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The determinants of adolescent smokers in Indonesia

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ABSTRACT

In Indonesia, the prevalence of adolescence smokers is high. The situation might be worse during the epidemiological transition. This study aimed to estimate the sociodemographic factors related to tobacco use (light, moderate, and heavy) among adolescent in school age in Indonesia. This cross-sectional study used the raw data from the secondary data of Indonesia Global Youth of Tobacco Survey (GYTS), 2019. This study only included the 9,992 adolescent smokers in school age as the sample. School was selected based on the proportional probability based on the number of students. The class was selected by random sampling method and the students in that class were eligible to join the survey. This current study only selected those who smoked at the time of survey. The univariate, bivariate (Chi-square and t-test), and multivariate (ordinal logistic regression) has been tested in this study. The prevalence of tobacco uses among adolescent in Indonesia in 2019 was 19.2%. The determinants of tobacco use mostly related to pocket money, having products with cigarettes logo, and can purchase near the school. The role of sociodemographic, factors related to current tobacco use is very important to arrange the policy. The policy is very important to prevent and control tobacco use, especially among adolescence.

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1. INTRODUCTION

The smoking trend among adolescent is an old issues in developing countries, including Indonesia. The trend is increasing since the cigarette' price in Indonesia is very cheap which was around 20,830 Indonesian rupiah (IDR) in average in 2020 [1]. The affordability of Indonesian to purchase the cigarette is still high even though the government has been applied the tax [2]. Appling the tax actually does not affect anything because the price only increased 1% [2]. As for student in adolescent age group, the money pocket is the main source to purchase the cigarette. However, the student could not find the cigarettes shop/retail near the school. The regulation from Indonesian Ministry of Education mentioned that the school environment is a free smoke area that need to be supported by headmaster of school, teachers, students, and others people in school area [3].

Smoking behavior is one unhealthy behavior as risk factor to non-communicable diseases (NCD) that may lead the hypertension, heart disease, stroke, and cancer [4]. The changing of phenomena from communicable diseases to non-communicable diseases will put the smokers as high-risk population. The condition will be worse if the students are also using the drug. The younger age of first try of cigarette, the higher risk to have noncommunicable diseases (NCD) [5]. Around 1.2 million passive smokers were estimated death due to the smoke exposed based on the data from World Health Organization (WHO) and seven million people deaths because their direct smoking behavior where Asia is the area with the highest number of smokers in the world [6].

Focusing on the adolescent in the school age, the risk factors of smoking is the complex one. The closest environment is in the family where adolescent spent much more time beside the school, and community. The study in Sumatera and Java Island found the fact that family and friends are the most influencer of early age smokers [7]–[9]. The tendency of children to imitate the parents is the nature condition that showed the effect of family role and environmental [10]. Another study using Indonesia Global Youth Tobacco Survey (GYTS) 2014 revealed that friends, parents, and teachers are the role mode to influence student to be a smoker [11].

GYTS is a global project managed by World Health Organization (WHO). The Indonesia GYTS is a survey designed to estimate the worldwide burden of tobacco use among adolescent [12]. In Indonesia, the tobacco users in adolescent school age always increase. It increased a lot from 0.3% in 1995 to 2.0% in 2007 [7], [8]. The data from basic health research Indonesia in 2013, prevalence of smokers among adolescent was 18.3% [13]. Comparing the place of residence, in 2017 smokers in rural (1.55%) is higher than urban (1.07%) [14]. The main findings from GYTS 2019 revealed that 19.2% students are using the tobacco but around 1% of them currently use the smokeless tobacco products [15].

Indonesia has been implementing the policies to control the tobacco use. The regulation from Minister of Education mentioned that the school environment is a free smoke area that need to be supported by headmaster of school, teachers, students, and others people in school area [15]. School is prohibited to produce, sell, distribute, sponsored, and put a cigarettes logo. The regulation about addictive product also mentioned that smoke cigarette is prohibited in enclosed public areas including school [16]. The regulation of Indonesian Ministry of Finance mentioned the price of cigarette stick only around IDR 1,350 (USD 0.094) which is cheap [17]. The cigarette advertisement is prohibited to demonstrate by using the real cigarette, and there is time restriction of promotion in television [18]. However, those policies are not implemented well because people can access to the cigarettes easily. For instance, adolescent still can purchase the cigarette without showing the identity card, which mean that the age restriction (18+) is not implement yet [19].

Study about determinants of smoking behavior is important. The effect of early smoke may associate with the adult smokers [20]. Most of adult smokers reported that they become addicted during adolescent [21]–[23]. The objective of this study was to examine the sociodemographic factors related to light, moderate, and heavy adolescent smokers based on the data from Indonesia Global Youth Tobacco Survey (GYTS) Indonesia, 2019.

2. RESEARCH METHOD

The GYTS is the cross-sectional study which has been conducted in 34 provinces in 2019. This survey aimed to control the tobacco use among adolescent in age 13 to 17 years [24]. In term of sampling method, school was selected based on the proportional probability. The class was selected by random sampling method and all of eligible student in grade 7-12 could join to the survey. Total sample in the original survey was 9,992 students. This study used the current tobacco use dependent variable based on the questions coded CR8: *Please think about the days you smoked cigarettes (including smoking white cigarettes, hand-rolled cigarettes or clove cigarettes) during the past 30 days. How many cigarettes did you usually smoke per day?* The sample was only the smokers who answered one or more days. After weighted to the place of residence and drop the missing data, total smokers in this study are 1,034 students.

The statistical analysis used in this study consists of univariate, bivariate, and multivariate. The univariate showed the frequency and percentage (for categorical variable) and minimum number, maximum number, and mean (for continuous variable) of each variable to see the characteristic of respondents. The bivariate analysis has been done by using Chi-square and t-test to see the crude odd ratio (COR) for each independent variable to dependent variables. The ordinal logistic regression has been done to examine all of independent variables to dependent variable in three models which was presented by adjusted odd ratio (AOR). STATA version 15 was used to analyze the data.

3. RESULTS AND DISCUSSION

3.1. Results

Totally, 19.2% adolescents were currently tobacco use with male percentage 35.6% and female 3.5%. In detail, Table 1 describes the characteristic of tobacco users. Mean age of adolescent smokers was 14 years old, the majority of them were male, and they mostly in grade 9 (junior high school). In terms of weekly pocket money, more than a half of them (60.74%) got less than IDR 30,000 (2.09 USD). The majority of them also did not have any products with cigarette logo (82.40%). Around 70% of adolescent smokers reported cigarettes with brand GG Mild and others brand as the brand usually smoke. Almost a half of them could not purchase cigarettes near school (47.20%).

Table 1. The characteristics of tobacco users

Variables (n=1,034)	Frequency	Percentage (%)
Age		
Min 11, Max 17, Mean 14.72		
Gender		
Female	51	4.93
Male	983	95.07
Grade		
Min 7, Max 12, Mean 9.40		
During an average week, how much money do you have that you can spend on yourself, however you want?	628	60.74
Less than IDR 30,000 (USD 2.09)		
More than IDR 30,000 (USD 2.09)	406	39.26
How much do you pay when you buy 1 cigarette?		
Less than Rp. 1,000 (0.07 USD)	231	22.34
IDR 1,000 (USD 0.07) – IDR 1,500 (USD 0.10)	566	54.74
IDR 1,600 (USD 0.11) – IDR 2,000 (USD 0.14)	171	16.54
More than IDR 2,000 (USD 0.14)	66	6.38
Do you have something (for example, t-shirt, pen, backpack, hat or sun glasses) with a cigarette product brand logo on it?		
No	852	82.40
Yes	182	17.60
During the past 30 days, what brand of cigarettes did you usually smoke?		
Unusual, A Mild, LA Lights	181	17.50
Mild Clas, Djarum Super MLD	122	11.80
GG Mild and others	731	70.70
Can you purchase cigarettes near your school?		
No	488	47.20
Yes	382	36.94
Do not know	164	15.86

Table 2 provides information about the relationship between each independent variable and dependent variable. In the sociodemographic variable, age, grade, money pocket, and had something with cigarette logo were statistically related to current tobacco use. The strongest independent variable in this domain is have something with logo.

Table 2. The bivariate results of current tobacco use

Variables (n=1,034)	Crude odd ratio	Confidence interval 95%	p-value
Sociodemographic			
Age	1.25	1.02-1.54	**0.035**
Gender	4.30	0.06-9.67	0.989
Grade	1.27	1.05-1.55	**0.013**
During an average week, how much money do you have that you can spend on yourself, however you want?	2.20	1.12-4.33	**0.022**
How much do you pay when you buy 1 cigarette?	0.93	0.61-1.42	0.748
Do you have something (for example, t-shirt, pen, backpack, hat or sun glasses) with a cigarette product brand logo on it?	3.52	1.78-6.96	**<0.001**
During the past 30 days, what brand of cigarettes did you usually smoke?	0.84	0.56-1.25	0.382
Can you purchase cigarettes near your school?	1.32	0.85-2.04	0.217

Note: the bold p-value means <0.05

Table 3 the multivariate results has been done to see the relationship and magnitude of independent variables and dependent variable. Those who had money pocket more than IDR 30,000 a week 2.32 times more likely to be heavy smokers compared by those had money pocket less than IDR 30,000. Having products with cigarette logo statistically associated with tobacco use, compare to those had no, those who had products with logo of cigarette 3.42 times more likely to be heavy smokers. In terms of accessibility to purchase cigarettes, those who could purchase near school were 2.75 times more likely to be heavy smokers.

Table 3. The ordinal logistic regression of current tobacco use

Variables (n= 1,034)	AOR	CI 95%
Age	1.02	0.72-1.45
Gender (ref: female)		
- Male	1.23	0.08-4.45
Grade	1.20	0.86-1.68
During an average week, how much money do you have that you can spend on yourself, however you want? (ref: Less than IDR 30,000)		
- More than or equal IDR 30,000	2.32*	1.13-4.74
How much do you pay when you buy one cigarette? (ref: Less than IDR 1,000)		
- IDR 1,000 – IDR 1,500	0.83	0.34-2.04
- IDR 1,600 – IDR 2,000	0.65	0.21-2.00
- More than IDR 2,000	0.32	0.04-2.72
Do you have something (for example, t-shirt, pen, backpack, hat or sun glasses) with a cigarette product brand logo on it? (ref: No)		
- Yes	3.42**	1.68-6.98
During the past 30 days, what brand of cigarettes did you usually smoke? (ref: Unusual, A Mild, LA Lights)		
- Mild Clas, Djarum Super MLD	0.54	0.14-2.12
- GG Mild and others	0.57	0.25-1.31
Can you purchase cigarettes near your school? (ref: No)		
- Yes	2.75*	1.24-6.09
- Do not know	1.28	0.38-4.22

Note: *p-value<0.05, **p-value<0.01, ***p-value<0.001
(Log likelihood = -157.31, LR chi2(12) =36.00, Prob >chi2 = 0.0003, Pseudo R2= 0.1027)

3.2. Discussion

The prevalence of current tobacco use among adolescent in Indonesia remains high compared with previous survey (in 2014) which 19.2% (35.6% male and 3.5% female) [24]. The prevalence of tobacco use in Indonesia was higher than Cameroon, Myanmar, Botswana, and India with current adolescent smoking was 11.2%, 13.6%, 10%, and 11.4% respectively [25]–[28]. Compared to 10 countries in Africa, that the current cigarettes smoking among students aged 13-15 was in range 3.4% to 13.6%, lower than Indonesia [29].

Sociodemographic and individual factors consisted of variables from the individual purchasing and indigenous. Higher money pocket is reflecting the high economic status and the high power of purchase the cigarette. In Indonesian context, students are given money pocket with daily or weekly frequencies. The money is using for meal, fulfill other school need. The logo of cigarettes on the something daily use may initiate people to try cigarette. The using of logo is also showing the identity of owner, including the identity as smokers. The access and affordability to purchase cigarettes near school may be due to the kiosk or shop near school sells the tobacco products. The knowledge of cigarette might come from the family who spend the majority of time with the adolescent [30].

The findings in this study emphasized the three main variables that determined the current tobacco use, such as money pocket, having products with logo, and can purchase near the school. These findings related to the policy and regulation in Indonesia. The regulation from Indonesian Ministry of Education mentioned that the school environment is a free smoke area that need to be supported by headmaster of school, teachers, students, and others people in school area [3]. School is prohibited to produce, sell, distribute, sponsored, and put a cigarettes logo. The regulation about addictive product also mentioned that smoke cigarette is prohibited in enclosed public areas including school [17]. The regulation of Indonesia Minister of Finance mentioned the price of cigarette stick [18]. The cigarette advertisement is prohibited to demonstrate by using the real cigarette, and there is time restriction of promotion in television [19], [31]–[33].

4. CONCLUSION

The prevalence of tobacco uses among adolescent in Indonesia in 2019 was 19.2%. The determinants of current tobacco use mostly related money pocket, to having products with cigarettes logo, and can purchase near the school. The role of sociodemographic, factors related to current tobacco use is very important to arrange the policy to prevent and control tobacco use.

The multilevel of prevention and control can reduce the prevalence of current tobacco use among adolescent, started from student level, school level, household level, community level, and national level. All of stakeholders need to take a part to prevent and control the prevalence of tobacco use. School and other stakeholder need to promote the harmfulness of smoking and smoke from other cigarettes, provide the health warning in the poster and describe in detail. Additionally, the parents are also need to control the money pocket so children will not use it to buy invaluable thing such as cigarettes. The government also need to control the policies and program that has been established and evaluate and compared it to other countries.

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