



## EXPOSURE TO RETAIL CIGARETTES AROUND SCHOOL AND ITS EFFECT ON SMOKING INITIATION STUDENTS IN TEBING TINGGI CITY AND PEMATANG SIANTAR CITY

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### ABSTRACT

*Backgrounds: Indonesia is the second-largest cigarette market in the world, with an increased smoking rate among young people aged 10–18 years. The latest data show that smoking is increasingly common in youth. Tobacco control will reduce public demand for tobacco products, especially if the supply of tobacco can be limited. Methods: This study uses a cross-sectional design; research was conducted in July–November 2022. This study was conducted on 130 junior high and senior high schools with details of 78 schools in Tebing Tinggi City, and Pematang Siantar City has 52 schools. This study will also examine smoking behavior among students as many as 3900 in junior high and senior high school, with the distribution of students in the city of Tebing Tinggi as many as 2340 students, and students in Pematang Siantar as many as 1560 students. This study will take the coordinates of the school and the coordinates of outdoor retailers' cigarettes around the school using GPS and then will be analyzed using QGIS 3.0 to describe the school's coordinates with the coordinates of the cigarette seller. Data analysis of retailers' cigarettes around schools and students' smoking behavior in Tebing Tinggi City and Pematang Siantar City will use the STATA 15. Results: This study's results indicate a relationship between the perception that smoking is cool and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001;  $OR=7.238$ ). Students who perceive smoking as cool are 7.238 times more likely to smoke. there is a relationship between the perception of smoking as a symbol of friendship and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001=  $OR=15.206$ ). Students who perceive smoking as a symbol of friendship are at risk 15.206 times greater for smoking. there is a relationship between the perception of smoking as a symbol of friendship/friendship and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001=  $OR=12.597$ ). Students who perceive*

smoking as a symbol of friendship/friendship are 12.597 times more likely to smoke. there is a relationship between the perception that smoking is cool and the smoking behavior of students in the last ten days in Tebing Tinggi City ( $P\text{-value}=<0.001= OR=9.798$ ). Students who perceive smoking as cool are 9.798 times more likely to smoke in the previous ten days. there is a relationship between the perception of smoking as a symbol of friendship and students' smoking behavior in the last ten days in Tebing Tinggi City ( $P\text{-value}=<0.001= OR=28.140$ ). Students who perceive smoking as a symbol of friendship are 28.140 times more likely to smoke in the last ten days. And there is a relationship between the perception of smoking as a symbol of friendship/friendship and students' smoking behavior in the previous ten days in Tebing Tinggi City ( $P\text{-value}=<0.001= OR=22.853$ ). Students who perceive smoking as a symbol of friendship/friendship are at risk 22.853 times greater for smoking in the last ten days compared to students who do not have smoking as a symbol of friendship/friendship. There is a relationship between cigarette advertisements around schools and students' smoking behavior in Pematang Siantar City ( $P\text{-value}=<0.001= OR=2.547$ ). Students have never smoked. And there is a relationship between cigarette advertisements around schools and students' smoking behavior in the last ten days in Pematang Siantar City ( $P\text{-value}=<0.001; OR=3.678$ ). Cigarette advertisements around schools have a risk of 3.678 times greater for students smoking in the last ten days. Suggestion: Tebing Tinggi City Government and Pematang Siantar City Government to strengthen SFA bylaws in Tebing Tinggi City and Pematang Siantar City by including a ban on cigarette advertising and sponsorship around schools. The Tebing Tinggi City Education Office and the Pematang Siantar City Education Office are expected to coordinate with the Tebing Tinggi City Civil Service Police Unit Agency and the Pematang Siantar City Civil Service Police Unit Agency to regulate cigarette advertisements around the school area with a radius of 1 Km. Government to make Regional Regulations related to the prohibition of cigarette advertising around schools and cigarette sellers in Tebing Tinggi City and Pematang Siantar City. The Tebing Tinggi City Education Office and the Pematang Siantar City Education Office are expected to coordinate with the Tebing Tinggi City Health Office and the Pematang Siantar City Health Office to provide socialization to students about the dangers of smoking actively.

**Keywords:** School, Retailers, Cigarette, Smoking, Students.

## 1. INTRODUCTION

Indonesia is one of the countries that has not signed a tobacco control agreement. The form of agreement in tobacco control is to prohibit all forms of advertising, promotion,

and sponsorship that promote tobacco products in any way (creating the wrong impression about the characteristics and health effects). In addition, it is also required that all tobacco advertisements, promotions, and sponsorships are accompanied by health messages/warnings and prohibit the free distribution of tobacco products to the public, especially minors. Thus, there are many differences between cigarette advertising policies in Indonesia and the articles contained in the FCTC. Indonesia is one of the countries in ASEAN that does not have an outdoor advertising policy for cigarettes, even though outdoor advertising is assumed to be one of the reasons for the high number of young smokers (WHO, 2015). Indonesia's policy not to follow the FCTC agreement will impact the increased consumption of cigarettes in Indonesia.

The condition of smokers in Indonesia is increasingly apprehensive because cigarette consumption continues to increase rapidly every year, exceeding the population growth rate. In 2013 it was 24.3%, and in 2018 it was still 24.3% (Kementerian Kesehatan RI, 2018). Based on the results of Basic Health Research (Riskesdas) in 2013, it was shown that smoking behavior aged 15-19 years in the daily category was 11.2%, and occasional smoking behavior was 7.1%. While the results of Basic Health Research (Riskesdas) in 2018 showed, increased smoking behavior occurred in 2018, where smoking behavior aged 15-19 years was in the daily category of 12.7% (Kementerian Kesehatan RI, 2018).

Indonesia became the second-largest cigarette market in the world in 2018; Indonesia reached 316.1 billion cigarettes in 2018. The volume of cigarette sales in Indonesia increased by 32.8% compared to 2017 of 238 billion cigarettes (Widowati, 2019). The 2018 Basic Health Research results showed an increase in daily cigarette consumption in Indonesia; in 2013, it was 12.3 cigarettes/day, increasing to 12.8 cigarettes/day. (Kementerian Kesehatan RI, 2018). Almost all regions in Indonesia have high cigarette consumption every day, with the lowest cigarette consumption in Yogyakarta Province at 10.88 cigarettes/day and the highest cigarette consumption in Riau Province at 16.8 cigarettes/day (Kementerian Kesehatan RI, 2018).

Smokers at a young age have a very worrying condition because the younger the generation of a person smoking, the more smoking behavior will become a habit that will persist so that it will have an impact on increasing risks to health in the future. Data from the Global Youth Tobacco Survey revealed that the majority of students aged 13 to 15 years in 2014 were 18.3% in 2019, increasing to 19.2%. The number of male student smokers in 2014 was 33.9%; in 2019 it increased to 38.3%. Whereas the number of female student smokers in 2014 was 2.5%, in 2019, it decreased to 2.4%. 6 out of 10 students aged 13-15 years are exposed to secondhand smoke at home. Meanwhile, 7 out of 10 students aged 13-15 years are exposed to cigarette smoke in public places. And 1 in 2 students aged 13-15 see people smoking at school (WHO, 2020).

North Sumatra Province is one of the areas with a population aged > 10 years that has the highest smoking habits in Indonesia. In 2013 the number of smokers every day of the people in North Sumatra Province was 24.2%; in 2018 the number of smokers every day of the population in North Sumatra Province decreased to as much as 22.38% (Kementerian Kesehatan RI, 2018).

The high number of smokers in North Sumatra Province is due to the high number of smokers in various districts/cities. Several cities in North Sumatra Province have a high number of smokers. Based on Basic Health Research data for 2018, Tebing Tinggi City and

Pematang Siantar City are districts/cities that have an increased number of young smokers (ages 5-9 years, ages 10-14 years, and ages 15-19 years) in North Sumatra Province (Kementerian Kesehatan RI, 2018). Tebing Tinggi City has smokers aged 5-9 years as much as 0.47%, then smokers aged 10-14 years as much as 9.44%, and smokers aged 15-19 years 44.84%. Pematang Siantar City has smokers aged 5-9 years as much as 0.13%, then smokers aged 10-14 years as much as 6.43%, and smokers aged 15-19 years 43.3% (Kementerian Kesehatan RI, 2018).

The Tebing Tinggi City Government and the City Government of Pematang Siantar already know that smoking is a problem that must be prevented immediately. The Tebing Tinggi City Government and the Pematang Siantar City Government issued a mayoral regulation regarding No-Smoking Areas (KTR) to prevent an increase in smokers. However, the number of smokers in Tebing Tinggi City and Pematang Siantar City remains high, especially among young smokers.

The high number of smokers, especially early-age smokers in Tebing Tinggi and Pematang Siantar City, can occur because students aged 5-18 still easily access information about cigarette advertisements containing invitations to smoke in cigarette shops around their school. The number of cigarette advertisements in cigarette shops located around schools may trigger students to follow cigarette advertisements in cigarette shops; cigarette companies will create creative outdoor cigarette advertisements to increase adolescent interest in smoking behavior (Chido-Amajuoyi et al., 2017). Cigarette sellers in the school environment influence smoking behavior where the closer the distance between cigarette sellers and schools will increase students' opportunities to smoke (Marashi-Pour et al., 2015). As many as 2.4 million cigarette sales points in Indonesia are everywhere, such as wholesalers and small shops selling cigarettes (PT HM Sampoerna Tbk, 2015).

The density of cigarette sellers in educational facilities has a significant relationship with smoking behavior among educators, with a distance of 100 m, which is close to cigarette sellers in the school environment indicating that teenagers have the opportunity to smoke. (Adisasmoro et al., 2020). The large number of cigarette sellers around the education sector, such as in school facilities, makes it easier for teenagers to buy cigarettes; it was found that an average density of 1.1 cigarette sellers within 100 m is adjacent to schools, and the number of cigarette sellers displaying cigarette advertisements in shops they (Dewi et al., 2020).

## 2. RESEARCH METHOD

This study used a cross-sectional design to collect information about the density of cigarette sellers around schools and the number of cigarette sellers in the room around the school on students' smoking behavior in Pematang Siantar City and Tebing Tinggi City, North Sumatra Province. This research was conducted in July-November 2022. The population for this study was all schools in the City of Tebing Tinggi and the City of Pematang Siantar, with a total of 1231 schools. The sample of this research is 130 schools, with details of 78 schools in Tebing Tinggi City and 52 schools in Pematang Siantar City. This study will also examine the smoking behavior of 3,900 students, divided into 2,340 students in Tebing Tinggi City and 1,560 students in Pematang Siantar City.

This research will take the coordinates of the school, and the coordinates of outdoor cigarette sellers around the school using GPS and then will be analyzed using QGIS 3.0 to describe the coordinates of the school and cigarette sellers. This research will also explain the number of cigarette sellers around the school. For school students, they will get questions about perceptions of cigarette sellers around the school and interest in cigarette sellers around the school; researchers will also examine smoking intentions and behavior (frequency of smoking and the number of cigarettes smoked every day for three days last), place and time of buying cigarettes in the previous three days. Researchers will conduct in-depth interviews with three school principals in Tebing Tinggi and the City of Pematang Siantar. The researcher will also conduct in-depth interviews with one representative from the Tebing Tinggi City and Pematang Siantar Education Offices. Researchers will also conduct in-depth interviews with 1 representative from the Tebing Tinggi City Health Office and Pematang Siantar City each.

Data analysis of cigarette sellers around schools and students' smoking behavior in Pematang Siantar City and Tebing Tinggi City will use the STATA 15 computer program. For an in-depth interview, data will be analyzed using ATLAS TI software. 9

### 3. RESULT AND ANALYSIS

Table 1. The Relationship between Cigarette Advertisements and Student Smoking Behavior in Pematang Siantar City

Variable	P-value	Odds Ratio	95% CI	P-value	Odds Ratio	95% CI
<b>Never Smoked</b>		<b>Smoking in the Last 10 Days</b>				
Cigarette advertisements around schools	<0,001	2,547	(1,612-4,025)	<0,001	3,678	(2,082-6,497)
<b>Cigarette advertisements around schools</b>						
Low cigarette prices	0,466	1,246	(0,690-2,248)			
Smoking is cool	0,373	0,715	(0,341-1,500)			
Boys must smoke	0,336	0,644	(0,261-1,587)			
Smoking friendship symbol	0,107	0,545	(0,258-1,152)			
Cigarettes are harmful to health	0,087	1,527	(0,938-2,485)			
Cigarettes are beneficial to health	0,658	1,255	(0,459-3,435)			
Cigarettes are sin/haram	0,526	0,872	(0,571-1,331)			
Cigarettes symbol of friendship/friendship	0,042	0,498	(0,251-0,986)			
Cigarettes symbol of maturity	0,380	0,805	(0,496-1,307)			
Cigarette symbol of good looks/dashing	0,373	0,715	(0,341-1,500)			
Cigarette symbol of manhood	0,154	0,640	(0,345-1,188)			
Cigarettes symbol of popularity	0,043	0,546	(0,302-0,988)			

Cigarette advertisements around schools	0,010	2,061	(1,178-3,607)	0,047	1,990	(1,000-3,960)
Cigarette advertisements around schools						
Low cigarette prices	0,440	0,783	(0,420-1,459)			
Smoking is cool	0,054	0,506	(0,250-1,023)			
Boys must smoke	0,609	0,796	(0,332-1,909)			
Smoking friendship symbol	0,435	0,756	(0,374-1,529)			
Cigarettes are harmful to health	0,998	0,999	(0,604-1,654)			
Cigarettes are beneficial to health	0,737	1,218	(0,385-3,849)			
Cigarettes are sin/haram	0,106	0,675	(0,418-1,090)			
Cigarettes symbol of friendship/friendship	0,155	0,637	(0,341-1,190)			
Cigarettes symbol of maturity	0,412	0,812	(0,492-1,338)			
Cigarette symbol of good looks/dashing	0,252	0,658	(0,321-1,351)			
Cigarette symbol of manhood	0,263	0,711	(0,390-1,296)			
Cigarettes symbol of popularity	0,018	0,517	(0,298-0,897)			

Based on the results of the study, it was shown that there was a relationship between the perception that smoking was cool and the smoking behavior of students in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=7.238$ ). Students who perceive smoking as cool are 7.238 times more likely to smoke. There is a relationship between the perception of smoking as a symbol of friendship and the smoking behavior of students in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=15.206$ ).

Students who perceive smoking as a symbol of friendship are at risk 15.206 times greater for smoking. There is a relationship between the perception of smoking as a symbol of friendship/friendship and the smoking behavior of students in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=12.597$ ). Students who perceive smoking as a symbol of friendship/friendship are 12.597 times more likely to smoke. There is a relationship between the perception that smoking is cool and the smoking behavior of students in the last ten days in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=9.798$ ). Students who perceive smoking as cool are 9.798 times more likely to smoke in the previous ten days. There is a relationship between the perception of smoking as a symbol of friendship and students' smoking behavior in the last ten days in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=28.140$ ). Students who perceive smoking as a symbol of friendship are 28.140 times more likely to smoke in the last ten days. And there is a relationship between the perception of smoking as a symbol of friendship/friendship and students' smoking behavior in the previous ten days in Tebing Tinggi City ( $P\text{-value}=<0.001$ ;  $OR=22.853$ ). Students who perceive smoking as a symbol of friendship/friendship are at risk 22.853 times greater for smoking in the last ten days compared to students who do not have smoking as a symbol of

friendship/friendship. There is a relationship between cigarette advertisements around schools and students' smoking behavior in Pematang Siantar City ( $P\text{-value}=<0.001$ ;  $OR=2.547$ ). Students have never smoked. And there is a relationship between cigarette advertisements around schools and students' smoking behavior in the last ten days in Pematang Siantar City ( $P\text{-value}=<0.001$ ;  $OR=3.678$ ). Cigarette advertisements around schools have a risk of 3.678 times greater for students smoking in the last ten days.

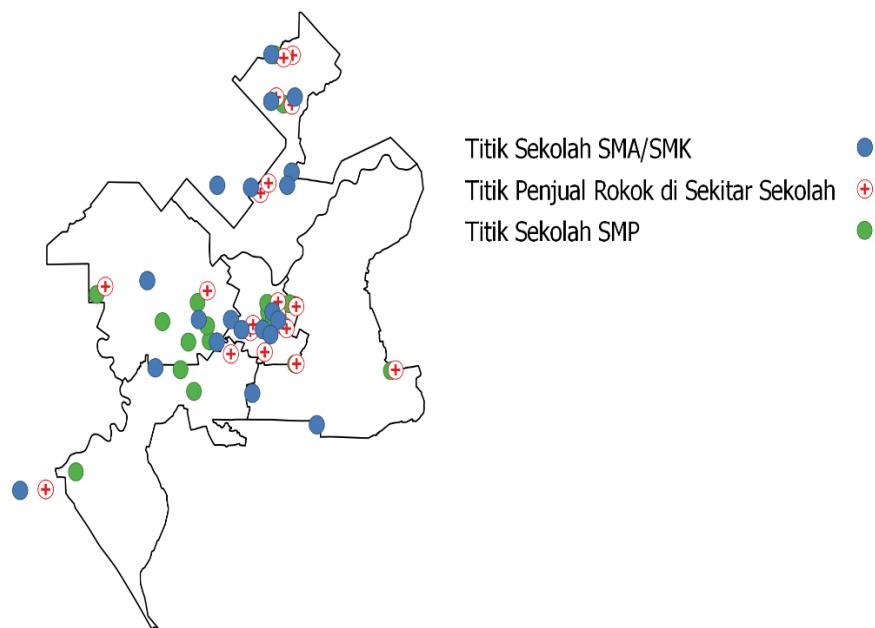


Figure 1. The density of cigarette sellers around schools in Tebing Tinggi City

This study's results indicate that both junior and senior high schools have a very high density of cigarette sellers. Every junior and senior high school is surrounded by cigarette sellers located around the school.

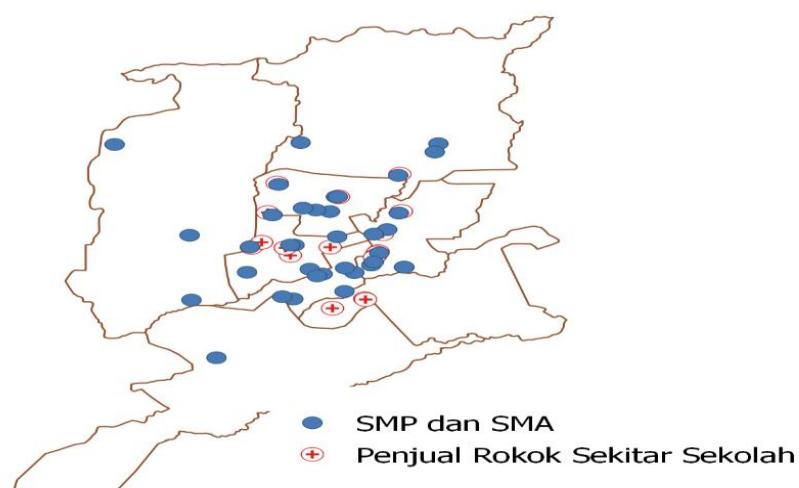


Figure 2. The density of cigarette sellers around schools in Pematang Siantar City

The results of this study indicate that both junior and senior high schools have a density of cigarette sellers. Middle and high school schools have thicknesses ranging from 20 meters to 500 meters from middle and high school schools.

Smoking behavior is behavior that burns one of the tobacco products intended to be burned, smoked, and or inhaled including clove cigarettes, white cigarettes, cigars, or other forms produced from the nicotine tabacum, nicotine rustica, and other species or their synthetics whose smoke contains nicotine and tar, with or without additives (Kemenkes RI, 2013). Cigarette advertisements in cigarette shops around schools greatly influence adolescents' perceptions and beliefs about smoking causing addiction; this is because there is no ban on outdoor advertisements by the Government so teenagers have more opportunities to smoke (Putra et al., 2017).

The TCSC-IAKM (2018) states that a person exposed to cigarette advertisements through television, radio, and billboards has a 1.396, 1.311 and 1.246 times greater chance of becoming a smoker than those who are not exposed to cigarette advertisements. Study. Fransiska et al. (2021) study state that smoking fish has a risk of 3.667 times smoking compared to someone who is not exposed to cigarette advertisements; this is because it effectively influences students to smoke. Cigarette advertisements can be found on television and in the streets in the form of banners and posters using idols of young people. Because they often see cigarette advertisements, teenagers are interested in smoking; they want to look dashing and masculine like their idols.

Cigarettes sold freely by cigarette sellers are a factor that causes adolescents to smoke with the ease of obtaining cigarettes. Teenagers usually buy cigarettes at nearby stalls (Kelian et al., 2016). The research result of Cahyo et al. (2012) states that there is a relationship between cigarette sellers and smoking behavior because cigarette sellers are easy to find in various places of sale, from roadside stalls to supermarkets. They purchase cigarette products at roadside stalls because they can buy them at retail and are not far from home.

Research by Irmawati et al. (2022) states that the affordability of access to buying cigarettes has a relationship with adolescents' smoking behavior; this is because easy access to cigarettes has a greater possibility of causing adolescents to smoke compared to the difficulty of accessing cigarettes. The biggest consumption of cigarettes is when teenagers hang out with their friends, such as when hanging out, staying up late, picnicking, or during get-togethers. This makes it easy for teenagers to visit grocery stores, convenience stores, or small shops in cigarette retailers near the school. Advertisements on television and mass media will influence adolescents to imitate and follow the behavior of models in introducing cigarette products, coupled with the image formed by models in cigarette advertisements so that it looks as if people who smoke are successful, cool, mature, and tough that can get through any obstacle.

Research by Awaluddin et al. (2019) states that the distance between cigarette retailers and schools influences smoking behavior in adolescents. The farther the cigarette shop is, the greater the chance of success in quitting smoking compared to the closest distance to the cigarette shop. The location of cigarette shops in schools makes it easy to get cigarettes and has a 53,818 times chance of being at risk of smoking behavior compared to teenagers whose schools do not have easy access to cigarettes or are not close to cigarette retailers (Fransiska et al., 2021).

Cigarette sellers around schools and their low prices cause teenagers to smoke. Smoking among adolescents is driven by curiosity or trying new experiences, getting rid of the boredom of wanting to be considered more manly, being accepted in the group, or being influenced by role models, for example, parents or older siblings who smoke. The high number of cigarette advertisements, both from television and roadside advertisements in the form of banners promoting the sale of cigarette products directly from the Sales Promotion Girl (SPG), is used to increase cigarette products (Cahyo et al., 2012).

Ease of access to cigarettes is the most dominant factor related to adolescent smoking behavior. Most teenagers easily get cigarettes if they want one. This is supported by the availability of shops or stalls selling cigarettes near schools and in the neighborhood. In reality, mini-markets' rapid growth has also contributed to the spread of smoking among students. Small stalls also make it easier for someone to get cigarettes. This happens because for small stalls like that, cigarettes become the spearhead of their sales, which are easy to sell in the neighborhood, and it doesn't matter if the buyer is an adult or a teenager. This is what makes the number of young smokers, especially teenagers, increase yearly and becomes a problem that the Government must immediately address. And it is necessary to make policies regarding smoking restrictions, especially for teenagers.

#### 4. CONCLUSION

This study concludes that there is a relationship between the perception that smoking is cool and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001; OR=7.238). Students who perceive smoking as cool are 7.238 times more likely to smoke. There is a relationship between the perception of smoking as a symbol of friendship and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001; OR=15.206).

Students who perceive smoking as a symbol of friendship are at risk 15.206 times greater for smoking. There is a relationship between the perception of smoking as a symbol of friendship/friendship and the smoking behavior of students in Tebing Tinggi City ( $P$ -value=<0.001; OR=12.597). Students who perceive smoking as a symbol of friendship/friendship are 12.597 times more likely to smoke. There is a relationship between the perception that smoking is cool and the smoking behavior of students in the last ten days in Tebing Tinggi City ( $P$ -value=<0.001; OR=9.798). Students who perceive smoking as cool are 9.798 times more likely to smoke in the previous ten days. There is a relationship between the perception of smoking as a symbol of friendship and students' smoking behavior in the last ten days in Tebing Tinggi City ( $P$ -value=<0.001; OR=28.140).

Students who perceive smoking as a symbol of friendship are 28.140 times more likely to smoke in the last ten days. And there is a relationship between the perception of smoking as a symbol of friendship/friendship and students' smoking behavior in the previous ten days in Tebing Tinggi City ( $P$ -value=<0.001; OR=22.853). Students who perceive smoking as a symbol of friendship/friendship are at risk 22.853 times greater for smoking in the last ten days compared to students who do not have smoking as a symbol of friendship/friendship. There is a relationship between cigarette advertisements around schools and students' smoking behavior in Pematang Siantar City ( $P$ -value=<0.001; OR=2.547). Students have never smoked. And there is a relationship

between cigarette advertisements around schools and students' smoking behavior in the last ten days in Pematang Siantar City (P-value=<0.001; OR=3.678). Cigarette advertisements around schools have a risk of 3.678 times greater for students smoking in the last ten days.

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