



## The Effect on Education of Cigarette's Danger Through Instagram on the Knowledge, Attitudes, and Practices of Female Student Smokers

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### Abstract

**Background:** Smoking behavior in women is a serious health problem. Indonesia is a country that has a fairly high prevalence of female smokers, and is the third country with the highest number of female smokers after Myanmar and Laos. Cigarette advertisements on social media are one of the factors that influence smoking behavior. The number of adolescents who use social media, especially Instagram, can have an influence on smoking behavior. The research aimed to analyze the influence of health education through Instagram towards the Diponegoro students knowledge, attitude, and practice of smoking behaviour control.

**Method:** A quasi-experimental study with the design of a pretest-posttest group design by using purposive sampling. The subject is 66 women students of Diponegoro University. Data collected using a questionnaire with data analyzed by Mc Nemar, Wilcoxon, and Mann-Whitney tests.

**Results:** there is an influence of health education using Instagram to increase the knowledge  $p < 0,05$ , attitudes  $p < 0,05$ , and practices  $p < 0,05$  of Diponegoro University students in the smoking behavior control.

**Conclusions:** Health education through Instagram has an effect on the knowledge, attitudes, and practices of female student smoking behavior control.

### How to Cited

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## INTRODUCTION

Smoking behavior is one of the risky behaviors that can have a negative impact on health. Findings from Southeast Asia Tobacco Control Alliance (SEATCA) written on the book "The Tobacco Control Atlas ASEAN Region" states that 1 of 5 people ASEAN population are active smokers. Indonesia ranked first country that has a percentage smoker highest of ASEAN, namely 36.3% of the total population or reach more than 65 million inhabitants. From these data it is known that male smokers are 66% while female smokers are 6.7% (Tan & Dorotheo, 2018).

The phenomenon of female smokers was found in developed countries with a prevalence of 20-35%. While in the developing country prevalence of female smokers by 2-10% (WHO, 2020). Indonesia is a country that has a prevalence rate of women smokers high, SEATCA mentioned that Indonesia is a country that has the third highest number of female smokers after Myanmar and Laos (Tan & Dorotheo, 2018). According to the Ministry of Health Indonesia prevalence of smoking behavior in women at Indonesia 2016 at number 2.5% then in 2018 numbered to 4.8%. This represents an increase of 2.3% from 2016 to 2018 (Research and Development Ministry of Health Indonesia, 2018).

The prevalence of female smokers aged  $\geq 10$  years in Central Java Province in 2018 according to smoking habits were divided into two, namely smoking every day and smoking occasionally. The proportion of women who smoke every day higher than women who smoke occasionally, were 0.62%, while women who smoke occasionally are 0.41%. With an average number of cigarettes smoked per day as many as 6 cigarettes (Primary Health Care Survey, 2018).

Smoking behavior in women was a serious health problem because it can cause women's health problems such as reproductive problems such as infertility, pregnancy complications, menstrual pain, early menopause, miscarriage, and low birth weight (LBW), birth defects, and increase the risk of death in the baby who will be born (Sukendro, 2007). Pregnant women who smoke have a greater risk of infant mortality at birth. This is in line with research conducted

in India, showing that pregnant women who smoke experience a 5% incidence of stillbirth while the incidence of non-smoking pregnant women is 1.7% (Lubis, 2012). The results of a survey conducted by the Ministry of Health Indonesia show that on average babies born to smoking women have a lighter weight (<2500 grams) and shorter (45 cm) than babies from nonsmokers women (> 3000 grams) and longer (50 cm) (Ministry of Health of the Republic of Indonesia, 2016).

According to research, the current smoking practice in women has been found, especially among female students. From 30 women, there is at least 1 student who smokes. Research conducted by the Rockefeller Foundation shows that 88.78% of junior high school girls to college students are active smokers (Efroymson & Jones, 2017). In addition, Aiman in his book reveals that smoking behavior in women is dominated by female students. However, until now there has been no specific data that states the prevalence rate of smoking behavior among students (Sukendro, 2007).

There are various factors that cause smoking behavior in female students. Based on research conducted by Sumarna, it is stated that knowledge about the dangers of smoking is one of the factors that can cause a person to smoke (Sumarna, 2009). Another study conducted by Liviyana stated that female students' attitudes had an effect on smoking behavior. The attitudes mentioned include the image of women smoking, warnings about the dangers of smoking, and faculty regulations regarding smoking behavior (Simanjuntak, 2017). In addition, cigarette advertisements also influence a person to smoke (Dewanta, 2013).

The development of Information and Communication Technology (ICT) has an impact on the social interactions of the community. The internet is a technology product that is widely used by the community. One of the uses of the internet is the existence of social media that allows online social interaction (Alyusi, 2016). Wearesocial Hootsuite published the results of its survey in January 2020 which contained the number of social media users in Indonesia. According to the results of this

survey, it is known that the number of social media users in Indonesia reaches 59% of the total population or 160 million people ("Global Socially-Led Creative Agency - We Are Social," 2019). In April 2020 NapoleonCat reported that the number of active Instagram users in Indonesia reached more than 65 million or 24% of the total population. The number of female users is more than that of men, namely 51.1%, while male users are 48.9%. People with an age range of 18 to 24 years are the largest age group as Instagram users. (Napoleoncat, 2020)

The large number of people, especially teenagers who use social media such as Instagram, can influence adolescent risk behavior (Simanjuntak, 2017). Exposure to social media content related to smoking also affects a person's smoking behavior. Through social media, especially instagram, you can find several accounts that can influence their followers to smoke. One of them is the "Cigarette.indonesia" account with 178 thousand followers, both men and women. In the content he shares, there are several female smoking figures, this can affect a person's smoking behavior ("Indonesian Cigarettes (@igar.indonesia) • Instagram photos and videos,"). This statement is in line with a research conducted by Utari in 2019 which states that smoking behavior in someone who is exposed to cigarette-related social media content is greater, namely 66,7% compared to someone who is not exposed to social media content related to smoking, namely 10.65% (Utari, 2019). Simanjuntak in his research also stated that exposure to cigarette advertisements on social media can encourage teenagers to smoke (Simanjuntak, 2017).

This study aims to analyze the effect of providing education on the dangers of smoking for women through Instagram on the knowledge, attitudes and practices of preventing smoking behavior among female students of Diponegoro University. The interventions provided were in the form of education regarding the definition of cigarettes, types of cigarettes, harmful substances in cigarettes, the impact of smoking on health, the benefits of quitting smoking, and tips on quitting smoking.

## METHOD

This type of research was quasi experimental design with a pretest-posttest control group design. All research activities are carried out online due to the COVID-19 pandemic. Research information is distributed using posters through social media Instagram, Twitter and WhatsApp to find potential respondents. Respondents were selected using purposive sampling technique that meet the criteria are active smokers, have instagram account, and active as a student of SOSHUM (Social and Humanities) faculty Diponegoro University during the study. Selection is based on a similarity respondents' characteristics and respondents' experiences through health education, especially the dangers of smoking. Students from the SOSHUM faculty rarely or never access education on the dangers of smoking. Before the intervention, all participants filled out a questionnaire pretest through a Google Form. Respondents were divided into two groups, namely the experimental group and the control group. Intervention is given to the experimental group for 1 month (24 December 2020-24 January 2021) to use posters and video through social media instagram "tidakberasap.id". The educational media used came from the Director General of P2PTM of the Indonesian Ministry of Health. Education is carried out every day using 26 posters and 4 videos. Meanwhile, a control group was not given intervention after filling out the questionnaire pretest to post-test. Post-test measurements also used a Google Form filled in by all participants which was carried out three days after the intervention ended. To maintain internal validity is done by way of locking instagram account used for the experimental group intervention to prevent educational accessing the control group. In addition, regulations are also imposed not to access education on the dangers of smoking from other sources. Analysis of knowledge, attitudes, and practices difference after given intervention is done using Mann Whitney and Wilcoxon test. This research has passed the ethical review by the Research Ethics Commission of the Faculty of Public Health,

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## RESULT AND DISCUSSION

Respondents in this study were 66 female students who smoked and divided into two, namely 33 female students in the experimental

group and 33 in the control group. The characteristics of respondents in the two groups were mostly homogeneous or there was no difference between the experimental group and the control group. Only the allowance variable shows a difference between the experimental group and the control group.

Table 1 Respondent's Characteristic

Variable	Experiment Group		Control Group		<i>p-value</i> <i>Mann Whitney</i>
	n	%	n	%	
<b>Age</b>					
18-24	31	94	33	100	0,154
25-35	2	6	0	0	
<b>Origin</b>					
Semarang	13	39,4	14	42,4	0,804
Outside Semarang	20	60,6	19	56,6	
<b>GPA Value</b>					
≥ 3,5	9	27,2	12	36,4	0,431
< 3,5	24	72,8	21	63,6	
<b>Organization Participation</b>					
Participate	9	27,2	11	33,3	0,595
Not Participate	24	72,8	22	66,7	
<b>Pocket Money</b>					
Rp 500.000-1.500.000	31	94	23	69,7	0,011
> Rp 1.500.000	2	6	10	30,3	
<b>Father's Smoking Status</b>					
Smoke	22	66,7	15	45,4	0,085
Not Smoke	11	33,3	18	54,6	
<b>Mother's Smoking Status</b>					
Smoke	7	21,2	6	18,2	0,759
Not Smoke	26	78,8	27	81,8	
<b>Friend's Smoking Status</b>					
Smoke	26	78,8	22	66,7	0,569
Not Smoke	7	21,2	11	33,3	
<b>Non Smoking Area Faculty Regulation</b>					
There is	16	48,5	20	60,6	0,326
There is no	17	51,5	13	39,4	
<b>Cigarette Ads Source</b>					
Nothing	0	0	4	12,1	0,171
TV	2	6,1	3	9,1	
Internet/web	5	15,1	4	12,1	
Social media	26	78,8	22	66,7	
<b>First Time Smoking</b>					
Junior High School	4	12,1	7	21,2	0,780
Senior High School	12	34,4	6	18,2	
College	17	51,5	20	60,6	
<b>Smokers Duration</b>					
< 1 year	10	30,3	10	30,3	0,186
1-3 years	9	27,3	8	24,2	
> 3 years	14	42,4	15	45,5	
<b>Type of Cigarette</b>					
Cigarette	4	12,1	5	15,2	0,993
Cigarette Filter	26	78,8	24	72,7	
E-Cigarette	3	9,1	4	12,1	

Adolescence is a phase where a person was very easily influenced by other people. This can have an impact on adolescent risk behavior, one of which is smoking behavior (Juliansyah, 2018). Living place also is one of the determinants of smoking behavior. Most of the respondents live overseas (outside Semarang). This limits the role of parents to supervise and direct correct behavior. So that many overseas students end up becoming smokers (Septiana et al. , 2016). Someone who smoke negatively affected by the nicotine in the brain cells that causes reducing memory. So that someone who smokes tends to be slower in understanding something than someone who does not smoke (Yuliarti, Karim, & Sabrian, 2015).

The factor of imitating the father who smokes is the second most influencing factor on someone's smoking behavior after curiosity (Wulan, 2012). In addition, many studies have revealed the influence of friends on a person's smoking behavior ( Wulan, 2012) , (Rachmat, Thaha, & Syafar, 2013). The application of Non Smoking Area regulations in public places changes the proportion of a person's smoking (Rahajeng, 2015). Research conducted by Rachmat said that respondents who studied in Non-Smoking Areas had a 2.6 times better chance of quitting smoking compared to respondents who came from schools that did not apply Non Smoking Area (Rach mat et al., 2013).

The next variable that was studied was cigarette advertisement. Cigarette advertising is a media for promoting cigarette products and is very influential on teenage smoking behavior (Rachmat et al., 2013). Students with high exposure to cigarette advertisements tended to be significantly more difficult to quit smoking than students who were not exposed to advertisements (Dewanta, 2013). Respondents started smoking the most after entering college

and had been smoking for more than 3 years. Respondents' age when they were in college belonged to the group of late adulthood (RI, 2009). In the late adolescence phase, a person has the courage to make decisions for his life and they also begin to be consistent in their choices, such as in the decision to smoke (Saputro, 2018). The types of cigarettes consumed by respondents were cigarettes, filter cigarettes and e-cigarettes. Filter cigarettes have a lower nicotine content than clove cigarettes because the use of filters can reduce the nicotine that is inhaled into the body. (Yuliarti et al., 2015).

Table 2 Differences Test for the Experiment Group and the Control Group before the Intervention

Variable	Experiment Group	Control Group	<i>p-value</i>
Knowledge	26,25	24,05	0,217
Attitude	14,10	13,80	0,917
Practice	70,20	71,80	0,970

The homogeneity test on the dependent variable (knowledge, attitude, and practice) between the experimental group and the control group before the intervention (pre-test) showed no difference in all variables with a p-value of 0.217 on the knowledge variable, 0.917 on the attitude variable, and 0.970 on the practice variable. So it can be concluded that the experimental group and the control group have the same level of knowledge, attitudes, and practices. In the experimental group 63.6% of respondents had good knowledge while in the control group respondents who had good knowledge were 54.5%. The selection of the two groups of respondents has been done by selecting respondents with similar characteristics as possible, but the existence of internal validity can interfere with the results of the study. (Hastjarjo, 2016).

Table 3 Overview of Knowledge Levels, Attitudes, and Practices of the Experiment Group and the Intervention Group

Category	Experiment Group				Control Group				
	<i>Pre-test</i>		<i>Post-test</i>		<i>Pre-test</i>		<i>Post-test</i>		
	f	%	F	%	f	%	f	%	
Knowledge	Not Good	12	36,4	1	3	15	45,5	15	45,5
	Good	21	63,6	32	97	18	54,5	18	54,5
Attitude	Support	13	39,4	1	3	8	24,2	12	36,4
	Not Support	20	60,6	32	97	25	75,8	21	63,6
Practice	Not Good	12	36,4	7	21,2	8	24,2	17	51,5
	Good	21	63,6	26	78,8	25	75,8	16	48,5

Table 4 Mean Knowledge, Attitudes, and Practices of Respondents in the Experiment and Control Groups

Variable	Group	Mean		$\Delta$ Mean	<i>p-value</i> Wilcoxon
		<i>Pre-test</i>	<i>Post-test</i>		
<b>Knowledge</b>	Experiment	26,3	30,4	4,1	0,000
	Control	24,1	24,1	0	1,000
<b>Attitude</b>	Experiment	14,1	22,3	8,2	0,005
	Control	13,8	12,9	-0,9	0,180
<b>Practice</b>	Experiment	70,2	77,6	7,3	0,042
	Control	71,8	66,8	-5	0,080

Knowledge is one of the important domains in shaping a person's behavior (Kumalasari, 2016). Someone with high knowledge about the dangers of cigarette are more likely to quit smoking (Rosita, Suswardany, and Abidin, 2012). The results of the experimental group showed an increase in the level of knowledge after intervention with a p-value of 0.000. In line with research conducted by Verayanti (2020) on adolescents, after being given an intervention in the form of education on the dangers of smoking, the level of knowledge at adolescents increased by 93%. Teens understand that cigarette smoke is very harmful to the health of both active and passive smokers. This can prevent teenagers from smoking (Verayanti, 2020). Another research conducted on junior high school students in Pontianak shows that education on the dangers of smoking using local language booklets has a positive effect on students' knowledge of the dangers of smoking (Ridha & Dwi H er nawan, 2016).

The intervention process to increase knowledge in research was carried out through Instagram "takberasap.id" using posters and video media. Instagram is one of the social media that has most notably teenager users. This happens because Instagram has many

and interesting features that make users often use it for various needs (Napoleoncat, 2020). Providing material starting with definition of cigarettes, cigarette type, the chemicals in cigarettes, the dangers of smoking to health, the dangers of smoking for women, the effects of smoking on the social life, the advantages of quitting smoking, as well as tips to quit smoking. The intervention process is done interactively, Respondent to each other to respond to the educational materials provided through features like and comment. The source of education comes from the Directorate of P2PTM of the Indonesian Ministry of Health.

According to the literature study conducted by Leonita and Jalinus show that form instagram social media use can effectively improve understanding and provide support to communities to adopt healthy behaviors (Leonita & Jalinus, 2018). This is also proven by Gafar (2014) which states that providing education on the dangers of smoking through instagram has an effect on the level of student knowledge, seen from the results of research before education, the percentage of students with good knowledge is 29% then after being given education increased to 92% (Gafar, 2014).

In the control group there was no increase in the mean level of respondents'



knowledge. This happens because the control group was given no intervention be educating the dangers of smoking, so there was increased knowledge of the respondent. In accordance with the behavior change theory put forward by Lawrance Green , health promotion will affect the level of knowledge (Lusk, 2015). It is also in line with the theory of SOR (Stimulus - Organization - Response) which says that a stimulus given to a person or group can be accepted or rejected. If the stimulus is accepted, there will be material changes to the action or behavior (Palupi & Ikaningtyas, 2018).

The next variable that was studied was the attitude of female student smokers. Attitude is a manifestation of individual thoughts to respond to an object positively or negatively based on knowledge, opinions, and beliefs from the results of interaction and socialization with their environment (Suhary at, 2017). It is very important to improve student attitudes because according to Cahyo and friends (2021) in their research, they said that most respondents showed negative attitudes or did not support the dangers of smoking (Cahyo, Wigati, & Shaluhiah, 2012).

The results of the study showed that there was an increase in the attitudes of the respondents in the experimental group. The intervention process to improve respondents' attitudes was carried out through Instagram using posters and video media. Educational materials to improve students smokers' attitudes, namely regarding the opinions of several people about women smokers. In the video, it contains the opinion of a man about smoking behavior carried out by women, he said that smoking behavior is inappropriate if it is done by a woman, especially if it is shown in public places or social media, this is not something to be proud of. The content gets various kinds of responses in the comments column from respondents. After the intervention using the video, the respondents began to realize that smoking behavior in women is not something to be proud of.

The use of posters through Instagram media for education on the dangers of smoking is proven to increase the attitude of respondents, Irnawati (2019) in her research revealed that Instagram can significantly be used as an

educational medium to increase individual positive attitudes towards the dangers of smoking (Irnawati, Syria, & Yusriani, 2019). Another study conducted by Yafrinal S (2018) shows that audio-visual media is more effective in increasing adolescent attitudes to the dangers of smoking (Siregar, 2018). This happens because humans can better understand material if they receive more than one sense, namely sight and hearing (Garzón-orjuela et al., 2019).

In the control group, there was no significant difference between the mean attitude of the respondents before the intervention and after the intervention. This happened because the control group was not given intervention in the form of education on the dangers of smoking, so there was no increase in respondent attitudes. Lake (2017) which states that a person's level of knowledge about the dangers of smoking will affect their attitude towards smoking behavior (Lake, Hadi, & Sutriningsih, 2017). A person with a higher level of knowledge will show a better attitude (Rosita et al., 2012). This statement is in accordance with the results of research conducted by researchers. Based on the results of the study, it is known that respondents in the experimental group showed better knowledge and skills than those in the control group. This can happen because health education is only given to the experimental group.

Practice is a form of individual action or reaction to a stimulus. Individual practice is influenced by several things including knowledge, attitudes, norms and values, environment, and experience (Suharyat, 2017). Health education is an effort that can be done to improve individual health practices (Musaini, Ichsan, & Basuki, 2011).

The results of the research in the experimental group showed an increase in practice after the intervention was carried out. This is in line with research conducted by Sugiarti (2019) which shows the increase in smoking cessation practices in adolescents after intervention. Before the intervention, adolescents with good smoking cessation practice category were 8.2% then after the intervention increased to 51.0% (Sugiarti, 2019). Another study conducted by Ikhsan (2013) on adolescents also said that after

being given intervention the practice of adolescent smoking was getting better, before the intervention was carried out by adolescents who became heavy smokers by 63.3% then after the intervention decreased to 10 %. This shows that education on the dangers of smoking can affect the number of cigarettes smoked in a day (Ikhsan, 2013).

The intervention process to improve the practice of stopping student smoking was carried out through Instagram using posters and videos. Giving materials started with the benefits of quitting smoking and then continued with smoking cessation tips. In the control group there was no increase, but instead there was a decrease in female student smoking practice. In line with the research of Said Usman (2018) which states that health promotion in the form of education on the dangers of smoking can reduce the smoking behavior of respondents (Usman, 2018). If the practice of smoking is not given proper intervention, the practice of smoking can show a worse condition (Oktavia, 2016). A person who has entered the trial smoking phase will increase into a regular smoking phase and then become addicted to cigarettes if not given proper education on the dangers of smoking (Fikriyah, Febrijanto, & Kediri, 2012). Education on the dangers of smoking can play a role in a person's efforts to stop being addicted to cigarettes (Ikhsan, 2013).

The use of Instagram as a means of educating the dangers of smoking provides an increase in the variable of respondents' smoking cessation practices. This is in line with research conducted by Melita R (2019) saying that the Instagram account "No smoking sound" has an effect on a person's smoking practice, the more often someone is exposed to public service advertisements about the dangers of smoking on the Instagram account, the more likely he is reduce smoking practice (Rahmani, 2019). Another study conducted by Kevin (2017) on Instagram users also said that Instagram had an influence on the practice of juvenile delinquency, one of which was the practice of smoking (Wicaksana, 2017).

## CONCLUSION

Education on the dangers of smoking through Instagram using posters and videos

can increase the knowledge, attitudes, and practices of smoking students regarding smoking cessation efforts. The use of social media in the form of Instagram as a means of educating students on the dangers of smoking to provide education in accordance with their characteristics so that the material presented can be understood.

Student smokers are expected to access health education more frequently, especially regarding the dangers of smoking, the impact of smoking on reproductive health, ways to quit smoking, and the benefits of quitting smoking. For further research, it can be considered the addition of intervention descriptions, so that changes in the knowledge, attitudes, and practices of female smokers can be better.

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