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Mon, Mar 28, 2022 at 5:41 PM

Reply-To: dr_pates23@hotmail.com

To: santi-m@fkm.unair.ac.id

28-Mar-2022

Dear Dr Santi Martini:

The above manuscript, entitled "ASSOCIATION OF TOBACCO ADVERTISING, PROMOTION, AND SPONSORSHIP (TAPS) EXPOSURE ON SMOKING INTENTION AND CURRENT SMOKING BEHAVIOR AMONG YOUTH IN INDONESIA" has been submitted to Journal of Substance Use.

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Sincerely,

Mr Pates

Journal of Substance Use Editorial Office

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MANUSCRIPT DETAILS

TITLE: ASSOCIATION OF TOBACCO ADVERTISING, PROMOTION, AND SPONSORSHIP (TAPS) EXPOSURE ON SMOKING INTENTION AND CURRENT SMOKING BEHAVIOR AMONG YOUTH IN INDONESIA

ABSTRACT: Background: This study aimed to assess the association of Tobacco Advertising Promotion and Sponsorship (TAPS) exposure on smoking intensity and smoking behavior among youth in Indonesia.

Method: This study used secondary data from the Global Youth Tobacco Survey (GYTS) 2019. The participants were secondary students from grades 7 to 12. We used multiple logistic regression to assess the association of TAPS exposure with smoking intention among smokers and current smoking status.

Results: More than half of participants (64,54%) reported being exposed by TAPS in television, followed by outdoor media (60,82%) and point of sales (55,45%). About 2.27% of 7,679 non-smoking participants had the intention to smoke cigarettes. Furthermore, TAPS exposure in sports events, music concerts, community gatherings, or social events, being offered free tobacco products, owning the tobacco industry's merchandise, and receiving vouchers of cigarettes discounts was associated with the smoking intention of non-smokers and current smoking status. In addition, a significant association was found between TAPS exposure in television, the internet, and print media with current smoking status among youth in Indonesia.

Conclusions: TAPS exposure was significantly associated with smoking intention and smoking behavior among youth in Indonesia. Therefore, we recommended that the government ban TAPS in any form.

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**ASSOCIATION OF TOBACCO ADVERTISING, PROMOTION,
AND SPONSORSHIP (TAPS) EXPOSURE ON SMOKING
INTENTION AND CURRENT SMOKING BEHAVIOR AMONG
YOUTH IN INDONESIA**

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3 **ASSOCIATION OF TOBACCO ADVERTISING, PROMOTION, AND SPONSORSHIP (TAPS)**
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5 **EXPOSURE ON SMOKING INTENTION AND CURRENT SMOKING BEHAVIOR AMONG**
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7 **YOUTH IN INDONESIA**
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12 **BACKGROUND**
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14 Cigarette smoking has become a global pandemic (Warner and MacKay, 2006). About 1 billion individuals
15 worldwide used tobacco products, consisting of 847 million males and 153 million females, by 2019 (WHO,
16 2021). Of these, a total of 25 million smokers are youth aged 13-15 (Lian and Dorotheo, 2021). The
17 Southeast Asia Region (SEARO) and Western Pacific Region (WPRO) have the highest number of
18 smokers, contributing around 6.4 million and 4.7 million, respectively (Lian and Dorotheo, 2021).
19 Indonesia is one of the leading contributors to the tobacco epidemic in the region (Lian and Dorotheo,
20 2021).

21 In Indonesia, smoking prevalence is approximately 38.3% among youth aged 13-18 (Lian and Dorotheo,
22 2021). This rate is substantially higher compared to the neighboring countries such as Malaysia (20.6%),
23 Thailand (17.2%), and Myanmar (17%) (Lian and Dorotheo, 2021). The average age of smoking initiation
24 is also the youngest among the Association of Southeast Asia Nation (ASEAN) countries, which is
25 approximately 16.8 years old (Soerojo et al., 2020, Lian and Dorotheo, 2021). Therefore, the Indonesian
26 government needs to implement tobacco control best practices to reduce the burden of tobacco-related
27 diseases.

28 A large body of evidence shows that smoking at a young age has a severe impact on health immediately
29 and accelerates the development of chronic diseases across the entire life course (USDHHS, 2012).
30 Smoking cigarettes by youth can cause nicotine addiction, which will have a lasting adverse impact on
31 brain development (USDHSS, 2014). Youth who smoke cigarettes have a higher risk of early
32 cardiovascular function damage (USDHHS, 2012). Moreover, young smokers are also in danger of slowing
33 lung function and impaired lung growth (USDHSS, 2014). A prior case-control study in Blitar City revealed
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3 that those who started smoking before the age of 15 were 12 times more likely to develop Chronic
4 Obstructive Pulmonary Disease (COPD than those who did not smoke at all (Safitri et al., 2021).
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7 The tobacco industry spends millions of dollars a year to promote its deadly product through various
8 channels such as television, radio, cinema, newspaper, magazines, point of sales, outdoor displays, and the
9 internet (WHO, 2013). Big tobacco also carried out marketing activities using indirect advertising,
10 including sponsoring sports events, community gatherings, and music concerts, offering free products,
11 merchandise, price discount, and engaging in so-called "corporate social responsibility" initiatives (WHO,
12 2013, Siahaya and Smits, 2021). The National Cancer Institute (NCI) revealed that most cross-sectional
13 and longitudinal studies had shown a significant association between TAPS exposure and current and future
14 smoking behavior (NCI and WHO, 2016). Therefore, WHO considered TAPS ban as one of the best buys
15 in tobacco control (NCI and WHO, 2016).
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18 Indonesia is one of few counties in the ASEAN region that have not comprehensively banned the TAPS
19 (Lian and Dorotheo, 2021). At the national level, tobacco advertising is still allowed in broadcast media
20 from 9.30 pm to 5.00 am (Soerojo et al., 2020). No restrictions are imposed on TAPS in print media and
21 the internet (Soerojo et al., 2020). A survey by Vital Strategies involving 2,281 adolescents aged 13-15
22 found that 81% of them reported ever seen or heard tobacco advertising on the television, 51% on the
23 internet, and 38% on the billboard (Vital Strategies, 2021). Unfortunately, the study evaluating the impact
24 of TAPS exposure on smoking intention and behavior is still limited. This evidence is essential to convince
25 policymakers to issue TAPS banned regulation in Indonesia.
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28 This study aimed to examine the association between TAPS exposure on the smoking intention of non-
29 smokers and current smoking behavior among youth in Indonesia.
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43 **METHOD**

44 *Data Source*

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3 This study utilized the secondary data of the Global Youth Tobacco Survey (GYTS) 2019. The GYTS is a
4 global initiative to provide comparable data sources of the tobacco epidemic in various countries. Indonesia
5 has participated in GYTS four times in 2006, 2009, 2014 dan 2019 (Kemenkes et al., 2020).
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9 The Indonesia GYTS 2019 involved 9,992 secondary school students from grades 7th to 12th. It applied two
10 stages sampling methods. First, the schools were selected through probability-proportional-to-size sampling
11 based on the number of students. Second, the classes were chosen randomly from selected schools. All
12 students from selected classes were invited to participate in the survey (Kemenkes et al., 2020). Our study
13 analyzed all participants of the GYTS 2019.
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19 *Measures*

20 *Smoking Intention and Current Smoking Status*

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22 The smoking intention of non-smokers and current smoking behavior were dependent variables in this
23 study. First, the participants were considered to have a smoking intention if they thought they would
24 consume cigarettes during the next 12 months from the interview. The GYTS 2019 asked about the smoking
25 intention of all participants. Nevertheless, we only included non-smoking participants in the analysis of
26 smoking intention determinants. Second, current smoking behavior was treated in binary outcomes,
27 smokers and non-smokers. A smoker was defined as someone who reported smoking cigarettes in the past
28 30 days.
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39 *Sociodemographic Characteristics*

40 Sociodemographic variables consisted of age (≤ 12 , 13-14, 15-16, and ≥ 17 years), sex (female and male),
41 and pocket money. Pocket money was measured by asking the participants about the average amount of
42 money spent in a week. This outcome was grouped into three categories, $\leq 10,000$, 11,000-30,000, 31,000-
43 50,000, and $\geq 51,000$ Rupiah. Pocket money was used as the proxy variable of the economic status.
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49 *Parental Smoking Status*

50 The participants were also asked about the smoking status of their father and mother. Parental smoking
51 status was classified as "no", "don't know", or "yes" if father/mother or both parents currently smoked.
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55 *Accessibility*

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3 Accessibility was assessed with the question on, "can you purchase cigarettes near your school?". The
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5 outcomes were classified into three groups as follows: no, don't know, or yes.
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7 *Affordability*

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9 Cigarette affordability was estimated using the Relative Income Price (RIP). This method was developed
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11 by Blecher dan van Walbeek (Blecher and Walbeek, 2008). The RIP is defined as the share (percentage) of
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13 Gross Domestic Products (GDP) per capita required to buy 100 packs of cigarettes. The higher RIP values
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15 indicate that the cigarettes price is less affordable. In this study, the cigarettes price was assigned as the
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17 average estimated amount of money to purchase one pack of 20 cigarettes within a primary sampling unit.
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19 The price was then converted to international dollar using Purchasing Power Parity (PPP) conversion rate.
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21 The Organization of Economic Cooperation and Development (OECD) provided the database of PPP
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23 conversional rates to Indonesian Rupiah in 2019 (OECD, 2020). For the 2019 GDP per capita, the data was
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25 drawn from the world bank database, which was also adjusted by the PPP conversion rate (World Bank,
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27 2020).
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30 *Anti-Smoking Messages Exposure*

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32 Anti-smoking exposure was defined as exposure by anti-smoking messages in television, radio,
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34 newspapers, magazines, the internet, billboards, posters, movies, sports events, fairs, concerts, or public
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36 gatherings in the past 30 days. The outcomes were in binary options (No/Yes).
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39 *TAPS Exposure*

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41 Self-reported direct TAPS exposure in the past 30 days were analyzed from types: television, printed media
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43 (newspapers or magazines), outdoor media (billboards, posters, banners, and digital billboards), the internet
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45 or social media, point of sales, music concerts, sports events, and community events or social gatherings.
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47 We also measured indirect TAPS exposure in multimedia by a question, "During the past 30 days, did you
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49 see any people using tobacco on TV, in videos, or in movies?". The participants were also asked about
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51 ownership of tobacco-related merchandise such as t-shirts, pens, backpacks, hats, or sunglasses with a
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53 tobacco brand logo on it. In addition, the participants were also asked whether they ever got free/discounts
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3 cigarettes vouchers or coupons, and offered free tobacco products by tobacco industry representatives
4 directly. The outcomes of TAPS exposure variables were in binary options (No/Yes).
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7 *Statistical Analysis*

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9 The data analysis took into account the complex survey sampling design, which produced the weighted
10 results. Participants' characteristics, determinants of smoking behavior, and TAPS exposure were
11 descriptively presented. The bivariate analysis with binary logistic regressions was carried out to select the
12 independent variables included in the final model. The odds ratio of each type of TAPS exposure in multiple
13 logistic regression was adjusted with independent variables with $p < 0.25$. The significance level was defined
14 at alpha 0.05. The current smoking behavior regression analyzed all participants while smoking intention
15 only included non-smoker participants. All statistical analysis was performed using STATA v.16.
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26 **RESULTS**

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28 The results show that the proportion of smokers is 19.62%, weekly spend pocket money dominantly at
29 range IDR 11,000 - 30,000 (32,72%), and prevalence of parents smoking is 42.51%. The youth are mostly
30 exposed to anti-smoking campaigns (80.79%) and were taught the danger of smoking at school (60.11%).
31 Moreover, about 2% of non-smokers had an intention to smoke cigarettes during the next 12 months (table
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39 Graphic 1 presents the level of self-reported TAPS exposure among youth in Indonesia. The most dominant
40 TAPS exposure is from television (64.54%) followed by outdoor media (60.82%), point of sales (55.45%),
41 indirect advertising in multimedia (50.06%), printed media (24.44%), and the proportions are distributed
42 fairly between sport events, music concert, community event, souvenir, and free products.
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47 The study found that age, sex, age, sex, pocket money, parents smoking status, affordability, access to buy
48 cigarettes, and TAPS exposure in school had p -value < 0.25 in the bivariate analysis of the current smoking
49 status, while smoking intention regression was adjusted by sex, parent smoking status, access to buy
50 cigarettes, and anti-smoking exposure in the media & offline events (table 2). We also found that TAPS
51 exposure in sports events, music concerts, community events, merchandise, free products, and
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3 voucher/discounts were significantly associated with smoking intention and smoking behavior ($p < 0.001$)
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5 in the bivariate analysis.
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7 The full multivariate analysis results can be found in the supplement. The smoking intention of non-smokers
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9 was also statistically significantly associated with TAPS exposure in sports events, music concerts,
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11 community events, merchandise, free products, and vouchers/coupons. The results also show that smoking
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13 behavior was most associated with free products (OR: 2.840, 95% CI: 2.174-3.708), voucher or discount
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15 (OR: 2.757, 95% CI: 2.099-3.622), music concerts (OR: 2.590, 95% CI: 2.059-3.258), and community or
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17 social event (OR: 2.293, 95% CI: 1.854-2.837) (table 4).
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22 **DISCUSSIONS**

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24 Our study shows that TAPS exposure among adolescents was highest through television (64.54%). This
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26 finding is consistent with prior research, which found that television was the medium that exposed the most
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28 TAPS to adolescents (Septiono et al., 2021, Fauzi et al., 2018). Television has the largest audience
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30 compared to other forms of media in Indonesia. Television viewers in Indonesia were approximately
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32 93.02% of the population in 2018, while radio listeners account for 18.57% and print media readers account
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34 for only 17.66% (BPS-Statistics, 2019).
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37 Our study also shows that adolescents who were exposed to TAPS in television had a greater likelihood of
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39 being current smokers (OR: 1.211, 95% CI: 1.037-1.415) than those who were not. These findings support
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41 the majority of previous studies that found a link between exposure to TAPS on television and smoking
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43 behavior in children and adolescents (Lovato et al., 2011). The industry certainly understands the
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45 importance of tobacco advertising on television for the survival of their business. Indonesian Food and
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47 Drugs Administration (FDA) reported that there were approximately 42,597 tobacco advertisements on
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49 television in 2020 (BPOM-Food and Drugs Administration, 2021). In addition, the spending on cigarette
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51 advertising on television has risen from 1.8 trillion rupiahs in 2010 to 5.4 trillion rupiahs in 2017 (Soerojo
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53 et al., 2020).
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3 In this study, outdoor media and point of sale are two major sources of TAPS exposure for adolescents at
4 rates of 60.82% and 55.45%, respectively. The lack of regulation is one of the reasons for the high exposure
5 to TAPS from those channels. In Indonesia, the regulation on advertisement in outdoor media and point of
6 sales is under local government jurisdiction (Chandra et al., 2021). To date, only 23 out of 514
7 cities/districts have regulations prohibiting cigarette ads on billboards, while 19 cities/regencies have
8 already banned the display of cigarette ads at points of sale. (Fakta, 2020). In a prior study conducted in
9 Surabaya City and Banyuwangi District, the density of cigarette ads in outdoor media is higher in Surabaya
10 than in Banyuwangi (Sebayang et al., 2021). Surabaya city has no regulations prohibiting cigarette ads in
11 outdoor media, while Banyuwangi has partially banned cigarette ads in outdoor media (Sebayang et al.,
12 2021).

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14 Despite the fact that some local governments already have TAPS banned regulation in the outdoor media
15 and point of sales, the law enforcement is still weak. A study in Banyuwangi discovered around 1,283
16 cigarette advertising items at 667 points that should have been prohibited (Sebayang et al., 2019). In another
17 survey in Bogor City, 17% of modern retailers do not comply with the local regulation on cigarettes
18 packages display and advertising banned at points of sales (Priyono et al., 2020). The level of compliance
19 would be inevitably lower if the study also investigated the traditional retailers or small kiosks, which are
20 less monitored yet have more points than modern retails.

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22 Cigarette ads on the internet and social media should also be given more considerable attention from the
23 government. Our study found that around 37.16% of adolescents were exposed to cigarette ads on the
24 internet and social media. This study also revealed that there was a significant relationship between
25 exposure to cigarette ads on the internet and social media with current smoking behavior (OR: 1.242, 95%
26 CI: 1.062 - 1.220). Social media has become an important channel for promoting commercial products in
27 Indonesia. About 170 million people actively used social media in 2021, accounting for 61.8% of the
28 population (Kemp, 2021). Thus, it is unsurprising if the tobacco industry uses these platforms to promote
29 its deadly products. A prior study showed that Indonesian adolescents are mostly exposed to TAPS on the
30 internet from Instagram, Facebook, and YouTube (Septiono et al., 2021). The tobacco industry spent
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3 approximately 481.3 million USD on digital ads in 2017 (Soerojo et al., 2020). This amount is almost
4 double in 2021, reaching 844.9 million USD (Soerojo et al., 2020). Furthermore, no policy restricts the
5 TAPS on the internet and social media (Soerojo et al., 2020). Unlike television or radio, in which tobacco
6 ads are permitted to be broadcast between 9.30 pm to 5 am, the tobacco industry can even advertise its
7 products for 24 hours on the internet and social media (Soerojo et al., 2020).
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11 We also found that exposure to TAPS at sporting events increased the smoking intention of non-smokers
12 (OR: 2.457, 95% CI: 1.628-3.895) and the likelihood of becoming a current smoker (OR: 1,993, 95% CI:
13 1,604-2,476). In Indonesia, there is no regulation prohibiting the tobacco industry from sponsoring sporting
14 events (Soerojo et al., 2020). The tobacco industry also uses so-called “Corporate Social Responsibility”
15 (CSR) to sponsor popular sports such as football, badminton, and volleyball (Tjandra et al., 2020). The
16 Djarum company, for example, established Djarum Badminton Club and sponsored badminton tournaments
17 at the national and international levels (Siahaya and Smits, 2021). One of the most popular tournaments is
18 the Indonesia Open, which was classified as Badminton World Federation (BWF) tour super 1000 (BWF,
19 2018). Djarum badminton CSR and Djarum company shared the same visual identity, which enabled the
20 company to associate with sports culture (Siahaya and Smits, 2021). Djarum badminton CSR also appeals
21 to youth by presenting an image of caring for youth development and has successfully fostered Indonesian
22 young people to become world champions (Siahaya and Smits, 2021). CSR through sports also allows the
23 tobacco industry to advertise in national media without time limitations, which is usually applied to tobacco
24 advertising (Siahaya and Smits, 2021).
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43 Our study shows that music concerts were one of the promotional tools that primarily expose TAPS to
44 teenagers (15.69%). Exposure to TAPS at music concerts also had a statistically significant relationship
45 with smoking intention (OR: 2.326, 95% CI: 1.505-3.594) and smoking behavior (OR: 2,590, 95% CI:
46 2,059-3.258) among adolescents. The tobacco industry uses music to shape brand image, generate brand
47 recognition, increase appeal to youth (Chandra et al., 2021). PT. HM Sampoerna/Phillip Morris
48 International, for instance, organized a SoundrenAline music concert that drew a large number of young
49 people (Astuti et al., 2018). This concert is part of Sampoerna's efforts to build A Mild as a brand image
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3 synonymous with creativity and self-expression (Astuti et al., 2018). The use of the internet and social
4 media makes music concert promotion more interactive and increases brand penetration to young adults
5 (Astuti et al., 2018).
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9 We also measured the Direct to Consumer (DTC) marketing exposure, including receiving
10 vouchers/coupons of free or discount of cigarettes, and offered free tobacco products by a tobacco industry
11 representative. DTC exposure was relatively low (<7%) in Indonesia compared to the finding in the United
12 States (Soneji et al., 2014). his finding is unsurprising because Indonesia's tobacco promotion and
13 marketing activities were less restricted than in the US. The DTC strategy was used in the US after Master
14 Settlement Agreement in 1998 prohibited tobacco marketing in billboards, magazines, and other forms
15 targeting the youth (Brock et al., 2015). Despite the fact that DTC exposure is low but highly related to
16 adolescents' smoking intention and smoking behavior in our study. Therefore, we recommended that the
17 government ban any form of DTC in Indonesia.
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20 This study has some potential limitations. First, the study design is cross-sectional. Thus, we may not be
21 able to conclude the causal relationship between TAPS exposure and smoking behavior. Second, the data
22 collection method for TAPS used self-reported. This approach is subject to recall bias, which could lead to
23 overestimation or underestimation.
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28 29 30 31 32 33 34 35 36 37 38 39 **CONCLUSIONS**

40 Indonesian adolescents were highly exposed to TAPS, particularly in television, outdoor media, and point
41 of sales. Moreover, TAPS exposure was significantly associated with smoking intention and smoking
42 behavior among adolescents. These finding may indicate that the current partial TAPS ban were not
43 effective. Therefore, we recommended the government totally ban the TAPS, particularly in broadcasting
44 media, outdoor media, point of sales, and the internet. Although some cities/districts already have some
45 regulations banning the TAPS in outdoor media and point of sales, compliance still needs to be improved.
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54 Thus, monitoring and enforcement are necessary to make regulation effective.
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DISCLOSURE STATEMENT

All authors state no potential conflict of interest

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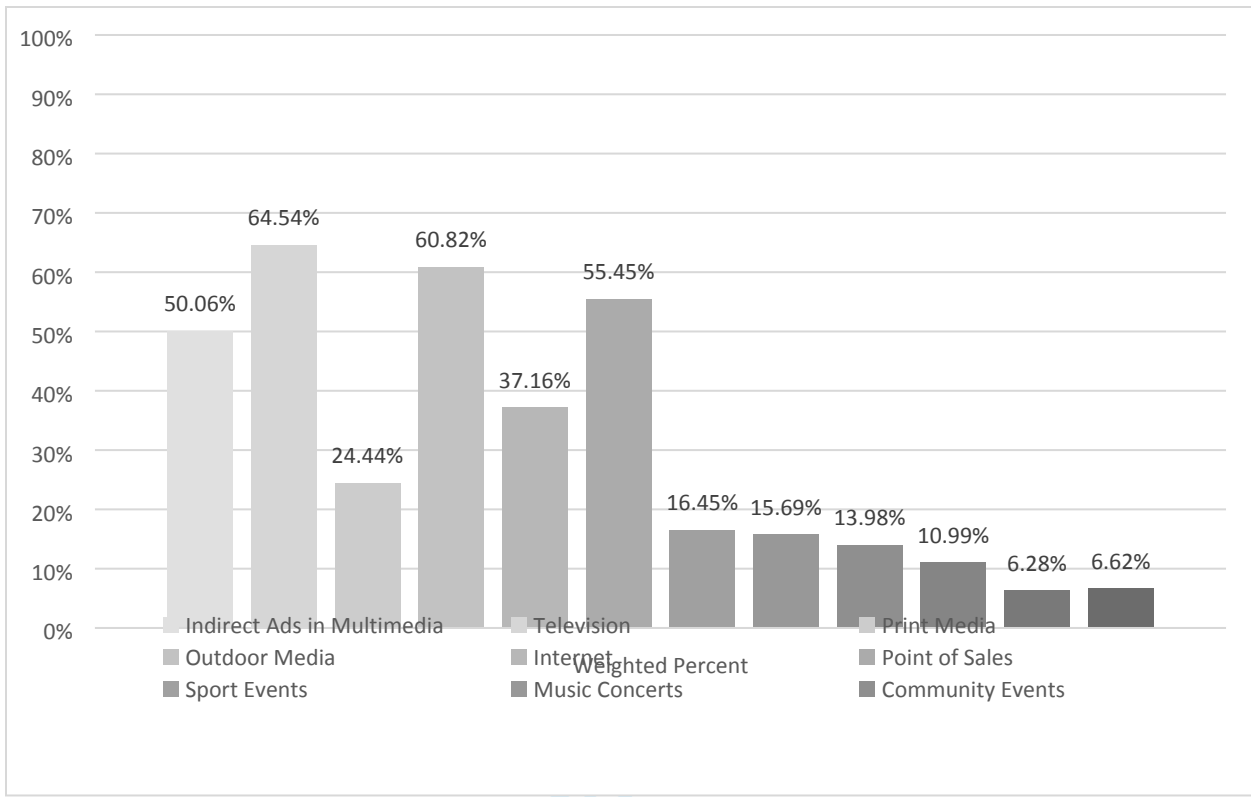
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Graphic 1. self-reported TAPS exposure among youth in Indonesia

Review Only

Table 1. Descriptive Statistics

Variables	Weighted Percent / mean (SD)
Current smoking status (n=9,398)	
No	80.38%
Yes	19.62%
Age group (n=9,978)	
≤ 12	17.72%
13-14	40.98%
15-16	28.57%
≥ 17	12.73%
Sex (n=9,983)	
Females	51.07%
Males	48.93%
Pocket Money in IDR (n=9,970)	
≤ 10,000	25.14%
11,000-30,000	32.72%
31,000-50,000	18.41%
≥ 51,000	23.73%
Parents Smoking (n=9,930)	
No	55.51%
Don't know	4.98%
Yes	42.51%
Easy to buy cigarettes (n=9,963)	
No	47.96%
Don't know	38.76%
Yes	13.27%
Affordability (n=9,992)	3.858 (0.161)
Anti-smoking messages exposure in media & event (n=9,966)	
No	19.21%
Yes	80.79%
Anti-smoking messages exposure in school (n=9,915)	
No	23.76%
Don't know	16.13%
Yes	60.11%
Intention to use cigarettes in the next 12 months*	
No	97.73%
Yes	2.27%

*only included the non smoking participants = 7,679

Table 2. Bivariate analysis of the determinants of smoking intention and current smoking behavior among youth

Variables	Smoking intention			Current smoking		
	OR	95% CI	p value	OR	95% CI	p value
Age group						
<=12	Ref.			Ref.		
13-14	0.881	0.536-1.448	0.613	1.160	0.933-1.441	0.178
15-16	1.091	0.639-1.864	0.746	1.184	0.907-1.545	0.210
>=17	1.103	0.529-2.301	0.791	1.158	1.201-2.083	0.001
Sex						
Female	Ref.			Ref.		
Male	4.337	2.754-6.828	<0.001	28.486	20.007-40.559	<0.001
Pocket Money						
<=10,000	Ref.			Ref.		
11,000-30,000	0.957	0.596-1.537	0.854	0.879	0.730-1.059	0.171
31,000-50,000	0.829	0.460-1.493	0.527	0.693	0.552-0.870	0.002
>=51,000	1.031	0.694-1.531	0.878	0.725	0.600-0.876	0.001
Parents Smoking						
No	Ref.			Ref.		
Don't know	1.103	0.434-2.805	0.834	1.190	0.831-1.705	0.338
Yes	1.540	0.961-2.466	0.072	1.215	1.033-1.428	0.019
Easy to buy cigarettes						
No	Ref.			Ref.		
Don't know	0.633	0.439-0.914	0.015	0.405	0.343-0.478	<0.001
Yes	2.329	1.419-3.823	0.001	3.548	2.868-4.390	<0.001
Affordability	1.495	0.388-5.779	0.555	0.441	0.218-0.893	0.023
Anti-smoking messages exposures						
Media & Events						
No	Ref.			Ref.		
Yes	0.607	0.387-0.951	0.030	0.941	0.772-1.147	0.543
Schools						
No	Ref.			Ref.		
Don't know	1.021	0.582-1.789	0.493	0.861	0.696-1.066	0.168
Yes	0.790	0.517-1.208	0.272	0.893	0.751-1.061	0.195

Table 3. Bivariate analysis of the relationship between TAPS exposure with smoking intention and current smoking behavior among youth in Indonesia

TAPS exposure	Smoking intention			Current smoking		
	OR	95% CI	p value	OR	95% CI	p value
Indirect ads in multimedia	1.133	0.791-1.621	0.491	1.050	0.923-1.195	0.453
Television	0.923	0.643-1.324	0.660	1.265	1.086-1.472	0.003
Print media	1.377	0.955-1.983	0.085	1.872	1.656-2.116	<0.001
Outdoor media	1.141	0.797-1.633	0.467	1.070	0.928-1.234	0.346
Internet	1.207	0.877-1.660	0.244	1.318	1.173-1.480	<0.001
Point of sales	1.208	0.827-1.765	0.322	1.305	1.154-1.475	<0.001
Sport events	2.920	1.893-4.505	<0.001	2.825	2.381-3.352	<0.001
Music concerts	2.663	1.732-4.096	<0.001	3.533	2.961-4.215	<0.001
Community or social events	2.380	1.536-3.690	<0.001	2.977	2.498-3.547	<0.001
Merchandise	3.085	2.029-4.692	<0.001	2.829	2.300-3.479	<0.001
Free products	5.219	3.218-8.463	<0.001	4.613	3.642-5.844	<0.001
Vouchers/coupons	3.760	2.102-6.723	<0.001	4.741	3.779-5.947	<0.001

Table 4. Multivariate analysis of the relationship between TAPS exposure with smoking intention and current smoking behavior among youth in Indonesia

TAPS exposure	Smoking intention ^x			Current smoking ^y		
	AOR	95% CI	p value	AOR	95% CI	p value
Television	n.a.			1.211	1.037-1.415	0.016
Print media	1.341	0.908-1.979	0.138	1.694	1.462-1.963	<0.001
Internet	1.259	0.902-1.757	0.173	1.242	1.062-1.454	0.007
Point of sales	n.a.			1.042	0.891-1.220	0.599
Sport events	2.547	1.628-3.895	<0.001	1.993	1.604-2.476	<0.001
Music concerts	2.326	1.505-3.594	<0.001	1.590	2.059-3.258	<0.001
Community or social events	2.030	1.343-3.068	0.001	2.293	1.854-2.837	<0.001
Merchandise	2.430	1.587-3.718	<0.001	1.994	1.576-2.523	<0.001
Free products	3.842	2.293-3.439	<0.001	2.840	2.174-3.708	<0.001
Vouchers/coupons	2.790	1.462-5.323	0.002	2.099	2.099-3.622	<0.001

^xadjusted with sex, parent smoking status, access to buy cigarettes, and exposure to anti-smoking message in media & offline events.

^y adjusted with age, sex, pocket money, parent smoking status, access to buy cigarettes, affordability and anti-smoking exposure in school.

SUPPLEMENT

Multivariate analysis of TAPS exposure on intention to smoking among non-smoking youth in Indonesia

1. Print Media

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	4.101	2.546	6.604	<0.001
Parents Smoking				
Don't know	1.044	0.397	2.743	0.929
Yes	1.692	1.034	2.769	0.037
Easy to buy cigarettes				
Don't know	0.672	0.459	0.983	0.041
Yes	2.031	1.213	3.400	0.008
Exposed to anti-smoking messages in media	0.579	0.358	0.935	0.026
Exposed to TAPS in print media	1.341	0.908	1.979	0.138

2. Internet

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	4.148	2.569	6.697	<0.001
Parents Smoking				
Don't know	1.038	0.398	2.709	0.939
Yes	1.679	1.021	2.761	0.042
Easy to buy cigarettes				
Don't know	0.657	0.449	0.960	0.030
Yes	1.987	1.197	3.300	0.009
Exposed to anti-smoking messages in media	0.572	0.356	0.918	0.021
Exposed to TAPS in the internet	1.259	0.902	1.757	0.173

3. Sport events

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	3.945	2.479	6.277	<0.001
Parents Smoking				
Don't know	0.967	0.363	2.577	0.946
Yes	1.653	1.012	2.699	0.045
Easy to buy cigarettes				
Don't know	0.689	0.472	1.004	0.053
Yes	2.042	1.217	3.428	0.008
Exposed to anti-smoking messages in media	0.559	0.346	0.905	0.019
Exposed to TAPS in sport events	2.547	1.628	3.985	<0.001

4. Music Concerts

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	4.039	2.506	6.510	<0.001
Parents Smoking				
Don't know	1.018	0.386	2.683	0.972
Yes	1.688	1.021	2.790	0.042
Easy to buy cigarettes				
Don't know	0.671	0.463	0.971	0.035
Yes	2.001	1.195	3.352	0.009
Exposed to anti-smoking messages in media	0.577	0.365	0.913	0.020
Exposed to TAPS in music concerts	2.326	1.505	3.594	<0.001

5. Community or Social Events

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	4.052	2.545	6.452	<0.001
Parents Smoking				
Don't know	1.024	0.390	2.690	0.961
Yes	1.641	1.005	2.679	0.048
Easy to buy cigarettes				
Don't know	0.681	0.470	0.987	0.042
Yes	2.038	1.223	3.400	0.007
Exposed to anti-smoking messages in media	0.585	0.369	0.932	0.024
Exposed to TAPS in community or social events	2.030	1.343	3.068	0.001

6. Owned Merchandise

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	3.995	2.471	6.457	<0.001
Parents Smoking				
Don't know	0.997	0.379	2.628	0.996
Yes	1.694	1.032	2.781	0.037
Easy to buy cigarettes				
Don't know	0.660	0.442	0.986	0.043
Yes	1.965	1.163	3.321	0.012
Exposed to anti-smoking messages in media	0.634	0.403	0.999	0.050
Owned merchandise related to tobacco industry	2.430	1.587	3.718	<0.001

7. Been offered tobacco products

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	3.932	2.424	6.377	<0.001
Parents Smoking				
Don't know	1.015	0.390	2.639	0.976
Yes	1.680	1.020	2.766	0.042
Easy to buy cigarettes				
Don't know	0.676	0.459	0.996	0.048
Yes	1.908	1.148	3.170	0.013
Exposed to anti-smoking messages in media	0.606	0.378	0.969	0.037
Been offered tobacco products	3.842	2.293	3.439	<0.001

8. Received voucher/discounts of cigarettes

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Male	3.923	2.420	6.360	<0.001
Parents Smoking				
Don't know	1.026	0.392	2.682	0.958
Yes	1.680	1.007	2.742	0.047
Easy to buy cigarettes				
Don't know	0.680	0.463	0.998	0.049
Yes	1.973	1.176	3.309	0.011
Exposed to anti-smoking messages in media	0.643	0.396	1.046	0.074
Received voucher/discounts of cigarettes	2.790	1.462	5.323	0.002

Multivariate analysis of TAPS exposure on current smoking status among youth in Indonesia

1. Television

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.266	1.013	1.583	0.038
15-16	1.405	1.037	1.903	0.029
>=17	1.915	1.354	2.709	<0.001
Male	26.108	18.780	36.297	<0.001
Pocket Money				
11,000-30,000	1.092	0.885	1.347	0.408
31,000-50,000	0.867	0.675	1.113	0.258
>=51,000	1.010	0.778	1.312	0.937
Parents Smoking				
Don't know	1.060	0.731	1.536	0.757
Yes	1.276	1.063	1.531	0.010
Easy to buy cigarettes				
Don't know	0.439	0.361	0.532	<0.001
Yes	2.562	2.027	3.240	<0.001
Affordability	0.308	0.123	0.772	0.013
Taught danger of smoking in school				
Don't know	1.087	0.841	1.404	0.520
Yes	1.049	0.850	1.295	0.651
Exposed to TAPS in television	1.211	1.037	1.415	0.016

2. Print Media

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.321	1.058	1.649	0.015
15-16	1.457	1.076	1.972	0.016
>=17	2.051	1.456	2.889	<0.001
Male	26.150	18.660	36.645	<0.001
Pocket Money				
11,000-30,000	1.110	0.896	1.374	0.335
31,000-50,000	0.899	0.697	1.158	0.403
>=51,000	1.045	0.805	1.358	0.736
Parents Smoking				
Don't know	1.058	0.727	1.539	0.766
Yes	1.293	1.079	1.550	0.006
Easy to buy cigarettes				
Don't know	0.450	0.368	0.550	<0.001
Yes	2.547	2.015	3.219	<0.001
Affordability	0.329	0.136	0.798	0.015
Taught danger of smoking in school				
Don't know	1.097	0.849	1.417	0.476
Yes	1.029	0.835	1.269	0.787
Exposed to TAPS in print media	1.694	1.462	1.963	<0.001

3. Internet

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.275	1.021	1.591	0.032
15-16	1.395	1.028	1.894	0.033
>=17	1.931	1.363	2.737	<0.001
Male	26,133	18.753	36.416	<0.001
Pocket Money				
11,000-30,000	1.101	0.890	1.362	0.368
31,000-50,000	0.885	0.686	1.143	0.345
>=51,000	1.009	0.774	1.316	0.948
Parents Smoking				
Don't know	1.050	0.725	1.522	0.792
Yes	1.278	1.065	1.534	0.009
Easy to buy cigarettes				
Don't know	0.437	0.359	0.533	<0.001
Yes	2.536	2.001	3.213	<0.001
Affordability	0.310	0.123	0.783	0.014
Taught danger of smoking in school				
Don't know	1.075	0.835	1.385	0.569
Yes	1.046	0.843	1.297	0.682
Exposed to TAPS on the internet	1.242	1.062	1.454	0.007

4. Point of sales

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.311	1.045	1.643	0.020
15-16	1.443	1.067	1.952	0.018
>=17	1.975	1.396	2.793	<0.001
Male	26.368	18.834	36.915	<0.001
Pocket Money				
11,000-30,000	1.092	0.886	1.346	0.402
31,000-50,000	0.871	0.677	1.121	0.279
>=51,000	1.009	0.778	1.309	0.945
Parents Smoking				
Don't know	1.047	0.721	1.521	0.806
Yes	1.283	1.064	1.546	0.010
Easy to buy cigarettes				
Don't know	0.433	0.357	0.526	<0.001
Yes	2.560	2.013	3.255	<0.001
Affordability	0.313	0.123	0.795	0.015
Taught danger of smoking in school				
Don't know	1.078	0.842	1.381	0.546
Yes	1.082	0.877	1.334	0.457
Exposed to TAPS in point of sales	1.042	0.891	1.220	0.599

5. Sport events

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.286	1.024	1.615	0.031
15-16	1.404	1.035	1.905	0.030
>=17	1.962	1.379	2.791	<0.001
Male	25.013	17.947	34.859	<0.001
Pocket Money				
11,000-30,000	1.088	0.870	1.360	0.454
31,000-50,000	0.895	0.694	1.155	0.388
>=51,000	1.036	0.799	1.345	0.786
Parents Smoking				
Don't know	1.040	0.715	1.514	0.834
Yes	1.290	1.069	1.555	0.008
Easy to buy cigarettes				
Don't know	0.453	0.370	0.553	<0.001
Yes	2.544	2.012	3.216	<0.001
Affordability	0.366	0.146	0.914	0.032
Taught danger of smoking in school				
Don't know	1.095	0.846	1.417	0.485
Yes	1.045	0.846	1.291	0.677
Exposed to TAPS in sport events	1.993	1.604	2.476	<0.001

6. Music concerts

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.326	1.063	1.654	0.013
15-16	1.440	1.067	1.943	0.018
>=17	1.893	1.365	2.626	<0.001
Male	25.564	18.109	36.087	<0.001
Pocket Money				
11,000-30,000	1.084	0.870	1.350	0.468
31,000-50,000	0.890	0.687	1.153	0.374
>=51,000	1.016	0.782	1.321	0.903
Parents Smoking				
Don't know	1.071	0.731	1.568	0.722
Yes	1.284	1.066	1.546	0.009
Easy to buy cigarettes				
Don't know	0.448	0.366	0.548	<0.001
Yes	2.442	1.927	3.094	<0.001
Affordability	0.345	0.139	0.855	0.022
Taught danger of smoking in school				
Don't know	1.117	0.867	1.440	0.387
Yes	1.060	0.855	1.315	0.589
Exposed to TAPS in music concerts	2.590	2.059	3.258	<0.001

7. Social events or community gathering

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.302	1.035	1.637	0.025
15-16	1.435	1.061	1.940	0.020
>=17	1.986	1.399	2.820	<0.001
Male	25.984	18.548	36.395	<0.001
Pocket Money				
11,000-30,000	1.121	0.901	1.394	0.302
31,000-50,000	0.923	0.716	1.191	0.534
>=51,000	1.046	0.802	1.365	0.736
Parents Smoking				
Don't know	1.062	0.740	1.525	0.740
Yes	1.268	1.057	1.521	0.011
Easy to buy cigarettes				
Don't know	0.460	0.377	0.561	<0.001
Yes	2.547	2.008	3.231	<0.001
Affordability	0.323	0.129	0.809	0.017
Taught danger of smoking in school				
Don't know	1.100	0.857	1.411	0.448
Yes	1.052	0.853	1.299	0.630
Exposed to TAPS in social/community events	2.293	1.854	2.837	<0.001

8. Owned merchandise

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.317	1.053	1.647	0.017
15-16	1.456	1.075	1.972	0.016
>=17	1.995	1.403	2.837	<0.001
Male	25.612	18.349	35.749	<0.001
Pocket Money				
11,000-30,000	1.108	0.894	1.374	0.345
31,000-50,000	0.888	0.687	1.147	0.358
>=51,000	1.030	0.791	1.339	0.826
Parents Smoking				
Don't know	1.017	0.700	1.478	0.927
Yes	1.305	1.092	1.560	0.004
Easy to buy cigarettes				
Don't know	0.439	0.363	0.532	<0.001
Yes	2.515	1.973	3.205	<0.001
Affordability	0.313	0.126	0.776	0.013
Taught danger of smoking in school				
Don't know	1.109	0.855	1.440	0.431
Yes	1.073	0.870	1.322	0.505
Owned merchandise related to tobacco industry	1.994	1.576	2.523	<0.001

9. Been offered free tobacco products

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.313	1.049	1.643	0.018
15-16	1.461	1.086	1.966	0.013
>=17	1.956	1.384	2.764	<0.001
Male	25.292	18.210	35.129	<0.001
Pocket Money				
11,000-30,000	1.114	0.907	1.368	0.297
31,000-50,000	0.877	0.684	1.123	0.293
>=51,000	1.013	0.786	1.305	0.918
Parents Smoking				
Don't know	1.060	0.728	1.543	0.760
Yes	1.285	1.070	1.543	0.008
Easy to buy cigarettes				
Don't know	0.442	0.365	0.536	<0.001
Yes	2.454	1.930	3.120	<0.001
Affordability	0.325	0.131	0.801	0.015
Taught danger of smoking in school				
Don't know	1.092	0.850	1.403	0.484
Yes	1.097	0.888	1.356	0.386
Been offered free tobacco products	2.840	2.174	3.708	<0.001

10. Received voucher/discounts of cigarettes

Variables	AOR	95% C.I.		p-value
		Upper	Lower	
Age group				
13-14	1.325	1.050	1.672	0.018
15-16	1.428	1.047	1.949	0.025
>=17	2.003	1.405	2.855	<0.001
Male	25.156	18.085	34.993	<0.001
Pocket Money				
11,000-30,000	1.102	0.896	1.356	0.353
31,000-50,000	0.884	0.686	1.139	0.337
>=51,000	1.016	0.786	1.312	0.904
Parents Smoking				
Don't know	1.100	0.761	1.589	0.609
Yes	1.320	1.097	1.590	0.004
Easy to buy cigarettes				
Don't know	0.443	0.365	0.539	<0.001
Yes	2.429	1.920	3.073	<0.001
Affordability	0.331	0.131	0.834	0.020
Taught danger of smoking in school				
Don't know	1.088	0.844	1.402	0.510
Yes	1.079	0.873	1.333	0.475
Received voucher/discount	2.757	2.099	3.622	<0.001