

## **Internet-Based Flipbook as A Health Education Medium on The Dangers of Smoking for Teenagers**

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### **ABSTRACT**

About 5.3% of teenagers are daily smokers, and 3.8% are occasional smokers in Indonesia. One of the strategies to decrease smoking prevalence is to conduct health education that could change health behavior determinants. Various health education media have been widely developed and published, but a flipbook educational media with the theme of adolescent smoking control has yet to be found. This study aimed to identify the effectiveness of internet-based flipbook media in changing adolescents' knowledge and attitudes about the dangers of smoking. This research is a pre-experimental design of the type one group pretest-posttest. Researchers treated the youth group using an internet-based flipbook on adolescents' knowledge and attitudes. The results obtained that the Wilcoxon test results on the knowledge variable produced a 2-tailed sig value of 0.0, and the paired t-test on the attitude variable is 0.000 at a 2-tailed sig value. The flipbook used for this intervention has proven effective in changing adolescents' knowledge and attitudes about the dangers of smoking.

### **INTRODUCTION**

Smoking behavior burdened Indonesia's health and economy (Satyana et al., 2020, n.d.). The prevalence of adolescent smokers in Indonesia is predicted to continue to increase (Holipah et al., 2020; World Health Organization, 2020). The lowest age to be influenced to become an active smoker is 9-17 years old (Azwar et al., 2018). Initiation of smoking aged 15-19 years (54.5%), 10-14 years (45.5%), and 6-9 years (5%). The percentage of teen smokers from 2013 to 2018 increased by 2.1% (World Health Organization, 2020).

Factors related to adolescent smoking behavior have been widely studied: cigarette advertising (Aulia et al., 2021; Waworundeng et al., 2019), gender, peers, surroundings, and desire to try (Mirnawati et al., 2018). Cigarette advertising impressions are very expressive. According to the adolescent mode, mass communication impressions such as movies can influence and improve adolescents' self-perception that smoking is cool or macho (Azwar et al., 2018). Visual design elements are identified as a map so that the meaning appears, expressed through the gesture of the visual elements

of the advertisement, namely the male and female figures (Benjamin, 2019).

Karang Taruna IMKA (Ikatan Muda Mudi Kepek Satu) in Bantul, Yogyakarta Special Region is a group of teenagers who have not escaped the target of the cigarette industry. There were 35 cadets, with 24 of them being men and 22 of them being smokers. The teens claimed to have received information about the dangers of self-obtained smoking. However, this knowledge does not affect their smoking habits, which means they still smoke. At least 5-10 cigarettes per day are consumed by them.

These problems make it clear that adolescents need help preventing and stopping smoking. WHO advises protection for non-smokers, helps them quit smoking, and provides warnings of the dangers of smoking, it is necessary to maximize the health promotion media on the dangers of smoking (Alamsyah and Nopianto, 2017). Media can stimulate learning and produce dramatic changes in behavior (Egger et al., 1993). The public has widely used e-books as an alternative reference in education. *Ebooks* are evolving into flipbooks. The flipbook display is more attractive, but this flipbook has only been developed as a reference medium for school learning (Azizah and

Budijastuti, 2021; Bura and Agustina, 2021; Yiwang et al., 2021). Researchers have yet to find a flipbook of health education, particularly adolescent smoking behavior. Researchers have developed a website-based flipbook and application for health education and obtained media feasibility results (Gustina and Wibowo, 2020; Wibowo et al., 2019). The content of the anti-tobacco education message should lead to the preferences of smokers, especially if the target is young people with a higher level of education (Sibarani and Perbawaningsih, 2018).

In 2021, researchers designed, internally validated, and produced health education products for adolescent smoking behavior control in flipbooks ([HTTPS flipbooks-sehat-tanpa-tembakau.netlify.app/](https://flipbooks-sehat-tanpa-tembakau.netlify.app/)). This study aimed to identify the effectiveness of an internet-based flipbook media entitled "Me, Adolescent, and My Health: Healthy without Tobacco" in changing adolescents' knowledge and attitudes about the dangers of smoking.

## **METHODS AND MATERIALS**

This research is a quantitative study with a pre-experimental design of the type one group pretest-posttest. Researchers pretested a group of teenagers, then gave

treatment in the form of an internet flipbook-based presentation, "me, adolescent, and my health: healthy without tobacco." One day after treatment, the researcher gave a posttest (marlina et al., 2021). With this design, researchers will find out the effect of treatment on adolescents' knowledge and attitudes about the dangers of smoking. The youth group was selected in total sampling, totaling 35 people from karang taruna imka (ikatan muda mudi kepek satu) in bantul, yogyakarta special region.

Researchers use questionnaire instruments to measure knowledge and attitudes. The instrument has been declared valid and reliable. The grid of knowledge questionnaires is the content of cigarettes, the impact of smoking on health, misinformation about the benefits of smoking, the benefits of quitting smoking, and the impact of smoking on others. The attitude questionnaire grid is an attitude to the seriousness of the smoking problem, the image of smoking, the attitude towards other smokers, the desire to smoke, the impact of smoking, the ethics of smoking, and the prevention of smoking.

The internet-based flipbook "me, adolescent, and my health: healthy without tobacco" was compiled by researchers and has been declared worthy of use by media

experts, materials, and practitioners. The flipbook contains information about adolescent smoking behavior in indonesia, yuk's acquaintance with tobacco and cigarettes, chemicals in cigarette smoke, how smoking can damage your body? Common misconceptions about the health effects of tobacco owned by tobacco users, and smoking cessation counseling. The flipbook can be accessed via <https://flipbook-sehat-tanpa-tembakau.netlify.app/>.

The data generated from the pretest and posttest were analyzed with an average difference test by SPSS software. In knowledge variables, data were analyzed using the Wilcoxon test because it was known that the data was not abnormally distributed. In attitude variables, the data were analyzed using paired t-tests because the data were normally distributed. The two tests were used to answer the hypothesis that there were differences in average knowledge and attitudes about the dangers of smoking in IMKA Cadet Coral adolescents after being treated using the internet-based Flipbook "Me, Adolescent, and My Health: Healthy without Tobacco." This research has received ethical approval from the Research Ethics Committee of UAD with the number 012207082.

## RESULTS AND DISCUSSION

Researchers have developed a flipbook on the dangers of smoking with the title "me, adolescent, and my health: healthy without tobacco." This flipbook has been tested for feasibility to experts, namely media experts, materials, and practitioners and has been declared worthy

of use. This flipbook was then used as an intervention medium in this study, to find out how the function of this media is in changing adolescent knowledge and attitudes about the dangers of smoking. Characteristics of respondents by gender and age are presented in Table 1.

**Table 1. Characteristics of Respondents by Gender, Age, and Number of Cigarettes Smoked**

Characteristic		Frequency	Percentage
Gender	Man	24	69%
	Woman	11	31%
Age	18 years ≤	16	46%
	18 years >	19	54%
Number of cigarettes smoked	0 cigarette	13	37%
	One cigarette	5	14%
	Three cigarettes	4	11%
	Five cigarettes	7	20%
	>10 cigarettes	6	17%
<b>Total</b>		<b>35</b>	<b>100%</b>

Based on Table 1, it is known that most respondents are men. Interventions using flipbooks result in changes in knowledge and attitudes. Pre- and post-test variable knowledge data are not normally

distributed, so researchers used the Wilcoxon test to determine the difference in average ability. Wilcoxon test results are presented in Table 2.

**Table 2. Wilcoxon Test Results of Knowledge Variables**

		N	Mean	Sig (2-tailed)
Post - Pretest	Negative ranks	1	2.46	0.000
	Positive ranks	30		
	Ties	4		
<b>Total</b>		<b>35</b>		

Table 2 presents information that 30 respondents experienced improved knowledge scores before and after being given an intervention using a flipbook. As many as 30 respondents experienced an increase in the value of knowledge, a response experienced an increase. In contrast, the rest did not experience an increase or decrease in the value of knowledge. The difference in the average value after and before the intervention was given was 2.46. The figure shows that

there is an increase in the intermediate knowledge of respondents. A sig value of 0.00 indicates a significant difference in the average understanding of adolescents before and after being given the intervention using a flipbook.

This study's pre and post-test variable attitude data were normally distributed, so the researchers used paired t-tests to determine the mean difference. The results of the paired t-test are presented in Table 3.

**Table 3. Paired T-Test Results of Attitude Variables**

	Mean	CI		Sig (2-tailed)
		Lower	Upper	
Pre - posttest	-9.686	-14.440	-4.141	0.000

Table 3 shows that the difference in the average variable attitude after and before the intervention using the flipbook is 9,686, which means that there is an increase in the average score. The CI value is between -14.1440 to -4.141, and the sig value (2-tailed) is 0.000, which indicates that there is a significant difference in average attitudes between before and after being given the intervention using a flipbook, meaning that the internet-based flipbook "Me, Adolescent, and My Health: Healthy without Tobacco" effectively increases adolescents' attitude of the dangers of smoking.

Various educational media about adolescent smoking control have been widely developed, but there has yet to be found development of internet-based flipbooks about the dangers of smoking. Therefore, researchers have developed an internet-based flipbook used in this study. They are giving treatment to the target group using flipbooks in the hope of a change in knowledge and attitudes in the target group, namely IMKA teenagers.

The results of the Wilcoxon test on knowledge variables showed that 30 respondents out of 35 experienced an increase in knowledge scores. The 2-tailed

sig value is 0.00, meaning there is a difference in the average adolescent knowledge about the dangers of smoking between before and after being given treatment using the internet-based flipbook "Me, Adolescent, and My Health: Healthy without Tobacco." The interpretation explains that the flipbook has helped significantly increase adolescents' knowledge.

Various media have been widely used to share information on the dangers of smoking and provide changes in knowledge, both visual and audiovisual media (Alimasita and Amalia, 2021; Angelina and Trisnadoli, 2020; Direktorat Jenderal Pencegahan dan Pengendalian Penyakit, Direktorat Pencegahan dan Pengendalian Penyakit Tidak Menular, Kementerian Kesehatan RI, 2017; Havizoh and Widyatuti, 2020; Ifroh et al., 2020; Kurstudy results differ., 2021; Syukaisih et al., 2018). The results of the study are different from previous studies, namely using *ebooks* that can be accessed through internet links and *flipbook* displays. Several flipbooks have been developed as learning media for learning materials at the school level and have produced good outputs for students (Azizah and Budijastuti, 2021; Bura and Agustina, 2021; Fathonah and Ratnasari, 2021;

Yiwang et al., 2021). This research proves the *flipbook* method as a medium for health education on adolescent smoking control.

The respondents of this study were primarily men, which was 69%. Their age is in the range of 15-24 years. It was more respondents over 18 years old than those who were the same age as or less than 18 years old. Based on the number of cigarettes smoked, 37% of respondents were not active smokers, while 63% of all respondents were smokers. Among the respondents who smoked, some smoked more than ten cigarettes per day. Based on these characteristics, adolescent health observers and researchers will undoubtedly feel concerned because they are already active and passive smokers at a young age. Adolescents who smoke at the age of fewer than 18 years tend to smoke every day (Zahrani and Arcana, 2020). If adolescents maintain this smoking behavior, then adolescents will get a negative impact from smoking in the future. These impacts include disruption of sleep patterns. (Rompas et al., 2013; Vaora et al., 2014). In addition, the number of cigarettes smoked will affect the level of CO in the blood (Putri, 2018), platelet count (Sundari et al., 2015), and blood viscosity (Irawati et al., 2011).

The results of this study show that there is a significant difference in the average knowledge of adolescents before and after being given an intervention using a flipbook, meaning that the internet-based flipbook "Me, Adolescent, and My Health: Healthy without Tobacco" is effective in increasing adolescents' knowledge about the dangers of smoking. Knowledge is everything that is known concerning things (KBBI, 2016). Based on this understanding, it means that everything that IMKA teenagers know about the dangers of smoking has changed for the better based on exposure to information from the internet-based flipbook "ME, TEENAGERS, AND MY HEALTH: HEALTHY WITHOUT TOBACCO." The exposure of this flipbook is in the form of exposure to the adolescent senses, namely vision. Several studies have shown the effectiveness of visual media in improving one's knowledge (Abanina and Baqri, 2021; Igiyany, 2020; Vaezi et al., 2018; Wulandari, 2018). The development of visual media in the form of flipbooks has been widely developed for health education and has proven effective (Billah and Maslikhah, 2022; Opidianto et al., 2021; Wimajaya et al., 2022). Flipbooks with the theme of the dangers of smoking as in this study, are new and prove their

effectiveness. The visual appearance of this flipbook is attractive, such as flip-opened book pages, the use of color illustration images, and the writing that is read. These indicators are an added value that makes teenagers interested in continuing to read the contents of the flipbook "Me, Adolescent, and My Health: Healthy without Tobacco."

Attitude is one of the determinants associated with adolescent smoking behavior (Nurfadhilah et al., 2022; Okta et al., 2022; Riyadi and Handayani, 2021). Therefore, it is appropriate if the determinants of this attitude are intervened to prevent adolescents from behaving in a smoking manner. The results of this study show that there is a difference in average attitudes before and after being given an intervention using a flipbook, meaning that the internet-based flipbook "Me, Adolescent, and My Health: Healthy without Tobacco" is effective in changing the attitudes of IMKA adolescents for the better than before. Information through writing and images in the flipbook has been able to influence the attitudes of teenagers. Thus, it can be concluded that the information conveyed in the flipbook is persuasive.

## CONCLUSIONS AND SUGGESTIONS

The results of this study show that there is a difference in the average knowledge and attitudes of adolescents before and after being given an intervention using the internet-based flipbook "me, adolescent, and my health: healthy without tobacco". Flipbooks have proven effective at changing teens' knowledge and attitudes about the dangers of smoking. This flipbook can be used by observers of adolescent smoking problems for health education without tobacco in other communities. This flipbook method can also be developed by carrying out other health topics as an educational medium that is easily accessible to teenagers.

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