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ACCESSIBILITY TO CIGARETTES IN URBAN AND SUBURBAN AREAS OF MALANG, INDONESIA

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Abstract. This observational study aimed to look at the density of retailers and accessibility to cigarettes and to see the difference of such conditions between urban and suburban areas in five sub-districts in Malang Raya, East Java Province, Indonesia. Trained data collectors walked through streets and alleys to map out retailer locations, conducted observations towards point of sale marketing, and interviewed shopkeepers. This study used a web-based instrument to collect and to store the data in real-time. The results found more than 1,921 cigarette retailers across the five sub-districts selected as study sites. The most common type of shops cigarettes found were grocery stores (42.9%) and small shops (41.5%). Approximately 70% of the retailers sold cigarettes in sticks which costed less than one US Dollar per stick. As many as 41.4% of retailers sold cigarettes to children under the age of 18. A total of 60.7% of retailers advertised cigarettes, with at least three cigarette advertisements found at points of sale. The study result also shows the average cigarette-retailers density in the observed areas was 9.88 retailers per 1 square kilometer (km²) with the average of 16.92 retailers per km² in urban area and 5.19 retailers per km² in suburban area. Cigarettes can also be accessed easily as they are available in sticks and at a very low price in both areas.

Keywords: tobacco retailer, adolescent, public policy, tobacco advertisements, single stick

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INTRODUCTION

Malang is known as the City of Students and City of Tourism. As the 18th most populous city in Indonesia, data from the Central Statistics Agency show the number of young people is growing year over year (Central Bureau of Statistics of Malang City, n.d.a). At the same time, cigarette consumption in Malang City is increasing, particularly among adolescents. In 2018, the adult cigarette consumption in Indonesia was high at 33.8% (Ministry of Health, 2019). Adolescent smoking increased from 7.2% in 2013 to 9.1 % in 2018 (Ministry of Health, 2013; Ministry of Health, 2019). Findings from the 2019 Global Youth Tobacco Survey (GYTS) showed 40.6% of students aged 13-15 years had used tobacco products, including one in five girls and two out of three boys (Megatsari *et al*, 2023).

The data shows that tobacco control efforts in Indonesia, especially among young people, face many challenges. Indonesian youth are the main target of cigarette marketing through social media and music events (Astuti *et al*, 2018). Tobacco advertising, promotion, and sponsorship are the main reasons Indonesian adolescents initiate smoking (Astuti *et al*, 2018; Henriksen, 2012; Prabandari and Dewi, 2016; Rukmi, 2019).

The implementation and enforcement of comprehensive tobacco control policies in Indonesia is one of the weakest implementation and enforcement among Asian countries (Tan and Dorotheo, 2018). The implementation of effective tobacco control requires the full support of policymakers, from the regional to the central level. Smoke-free policies at the regional level, especially the provincial level, are significantly associated with lower levels of cigarette consumption (Rahmayanti, 2019; Septiono *et al*, 2020b). To date, there are at least 19 provinces and 309 regencies and cities that have smoke-free regional regulations (Septiono *et al*, 2020a).

The governments of Malang City (urban) and Regency (suburban), the focus areas of this study, have each ratified their smoke-free policies, the Malang City Regional Regulation (*Perda*) No. 2 of 2018 and Malang Regency Regulation No. 5 of 2018 (Mayor of Malang City, 2018; Regent of Malang Regency, 2018). The main areas of focus for both are smoke-free public places and the prohibition of advertising, promotion, and sponsorship of cigarettes. Neither, however, is comprehensive and there are differences between the two regulations. The Malang City Regulation, for example, bans selling tobacco to children, although no age is specified, while the Malang Regency Regulation does not ban sales to children. Neither regulation addresses the purchase of cigarettes by stick.

To further strengthen the regulations and make them more comprehensive, this observational study explored whether implementation of some of the existing regulations was effective and where there were gaps that needed to be addressed to reduce youth uptake. This study focused on three key areas: retail density, accessibility to cigarettes that include sale of cheap single cigarettes and sale to minors, and cigarette advertisements at points of sale.

MATERIALS AND METHODS

Data collection

This study used digital mapping, observational surveys, and short interviews. The researchers developed a website-based mapping and survey instrument, called TRAQ, which can be accessed through <https://www.traq-study.com/>, to collect and store the data. With this tool, data collectors could, in real-time, map their location, upload retail photos, fill out answers to standard observational questions on a survey form provided, and conduct a short interview with shopkeepers. The website automatically put a timestamp on each photo taken by the data collectors to validate the photo and data.

Thorough observations were carried out to determine the locations of retailers and cigarette advertisements in Malang City and Malang Regency, which ruled by different local governments with different authorities. We selected two sub-districts in Malang City and three sub-districts in Malang Regency as Malang regency has a wider area. The sub-districts were selected based on the most highly-populated sub-districts in both areas.

The data collectors walked through all areas in each selected sub-district and input the data of each retailer they found along the way. They input the data right in the location to record the retailer's longitude and latitude. The data collectors determined the starting point which was located in the center of the sub-district. Furthermore, the walk started from a smaller area by following the streets and alleys in a counter-clockwise route, then expanded to a wider area, forming a spiral-like shape. This protocol was carried out in order to map the entire area and find as many cigarette retailers as possible.

The criteria for retailers were any kind of shop selling cigarettes. We excluded mobile or moving seller (*eg* seller using bike/motorcycle) to avoid bias. Validity and reliability tests of the instrument were conducted before the observations at several different locations. Data gathered by the ten observers were compared to ensure they all had the same understanding of each question in the form. Short interviews with shopkeepers gathered information about whether or not the retailer sold cigarettes to minors. Each observer was also required to take a selfie in front of the observed retailer before submitting the form. The variables observed included: location and type of retailer, the availability of cigarettes, whether they sold cigarettes to children under 18 years of age, and display and advertising of cigarettes at the point of sale. The research was carried out in July-November 2021. All data collectors received a three-days training before the data collection process.

Ethical clearance

This study was approved by the Health Research Ethics Committee State Polytechnic of Health Malang with ethical clearance certificate number: 268/KEPK-POLKESMA/2021.

RESULTS

The density of tobacco retailers

This study included 1,921 retail stores in the final analysis, out of the 1,940 originally mapped. Nineteen stores that displayed tobacco advertisements and potentially sell tobacco products were closed during the data collection, therefore, they were excluded from this study. There were 823 retailers located in the area of 47.44 km² in the urban sub-districts, making an average of 16.93 retailers per km². Meanwhile, in the suburban area, there were 1,098 retailers located in the area 231.36 km², making an average of 5.19 retailers 1 km². It indicates that the density of retailers in the urban area is approximately three times higher than that in the suburban area.

Of the 1,921 retailers, the most common types found were traditional grocery stores (*kelontong* in Indonesian) (42.9%) and small shops (41.5%), followed by convenience stores (7.5%), large/wholesale stores (4.9%), and settled-street vendors (0.7%) (Table 1).

Access to cigarettes

As can be seen in Table 1, a total of 1,345 retailers located in both districts observed sell cigarettes by stick (*ie* it was not necessary to buy a whole pack of cigarette). The percentage of retailers selling cigarettes by stick is higher in the urban area than that in the suburban area (73.9% and 67.1% respectively). Cigarette sticks can be easily purchased for ≤IDR 2,000 (≤USD 0.14) per stick making them more affordable for youth than if they were only sold in packages. There is no difference between urban and suburban areas regarding the price of cigarette per stick sold by the studied retailers. Moreover, 233 retail outlets sold cigarettes for less than IDR 2,000. Furthermore, the study found 42.5% of retail stores in the urban area and 40.6% in the suburban area sell cigarettes to children under the age of 18 (Table 1).

Product display and tobacco advertisements at point of sales

The results of observations at points of sale in five sub-districts show that there is a lot of exposure to cigarette advertisements at points of sale. Almost all points of sale, 96.7% in the urban area and 95.9% in the suburban area, display cigarette products. As high as 74.5% of retailers in Malang City advertise cigarettes. The average number of cigarette advertisements installed in each observed retailer is three advertisements. The number of retailers showing up to three advertisements at point of sales in the urban area is higher than that in the suburban area (62.0% and 41.9% respectively). Moreover, 12.5% retailers in the urban area show more than three advertisements (Table 1). The sizes of advertisements vary, but the most common are medium sizes, which are about 1.3 meters × 1.9 meters to 2.0 meters × 2.5 meters. The size of this advertisement is quite prominent and easily attracts the attention of children.

DISCUSSION

Physical cigarette outlets are one of the main aspects of access to cigarettes, especially for teenagers where they can be easily exposed to tobacco products and promotions at point of sales (Astuti *et al*, 2018). The findings of this study are in line with the findings of a study by Tobacco Control Support Center (TCSC), which showed many teenagers and children were exposed to advertisements in places of sale (Laili *et al*, 2022). The study also found public support for tobacco advertisements, promotions and sponsorships (TAPS) bans, prohibition of cigarette displays at points of sale, and prohibition of tobacco sales to minors. This study's findings are also supported by a previous study conducted in the cities of Denpasar and Yogyakarta that found support for TAPS bans and prohibition of sales of cigarettes in stick, particularly to children (Mardhiati *et al*, 2016). Another study in the province of DKI Jakarta showed that the implementation of smoke-free regulation was found to be effective to reduce the proportion of daily smokers; however, it was highly dependent on the commitment of the local government and support from related sectors such as education (Rahajeng, 2015). Each of these studies showed strong support for protecting children and youth from exposure to advertising and cigarette products in retail outlets.

One city that has implemented comprehensive tobacco control regulations and is said to have one of the best practices for the enforcement of smoke-free policies in Indonesia is the City of Bogor (Sulistiadi *et al*, 2020). The local regulations regulate smoke-free areas and prohibit cigarette sales to children under 18 years old, installation of outdoor cigarette advertisements, and the display of cigarettes at points of sale. Administrative sanctions such as revoking installation permits and taking down outdoor advertisements are applied to violators. Furthermore, the Bogor City Government imposes criminal sanctions of confinement or fines to smoke-free violators, including fines on owners or managers of public places. The compliance of the community and managers of public places is reported to continue to increase (Veruswati *et al*, 2018). Another study evaluating the smoke-free regulation in Bogor City shows that partnerships with local religious leaders can promote stronger tobacco control, especially smoke-free regulations (Byron *et al*, 2015).

Because there are no policies prohibiting the sale of cigarettes by stick in Malang City or Regency, sales of cigarette sticks make smoking even more accessible to youth by giving them the option to buy one cigarette at a time. Ending this practice through district regulations is crucial and should be complemented with increased excise taxes on cigarette packs to increase prices overall and make cigarettes less affordable. A strict law prohibiting the sale of cigarettes in sticks will also need to be coupled with strong enforcement to protect youth. Effective regulations protecting children would outline a minimum age requirement and would require strong enforcement at the retail level. Enforcement of existing regulations is critical as well as working toward a comprehensive regulation that covers all forms of tobacco advertising, promotion, and sponsorship.

This study has some limitations. TRAQ mapping tool shows only the longitude and latitude of the location but not an exact address. Furthermore, this instrument also relies on an internet

connection. Therefore, certain areas with a poor internet connection or near mountainous areas could not be mapped. TRAQ could, however, generate a postal code for each point, so each sub-district was distinguishable.

In summary, this study found more than 1,921 cigarette shops spread or approximately 10 retailers per km² across five densely populated sub-districts in Malang City and Regency showing how available and accessible tobacco products are for youth in these districts. The data demonstrates the pressing need to strengthen the regulations in both districts to include a ban on selling cigarettes by stick and develop and/or enforce policies aimed at prohibiting the sale of tobacco to children and youth. With currently a weak policy in Malang City prohibiting retailers from selling cigarettes to children and no such policy at all in Malang Regency, more than 40% of youth in both areas are buying directly from retailers. With 74.5% of retailers advertising cigarettes in Malang City and 50.5% in Malang Regency, exposure to advertisements and promotions of cigarettes is common and remains a barrier to reducing youth initiation. All of these findings demonstrate that efforts to reduce youth initiation can be strengthened by enforcing existing smoke-free regulations in Malang City and Malang Regency and developing, implementing, and enforcing more comprehensive regulations that will protect youth.

CONFLICT OF INTEREST DISCLOSURE

All researchers in this study did not have a conflict of interest nor received funds from the tobacco industry or other parties.

REFERENCES

- Astuti PAS, Assunta M, Freeman B. Raising generation 'A': a case study of millennial tobacco company marketing in Indonesia. *Tob Control* 2018; 27(e1): e41-9.
- Byron MJ, Cohen JE, Gittelsohn J, Frattaroli S, Nuryunawati R, Jernigan DH. Influence of religious organisations' statements on compliance with a smoke-free law in Bogor, Indonesia: a qualitative study. *BMJ Open* 2015; 5(12): e008111.
- Central Bureau of Statistics of Malang City. Number of population in Malang City by age group and gender 2009-2011, n.d.a [cited 2023 Nov 12]. Available from: URL: <https://malangkota.bps.go.id/indicator/12/51/5/jumlah-penduduk-menurut-kelompok-umur-dan-jenis-kelamin-di-kota-malang.html>
- Central Bureau of Statistics of Malang City. Number of population in Malang City by age group and gender 2012-2014, n.d.b [cited 2023 Nov 12]. Available from: URL: <https://malangkota.bps.go.id/indicator/12/51/4/jumlah-penduduk-menurut-kelompok-umur-dan-jenis-kelamin-di-kota-malang.html>
- Henriksen L. Comprehensive tobacco marketing restrictions: promotion, packaging, price and place. *Tob Control* 2012; 21(2): 147-53.
- Laili K, Ratih SP, Gayatri RW, Adi S. The impact of exposure to cigarette advertising and promotion on youth smoking behavior in Malang Regency (Indonesia) during the COVID-19 pandemic. *J Public Health Afr* 2022; 13 (Suppl 2): 2409.
- Mardhiati R, Fatimah N, Andayani N. Support of smokers and non-smokers for tobacco control policies in Denpasar and Yogyakarta City, 2016 [cited 2022 Jul 12]. Available from: URL: <https://journal.uhamka.ac.id/index.php/arkemas/article/view/507/257>
- Mayor of Malang City. Malang City Regional Regulation No. 2 of 2018 about no-smoking area, 2018 [cited 2022 Sep 12]. Available from: URL: <https://peraturan.bpk.go.id/Download/86025/SALINAN%20PERDA%202%20TAHUN%202018%20TENTANG%20KAWASAN%20TANPA%20ROKOK.pdf> [in Indonesian]
- Megatsari H, Astutik E, Gandeswari K, Sebayang SK, Nadhiroh SR, Martini S. (2023). Tobacco advertising, promotion, sponsorship and youth smoking behavior: the Indonesian 2019 Global Youth Tobacco Survey (GYTS). *Tob Induc Dis* 2023; 21: 163.
- Ministry of Health. Basic Health Research (RISKESDAS) 2013, 2013 [cited 2022 May 07]. Available from: URL: https://repository.badankebijakan.kemkes.go.id/id/eprint/4467/1/Laporan_riskesdas_2013_final.pdf [in Indonesian]
- Ministry of Health. Basic Health Research (RISKESDAS) 2018, 2019 [cited 2022 May 07]. Available from: URL: <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan%20Riskesdas%202018%20Nasional.pdf> [in Indonesian]
- Prabandari YS, Dewi A. How do Indonesian youth perceive cigarette advertising? A cross-sectional study among Indonesian high school students. *Glob Health Action* 2016; 9: 30914.

- Rahajeng, E. The effect of the implementation of the Smoke-Free Area policy on reducing smokers' proportion in DKI Jakarta, DI Yogyakarta, and Bali Province, 2015 [cited 2022 Aug 18]. Available from: URL: <https://media.neliti.com/media/publications/82026-ID-pengaruh-penerapan-kawasan-tanpa-rokok-t.pdf> [in Indonesian]
- Rahmayanti KP. Local government commitment to the Smoke-Free Policy in Indonesia. *KnE Life Sci* 2019; 330-8.
- Regent of Malang Regency. Malang Regency Regional Regulation No. 5 of 2018 about no-smoking area, 2018 [cited 2022 Sep 12]. Available from: URL: https://peraturan.bpk.go.id/Download/111585/Perda_5_th_2018.pdf [in Indonesian]
- Rukmi S. Tobacco use and adolescents in Indonesia: narrative review of determinants. *KnE Life Sci* 2019; 69-84.
- Septiono W, Kuipers MA, Ng N, Kunst AE. Changes in adolescent smoking with implementation of local smoke-free policies in Indonesia: Quasi-experimental repeat cross-sectional analysis of national surveys of 2007 and 2013. *Drug Alcohol Depend* 2020a; 209: 107954.
- Septiono W, Kuipers MA, Ng N, Kunst AE. The impact of local smoke-free policies on smoking behaviour among adults in Indonesia: a quasi-experimental national study. *Addiction* 2020b; 115(12): 2382-92.
- Sulistiadi W, Veruswati M, Asyary A, Herawati MH, Wulandari RA, Haryanto B. Smoke-free zone in Indonesia: who is doing what now. *Open Access Maced J Med Sci* 2020; 8(E): 322-4.
- Tan YL, Dorotheo U. The Tobacco Control Atlas: ASEAN Region. 4th ed, 2018 [cited 2022 Aug 20]. Available from: URL: <https://seatca.org/dmdocuments/SEATCA%20Tobacco%20Control%20Atlas%20ASEAN%20Region%204th%20Ed%20Sept%202018.pdf>
- Veruswati M, Asyary A, Nadjib M, Achadi A. Current activities in smokes-free zone policy: a tobacco control care reviews in Indonesia. *Fam Med Prim Care Rev* 2018; 20(4): 385-8.

Table 1. Comparison of types of tobacco retailers and accessibility to cigarettes in the studied suburban and urban areas

Variable	Frequency*, <i>n</i> (%)	
	Malang Regency (Suburban) N = 1,098	Malang City (Urban) N = 823
Density of cigarette retailers	5.19 retailers/km ²	16.93 retailers/km ²
Number and type of retailer		
Large/wholesale store	57 (5.2)	38 (4.6)
Traditional grocery store (<i>kelontong</i>)	478 (43.5)	347 (42.2)
Convenience store	75 (6.8)	70 (8.5)
Small shop	448 (40.8)	350 (42.5)
Settled-street vendor	11 (1.0)	3 (0.4)
Restaurant/canteen that clearly display tobacco products in front	29 (2.7)	15 (1.8)
Cigarettes sold per stick		
No	361 (32.9)	215 (26.1)
Yes	737 (67.1)	608 (73.9)
Price of cigarette per stick†		
≤IDR 2,000 (≤USD 0.14)	731 (99.2)	604 (99.3)
>IDR 2,000 (>USD 0.14)	6 (0.8)	4 (0.7)
Selling cigarette to children under 18 years old		
No	651 (59.3)	473 (57.5)
Yes	445 (40.5)	350 (42.5)
Did not answer	2 (0.2)	0 (0.0)
Poster prohibiting the selling cigarettes to children under 18 years old		
Not available	757 (68.9)	447 (54.3)
Available	341 (31.1)	376 (45.7)
Tobacco product display		
Not available	45 (4.1)	27 (3.3)
Available	1053 (95.9)	796 (96.7)
Tobacco product/cigarette advertisement		
Not available	544 (49.5)	210 (25.5)
≤3 advertisements	460 (41.9)	510 (62.0)

>3 advertisements	94 (8.6)	103 (12.5)
Size of tobacco product/cigarette advertisement in store‡		
Small (<1.3×1.9 m ²)	145 (26.2)	128 (20.9)
Medium (1.3×1.9 m ² to 2.0×2.5 m ²)	327 (59.0)	411 (67.0)
Large (>2.0×2.5 m ²)	82 (14.8)	74 (12.1)

Note: Observations were made in 2 sub-districts of Malang City and 3 sub-districts of Malang Regency.

*Unless otherwise stated; †Calculations of the percentages were based on the numbers of stores sell cigarettes per stick; ‡Calculations of the percentages were based on the numbers of stores that tobacco product/cigarette advertisements were available.

IDR: Indonesian rupiah; km²: square kilometer; m²: square meter; USD: United States dollar