

The Effects of A Community-based Health Program on Adolescents' Smoking Prevention - A Quasi-Experimental Study

Mardhiah¹, Teuku Tahlil^{2*}, Darmawati³

¹Postgraduate Student, Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh, ²Associate Professor, Department of Community Health Nursing, Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh, ³Associate Professor, Department of Maternity Nursing, Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh

How to cite this article: Mardhiah, Tahlil T, Darmawati. The Effects of A Community-based Health Program on Adolescents' Smoking Prevention - A Quasi-Experimental Study. 2023;15(1):35-41.

ABSTRACT

Background: Tobacco Smoking is considerably high among adolescents in Indonesia, indicating the potential proportion of tobacco smoking effects experienced by young Indonesians in the future and the need of program interventions to halt the tendency. This study aims to investigate effects of a community-based health promotion intervention on smoking prevention among Indonesians' adolescents.

Methods: The quasi-experimental study with a pre-and-posttest control group design involved 104 adolescents aged between 12 to 14 years. The adolescents were conveniently assigned into one intervention (55 adolescents) or a control group (49 adolescents), with participants in the intervention group received four health promotion sessions using smoking prevention videos for one month. Effects of the intervention were measured by a questionnaire at one week before and after the intervention completed and then analyzed by an appropriate data analysis technique.

Results: After the intervention completion, there was a significant positive effect of the community-based health promotion intervention program in improving adolescents tobacco smoking knowledge, attitude, intention and behavior ($p = <0.001$).

Conclusion: Community-based health promotion program provides positive impact on adolescents smoking prevention and therefore should be considered as one of strategies for tobacco smoking prevention program.

Keyword: Health Promotion, Community, Smoking Prevention, Aceh, Knowledge, Attitudes, Intentions, Smoking Behavior.

INTRODUCTION

Smoking is part of life for some people in many societies, both adults and children. Smoking is a global problem and one of the preventable causes of death.¹ Adolescents in Indonesia tend to smoke and perceive smoking is not contrary to the norms in society. Adolescents smoking behavior is influenced by their religious view on smoking status, peer pressure, parental

smoking status, masculinity, and curiosity². Socio-economic factors and low education levels also influence smoking behavior³.

The proportion of smokers is relatively high among teenagers in Indonesia. The 2018 Basic Health Research showed that 0.7% of Indonesian students smoked clove cigarettes at 5 to 9 years old, 53.6% aged 10 to 14 years, and 57.2% aged 15 to 19 years⁴. Other report

Corresponding author: Teuku Tahlil, Associate Professor, Department of Community Health Nursing, Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh

E-mail: ttahlil@unsyiah.ac.id; Telp/Fax: +62 651 7555249

suggests that 13.4 % of smokers in Indonesia were younger than 19 years in 2018⁵. In Aceh Province, the proportion of smokers aged 15 years or over was 31.8% by 2018, reduced to 28.7% in 2019, 28.1% in 2020, and 28.3% in 2021.⁶

Smoking increases morbidity and mortality rates⁷. Deaths due to smoking in Indonesia occur at the age of 35-69 years. Globally tobacco kills 5.4 million people annually, and estimated around 8 million deaths annually by 2030⁸. Smoking is also responsible for several non-communicable diseases (NCDs).⁹ The NCDs are the highest cause of death in Indonesia, namely coronary heart disease, cancer, diabetes mellitus with complications, tuberculosis and chronic obstructive pulmonary disease (COPD). The NCDs can occur in the productive age, thus the impact of smoking in the future must be considered.¹⁰

Health promotion can be an effective strategy for smoking prevention. Health promotion strategy can increase knowledge about the dangers of smoking and reducing smoking intentions and increasing quitting intentions among users.¹¹

Many smoking prevention studies have been conducted in school settings and shown to be effective in improving students' smoking prevention knowledge, attitudes and behavior^{12,13}. The use of participatory videos has been reported effective in reducing smoking intentions and empowering youth as advocates for non-smoking communities^{14,15}. Various strategies can be carried out at the individual, community, and policies to prevent and reduce smoking among teenagers¹⁶. The smoking prevention program in this study uses the Health Promotion Model framework, which is rooted in Social Cognitive Theory. Pender states the importance of cognitive processes as behavior change¹⁷.

Preventing adolescent of tobacco use is an important public health priority. However, there is little research on smoking prevention in community setting. More research is needed

to reduce adolescent smoking rates. Efforts to prevent tobacco smoking in adolescents are a challenge because these populations are difficult to reach, difficult to maintain involvement, and low levels of health knowledge and resources.¹⁴ Based on the above evidence, the current research is designed to assess the effects of community based health promotion methods with video media on adolescents smoking prevention.

METHODS

This quasi-experimental study used a pretest and posttest control group design. The sample were recruited by non-probability sampling with inclusion criteria included adolescents aged 12 to 14 years, willing to be a respondent, living in the working area of the selected public health centers, having good communication and low socio-economic family incomes.

Health promotion interventions were carried out using video media, consisting of a combination of moving text, pictures, animation, and youth-friendly music. Overall, the intervention consisted of four sessions, lasting 4 weeks with duration of 45 minutes. Each session consists of a 5-minute video presentation and 40-minute question and answer sessions. Intervention focuses on the phenomenon of smoking, incidence and prevalence of smoking, the concept of smoking, youth as a target for cigarette marketing, factors that encourage youth to smoke, and how to avoid the effects of smoking, the impact of smoking on health, and the Islamic religion concept. The intervention was only provided to the intervention group, facilitated by health promotion nurses who had been previously trained by researchers. Program providers were two health promotion nurses. A training was provided to the nurses before the program was carried out.

Data collection was carried out using a paper-based questionnaire, assessing students' demographic data, smoking knowledge, attitudes, intentions, and behavior. Questionnaire for smoking knowledge was

adopted from previous reseach, consisted of 13 questions with four answer choices and a value of 1 for the correct answer and 0 for an incorrect answer. The Scores range from 0 to 13, the higher the score, the higher the knowledge related to smoking¹². The Cronbach's Alpha reliability test for the questionnaire was 0.99¹⁸. Questionnaire for smoking attitude was adopted from previous research, comprised 13 questions in a five-point Likert scale format with responses ranging from 0 (strongly disagree) to 4 (strongly agree) for positive items, and 0 (strongly agree) to 4 (strongly disagree) for negative. The scores range from 0 to 52, with a higher score indicates that the individual is more likely to smoke¹². The Cronbach's Alpha reliability test for the smoking attitude questionnaire was 0.94.¹⁸

Questionnaire for smoking intention was adopted from previous studies^{12,13}, included three items with 4 point responses (sure don't smoke =0, probably don't smoke = 1, probably smoke/maybe/Not sure = 2, probably smoke = 3, sure smoke = 4). A higher score indicates a higher intention of participants to smoke.

The Cronbach's Alpha reliability test for the smoking intention questionnaire was 0.84¹².

Questionnaire for smoking was adopted from previous studies^{12,13}, comprised three questions. Scores ranged between 0 to 8, with the higher the score indicate the higher smoking behavior. The Cronbach's Alpha reliability test for the smoking behavior instrument was 0.88¹².

Research ethics approval was obtained from the Research Ethics Committee of the Nursing Faculty, Universitas Syiah Kuala, Banda Aceh, with registered No.112016150922. Written consent was requested from respondents and their parents or guardians. Respondents' participation were voluntary, respondents were allowed to withdraw from the study at any time, if needed.

RESULTS

Characteristics of respondents

Characteristics of respondents are persented in the Table 1..

Table 1: Characteristics of Respondents

Characteristics	Interventios Group (n=55)		Control Group (n=49)	
	f	%	f	%
Age				
12 years old	29	52.7	32	65.3
13 years old	-	-	7	14.3
14 years old	26	47.3	10	20.4
Parent or guardian education				
No School	-	-	2	4.1
Elementary School	17	30.9	17	34.7
Yunior High School	15	27.3	14	28.6
Senior High School	21	38.2	11	22.4
Brachelor	2	3.6	5	10.2
Parent or guardian work				
Fisherman	4	7.3	4	8.2
Farmer	43	78.2	42	85.7
Private employees	-	-	3	6.1
Self-employed	8	14.5	-	-
Parent or guardian income				
500 thousand - 1 million	19	34.5	17	34.7
1 million - 1.5 million	36	65.5	32	65.3
Over 2 million	-	-	-	-
Parent or guardian smoking status				
Smoke	32	58.2	33	67.3
Do not smoke	23	41.8	16	32.7

Table 1 shows that the majority of respondents in both the intervention and control groups aged 12 years (52.7% for intervention group, 65,3% for control group). The majority of respondents' parents or guardians in the intervention group were identified as senior high school (38.2%), farmers 78.2%, had income between IDR 1 to 1,5 million/month (65,5%) and reported as smokers (58,2%). In the control group, the majority of respondents' parents or guardians were elementary school (34.7%), farmers (85.7%), had income IDR 1 to 1,5 million/month (65,3%) and smokers (67.3%).

The Students' smoking knowledge, attitude, intention and behavior before the intervention

The students' knowledge, attitude, intention, and behavior before the intervention started are described in the Table 2.:

Table 2 shows that the mean scores for smoking knowledge (8.84 ± 2.40), Attitude (18.51 ± 8.45), Intention (3.06 ± 2.70), and behavior (5.61 ± 4.27) of the respondents in the intervention group at pre-test were almost similar with the knowledge (8.82 ± 2.44), Attitude (18.55 ± 6.90), and behavior (5.78 ± 4.22) of those in the control group except for the Intention to smoke (2.86 ± 2.170).

Effects of the Community-based Health Promotion Intervention on Adolescents' Smoking Prevention

The Effects of the intervention can be seen in the Table 3.

Table 3 shows that there were significant differences between participants in the intervention and control groups in their scores of smoking knowledge ($p=0.0001$), attitude toward smoking ($p=.0001$), intention to smoke ($p=0.03$), and smoking behavior

Table 2. The Mean scores of smoking knowledge, attitudes, intentions, and smoking behavior in the Intervention and Control Group at Pretest

<i>Variable</i>	<i>Intervention Group</i>	<i>Control Group</i>
Knowledge (Mean \pm SD)	8.84 \pm 2.40	8.82 \pm 2.44
Attitude (Mean \pm SD)	18.51 \pm 8.45	18.55 \pm 6.90
Intention (Mean \pm SD)	3.06 \pm 2.70	2.86 \pm 2.17
Behavior (Mean \pm SD)	5.61 \pm 4.27	5.78 \pm 4.22

Table 3. The Mean score differences in smoking knowledge, attitude, intention, and behaviors between respondents in the Intervention and the Control Groups

<i>Variable</i>	<i>Intervention Group</i>		<i>Control Group</i>		<i>Mann-Whitney Test</i>	<i>P-value</i>
	<i>Mean Rank</i>	<i>Sum of Rank</i>	<i>Mean Rank</i>	<i>Sum of Rank</i>		
Knowledge	50.48	2574.50	50.52	2475.50	-0.007	0.99
Pre Test						
Post Test	64.33	3281.00	36.10	1769.00	-4.937	0.0001
Attitude						
Pre Test	51.82	2643.00	49.12	2407.00	-446	0.64
Post Test	39.33	2006.00	62.12	3044.00	-3.933	0.0001
Smoking Intention						
Pre Test	50.72	2586.50	50.28	24.63	-0.077	0.94
Post Test	44.56	2272.50	56.68	2777.50	-2.120	0.03
Smoking Behavior						
Pre Test	50.09	2554.50	50.93	2495.50	-146	0.88
Post Test	41.85	2134.50	59.50	2915.50	-3.108	0.002

($p=0.02$). Scores of smoking knowledge were higher in the intervention group compared to the control group, scores of attitude toward smoking, intention to smoke, and smoking behavior were lower in the intervention group compared to the control group following the program intervention completion.

DISCUSSIONS

This study investigates the effect of smoking prevention using a community health based promotion intervention program on adolescents' smoking knowledge, attitudes, intentions, and behavior. The findings of the study indicate that a community health promotion intervention program can provide positive impact on adolescents smoking prevention endeavours. The scores of knowledge about smoking had increased among adolescents after their participation in the intervention. The results of this study finding are in line with previous studies that shows positive impact of smoking prevention program on participants health smoking knowledge¹². Videogame intervention had a highly effective on improving participants' beliefs and knowledge about tobacco products, including e-cigarettes and vaping, and was well received by adolescents¹⁹.

Attitudes towards smoking of participants in the intervention group improved significantly after the intervention. This finding is consistent with previous research on smoking prevention programs in other countries. It has been reported that smoking prevention program prevent adolescents from having negative attitudes towards smoking²⁰. Attitudes towards smoking in adolescents improved significantly after both health and Islamic-based interventions programs^{2,12}.

Adolescents' smoking intentions decreased significantly after the health promotion interventions were carried out. Previous research using digital anti-smoking video media produced by adolescents as an educational method also reports positive changes to the participants' intention to smoke where they tend not to start smoking after

joining the program¹⁶. Adolescents who have good knowledge about smoking will have low intentions towards smoking. After received a health promotion intervention, the respondents' smoking intention decreased at all ages.

Other findings of the current study suggests that after being given a health promotion intervention with video media, smoking behaviors among adolescents in the intervention group were lower compared to adolescents in the control group. A previous research using digital anti-smoking video media produced by adolescents as a health education method was also effective in preventing adolescent smoking behavior¹⁴. Playing serious game can be benefits for smoking prevention, cessation, or behavior program. It has a positive effect on smoking-related outcomes, particularly smoking cessation²³.

CONCLUSION

Community-based health promotion program can provides positive impact on smoking prevention program for adolescents; increasing adolescents smoking knowledge, improving smoking attitude, and reducing smoking intention and behaviors.

STUDY LIMITATIONS

The research was conducted in a community setting with a relatively short time, no screening was conducted to identify smoking behavior among the youth. Smoking material based on Islamic perspective was also limited, especially concerning skills in smoking prevention endeavours.

SOURCES OF FUNDING

All costs for this research were supported by the researchers.

CONFLICT OF INTEREST

There is no conflict of interest to be disclosed.

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