



FACTORS RELATED TO ADOLESCENT SMOKING CESSATION INTENTIONS BASED ON THE THEORY OF HEALTH BELIEF MODEL

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Abstract

Smoking in adolescence has a serious impact on health, including lowering lung capacity, affecting cognitive function, and lowering physical ability. However, GYTS data in 2019 shows that most adolescents in Indonesia have tried to quit as much as 81.1% want to quit smoking as much as 80.8%, adolescents who can quit smoking as much as 87.7% and get quit support as much as 23.3%. The desire to quit smoking can be studied using *the health belief model*. This study aims to analyze the relationship between *perceived threat*, *perceived barrier*, and *perceived benefit* with smoking cessation intention in Indonesian adolescents. This study uses a quantitative approach with a cross sectional design and secondary data from the 2019 GYTS. The total sample studied was 2.074 adolescents aged 13-15 years. The analysis data was carried out univariate and bivariate with *the chi square* test. The results showed that *perceived threats* (OR 3.7; CI 95% 2.8-4.8), *perceived barrier* (OR 3.1; CI 95% 2.4-4.0), and *perceived benefit* (OR 4.7; A 95% CI of 3.6-6.1) had a significant association with smoking cessation intention ($p = 0.000 < 0.05$). Respondents who felt threatened by their health had a 3.7 greater chance of quitting smoking, respondents who did not have a smoking cessation barrier had a 3.1 greater chance, and respondents who felt the benefits of quitting smoking had a 4.7 greater chance. The results of this study can be used as a plan for health promotion efforts to increase smoking cessation intentions in adolescents.

Keywords : Adolescents, intention to quit smoking, Health Belief Model, GYTS 2019

Introduction

Smoking is one of the biggest public health threats the world has ever faced, killing more than 8 million people each year worldwide (1). Adolescence is the time when people start trying to smoke. The earlier a person starts smoking, the higher the level of dependence and the greater the negative impact on health. The earlier a person starts smoking, the higher the level of dependence and the greater the negative impact on health (2). Smoking can cause a weakening economy because smokers spend too much pocket money (3), decreased physical ability, affects cognitive function, decreased lung capacity (4), severe damage to the respiratory system and cardiovascular system and accelerates the onset of chronic diseases in adulthood (5)(6).

Smoke-free legislation is an effective strategy to reduce smoking habits among adolescents. The goal of tobacco control policies is to reduce the number of adolescents who start smoking as well as reduce the frequency of their smoking, while encouraging adolescents to quit smoking (7)(8).

According to WHO, as many as 38 million adolescents aged 13-15 years consume cigarettes. In the second WHO report, about 1.3 billion 16% of the world's population are teenagers, i.e. individuals aged 10-19 years (9). Based on GYTS 2019 data (10), The prevalence of smoking among schoolchildren aged 13-15 years increased from 18.3% (2016) to 19.2% (2019). The prevalence of adolescent active

smokers in Indonesia was recorded at 29.03% in BPS 2019 and decreased to 28.62% in BPS 2023 (11). The good news according to GYTS 2019, Many adolescent active smokers who have currently tried to quit smoking in the past year as many as 81.1%, adolescents who currently smoke have a desire to quit smoking now as much as 80.8%, adolescents who can quit smoking if they want as much as 87.7%, and those who have received smoking cessation support/services as much as 23.3% (10).

Smoking behavior in adolescents is influenced by various psychosocial factors, such as knowledge and attitudes, curiosity, and stress relief efforts (12)(13), Peer influence encourages teens to smoke (14), Exposure to mass media, especially tobacco advertising in the surrounding environment also contributes to smoking behavior in adolescents (15). To be able to quit smoking for teenage smokers, they need a strong intention because. The factor of intention to quit smoking in adolescents based on *the theory of health belief model* (HBM) is *that perceived threat* is a perception of the threat if they continue to smoke or do not quit smoking which can have a positive influence on the intention to quit smoking, but *the perceived benefit* or perceived benefits of quitting smoking acts as a motivating factor for the intention to quit smoking (16). *Perceived barrier* (smoking addiction) has never been ignored with the danger of cigarettes because it has become a habit or culture of smoking in the surrounding environment (17).

Previous research has addressed factors that influence adolescents' decision to quit smoking based on *the health belief model*, but there are shortcomings. The research by Sitinjak (2018) used primary data with a limited area coverage (18), while the research by Pribadi (2020) only involved female respondents of a certain age (19). Meanwhile, the research using GYTS 2019 data includes anti-smoking messages (20), Smoking ads (21) Smoking behavior (22)(23)(24). Meanwhile, research on smoking intention using GYTS 2019 data has only found several literatures. Some of them are the first research related to the perception factors of harmful cigarettes, sources of support, and smoking status from friends (25). The second study is related to factors related to the intention to quit smoking based on the theory of transtheoretical models of behavioral change (26). No research has been found on *perceived threat*, *perceived barrier*, and *perceived benefit* factors related to smoking cessation based on GYTS 2019 data. Therefore, this study aims to analyze the relationship between these three factors and adolescent smoking cessation intentions using the 2019 global youth tobacco survey (GYTS) data.

Method

This study uses a quantitative method using secondary data from GYTS 2019. In Indonesia, GYTS is run by the Health Research and Development Agency and the Ministry of Health. GYTS discusses smoking behavior, smoking cessation intentions, exposure to secondhand smoke, access and availability, media, and knowledge & availability and use of tobacco in adolescents. This study focuses on reporting smoking intention behavior and uses a cross sectional design that can provide information about the relationship between variables at a given time.

Sampling of GYTS in schools nationwide for students in grades 13-15 years old. The total sample of 9.992 students in grades 7-12 took part in the survey. Of these, 5.125 students are in the age group of 13-15 years. The GYTS sampling design uses a core questionnaire, sample design, and standard data collection protocols. Sample design uses two stages. First, schools are selected using probabilities proportional to the number of students. Secondly from each selected school, classes are randomly selected. All students in the selected class were included in the survey (GYTS, 2019). The sample design of this study is a sampling of smoking status with the criteria of having the intention to quit smoking and not quitting smoking. Based on these criteria, the sample of this study is 2.074 respondents.

Table 1. Study variables: GYTS questions used in the analysis of adolescent smoking intention behavior

Variabel	Questions	Identify the Answer	Format Analysis
Perceived Threat (CR32, IDR53, IDR75, OR54)	Over the past 30 days, have you seen any health warnings on cigarette packs?	recoding 0. Feeling not threatened 1. Feeling threatened	Median = 3 Category ≤ 3 feel not threatened > 3 feel threatened
	What do you think when you see a health warning on a cigarette pack?		
	Do you think smoking is harmful to your health?		
	Do you think it's safe to smoke tobacco for just one or two years as long as you quit afterwards?		
Perceived Barrier (CR12, IDR70)	How soon after you smoke, do you start to feel a strong urge to smoke again that is hard to ignore?	Recoding 0. Feeling like you have a barrier 1. Feeling uninhibited	Median = 1 Category ≤ 1 feel like they have an barriers > 1 feel that there are no barriers
	If one of your best friends offered you a cigarette product, would you use it?		
Perceived Benefit (OR13)	What was your main reason for deciding to quit smoking?	Recoding 0. There is no benefit to squeezing 1. Feel benefited	Median = 1 Category ≤ 1 feel no benefit > 1 feel there is a benefit
Intention to Quit Smoking (CR15)	Do you want to quit smoking now?	Recoding 0. Have no intention of quitting smoking 1. Have the intention to quit smoking	Median = 2 Category ≤ 2 have no intention of quitting smoking > 2 have the intention of quitting smoking

In this study, data analysis was carried out in two ways, namely univariate and bivariate. Univariate analysis was used to see how the frequency and percentage of respondent characteristics as well as research variables, such as smoking cessation intention, *perceived threat*, *perceived barrier*, *perceived benefit*, allowance, and assistance to quit smoking. All variables are categorized based on their median values. Bivariate analysis was conducted to determine the relationship between *perceived threat*, *perceived barrier*, and *perceived benefit* with adolescent smoking cessation intention. The statistical test used is *the chi square test* because all variables are in the form of categorical data. The relationship between variables is stated to be meaningful if the p value < 0.05, and the odds ratio (OR) value and confidence interval are presented 95% (95% CI).

Results

Respondent Characteristics

Table 2. Characteristics of Respondents by Age, Gender, and Class

Variabel	Quantity (N)	Percentage (%)
Age		
11 years or younger	80	3.9%
12 years	313	15.1%
13 years	363	17.5%
14 years	396	19.1%
15 years	314	15.1%
16 years old	269	13.0%
17 years or older	339	16.3%
Total	2074	100%
Gender		
Male	1822	87.8%
Female	252	12.2%
Total	2074	100%
Class		
7	491	23.7%
8	421	20.3%
9	442	21.3%
10	221	10.7%
11	206	9.9%
12	293	14.1%
Total	2074	100%

Based on table 2, the distribution of the most respondents was 14 years old, namely 396 respondents (19.1%) and at least 11 years old or younger, namely 80 respondents (3.9%). These results show that the majority of respondents are in the early to middle adolescence age range. Most of the respondents were male, namely 1,822 respondents (87.8%), while women were 252 respondents (12.2%). The distribution of respondents by grade level showed that the most respondents came from grade 7, which was 491 respondents (23.7%), followed by grade 9, which was 442 respondents (21.3%) and grade 8, which was 421 respondents (20.3%). Meanwhile, the number of respondents was the least from grade 11, which was 206 (9.9%). These results show that the majority are at the junior high school (SMP) level.

Univariate Test Results

Table 3. Categories Intentional Smoking Intentions in Adolescents

Category	Quantity (N)	Percentage (%)
Intention to Quit Smoking		
Have the intention to quit smoking	1763	85.0%
Have no intention of quitting smoking	311	15.0%
Perceived Threat		
Feeling threatened	1199	57.8%
Feeling not threatened	875	42.2%
Perceived Barrier		
Have barriers	499	24.1%
Have no barriers	1575	75.9%
Perceived Benefit		
Feel benefited	1639	79.0%
Feeling not benefited	435	21.0%
Spending Money		
I usually don't have pocket money	122	5.9%
Less than Rp 11.000	500	24.1%
Rp 11.000 – Rp 20.000	484	23.3%
Rp 21.000 – Rp 30.000	210	10.1%
Rp 31.000 – Rp 40.000	143	6.9%
Rp 41.000 – Rp 50.000	194	9.4%
More than Rp 50.000	421	20.3%
Help To Quit Smoking		
I have never smoked	138	6.7%
Yes, from a program or professional	147	7.1%
Yes, from a friend	600	28.9%
Yes, from a family member	540	26.0%
Yes, from both programs or professionals	312	15.0%
No	337	16.2%
Total	2047	100.0%

Based on the results of table 3, it is known that out of a total of 2,074 respondents who had the intention to quit smoking, as many as 1,763 respondents (85%). The *perceived threat* showed that as many as 1,199 respondents (57.8%) felt threatened by the impact of smoking behavior. The *perceived barrier* showed that as many as 1,575 respondents (75.9%) felt that they had no barriers to quitting smoking. In the *perceived benefit*, most of the 1,639 respondents (79%) felt that there were positive benefits obtained when quitting smoking. Most respondents spent less than Rp 11,000 (24.1%) on their allowance. The most popular smoking cessation assistance received by respondents was support from friends as many as 600 respondents (28.9%).

Bivariate Test Results (Inter-Variable Relationship)

Table 4. Bivariate Test with *chi square*

Variable		Intention to Quit Smoking				Total		Value <i>p</i>	OR (95%CI)
		No Quit		Yes Quit		N	%		
		N	%	N	%				
Perceived Threat	Not feeling threatened	215	24.6	660	75.4	875	100	0.000	3.7 (2.8-4.8)
	Feeling threatened	96	8.0	1103	92.0	1199	100		
	Total	311	15,0	1763	85,0	2074	100		
Perceived Barrier	Have no barriers	172	10.9	1403	89.1	1575	100	0.000	3.1 (2.4-4.0)
	Have barriers	139	27.9	360	72.1	499	100		
	Total	311	15,0	1763	85,0	2074	100		
Perceived Benefit	No benefits	149	34.3	286	65.7	435	100	0.000	4.7 (3.6-6.1)
	There are benefits	162	9.9	1477	90.1	1639	100		
	Total	311	15.0	1763	85.0	2074	100		

Based on table 4, it is known that the results of the analysis on *perceived threat* show that respondents with high threat perception and intention to quit smoking as much as 92% compared to respondents who have low threat perception as much as 75%. The *chi-square* test showed a *p* value of 0.000 (< 0.05) meaning that there was a relationship between threat perception and intention to quit smoking. The value (OR) of 3.7 indicates that respondents who feel threatened have a 3.7 times greater chance of having the intention to quit smoking than respondents who do not feel threatened.

Based on the results on *perceived barriers*, it was shown that respondents who had low barrier perception and had the intention to quit smoking as much as 89.1% tended to be more than respondents who had high barrier perception. The results of the *chi-square* test showed a *p* value of 0.000 (< 0.05), meaning that there was a relationship between the perception of inhibition and the intention to quit smoking. The value (OR) of 3.1 indicates that respondents with low resistance have a 3 times greater chance of having the intention to quit smoking than respondents who have high resistance.

The results on *perceived benefits* showed that respondents who had a perception of benefits and had the intention to quit smoking were more numerous, namely 90.1% compared to respondents who had a perception of no benefits. The *chi square test* yielded a value of $p = 0.000$ (< 0.05), which means that there is a relationship between the perception of benefits and the intention to quit smoking. The OR value = 4.7 showed that respondents who were aware of the benefits of quitting smoking had a 4.7 times greater chance of intending to quit smoking compared to respondents who were unaware of the benefits.

Discussion

This study showed that there was a significant relationship between *perceived threat* and desire to quit smoking ($p = 0.000 < 0.05$; OR = 3.7). People who feel threatened have a 3.7 times greater chance of intending to smoke than people who don't feel threatened. In the framework of the *health belief model* (HBM), *perceived threat* is a combination of *perceived susceptibility* and *perceived severity* (27). From the data, it can be seen that 92% of respondents who feel threatened have the intention to quit smoking.

Adolescents with the urge to quit smoking due to their strong awareness of the dangers that threaten their health. This perception of threat is formed when teens acknowledge there are serious dangers and other dangers that can occur if they continue to smoke. Awareness of this danger is obtained, among other things, from exposure to health messages such as health warnings on cigarette packaging and being aware of the dangers of smoking, they tend to be more eager to quit (28)(29). As well as the understanding that smoking is very harmful to their health. When teens realize that smoking negatively impacts the lungs, cognitive function, and accelerates chronic disease (4). This confirms that the threat component plays an important role as a predictor of smoking cessation intention in adolescents.

At the *perceived barrier*, there was a significant relationship between *perceived barrier* and smoking cessation intention ($p = 0.000 < 0.05$; OR = 3.1). Respondents who felt that their barrier was low had a 3.1 times greater chance of quitting smoking. Barriers to quitting smoking among adolescents are usually related to addiction, social environment, and peer pressure. The results of this study showed that 89.1% of respondents who felt that their barrier was low had the intention to quit smoking. If the *perceived barrier* is low, it means that the respondent does not feel any obstacles to take action to quit smoking. The fact that 75.9% of respondents feel that there are no barriers, even though smoking is already a habit or the surrounding culture, many teenagers believe that they can overcome obstacles if they have the intention. Friend support (32), the most accepted (28.9%), may play a role in reducing the perception of these barriers.

Smoking cessation intentions in adolescents increase when they view barriers as something that is easy to overcome (30). This is influenced by two important things, namely the level of addiction or dependence on cigarettes and social pressure (31). Adolescents are more likely to want to quit smoking if they are able to ignore the urge to smoke again after waiting for some time (low indication of addiction), and they are confident that they can refuse cigarette offers from peers (low indication of social barrier). The earlier the smoker is old enough to quit, the better their chances of living a healthier life (33).

The results showed that *perceived benefit* was the most influential factor on smoking cessation intention ($p = 0.000 < 0.05$; OR = 4.7). Adolescents who realized the positive benefits of quitting smoking were 4.7 times more likely to act to quit smoking than those who were unaware of it. The majority of respondents felt that there were benefits if they quit smoking, and 90.1% of this group had the intention to quit. An OR value of 4.7 indicates a focus on perceived benefits as an effective strategy to increase smoking cessation intentions (37).

From Setyoadi's research (2025) (34) These findings are in line with the *health belief model*, where *perceived benefits* serve as the main driver in shaping intentions. Teens' decision to quit smoking is driven by their understanding of the positive benefits they will get, referred to as *perceived benefits*. Teens who realize that quitting smoking provides benefits such as better health, can save money, or have a better social response (35)(36), have a much greater chance of quitting smoking. These positive benefits act as the main motivation and the most influential factor in the process of forming smoking cessation intentions in adolescents.

Overall, these findings strengthen the *health belief model theory* in predicting smoking cessation intentions in Indonesian adolescents and address the limitations of previous research. To encourage smoking cessation intentions in adolescents, intervention strategies should emphasize increasing

perceived benefits as the strongest driving factor, for example by showing tangible benefits such as improved health, savings in pocket money, and a more positive social image. At the same time, support is needed to overcome perceived barriers so that perceptions of barriers are reduced, such as smoking cessation assistance services, counselling to overcome dependence, and improved ability to resist peer social pressure from smoking.

Conclusion

The results of the study showed that *perceived threat*, *perceived barrier*, and *perceived benefit* had a significant relationship with smoking cessation intention in adolescents aged 13-15 years in Indonesia. Adolescents who have a perception of a high health threat due to smoking, feel that the barrier to quitting smoking is lower, and realize the benefits tend to prefer to quit smoking. Among the three factors, *perceived benefit* was the strongest factor in its relationship with smoking cessation intentions, showing that the positive impact on smoking cessation benefits is the main driver in the formation of change intentions in adolescents.

The need to strengthen health promotion strategies that not only emphasize the dangers of smoking, but also emphasize the real benefits that adolescents get when they successfully quit smoking. Interventions should be focused on creating an environment that supports adolescents to quit smoking by improving their ability to face obstacles, strengthening support from the surrounding social environment, and utilizing educational media that is in accordance with adolescent characteristics. The approach with *the theory of health belief model*, is expected to be the basis for designing a more targeted and effective program to increase adolescents' intention to quit smoking.

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