

Smoking behavior in school-aged children in Indonesia: analysis of the 2019 Global Youth Tobacco Survey

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Abstract

Background Adolescents face high pressure to participate in smoking behavior. The impact of smoking will not only affect the health of children and adolescents today, but also their later health status in adulthood. Children who start smoking at a young age are at higher risk of nicotine addiction than those who start in adulthood. Over time, this condition leads to continued cigarette consumption with age.

Objective To describe smoking behavior in school-aged children in Indonesia.

Methods This was a descriptive study using secondary data from *The 2019 Global Youth Tobacco Survey* (GYTS) in Indonesia. A sample of 7,582 school-aged children (13-15 years) was selected for this study. The study variables were age, sex, spending money, smoking status, age when they first started smoking, number of days of smoking within the last 30 days, average number of cigarettes per day, electric cigarette use, accessibility to electric cigarettes, and information source on electric cigarettes.

Results The largest age group in this study was 14 years old (18.21%). Most subjects were female (57.49%). One-third (2,546 children; 33.57%) of the children have tried or experimented with cigarette smoking. Out of those, 722 children (9.52%) started smoking at the age of 12-13 years and 468 children (6.17%) consumed an average of 1 cigarette per day. Two-thirds of the children were already familiar with e-cigarettes (n=6,061 or 79.94%). The e-cigarettes were obtained from other people (8.16%) and information on e-cigarettes were mostly obtained from peers (8.19%).

Conclusion A third of school-aged children in Indonesia have tried or experimented with cigarette smoking. Most of the information on cigarette smoking come from their peers. [Paediatr Indones. 2023;63:506-10; DOI: <https://doi.org/10.14238/pi63.6.2023.506-10>].

Keywords: school-aged children; smoking; Global Youth Tobacco Survey

Smoking in children and adolescents can cause health problems in adulthood and elderly age. Health problems resulting from smoking at a young age include an increase in the incidence and severity of respiratory illnesses, decreased physical fitness, and potential problems with lung function.¹

People who start smoking at a young age are more likely to develop a severe nicotine addiction than those who start smoking at an older age. A study stated that most children and adolescents who have smoked at least 100 cigarettes in their lifetime, reported wanting to quit smoking but were unable to do so.²

If the current tobacco use patterns continue, it is estimated that 5.6 million youth who are currently under the age of 18 will die prematurely from smoking-related diseases.² Meanwhile, a national survey in 2006 showed that 37.7% of 3,737 children aged 13 to 15 years in Indonesia have smoked. *The 2014 Global*

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Submitted October 5, 2022. Accepted December 15, 2023.

Youth Tobacco Survey (GYTS) in Indonesia found that 20.3% of students for the same age range have smoked.³

The purpose of this study is to describe smoking behavior in school-age children in Indonesia using secondary data from the 2019 GYTS.

Methods

A descriptive study was conducted using data from the 2019 GYTS in Indonesia. This national survey was supported by the *World Health Organization* (WHO), the *United States Centers for Disease Control and Prevention* (CDC), and the *Ministry of Health of the Republic of Indonesia*. It was conducted to collect a nationally representative sample of students from across the country and provide national estimates of trends in tobacco use among Indonesian school children aged 13-15 years during the survey period.³

Data from the 2019 GYTS in Indonesia comprised 9,992 research subjects of 13 to 15-year-old schoolchildren. The authors subsequently carried out a selection by eliminating missing data (incomplete data), resulting in a total sample size of 7,582 subjects. The variables recorded in the study were compiled based on a number of questions in the codebook guidelines of the 2019 GYTS (**Table 1**).

Data was obtained from the *Global Tobacco Surveillance System Data* (GTSSData) datasets for the *South-East Asian Region* (SEAR), Indonesia, Indonesia - National. This data can be accessed for free at <https://www.cdc.gov/tobacco/global/gtss/gtssdata/index.html>. The data was described in as frequencies and percentages, and were analyzed using *Stata software version 13* (Stata Corp LLC, College Station, Texas).

Results

Table 2 describes the characteristics of the study subjects. The largest age group was 14-year-old (18.20%). As much as 57.49% of the participants were female. The highest percentage of school-age children (23.52%) reported spending an average weekly allowance of more than IDR 50,000.

Table 3 describes the characteristics of cigarette smoking behavior among the survey subjects. One-third (33.58%) had tried or consumed tobacco cigarettes. The most common age at the first cigarette consumption was 12-13 years (9.52%). Some children (2.77%) smoked cigarette every day in the last 30 days. The majority of children consumed <1 cigarette/day (5.08%), 1 cigarette/day (6.17%), and 2-5 cigarettes/day (5.28%). Among children who smoked, 82.64% were boys (**Table 4**).

Table 1. Questions from the 2019 GYTS codebook used in this study

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- a. Age: question code CR1: "How old are you?"
 - b. Gender: question code CR2: "What is your gender?"
 - c. Spending money during an average week: question code IDR4: "During an average week, how much money do you have that you can spend on yourself however you want?"
 - d. Smoking behavior: question code CR5: "Have you ever tried or experimented with cigarette smoking, even if it was just one or two puffs?"
 - e. Age at first cigarette consumption: question code CR6: "How old were you when you first tried a cigarette?"
 - f. Number of days of smoking in the last 30 days: question code CR7: "Out of the past 30 days, on how many days did you smoke cigarettes?"
 - g. Number of cigarettes smoked per day: question code 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?"
 - h. Knowledge of e-cigarettes: question code ELR1: "Before today, have you ever heard of electronic cigarettes or e-cigarettes?"
 - i. Age at first e-cigarette consumption: question code IDR19: "How old were you when you first tried e-cigarettes?"
 - j. Place to buy e-cigarettes: question code IDR20: "The last time you consumed an electric cigarette within the past 30 days, where did you get it from?"
 - k. Source of information about e-cigarettes: question code IDR22: "Where can you find information on e-cigarettes?"
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Table 2. Subject characteristics

Characteristics	N=7,582
Age, n(%)	
≤ 11 years	197 (2.60)
12 years	1,041 (13.73)
13 years	1,320 (17.41)
14 years	1,380 (18.20)
15 years	1,202 (15.85)
16 years	1,211 (15.97)
≥ 17 years	1,231 (16.24)
Gender, n(%)	
Male	3,223 (42.51)
Female	4,359 (57.49)
Spending money during an average week, n(%)	
Does not have spending money <Rp 11.000	382 (5.04)
Rp 11.000-Rp 20.000	1,631 (21.50)
Rp 21.000-Rp 30.000	1,614 (21.28)
Rp 31.000-Rp 40.000	835 (11.01)
Rp 41.000-Rp 50.000	540 (7.12)
>Rp 50.000	799 (10.53)
	1,784 (23.52)

Table 3. Characteristics of smoking behavior in school-aged children

Characteristics	N=7,582
Have tried or experimented with cigarette smoking	
Yes	2,546 (33.58)
No	5,036 (66.42)
Age at first cigarette consumption	
Never tried smoking cigarettes	5,124 (67.58)
≤ 7 years	236 (3.11)
8-9 years	323 (4.26)
10-11 years	577 (7.61)
12-13 years	722 (9.52)
14-15 years	466 (6.15)
≥ 16 years	134 (1.77)
Number of days of smoking within the last 30 days	
Never tried smoking a cigarette	6,178 (81.48)
1-2 days	622 (8.20)
3-5 days	240 (3.16)
6-9 days	139 (1.83)
10-19 days	137 (1.81)
20-29 days	56 (0.74)
All 30 days	210 (2.77)
Number of cigarettes smoked per day	
Did not smoke cigarettes during the past 30 days	6,178 (81.48)
Less than 1 cigarette per day	385 (5.08)
1 cigarette per day	468 (6.17)
2-5 cigarettes per day	400 (5.28)
6-10 cigarettes per day	99 (1.31)
11-20 cigarettes per day	36 (0.47)
>20 cigarettes per day	16 (0.21)

Table 4. Differences in smoking behavior by gender (N=7,582)

Tried cigarette smoking	Male	Female
Yes, n(%)	2,104 (82.64)	442 (17.36)
No, n(%)	1,119 (22.22)	3,917 (77.78)

Table 5. Characteristics of the use of e-cigarettes in school-age children

Characteristics	N=7,582
Have tried or experimented with e-cigarette smoking	
Yes	1,521 (20.06)
No	6,061 (79.94)
Age at first e-cigarette consumption	
Never tried smoking cigarettes	6,061 (79.94)
≤ 7 years	52 (0.69)
8-9 years	65 (0.86)
10-11 years	204 (2.69)
12-13 years	516 (6.81)
14-15 years	434 (5.72)
≥ 16 years	250 (3.30)
Place to buy e-cigarettes	
Never tried buying a cigarette	6,061 (79.94)
Store in the mall or at the mall	120 (1.58)
Shop	378 (4.99)
Streetside shop	86 (1.13)
Online shop	224 (2.95)
Buy from someone (peer)	619 (8.16)
Other means	94 (1.24)
Source of information about e-cigarettes	
Never tried smoking a cigarette	6,061 (79.94)
Advertisement on street and shop	120 (1.58)
Advertisement in television	378 (4.99)
Internet	311 (4.10)
Friends/peers	621 (8.19)
Shopkeeper	35 (0.46)
Promotional event	56 (0.74)

Table 5 describes the characteristics of electronic cigarette smoking behavior in school-age children. As much as 20.06% of the participants have ever tried e-cigarette. The e-cigarettes were obtained from other people (8.16%) and information on e-cigarettes were mostly obtained from peers (8.19%).

Discussion

Our results indicated that in 2019, 33.58% of school-aged children in Indonesia had smoked tobacco. Among the school-aged children who smoked, most (82.64%) were male. In the same year, the CDC collected data from a nationally representative sample of ninth-to-twelfth-grade public- and private school

students in the United States. The results showed that 36.5% of high school students in the United States currently use some form of tobacco product, with e-cigarettes being the most commonly used.⁴

In our current study, 6.78% of school-aged children in Indonesia started smoking e-cigarettes at the age of 12-13 years. The recent uptick in the use of e-cigarettes is not unique to Indonesia. In the United States, in 2017 to 2019 there was also a significant increase in the use of e-cigarettes, from 13.2% to 32.7%, and the use of tobacco products in general, from 19.5% to 36.5%.⁴

Tobacco use is an important behavioral risk factor that can be recognized and modified at a young age.⁵ Smoking can affect a person's health throughout the lifespan. Smoking in childhood impairs lung growth and lung function, causes asthma symptoms, and initiates damage that leads to cardiovascular disease and chronic obstructive pulmonary disease. Nearly 90% of adult daily smokers started smoking before the age of 18.⁶ Dependence on cigarettes and tobacco products often occurs quickly and can develop even after exposure to only very low nicotine levels. Indeed, tobacco dependence usually begins as a condition in youth. Early dependence is associated with continued smoking and heavy smoking in adulthood.^{7,8}

Our subjects who smoked e-cigarettes reported having obtained cigarettes from other people or peers. Peers were the greatest source of information about e-cigarettes (8.19%). This finding shows that peers play an important role in the initiation of smoking behavior in school-aged children's peers to initiate smoking behavior in Indonesia.

A previous study reported that the main factor contributing to smoking initiation in children and adolescents is peer pressure.⁹ Other studies also support this finding. Several studies conducted in India observed that family members and peers not only hold a considerable influence on the initiation of smoking behavior, but are also an important source of spending money to buy cigarettes. Availability and easy access to cigarettes are also correlated with smoking behavior in school-age children and adolescents.^{10,11}

Based on our findings, we conclude that a third of school-aged children in Indonesia have tried or experimented with cigarette smoking. Most information about e-cigarettes come from their peers.

Conflict of interest

None declared.

Acknowledgment

The authors would like to thank the Center for Disease Control and Prevention (CDC) for openly providing access to The Global Youth Tobacco Survey data.

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