

Original Research Article

Adolescent smoking behaviour determinants in the city of Yogyakarta, Indonesia

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Received: 28 September 2019

Revised: 15 November 2019

Accepted: 16 November 2019

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ABSTRACT

Background: The increasing number of smokers has an impact on increasing the number of deaths due to smoking-related illnesses. Teenagers are the easiest targets for cigarette marketing, including in the city of Yogyakarta, whose numbers continue to increase. The proper investigation needs to be carried out to determine the determinants that play a role in developing effective interventions to reduce the number of teenage smokers. The purpose of this study was to determine the determinants of smoking in adolescents in The City of Yogyakarta.

Methods: This study was a cross-sectional study with senior high school/vocational students' samples. The sampling technique uses multistage random cluster sampling with Chi-Square analysis.

Results: Researchers collected 481 respondents. Variables significantly associated with smoking behavior of senior high school/vocational high school students in Yogyakarta City are knowledge, attitude, self-confidence, family's role, and peer's role, while the unrelated variables are teacher's role and information sources. The RP value of these variables is more than 1, which shows the seven variables are risk factors for adolescent smoking behavior.

Conclusions: There is a significant relationship between knowledge, attitudes, self-confidence, the role of family, the role of peers and the smoking behavior of adolescents in Yogyakarta, Indonesia. The role of the teacher and the source of information has no significant relationship with the smoking behavior of adolescents in Yogyakarta, Indonesia. The intervention program for reducing and preventing smoking must pay attention to these variables as a determining factor.

Keywords: Adolescent, Behavior, Smoking

INTRODUCTION

Tobacco is one of the legal drugs that kills many users when used exactly as intended by the manufacturer. The World Health Organization, WHO has predicted tobacco use is currently the cause of the deaths of around six million people worldwide each year, this number includes the impact on passive smoking.¹ The prevalence of male smokers in the Southeast Asian and Western Pacific region is high.² In Indonesia, the prevalence of male smokers is also higher than that of women.³ Based on the

2016 National Health Indicator Survey, 17.2% of male adolescents 10-18 years were smokers, while 0.2% of female adolescents 10-18 years were smokers. These results indicate men tend to be smokers than women.⁴ However, the Regional Health Survey data shows that in 1.1% of women smoke tobacco.⁵

Teenagers are an easy target for the cigarette industry. Smoking is a behavior that affects the understanding of teenagers, especially men, about masculinity.² Adolescent smokers have a higher self-esteem than adolescent non-

smokers.⁶ Adolescent self-control has a negative and significant relationship with adolescent smoking behavior.^{7,8} The adolescent's behavior will continue to increase in accordance with its development stage which is characterized by increasing frequency and intensity of smoking and often results in nicotine dependence. Teenagers start smoking at the instigation of themselves because they want to try. In addition, smoking teenagers is also caused by the influence of playmates and schools.⁹ The city of Yogyakarta is a city of students who have many teenagers who are studying, both from the city of Yogyakarta and from outside the city. Characteristics of adolescents and living in urban areas, with easy access make them at risk of carrying out unhealthy behaviors, such as smoking. Identification of appropriate smoking determinants will help the development of effective interventions to reduce the number of adolescent smokers. The purpose of this study was to determine the determinants of smoking in adolescents in the city of Yogyakarta.

METHODS

This study was an observational study with a cross-sectional design conducted in March 2017 to September 2017. The research was conducted at high schools/vocational schools in the city of Yogyakarta, totaling 80 schools. The population of high school/vocational high school students in the city of Yogyakarta is 36,360 students.

Table 1: Sample size calculation.

Total population (N)	Sample size (error level 5%)
10,000	336
15,000	340
20,000	342
30,000	344
40,000	345

Based on Table 1, researchers determined a sample size of 345 people. As an effort to minimize missing data,

researchers added 10% of the total sample, so the sample used amounted to 380. The researcher has requested respondent's approval before data collection. Researchers used multistage random sampling in determining the number of schools and the number of samples in each school as illustrated in Figure 1.¹⁰ Determination of the chosen school name using simple random sampling. The collected data were analyzed bivariate with chi-square test to find out the relationship between the independent variable and the dependent variable. The independent variables in this study were knowledge, attitudes, self-confidence, sources of information, the role of the family, the role of the teacher, and the role of peers, while the dependent variable was smoking behavior.

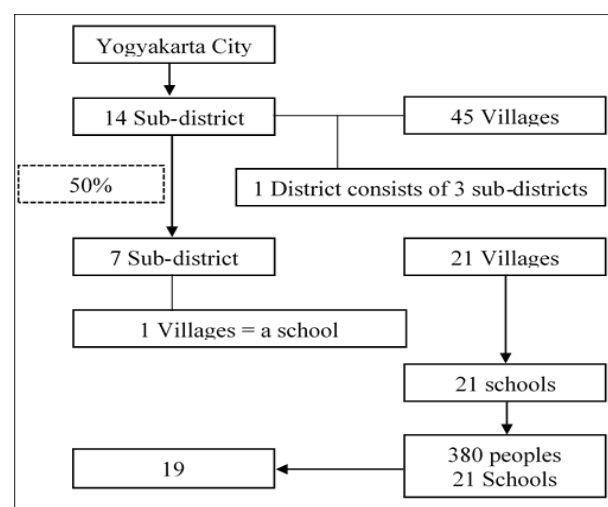


Figure 1: Sampling scheme.

RESULTS

The results of this study show 11 variables which the frequency distribution is described in Table 2. While the results of cross tabulation are described in Table 3. Based on the research that has been done, from all respondents who behaved smoking was 217 respondents (45.1%).

Table 2: Distribution of frequency of respondent's characteristics.

S. no.	Characteristics	Category	Frequency	%	Mean
1	Age in years	15	85	17.7	1.628
		16	231	48	
		17	118	24.5	
		18	41	8.5	
		19	6	1.2	
2	Gender	Male	236	49.1	
		Female	245	50.9	
3	Parent education level	Not known	62	12.9	
		Primary school	26	5.4	
		Junior high school	36	7.5	
		Senior high school	216	44.9	
		College	141	29.3	

S. no.	Characteristics	Category	Frequency	%	Mean
4	Smoking behavior	Smoke	217	45.1	
		Do not smoke	264	54.9	
5	Knowledge	Low	143	29.7	658
		High	338	70.3	
6	Attitude	Negative	201	41.8	1.968
		Positive	280	58.2	
7	Confidence	Lack of confidence	97	20.2	525
		Confidence	384	79.8	
8	Information resources	Low	252	52.3	587
		High	229	47.7	
9	Family role	Less of role	92	10.9	338
		Have a role	389	89.1	
10	Teacher role	Less of role	149	30.9	450
		Have a role	332	69.1	
11	Peers role	Have a role	234	48.6	165
		Less of role	247	51.4	
Total			481	100	

Table 3: The results of cross tabulation.

S. no.	Variables	Category	Smoking behavior		Do not smoke		P value	RP	CI 95%
			N	%	N	%			
1	Knowledge	Low	91	636	52	364	0.000	1.707	1.418-2.055
		High	126	373	212	627			
2	Attitude	Negative	156	776	45	224	0.000	3.563	2.819-4.502
		Positive	61	218	219	782			
3	Confidence	Lack of confidence	73	753	24	247	0.000	2.007	1.689-2.384
		Confidence	144	375	240	625			
4	Information resources	Low	122	484	130	516	0.152	1.167	0.956-1.425
		High	95	415	134	585			
5	Family role	Less of role	67	728	25	272	0.000	1.889	1.582-2.254
		Have a role	150	386	239	614			
6	Teacher role	Less of role	69	463	80	537	0.800	1.039	0.842-1.282
		Have a role	148	446	184	554			
7	Peers role	Have a role	146	624	88	376	0.000	2.171	1.742-2.705
		Less of role	71	287	176	713			
Total			217	451	264	549			

This number is less than the number of respondents who are nonsmokers, namely 264 respondents (54.9%). The number of respondents who smoke can also be seen from the distribution of respondents by sex where the total male respondents are 236 respondents and the total female respondents are 245 respondents. Male respondents who smoked were 169 respondents and 49 were female respondents who smoked. This is in line with the Indonesian demographic and health survey in 2012 where there were more adolescents aged 15-19 years than adolescent girls. Smoking behavior in men is a behavior that is considered normal by the people of Indonesia. Even smoking behavior in men in Indonesia is considered a symbol of virility. While smoking men can be accepted by Indonesian society, from a cultural perspective, smoking among women is considered a deviant behavior.

Respondents who were sampled were adolescents aged 15-19 years consisting of class X-XII.

The age of the most respondents is 16 years, as many as 231 respondents and the least is 19 years, namely 6 respondents. But this 19-year-old respondent has the highest percentage of smokers, 83.3% with 5 smoking respondents and the remaining 1 respondent does not smoke. The lowest percentage of smokers is 15 years old with a percentage of 42.4% or 36 respondents from the total respondents aged 15 years as many as 85 respondents. Teenagers often involve themselves in taboo pleasures, namely forms of recreation that are considered symbolic of adults. The common enjoyment of taboos is smoking, drinking, and using various kinds of drugs.

DISCUSSION

Knowledge of respondents was categorized into 2, namely low and high. Knowledge of respondents who are low on cigarettes is 143 people but 63.6% of them are smoking. Whereas in respondents who were highly knowledgeable about smoking, 338 respondents with 37.3% of them were smoking. Although the total number of respondents who smoke is more knowledgeable, based on the percentage of the total respondents there are more smokers with low knowledge. Bivariate analysis with chi-square test showed a statistically significant p value of $0.000 < \alpha 0.05$. This test also obtained the results of ratio prevalence (RP) of 1.707 (CI=1.418-2.055). This number is more than 1, so the biological significance of knowledge is a risk factor. This means that the lower a person's knowledge is, the more at risk for smoking.

The general knowledge of smoking in adolescents is good, namely an average of 6.58 with a total of 7 questions. This shows that the average teenager in the city of Yogyakarta already knows the dangers of smoking and the effects of smoking (the effects of addiction and negative effects on health). Although the results obtained from good knowledge but according to Notoatmodjo knowledge is also strongly influenced by the intensity of attention and perception of objects. The relatively low attention intensity in smokers tends to ignore the risks that they already know. Therefore, smokers have theories about the dangers of smoking but they cannot stop smoking because of addictive substances that make smokers addicted so it is not easy to just quit smoking. So, counseling and health promotion programs in schools not only discuss the effects and dangers of smoking, but also discuss ways to stop smoking. This will increase the insight of active smokers so he knows how to stop smoking. The results of this study and other studies agree that smokers and nonsmokers have different knowledge about cigarettes.¹¹

The assessment of the attitude to prevent smoking behavior in the respondents is 2 categories, namely negative and positive. In this study, a negative attitude is an attitude that is tolerant of smoking and people who smoke. A positive attitude is an attitude that opposes smoking behavior in everyday life. The attitude of respondents who are classified as negative is 201 people and 77.6% of them are smokers. While respondents who have a positive attitude are 280 people, only 21.8% of them who smoke. The p value in the chi-square analysis of 0.000 indicates that there is statistical significance. That is, there is a relationship between a person's attitudes to smoking behavior. Biological significance can be proven by the number $RP > 1$, which is 3.563 (CI=2.819-4.502). With the relationship between attitudes and smoking behavior, it can be seen that the more negative the attitude of the respondent/person, the more-risky for smoking behavior.

The attitude has a value of Rp 3,563 with CI 2,819-4,502 which is the highest RP value of all the independent variables studied. That means, attitude is the variable that most determines a person's risk for smoking or not. Therefore, it is necessary to hold health promotion programs in schools that not only increase knowledge but also can change the attitudes of students who were initially tolerant to smoking to have the determination not to smoke or stop smoking. This study shows that attitudes have a relationship with adolescent behavior in Yogyakarta. However, the results of the study in Kuningan Regency state that attitudes do not affect the smoking behavior of vocational schools because adolescents are still in the ambivalent nature.¹²

The results of the bivariate analysis showed that respondents who were less confident were more smoking with a total of 73 out of 97 people (75.3%) compared to respondents who were confident and smoking namely 144 out of 384 people (37.5%). The p value of $0.000 < \alpha 0.05$ on self-confidence shows a statistical significance which means there is a relationship between self-confidence and smoking behavior. Biological significance is indicated by the value of RP: 2.007 (CI=1.689-2.384) which means self-confidence is a risk factor for smoking behavior. The less confident a person is, the greater the risk he smokes.

The average self-confidence in respondents is also good at 5.25 out of a total of 6 about self-confidence. This figure shows that the average teenager in the city of Yogyakarta is more confident as shown by the total respondents including self-confidence as many as 384 people or 79.8%. However, more respondents who are smokers are less confident. This is what makes smokers have to smoke first so he feels confident. Therefore, moral support is needed to increase student self-confidence. This can be done by counseling guidance teachers who have contributed to the behavior and character of students. The same research was also conducted by other researchers to get the results of a person's self-confidence related to smoking behavior with p value was 0.000.¹⁴

The source of information obtained by respondents regarding smoking is divided into 2, namely low and high. This study shows that the respondents' information sources about cigarettes are more in the low category, namely 252 respondents (52.3%). However, from 252 respondents with low information sources, there were 48.4% of them were smokers. The same results were shown in 229 (47.7%) respondents with high information sources, not more than half of those respondents who smoked 41.5%. If proven statistically, the p-value at the information source is $0.152 > 0.05$. That is, the number of sources of information obtained by respondents did not affect the smoking behavior of respondents. The RP value shows $1.167 > 1$ with CI=0.956-1.425 (including number 1) which means that the source of information is not necessarily a risk factor for smoking behavior.

The resulting impact depends on the content of the information delivered. In the context of behavior, mass media can have a negative effect on the formation of smoking behavior in adolescents. For teenagers, mass media, both print and electronic, such as newspapers, magazines, television, radio or the internet, are sources of information that can shape their thinking concepts. Many teenagers who fall prey to smoking behavior due to the influence of information or advertisements in various mass media. Putting aside information regarding the effects of smoking, cigarette advertisements are intentionally designed to encourage strong curiosity for teenagers to try cigarettes. These advertisements are not directly intended to sell cigarettes to teenagers but to gather teenagers who have not smoked at the sponsored event. Through these motives, teenagers as if trapped to try cigarettes until they cannot stop the habit.

The source of internet-based information is the main source of information at this time. A health information program related to smoking in Chinese adolescents in the form of effective online viral marketing to reach a large number of smokers and nonsmokers and able to change their attitude towards smoking.¹³ Revise tobacco laws in Indonesia to include bans on retail sales and small packages, advertising sales points such as displays and law enforcement on the sale of cigarettes for minors.¹⁴

Primary education starts from the family environment. Parents directly play a role in shaping the personality of their children who in this case are teenagers. In this study, the role of parents in preventing smoking behavior is divided into 2, namely parents who play a role and parents who have fewer roles. Respondents who have families that have less role in preventing smoking behavior are 92 people with 72.8% of whom are smokers. Respondents who have families who play a role in preventing smoking behavior there are 389 people with 38.6% of whom are smokers. Bivariate analysis using the chi-square test to get the results of p value $0.000 < \alpha < 0.005$, which means there is statistical significance. Significance shows that there is a relationship between the role of parents and smoking behavior in adolescents in the city of Yogyakarta. Biological significance is indicated by the value of RP $1.889 > 1$ which has the meaning of risk factors (1.582-2.254). That is, the more parents have less role in preventing smoking behavior in adolescents, the greater the risk of adolescents to smoke.

Many teens who smoke because of their parents (role models) also smoke.^{15,16} Thus, parenting and the formation of good discipline from parents is very necessary in controlling smoking behavior in adolescents. Parental education is also one of the factors of parenting in educating children not to smoke. From the results of univariate analysis conducted, the highest proportion of parents' education is high school/equivalent as many as 216 respondents (44.9%) and the lowest percentage is elementary school (SD) which is 26 people (5.4%). Parental education will influence the knowledge and

attitudes of parents so that they determine how to educate or care for their children. Therefore, in addition to the socialization of students, the school must also provide information about the dangers of smoking to the health of the child and his future to the parents/guardians of the students. Socialization of parenting also needs to be given that parents are the first and foremost environment for children's character education. Families need to make smoking bans at home. Family support is an important factor for adolescents to stop smoking, one of which is that no single family member smokes.¹⁷

The family role significantly influences the prevention of smoking behavior.¹⁸ Parenting patterns significantly influence smoking behavior in adolescents.¹⁹ The educator model of parents who smoke significantly increases the frequency of parental care and increases knowledge about the dangers of smoking significantly. While the educator model of parents who do not smoke non-significantly can reduce the number of smoking status and reduce the number of cigarettes smoked every day.²⁰ For teens who smoke, the role of parents is an important factor in the success of quitting smoking. Families need to apply rules at home to support family members to stop smoking. Parents and the community should apply the rules of a smoke-free house, which means that no family member smokes inside the house. Place a sticker of a smoke-free house and a smoking ban in front of children and pregnant women even if outside the home.¹⁷ The higher the level of family functioning, the higher the self-control of adolescents.²¹ Smoking behavior in the house will have a negative impact on the health of family members, smoking habits in the home associated with the incidence of pneumonia in infants.²² The family has an important role in imitation of a child's behavior, so the family should not provide cigarettes in the house. Preferably, the family sanctions if there are family members smoking in the home environment. Families should set an example for their children not to smoke.²³

The role of the teacher is very important for the behavior of students at school. In the role of prevention of smoking behavior carried out by teachers towards respondents, there were 149 respondents who felt the lack of roles of teachers and 332 felt that teachers had enough role. Respondents who have teachers who have less role in preventing smoking behavior, as many as 69 people (46.3%) smoke behavior then 80 (53.7%) the remaining respondents do not smoke. But among respondents who have teachers who play a role in preventing smoking behavior there are also respondents who are smokers as many as 148 people (44.6%) and 184 people (55.4%) the rest do not smoke. Based on the results of bivariate analysis, it was found that there was no difference in the role of teachers in preventing smoking behavior among respondents who smoked or did not smoke. This is indicated by the value of p value 0.800 where this value is more than α 0.05. Biological significance obtained from RP was $1.039 > 1$ with confident interval was 0.842-1.282

includes number 1. This means that the role of the teacher is not necessarily a risk factor for one's smoking behavior.

The teacher has a role to educate his students in school, including not to smoke.²⁴ However, based on this study, there is no relationship between the teacher's roles in adolescent smoking behavior. This is possible because of the surrender of the teacher that after school that is in the house handed over to their parents.²⁴ In addition to teachers, the extra-curricular provided in schools has an effect on adolescent smoking behavior. Therefore, promotive efforts are needed in schools to improve students' understanding of the dangers of smoking, such as through school health units and youth school red bars.²⁵ Schools need to form peer to peer to socialize the dangers of cigarettes and the application of pictorial health warnings to students.²³

As many as 418 respondents in this study, there were 234 respondents who had peers who played a role in smoking behavior and 62.4% of them were smokers. Only 37.6% do not smoke while they have peers who play a role in smoking behavior. While peers who felt less instrumental in smoking behavior as many as 247 respondents. But despite having peers who did not play a role in smoking behavior, as many as 28.7% of respondents remained smoking and 71.3% of other respondents did not smoke. After bivariate analysis using the chi square test the results of p-value 0.000 showed that there was statistical significance. That is, there is a relationship between the role of peers and smoking behavior in adolescents. The existence of biological significance is also shown from the RP value of 2.171 where this number is more than 1 (CI=1.742-2.705). This biological significance means that the role of peers is a risk factor. That is, the more a person has peers who play a role in smoking behavior, the greater the risk for smoking.

Smoking behavior is a social phenomenon that needs the understanding to design strategies.²⁶ The role of peers greatly influences the prevention of adolescent smoking behavior.^{18,23,27} Adolescent smoking behavior prevention programs must consider the role of teenage close friends.¹⁵ Good self-control in adolescents can lead to positive consequences.²⁸ The availability of cigarette products on the market can facilitate youth access in carrying out their smoking behavior, therefore it is necessary to restrict access to cigarettes such as an increase in cigarette excise duty. The increase in cigarette excise tax is considered effective in reducing the number of teen smokers also Determination of cigarette price policy.^{29,30}

CONCLUSION

There is a significant relationship between knowledge, attitudes, self-confidence, the role of family, the role of peers and the smoking behaviour of adolescents in Yogyakarta, Indonesia. The role of the teacher and the source of information has no significant relationship with

the smoking behaviour of adolescents in Yogyakarta, Indonesia. The intervention program for reducing and preventing smoking must pay attention to these variables as a determining factor. Teachers at the school have to take an important role in the formation and characteristic behaviour of their students, especially in this case is the prevention of smoking behaviour of students. Thus, teachers will get a place in the hearts of students to serve as a good model for behaviour.

ACKNOWLEDGEMENTS

Authors would like to thank Department of Research and Development, Institute of Universitas Ahmad Dahlan.

Funding: Universitas Ahmad Dahlan

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Wibowo M, Sofiana L, Ayu SM, Gustina E, Khoeriyah I. Adolescent smoking behaviour determinants in the city of Yogyakarta, Indonesia. *Int J Community Med Public Health* 2019;6:5064-70.