Self-reported exposure of Indonesian adolescents to online and offline tobacco advertising, promotion and sponsorship (TAPS)

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ABSTRACT

Objectives To quantify tobacco advertising, promotion and sponsorship (TAPS), self-reported exposure from online and offline platforms among adolescents in Indonesia.

Methods A cross-sectional school-based survey was conducted in 2017. In total, 2820 students aged 13–18 years were recruited from 22 schools in seven cities. Respondents reported TAPS exposure on online (news, YouTube, Facebook, Twitter and Instagram), and offline platforms (broadcast media, tobacco industry sponsored events and outdoor advertising). For outdoor advertisements, respondents reported the locations where they were exposed. We used multilevel analysis to assess TAPS exposure by age, gender, smoking status and city.

Results Online TAPS exposure was high on Instagram (29.6%), and relatively low on Twitter (7.3%). Offline TAPS exposure was high via television (74.0%), billboards (54.4%) and live music events (46.2%), but low on radio (6.9%). In all cities, outdoor advertising was seen particularly on the streets and in minimarkets. Overall, TAPS exposure was higher among older than younger adolescents, boys than girls, and smokers than non-smokers.

Conclusions Overall TAPS exposure was high on both online and offline platforms. Banning online tobacco advertising, in addition to complete bans on outdoor and television advertising, is essential to adequately protect Indonesian adolescents from tobacco advertising.

INTRODUCTION

Exposure to cigarette advertising and promotion is associated with smoking uptake among adolescents.1–3 By the end of 2018, 131 countries worldwide had reported having complete bans on tobacco advertising, promotion and sponsorship (TAPS).4 However, low-income and middle-income countries primarily implemented partial TAPS bans, allowing the tobacco industry there to advertise via multiple media platforms. A large proportion of advertising is communicated through conventional media such as television, print media and outdoor advertising. However, an increasing proportion of it takes place online, on social media5 and at music and sports events which are increasingly popular.6–11 Moreover, social media is borderless and can reach out to the populations beyond a country’s administrative borders. Adolescents may therefore be vulnerable to exposure to tobacco advertising from countries with insufficient legislation.

Indonesia has not signed and ratified the WHO Framework Convention on Tobacco Control (FCTC) and has limited restrictions on TAPS. At the national level, Indonesia has restricted tobacco advertising on broadcast media during the day since 2005, but it is still allowed during the night, from 09:30 PM to 05:00 AM.12 Tobacco company sponsorship of activities involving children has been banned through national policy since 2012.12–13 Encouraged by the national government regulation, some districts have started implementing stricter TAPS bans, often in the form of partial outdoor advertising bans (eg, billboards and banners).13 Exposure to TAPS may therefore vary across districts and provinces in Indonesia. Only a few studies have estimated TAPS exposure in Indonesia. A survey of 10 Indonesian cities showed that cigarette advertising through graphic promotions was highly visible on the streets and in minimarkets across all 10 cities.14

Due to its lenient policy, many forms of advertising are still found in Indonesia. Previous studies have demonstrated that the tobacco industry targets young people.10,11 Even though the national sponsorship ban in 2012 is seemingly quite strict, the tobacco industry still sponsors music and sports events that involve children; a recent example from Indonesia was the sponsorship of a youth badminton player audition in 2019.15 A study from Bali, Indonesia, showed that advertising at the point of sale (PoS) is omnipresent, and tobacco companies link these offline campaigns to online content by using hashtags on their posters that refer to social media posts and accounts.11 The use of online advertising is also demonstrated by a study from the USA, showing that each cigarette brand in the USA uses at least two social media platforms for promotion and posts approximately two new posts per week on Facebook and Instagram.16 Most of these online ads have no age restriction statement, which indicates that contents are visible to youth.16

Adolescent smoking prevalence in Indonesia increased from 7.2% in 2013 to 9.1% in 2018.17 Many Indonesian adolescents reported to notice cigarette advertising at PoS (65.2%), on television (56.8%), outdoor media (60.9%) and social media (36.2%).13 The Indonesian Ministry of Health proposed a ban on internet tobacco advertising in June 2019,19 arguing that the increase in smoking prevalence among Indonesia’s youth is due to tobacco promotion on social media.13 However, the extent of exposure to TAPS among adolescents in Indonesia and the relative importance of social media advertising on specific platforms have
not been quantified. To date, the proposed ban has not been adopted. Moreover, there is limited information available on who are most exposed and where exposure occurs most. This information is important in determining the future direction of Indonesia’s TAPS bans.

This study aimed to assess self-reported exposure to TAPS among adolescents in Indonesia. Our specific objectives were as follows: (i) to assess to what extent adolescents were exposed to online and offline TAPS; (ii) to compare TAPS exposure among adolescents between selected cities and locations and (iii) to estimate exposure according to age, gender, and smoking status.

METHODS

Data collection, study design and participants

A cross-sectional school-based survey was conducted in March–June 2017 by the researcher (WS) and trained enumerators in seven Indonesian cities from five different islands among 2860 students aged 10–18 years old. Cities were purposively selected to reflect the variation in tobacco control policy between cities (see table 1 for TAPS bans in each city) and for similarity in terms of GDP per-capita which ranged from 2406 to 3720 US$/person. Rural settings were not included in our study to maintain similarity in other respects as well. The population density of adolescents aged 10–19 years ranged from 185.2 (Samarinda) to 1919.3 (Cimahi) people per km$^2$. In cities with partial outdoor TAPS bans, tobacco advertising is still allowed under certain conditions (eg, in establishments of less than 72 m$^2$, not on the main arterial roads or within smoke-free areas), while in cities with complete bans, there are no exceptions for any forms of cigarette advertising. At the national level, there is a partial ban of tobacco industry sponsorship of music and sport events: it is prohibited if the event involves children and adolescents. Some cities completely prohibit the sponsorship of events regardless of age.

Using two-stage cluster random sampling, students were recruited from 22 public schools (see table 2 for division over cities). The schools were purposively selected to represent schools at varying distances to the City Hall. Selected schools were not situated in the same subdistrict. We invited 29 public schools with general education systems; seven schools did not participate due to national examinations around the time of data collection. In grades 7–9 of junior high school and 10–12 of senior high school (typical age range 13–18 years), at least one class within each grade was randomly selected (ie, minimum three classes per school, 134 in total). All students who were in the selected classes during the survey were invited to voluntarily participate. In line with the National Guidelines for Health Research Ethics for adolescents, written permission from all school principals was required before data collection, students gave written consent before starting the survey and parents were informed after the survey. As per the guideline (Ministry of Health Decision concerning Guidelines of National Ethics No
were estimated using the Wald test of multilevel (individual at
in TAPS exposure between groups of age, gender and smoking
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Table 4 shows the percentage of respondents who reported
being often exposed to TAPS, stratified by city. Overall, differ-
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ATs exposure stratified by adolescents’ characteristics. In general, the
exposure was higher among older than younger adolescents, boys
urtage than non-smokers. Exposure on
online platforms did not differ consistently by gender. Outdoor
advertising exposure tended to be similar across groups defined
by age, gender and smoking status. Exposure to television
advertising only differed by age, with a lower exposure among younger adolescents. Exposure to sponsorship at music and
sports events was less prevalent among younger adolescents.

Table 5 presents the percentage of being often exposed to TAPS stratified by adolescents’ characteristics. In general, the
exposure was higher among older than younger adolescents, boys
than girls and smokers than non-smokers. Exposure on
online platforms did not differ consistently by gender. Outdoor
advertising exposure tended to be similar across groups defined
by age, gender and smoking status. Exposure to television
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sports events was less prevalent among younger adolescents
and non-smokers, but was selected not consistently different by
gender.

Online supplemental table 1 and online supplemental table 2
present the sensitivity analysis from results when respondents
who did not have a social media account were excluded. The
percentage often exposed was slightly higher in our sensitivity
analysis, as some of the ‘never exposed’ without an account were
excluded, but we did not observe large differences with the main
analysis. The patterns across cities (online supplemental table 1)

**RESULTS**

Table 2 presents characteristics of the study population stratified by city. The largest age group was 15–16 years old (37.6%),
followed by 13–15 years old (34.4%) and 17–18 years old (28.0%). More than half of participants were female (58.5%).
The smoking prevalence was 15.7% and varied by city, being
highest in the samples from Gorontalo (31.6%) and Samarinda (23.6%), and relatively low in Pekanbaru (4.5%).

In Table 3, TAPS exposure on various platforms and in
different locations was assessed. Exposure via online media was
high overall, especially on Instagram (29.6%), followed by Face-
book (26.8%), online news (26.6%) and YouTube (23.7%). Not
many students were exposed via Twitter (7.3%). Exposure to
outdoor TAPS most often occurred through billboards (54.4%),
and exposure was highest on the street (58.1%). Adolescents also
reported being often exposed to TAPS in minimarkets (32.2%).
However, not many respondents reported exposure near the
school entrance (4.7%) and in places of worship (4.8%). Tele-
vision was a major source of TAPS exposure (74.0%), while
the exposure was low on radio (6.9%). Adolescents reported
that tobacco industry sponsorship was often seen at live music
(46.2%) and sport events (35.0%).

Table 4 shows the percentage of respondents who reported
being often exposed to TAPS, stratified by city. Overall, differ-
ces of TAPS exposure from different channels between cities
were inconsistent and relatively small. Differences in exposure
through online platforms, outdoor advertising, broadcast media
and by location were not significant across cities. In Pekanbaru,
the exposure to advertising on the street was the highest of all
cities (68.7%), but exposure in other locations was relatively
low. Cimahi showed the highest level of reported exposure
in public transportation (26.6%), malls (28.1%), minimarkets (38.2%) and parks (18.7%). Advertising exposure near
the school entrance was relatively rare in all cities except for
Denpasar (9.6%).

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**Measures**

**Taps exposure**

Respondents were asked, ‘How often do you see or hear tobacco
product advertisements on the following media?’. Response
options for each media platform (including YouTube, Facebook,
Twitter, Instagram, radio, television, billboards, outdoor banners
and online news) were ‘never’, ‘sometimes’ and ‘often’. For social
media, the response option ‘no account’ was added and these
respondents were categorised into ‘never’. We also asked adoles-
cents, ‘How often do you see tobacco product advertisements in
the following locations’: on the street, near the school entrance,
in public transportation, in the mall, in the minimarket, in the
park and in places of worship. The same response categories of
‘never’, ‘sometimes’ and ‘often’ were used.

Tobacco sponsorship exposure was determined by two ques-
tions: ‘Did you see any tobacco product advertisements during
[sport/music] events?’ Responses to these questions were ‘no’
and ‘yes’. Students who had never been to music or sport event
were asked to tick ‘no’.

**Individual characteristics**

Individual characteristics included age, gender and smoking
status. Adolescents were categorised into three age groups:
13–14, 15–16 and 17–18 years old. Gender distinguished boys
and girls. Adolescents’ smoking status was determined from
the question ‘How many cigarettes did you smoke in the last
30 days?’. Adolescents who responded ‘never smoked’ or ‘none’
were categorised as non-smokers, while those with any other
response (ie, one cigarette or more) were categorised as current
smokers.

**Statistical analyses**

First, the study sample’s age, gender and smoking status were
described, stratified by city. Second, adolescents’ level of expo-
sure to TAPS on each media platform was specified. For outdoor
advertising, locations of exposure were additionally detailed.
Third, the percentage of adolescents who were often exposed
to outdoor advertising in different locations was specified by
city. Fourth, exposure via each platform was described, strat-
ified by individual characteristics. P values for the differences
in TAPS exposure between groups of age, gender and smoking
were estimated using the Wald test of multilevel (individual at
level 0, school at level 1 and city at level 2) logistic regression
analysis through generalised structural equation model in Stata
V.14.20 Models estimating differences between smokers and
non-smokers, and boys and girls were adjusted for age. A sensi-
tivity analysis of TAPS exposure on social media platforms (ie,
YouTube, Facebook, Twitter and Instagram) was performed in
which we excluded respondents who did not have an account on
the social media platform in question.
### Table 3  Frequency of exposure (in %) to tobacco advertising, promotion and sponsorship among adolescents on various platforms of media and locations (n=2820)

| N (%) | Frequency of exposure | Never | Sometimes | Often |
|-------|-----------------------|-------|-----------|-------|
| Internet |                       |       |           |       |
| Instagram |                     | 240 (8.5) | 572 (20.3) | 1173 (41.6) | 835 (29.6) |
| Facebook |                     | 207 (7.4) | 590 (20.9) | 1267 (44.9) | 756 (26.8) |
| YouTube |                     | 261 (9.2) | 798 (28.3) | 1094 (38.0) | 667 (23.7) |
| Twitter |                     | 665 (23.5) | 1447 (51.3) | 565 (17.9) | 207 (7.3) |
| Online news |                 | – | 1047 (37.1) | 1023 (36.3) | 750 (26.6) |
| Outdoor advertising |               |       |           |       |
| Type of media |                 |       |           |       |
| Billboard |                     | – | 494 (17.5) | 792 (28.1) | 1534 (54.0) |
| Electric banner |                | – | 1365 (48.4) | 798 (28.3) | 657 (23.3) |
| Location |                       |       |           |       |
| On street |                     | – | 271 (9.6) | 911 (32.3) | 1638 (58.1) |
| Minimarket |                   | – | 807 (28.60) | 1105 (39.2) | 908 (32.2) |
| Mall |                       | – | 1156 (41.0) | 1072 (38.0) | 592 (21.0) |
| Public transportation |                | – | 1018 (36.1) | 1224 (43.4) | 578 (20.5) |
| Park |                       | – | 1379 (48.9) | 1021 (36.2) | 420 (14.9) |
| Places of worship |                  | – | 2448 (86.8) | 237 (8.4) | 135 (4.8) |
| Near school entrance |              | – | 2327 (82.5) | 361 (12.8) | 133 (4.7) |
| Broadcast media |                   |       |           |       |
| Television |                     | – | 124 (4.4) | 609 (21.6) | 2087 (74.0) |
| Radio |                       | – | 1971 (69.9) | 654 (23.2) | 195 (6.9) |
| Tobacco industry sponsorship* |               |       |           |       |
| Live music |                     | – | 1517 (53.8) | – | 1303 (46.2) |
| Sport event |                   | – | 1833 (65.0) | – | 987 (35.0) |
*Responses were only 'no' and 'yes'.

### Table 4  Percentage of adolescents who were often exposed to tobacco advertising, promotion and sponsorship on online and offline platforms, at outdoor and in different locations, stratified by city (n=2820)

| Cities | Malang | Pekanbaru | Pontianak | Gorontalo | Denpasar | Samarinda | Cimahi | p value* | Variance (SD)† |
|--------|--------|-----------|-----------|-----------|----------|-----------|--------|---------|----------------|
| Internet |       |           |           |           |          |           |        |         |                |
| Instagram | 33.0 | 29.3 | 19.0 | 30.9 | 36.7 | 25.3 | 41.6 | 0.48 | 0.01 (0.13) |
| Facebook | 31.3 | 17.7 | 28.3 | 28.4 | 17.5 | 32.6 | 27.7 | 0.97 | 0.01 (0.13) |
| YouTube | 23.4 | 18.6 | 21.6 | 33.0 | 15.8 | 25.7 | 24.7 | 0.64 | 0.01 (0.13) |
| Twitter | 7.1 | 6.6 | 5.0 | 12.1 | 6.7 | 5.1 | 9.7 | 0.82 | 0.01 (0.13) |
| Online news | 23.8 | 28.9 | 24.0 | 29.1 | 29.2 | 25.3 | 29.1 | 0.51 | 0.01 (0.13) |
| Outdoor advertising |       |           |           |           |          |           |        |         |                |
| Billboard | 57.6 | 62.5 | 44.3 | 52.0 | 45.8 | 56.5 | 60.3 | 0.86 | 0.01 (0.13) |
| Electric banner | 37.0 | 29.8 | 11.9 | 16.9 | 22.5 | 18.2 | 27.7 | 0.52 | 0.01 (0.13) |
| Broadcast media |       |           |           |           |          |           |        |         |                |
| Television | 76.0 | 73.0 | 73.2 | 74.4 | 68.8 | 71.7 | 81.7 | 0.97 | 0.01 (0.13) |
| Radio | 5.4 | 7.9 | 5.2 | 8.0 | 10.8 | 6.4 | 6.4 | 0.54 | 0.01 (0.13) |
| Tobacco industry sponsorship* |       |           |           |           |          |           |        |         |                |
| Live music | 49.5 | 41.1 | 35.6 | 52.9 | 49.6 | 43.0 | 58.8 | 0.21 | 0.01 (0.13) |
| Sport event | 33.6 | 33.4 | 31.8 | 38.2 | 35.4 | 33.8 | 42.3 | 0.08 | 0.01 (0.13) |
| Locations |       |           |           |           |          |           |        |         |                |
| On the street | 63.3 | 68.7 | 49.5 | 48.3 | 47.1 | 59.7 | 68.2 | 0.93 | 0.01 (0.13) |
| Minimarket | 34.9 | 37.5 | 26.3 | 25.6 | 32.1 | 32.8 | 38.2 | 0.36 | 0.01 (0.13) |
| Mall | 20.5 | 22.3 | 17.1 | 20.4 | 22.1 | 20.1 | 28.1 | 0.12 | 0.01 (0.13) |
| Public transportation | 20.7 | 21.6 | 19.7 | 15.8 | 18.3 | 22.1 | 26.6 | 0.52 | 0.01 (0.13) |
| Park | 15.2 | 12.2 | 12.5 | 16.5 | 14.6 | 15.8 | 18.7 | 0.12 | 0.01 (0.13) |
| Places of worship | 3.5 | 5.4 | 6.3 | 4.8 | 7.9 | 3.6 | 2.6 | 0.56 | 0.01 (0.13) |
| Near school entrance | 1.9 | 6.2 | 3.9 | 6.9 | 9.6 | 2.6 | 3.7 | 0.67 | 0.01 (0.13) |

*P value was derived from the Wald test in age-adjusted multilevel logistic regression model with no exposure versus often exposure through internet, outdoor advertising, broadcast media and tobacco industry sponsorship as the outcomes, and cities as independent variable.
†The variance in exposure between schools and cities, respectively.
‡Responses were only 'no' and 'yes'.

Septiono W, et al. Tob Control 2022;31:98–105. doi:10.1136/tobaccocontrol-2020-056080
and individual characteristics (online supplemental table 2) were similar to the main findings.

**DISCUSSION**

**Key findings**

We found that TAPS exposure among adolescents was frequent on online and offline platforms. Exposure to tobacco advertising was particularly high on offline media (television and billboards), but also on online media (mostly Instagram). In all cities, outdoor advertising was seen especially on the streets and in minimarkets, but much less often near school entrances and in places of worship. Differences in TAPS exposure across age, gender and smoking status were fairly small and inconsistent, although overall, TAPS exposure was higher among older than younger adolescents, boys than girls and smokers than non-smokers. Differences in TAPS exposure between cities were not consistent, but reported exposures were relatively low in Pekanbaru and relatively high in Cimahi.

**Interpretation of results**

Tobacco advertising exposure was high on the streets and in minimarkets but was low in places of worship and near school entrances. This corresponds with a recent survey of 10 Indonesian cities that observed frequent outdoor advertising on streets and at the PoS, but not in places of worship and near schools and with Astuti et al who found that at the PoS tobacco advertisements are often displayed and that retailers regularly sell cigarettes to young people. Due to TAPS bans being partial, the tobacco industry shifts its strategy to optimally use those advertising options that are still legal, which include streets, minimarkets, kiosks and malls. By linking campaigns in minimarkets to advertisements on social media and tobacco companies’ websites, the industry increases its reach among young people.

The importance of PoS for tobacco advertising was also reported in Vietnam, where after the 2007 TAPS ban, PoS advertising became the second most important medium for tobacco promotion after the internet. Banning advertising from shops in Indonesia is therefore highly recommended.

Due to the absence of advertising ban for online platforms, tobacco industry has expanded tobacco advertising to these platforms. Many tobacco advertisements in Indonesia display courageous, sporty images and hashtags that link to promotions on online platforms. This strategy seems designed to appeal to the younger generation target market, among whom advertising exposure on online platforms was high. Indonesia is the fourth biggest country in terms of its social media users after the USA, India and Brazil. About 15% of Indonesia’s 150 million active social media users is 13–17 years old. Algorithms used by social media platform target advertising based on users’ data such as demographics and website visits. As a result, adolescents who often visit websites, forums and groups or click hashtags that promote smoking, may increase tobacco advertising in their social media timeline. Banning advertising on online platforms is an important step in reducing TAPS exposure among adolescents, especially since there is a general shift of marketing activity from the offline to the online realm.

Of all media platforms included in this study, exposure to tobacco advertising on television was particularly high; more than 95% of adolescents reported having seen tobacco advertising on TV at least sometimes. The national ban on TV tobacco advertising during the day clearly did not adequately protect adolescents from being exposed. Adolescents in this study are likely to be exposed to tobacco commercials after 09:30 PM. Notably, as tobacco companies are prohibited from showing direct images of smoking and tobacco products in their TV commercials, the commercials instead link tobacco brands to fun, adventurous, self-confident lifestyles, with adolescents now recognising these as tobacco advertising. More comprehensive policies to ban TV advertising in Indonesia are required.

For some media platforms, adolescents reported relatively low exposure, for example radio and Twitter. One obvious explanation may be the lower use of these media by adolescents compared with for example TV or Instagram although Twitter is still popular among Indonesian adolescents. In Indonesia, the Twitter’s growth was the highest at global scale (41%) in 2018, although Twitter’s growth was the highest at global scale (41%) in 2018. Adolescents in this study are likely to be exposed to tobacco commercials after 09:30 PM. Notably, as tobacco companies are prohibited from showing direct images of smoking and tobacco products in their TV commercials, the commercials instead link tobacco brands to fun, adventurous, self-confident lifestyles, with adolescents now recognising these as tobacco advertising. More comprehensive policies to ban TV advertising in Indonesia are required.

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less effective for tobacco advertising. Another difference with other platforms is the lower use of visuals. Visuals are essential in advertising and promotion to attract potential customers as the human brain can process graphical content faster than audio or written text. However, graphical contents are increasingly more used on Twitter as well. Young people are more susceptible to cigarette advertising with visual elements, and images may be more memorable. Banning graphical tobacco promotions is important in preventing positive perceptions among adolescents towards tobacco products.

Differences in TAPS exposure between cities were relatively small. We did not find that the exposure was lower in cities with stronger TAPS bans: even though Cimahi had the strongest policies it also had one of the highest levels of exposure. This may be due to the recent implementation of the TAPS ban in Cimahi, where high levels of TAPS before implementation may have driven policy adoption. Outdoor cigarette advertising was restricted earlier in Denpasar and Samarinda, where billboards have been restricted on major arterial roads in particular. However, despite these outdoor advertising bans, exposure on the streets was not consistently lower in Denpasar and Samarinda compared with other cities. A recent study from Botswana found that a partial TAPS ban did not reduce TAPS exposure among adolescents within the first 4 years of its implementation in 2004. On the other hand, a study from Vietnam found that the implementation of comprehensive TAPS ban policies in 2007 significantly reduced adolescent exposure to outdoor TAPS from 53.6% in 2007 to 11.5% in 2014. Local bans on advertising in outdoor spaces, PoS and public transport in Indonesia are mostly partial, frequently violated and not sufficiently enforced. This will need to be improved for these bans to contribute to smoking prevention.

Although TAPS exposure was high in all subgroups, older adolescents, boys and smokers generally reported higher exposure than younger adolescents, girls and non-smokers. Studies from India and Vietnam also reported particularly high TAPS exposure among boys and smokers. Among Asian countries and in Indonesia particularly, smoking is more prevalent among male adults and adolescents than among females. This gender divide is reflected in and perhaps magnified by tobacco advertisements, which are mostly targeting boys with images of masculinity and adventurous behaviour.

We observed high exposure to sponsoring at music and sport events, despite the national ban on tobacco sponsoring of events involving minors. Many music events in Indonesia are still sponsored by tobacco companies. Adolescents may attend these events, because age is not checked at admission. Moreover, tobacco companies still use sponsoring of events to show their ‘goodwill’ and support for the community. Sports events often welcome these funds, and among the general Indonesian public, it is not considered a problem if such sponsoring takes place. In 2019, when the National Commission of Indonesian Child Protection (KPAI) rebuked a tobacco company sponsoring a youth badminton audition, the tobacco company countered by cancelling the audition and thus evoking a public outrage towards the KPAI.

The lack of implementation and enforcement of tobacco advertising bans and the general public’s acceptance of tobacco advertising in Indonesia hampers effective tobacco prevention among adolescents. The continued increase in smoking prevalence among adolescents underlines the need for more and stronger tobacco control policies, among which the restriction of the tobacco industry’s advertising opportunities is essential. It is imperative that current partial TAPS ban policies at national and local levels are transformed into a comprehensive TAPS ban in order to reduce and prevent high TAPS exposure. This reform can be petitioned through a strong community participation. It also has been demonstrated that a strong antitobacco coalition is key for a successful tobacco control, consisting of NGOs, unions of race, religious groups and individuals. The coalition aims at supporting the implementation of tobacco control policies and protecting public health policymaking from tobacco industry involvement. Moreover, the WHO FCTC is required to be ratified by the Indonesian government so commitment to tobacco control including TAPS ban is strengthened.

**Limitations**

In interpreting the results of this study, some potential limitations need to be taken into account. First, our sample was derived only from urban settings and did not include adolescents from rural settings. Consequently, our study may not be generalisable to all areas in Indonesia. We may expect that exposure to TAPS is higher in urban areas than in rural areas, as the population density is higher and there are more advertising opportunities for tobacco companies. Second, due to the measurement of exposure through self-reports, we cannot rule out observation and recall bias, which may have led to an overestimation or underestimation of TAPS exposure. Underreported exposure may also be resulted from adolescents who did not recognise the tobacco advertising. Third, the questions regarding TAPS exposure did not indicate the period over which exposure should be reported. The question may therefore have been interpreted as lifetime exposure or as the general level of exposure over the past few weeks. This means that we cannot be certain whether in cities with TAPS bans exposure reflects levels after implementation of TAPS bans.
these bans or also before implementation. Fourth, our survey did not measure how often adolescents accessed social media platforms in a certain period of time, independent of whether they had an account. Therefore, we could not measure TAPS exposure by frequency of accessing social media.

Conclusion
As high exposure to tobacco advertising and sponsoring was observed among Indonesian adolescents, strengthening of the currently partial TAPS bans is needed, especially on television, outdoors and at PoS. TAPS bans should be comprehensive and include bans on visual (ie, images, videos) promotions. A TAPS ban on online platforms is therefore necessary to reduce the high online TAPS exposure. Reinforced TAPS bans will need continuous monitoring, enforcement and evaluation to be effective in reducing adolescents’ exposure to TAPS.

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Contributors
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None declared.

Patient consent for publication
Not required.

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