RESEARCH ARTICLE

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Cigarette Display Regulation at Point Of Sales (POS) and its Impact on Cigarette Sales

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Abstract

Objective: This study aims to determine the impact of cigarette display settings on cigarette sales in the stores in Semarang City. **Methods:** The research was conducted in August-October 2020 using a quasi-experimental study approach. Cigarette displays were installed in three ways (1) the cigarette displays were opened for 35 days in 5 stores, (2) the cigarettes displays were covered by a piece of fabric for a pre-intervention and intervention periods of 15 and 30 days respectively, in five stores; and (3) the cigarette displays were hidden for a pre -intervention and intervention periods of 15 and 30 days respectively, at three stores. Cigarette sales were recorded based on the number of packs or sticks sold per day. The authors would visit the stores every two or three days without prior notification to the store owner to check the cigarette displays and record the data. The sales data was descriptively evaluated using paired t-test with a 95% confidence level. **Results:** The results showed that one hidden cigarette display store (R3-1) experienced a significant decrease in sales, three hidden/covered display stores had an insignificant decrease in cigarette sales and four hidden/covered display stores did not have any decline in cigarette sales. The mean decline in cigarette consumption in stores was -1.4 packs/day. Based on the analysis of sales per day and the pre/post intervention paired, the stores with a covered display had no difference in the pre/post intervention sales, while the stores with hidden displays showed differences in their cigarette sales. **Conclusion:** Covered displays did not affect cigarette sales, while stores with hidden displays showed differences in sales.

Keywords: Display Ban- POS- cigarette- covered- hidden

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Introduction

Point of Sale (POS) has become a major player in the cigarette industry as a medium for marketing and promoting cigarette products because most of these marketing methods are not regulated by governments. Therefore, tobacco companies now spend most of their annual marketing budget on retail or point of sale (POS) environments. Meanwhile, POS refers to any location where cigarette products are advertised, displayed, or purchased. Advertising and retail promotion increase impulsive buying and normalize the presence of cigarette products in daily life. Exposure to cigarette products and price promotions in retail settings encourages smoking and discourages smokers from quitting (State and Community Tobacco Control, 2016). Furthermore, cigarette companies are expanding the range of their brands to maximize the visual impact on store shelves (Haw et al., 2020). The tobacco industry has criticized the evidence surrounding POS bans despite the small effect sizes in some studies. However, these bans are still meaningful at the population level, as existing research might have underestimated the actual effect sizes (WHO, 2020).

The Indonesian Public Health Association's Tobacco Control Support Center claims that 59% of Indonesians support the prohibition of cigarette displays at Point of Sale (POS) (Ridwan et al., 2018). Moreover, based on the results of research projects in 77 countries, cigarette display ban has the potential to reduce adult smokers' daily smoking behavior by 7% (He et al., 2018). The ban on cigarette displays at Point of Sales (POS) has been implemented in Europe, including in the UK, Ireland, Norway, and Iceland (Eadie et al., 2016; Scheffels and Lavik, 2013; McNeill et al., 2011). In Thailand, regulations require hiding cigarettes on storage racks in stores, while Canada has implemented a display ban on cigarettes in stores (Li et al., 2015; Brown et al., 2012; Cohen et al., 2011). In Indonesia, there is no national policy on covering or hiding cigarette displays in stores except in Bogor City.

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In 2017, the Bogor City government requested all traders to cover cigarette displays with cloth but still allowed them to sell cigarettes (Bogor Regional Regulation, 2018) (Priyono et al., 2020). However, the prohibition of displays in stores raised a disagreement in merchants with the assumption that when cigarette displays are prohibited, sales tend to decline (Harper, 2006). In addition to Bogor, the cities of Depok, Klungkung, and Kulon Progo in Indonesia have also banned cigarette displays.

Research on the impact of cigarette display prohibition on sales in Ireland reported no decline in sales in the first year of the ban (Quinn et al., 2011). It is notable that there has been no research on the impact of cigarette display settings on sales in Indonesia. Central Java is Indonesia's third most populated province and the provincial capital is Semarang. Semarang City Government, through Regional Regulation Number 3 of 2013 concerning Smoke-Free Area (SFA), explains the prohibition on the production, sales, advertisement, promotion, and/or use of cigarettes (Semarang Regional Regulation, 2013). Even though the Semarang city government has regulations for Smoke-Free Area (SFA), the regulations are not implemented strictly. Thus, the cigarette display ban covered with cloth has never been implemented in the city of Semarang. Therefore, this research was carried out in the city of Semarang to assess the impact of covering cigarette displays on sales.

Materials and Methods

The study was carried out as a quasi-experimental study conducted quantitatively through observation and intervention from August to November 2020. The study population consisted of tobacco stores in Semarang, while the research sample was limited to 13 stores which served as the study's initial sample. The selected stores had similar characteristics, such as being in residential areas and serving the local customers. Each respondent gave consent to collect research data. The study received ethical approval from the Faculty of Public Health, University of Muhammadiyah Semarang. The study was carried out by setting the cigarette displays in three methods with one control group and two intervention groups. In method one, the cigarette displays were opened (control class) for 35 days in five stores. In method two, the cigarette displays were covered with cloth (intervention class 1) based on the display cover pattern used in Bogor city (Priyono et al., 2020) with a pre-observation period of 15 days and a post-observation period of 30 days in five stores. As for method 3, the cigarette displays were hidden (intervention class 2) and followed the display methods used in Thailand (Li et al., 2015) with a pre-observation period of 15 days and a post-observation period of 30 days in three stores. Figures 1 and 2 illustrate methods 1, 2, and 3 and the flowchart of the study.

There was no intervention during the pre-observation period, so that the cigarette displays remained open as usual. The data collected were the cigarette sales of each brand and the total store sales for 35 days in method one and 45 days for methods two and three. Cigarette sales were recorded based on the number of packs or sticks sold per day, assuming that one pack had 12 sticks. Furthermore, to monitor store compliance and collect cigarette sales data, a visit to the stores was made every two or three days without prior notification to the store owner. Cigarette sales data was analyzed using descriptive and analytical tools in SPSS (16). The paired sample t-test analysis with a 95 percent confidence level was performed to evaluate the difference in sales before and after the intervention ($P< 0.05$).

Results

Table 1 shows that the majority store owners were women, had been in business for more than 20 years, and the majority of their customers were local residents. The results showed that the top brands in terms of sale were Gudang Garam (GG), Djarum, Tuton, and Sampoerna. Most of the store owners supported the cigarette display ban. The data on average sales and paired t-tests are listed in Table 2.

In stores R1-1 to R1-5, method one was carried out where the cigarette displays were open for 35 days. Meanwhile, in stores R2-1 to R2-5, method two was carried out where the cigarette displays were covered with a cloth, after 15 days of pre-observation period, for 30 days. Furthermore, in stores R3-1 to R3-3, method three was carried out, where the cigarette displays were hidden, after 15 days of pre-observation period, for 30 days. Among the five stores where cigarette displays were covered with a cloth, three stores experienced no decrease in cigarette and store sales, while two stores experienced a decrease in the same. However, the decrease in sales was insignificant.

Moreover, among the three stores where cigarette displays were hidden, one store experienced no decrease in cigarette sales, while two stores R3-1 and R3-3 experienced a decrease in cigarette sales by -10.77 packs/day and -0.49 packs/day and store sales fell by -57433 and -9633 IDR respectively. On average, all the stores administered with intervention experienced a decrease in cigarette sales by -1.4 packs of cigarettes/day. Based on these results, one store with a hidden display experienced a significant decrease in sales while three stores with covered/hidden displays experienced an insignificant

Figure 1. Method 1, Open Display; Method 2, Covered Display; Method 3, Hidden Display.

Table 1. Characteristic of Cigarette's Store

Description		f	%
Gender of Store Owner	Men	3	23
	Women	10	77
Duration of tobacco sales	< 5 years	2	15
	5-10 years	3	23
	10-15 years	2	15
	15-20 years	2	15
	> 20 years	4	31
Cigarette Buyer	Local Resident	13	65
	Passers-by	5	25
	Student	2	10
Bestseller brand	Gudang Garam	6	33
	Djarum	5	28
	Tuton	4	22
	Sampoerna	1	6
	etc	2	11
Perception of the cigarette display ban	Agree	9	69
	Not Agree	1	8
	No Answer	3	23

decreased cigarette sales. In addition, four stores with covered/hidden displays experienced no decline in cigarette sales.

The paired t-test was used to test the increase before and after the intervention. Based on the results, the opened display store (control class) obtained a p-value of 0.224 (> 0.05), indicating that there was no significant difference in cigarette sales during the pre/post intervention periods. Moreover, there were no statistically significant differences in cigarette sales between the pre/post intervention periods in display-covered stores (p-value=0.97). The result also showed that the stores with hidden displays experienced a significant difference in cigarette sales after hiding the cigarette displays (p-value= 0.000). The cigarette sales per day before and after the intervention in the three methods are shown in Figure 3.

Cigarette sales in stores under method one were quite stable from day 1 to 35. Sales in stores under method two were also quite stable before and after the cigarette displays were covered with cloth, whereas sales in method three stores began to decline after day 16 (cigarette displays were hidden) so that the sales were unstable and did not return to the point before the study. Therefore, covering cigarette displays with a cloth has no significant effect on cigarette sales. However, hiding cigarette displays affected cigarette sales significantly.

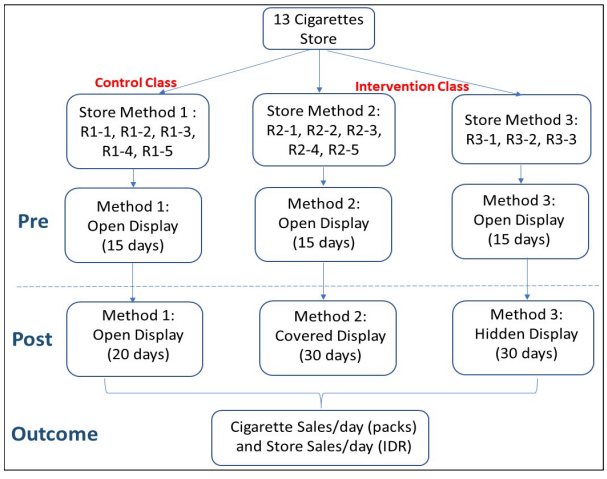

Figure 2. Flowchart of the Study

Discussion

In the intervention class consisting of stores with cloth-covered cigarette displays and stores with hidden cigarette displays, four stores experienced no decline while three stores had a decrease in sales, which was not significant. Therefore, the cigarette display intervention had no significant effect on sales at the seven stores. A study in Europe stated that there was no decrease in sales after the cigarette display ban because buyers continued to ask the seller for cigarettes (Bogdanovica, McNeill, and Britton, 2017). Out of thirteen stores, nine stores agreed to the cigarette display ban. Similar results were obtained from a study on store owners' attitudes about the prohibition of cigarette displays in New Zealand and a majority of the store owners supported tobacco control policies (Jaine et al., 2014). Cigarette display bans in stores do not affect the perception of cigarette availability in the store, as smokers directly asked the seller (Van Hurck et al., 2019).

There was no difference in cigarette sales before and after the cigarette displays were covered with cloth; whereas, there was a difference in the sales during the pre/post intervention periods in the hidden display stores. This is consistent with a previous study that stated covering cigarette displays did not reduce cigarette sales in stores (Quinn et al., 2011). Although the display ban on cigarettes has no impact on sales, it can be used to

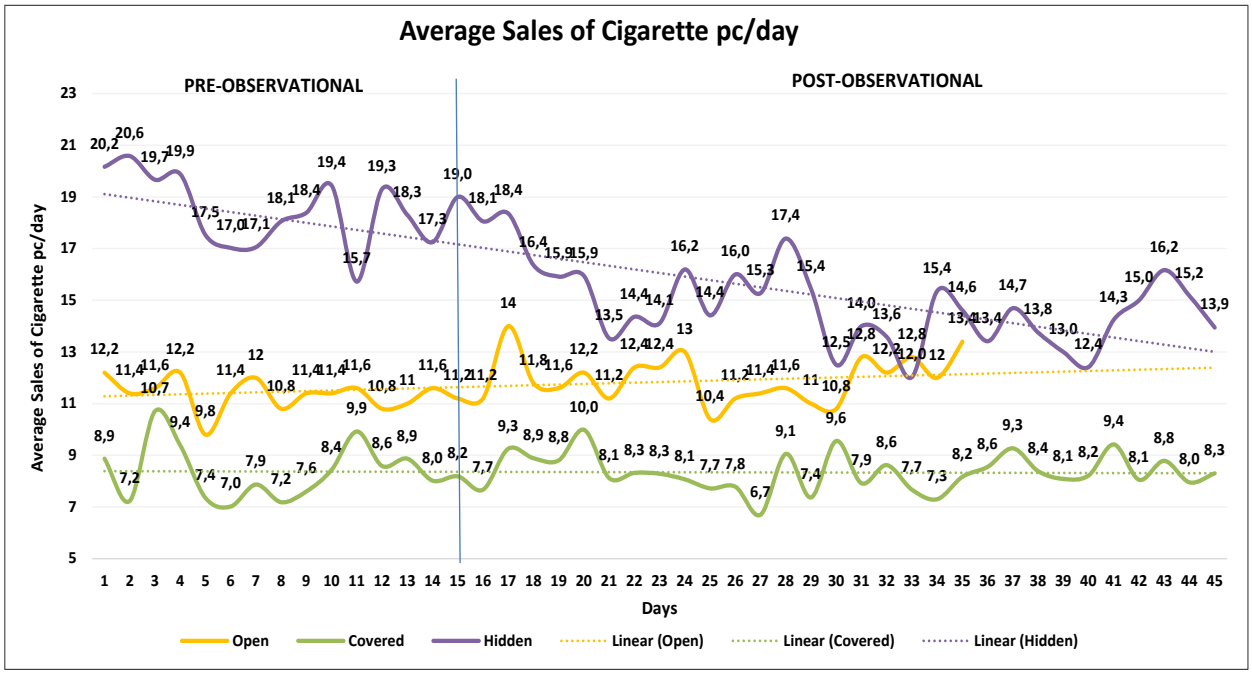

Figure 2. Evolution of Sales Per Day, 15-day Pre Observation Period and 30-day Post Observation Period in Display Opened, Display Covered with Cloth, and Display Hidden

Table 2. Average of Cigarette Sales/day (pack) and Store Sales/day (IDR) and Paired t-test

Store Code	Item Cigarette	Display Method		AVG Sales Cigarette /day (packs)			AVG Sales of Store/ day (IDR)			p-value
		Pre	Post	Pre	Post	GAP	Pre	Post	GAP	
R1-1	15	Open	Open	4.5	4.3	-0.17	198,667	220,700	22,033	0.155555556
R1-2	25	Open	Open	9.3	12	2.62	300,000	332,400	32,400	
R1-3	28	Open	Open	17.3	15.1	-2.17	386,667	430,000	43,333	
R1-4	8	Open	Open	3.5	4.5	0.92	128,800	141,350	12,550	
R1-5	39	Open	Open	22.2	24.1	1.85	1,267,133	1,266,250	-883	
AVG Open Display				11.4	12	0.61	456,253	478,140	21,887	
R2-1	38	Open	Covered	15.3	15.2	-0.03	609,333	628,333	19,000	0.679861111
R2-2	6	Open	Covered	4.9	5.1	0.2	254,133	258,033	3,900	
R2-3	12	Open	Covered	2.3	2.6	0.3	135,333	156,500	21,167	
R2-4	15	Open	Covered	10.1	9.8	-0.23	278,000	265,433	-12,567	
R2-5	22	Open	Covered	9.3	9	-0.27	596,000	530,000	-66,000	
AVG Covered Display				8.3	8.3	-0.01	374,560	367,660	-6,900	
R3-1	35	Open	Hidden	46.4	35.6	-10.77	740,933	683,500	-57,433	0.000
R3-2	10	Open	Hidden	2.3	2.6	0.3	498,667	478,833	-19,833	
R3-3	23	Open	Hidden	6.7	6.3	-0.49	202,900	193,267	-9,633	
AVG Hidden Display				18.5	14.8	-3.65	480,833	451,867	-28,967	
AVG Covered & Hiiden Display				12.2	10.8	-1.4	414,413	399,238	-15,175	

limit the visibility of cigarette displays in point-of-sale (POS) to children. This is in line with a previous study in New Zealand and the U.S that stated that with a cigarette display ban in stores, the desire to buy cigarettes in children decreased (Robertson et al., 2016; Laverty et al., 2019; Edwards et al., 2017). Cigarette displays at POS promote buyers' intention, including that of individuals who do not smoke. In addition, others that intend to quit smoking are increasingly deterred by the display (Truth Initiative, 2017).

Given the size of POS promoting cigarette sales, support is needed from the government to ban POS promotion. Meanwhile, several countries have made good progress in arranging various forms of POS promotion bans including Australia, Canada, India, Ireland, New Zealand, the UK, and Thailand (no visible tobacco products at the point of sale). In these countries only one display area per store is allowed and the area of the display cannot exceed 4m2 and must be 2 meters from children's products. Research in these countries has shown that a majority of retailers comply with the new regulations (Institute for Global Tobacco Control, 2013). Therefore,

a cloth-covered cigarette display does not affect sales, however, a hidden cigarette display affects sales.

Author Contribution Statement

All authors declare that they are participating actively in research and article writing and are partly responsible for the content of a writing, including the preparation and writing of concepts, designs, analysis, or revision of the article. The role (s) of all authors is Evina Widianawati: Writing- Original draft preparation, visualization, and analysis of data. Faik Agiwahyuanto: drafting data qualitative and interpretation of the data of the article. Widya Ratna Wulan: drafting data quantitative and interpretation of the data of the article. Adian Khoironi: Reviewing and Editing of the article. Abdillah Hasan: conceptualization and methodology of the article.

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Approval

All authors have reviewed and approved the submitted version of the manuscript.

Ethical Declaration

The study protocol was reviewed and approved by the Faculty of Public Health, University of Muhammadiyah Semarang.

Conflict of Interest

The authors have no financial interests or benefits related to this research to disclose.

References

Bogdanovica I, McNeill A, Britton J (2017). Cohort study investigating the effects of the first stage of the English tobacco point-of-sale display ban on awareness, susceptibility and smoking uptake among adolescents. *BMJ Open*, **7**. DOI: 10.1136/bmjopen-2016-012451.

Bogor Regional Regulation (2018). Bogor City Regional Regulation Number 10 of 2018 concerning Amendments to Regional Regulation Number 12 of 2009 concerning Non-Smoking Areas', Bogor. doi: 10.1007/978-3-319-54466-3.

Brown A(2012). Support for removal of point-of-purchase tobacco advertising and displays: Findings from the International Tobacco Control (ITC) Canada survey. *Tob Control*, **21**, 555–9.

Cohen JE (2011). Changes in retail tobacco promotions in a cohort of stores before, during, and after a tobacco product display ban. *Am J Public Health*, **101**, 1879–81.

Eadie D (2016). Are retail outlets complying with national legislation to protect children From exposure to tobacco displays at point of sale? Results From the first compliance study in the UK. *PLoS One*, **11**, 1–11.

Edwards R (2017). Impact of removing point-of-sale tobacco displays: Data from a New Zealand youth survey. *Tob Control*, **26**, 392–8.

Harper T (2006). Why the tobacco industry fears point of sale display bans. *Tob Control*, **15**, 270–1.

Haw S (2020). The impact of the point-of-sale tobacco display ban on young people in Scotland: before-and-after study. *Public Health Res*, **8**, 1–118.

He Y (2018). Global evidence on the effect of point-of-sale display bans on smoking prevalence. *Tob Control*, **27**, 98–104.

Van Hurck MM (2019). Impact of removing point-of-sale tobacco displays on smoking behaviour among adolescents in Europe: A quasi-experimental study. *Tob Control*, **28**, 401–8.

Institute for Global Tobacco Control (2013). Point of Sale Promotion of Tobacco Products', in. Johns Hopkins Bloomberg School of Public Health.

Jaine R (2014). New Zealand tobacco retailers' attitudes to selling tobacco, point-of-sale display bans and other tobacco control measures: a qualitative analysis. **127**, p 8716.

Laverty AA (2019). Child awareness of and access to cigarettes: Impacts of the point-of-sale display ban in England. *Tob Control*, **28**, 526–31.

Li L (2015). Impact of point-of-sale tobacco display bans in Thailand: Findings from the International Tobacco Control (ITC) Southeast Asia survey. *Int J Environ Res Public Health*, **12**, 9508–22.

McNeill A (2011). Evaluation of the removal of point-of-sale tobacco displays in Ireland. *Tob Control*, **20**, 137–43.

Priyono B (2020). Removal of point-of-sale tobacco displays in Bogor city, Indonesia: A spatial analysis. *Tob Prev Cessation*, **6**, 1–9.

Quinn C (2011). Economic evaluation of the removal of tobacco promotional displays in Ireland. *Tob Control*, **20**, 151–5.

Ridwan F (2018). Relationship of Advertising, Promotion, Cigarette Sponsorship and Smoking Status in Indonesia. (2018). Available at: http://www.tcsc-indonesia.org/wp-content/uploads/2019/05/Booklet-Hasil-Studi-TAPS-dan-Status-Merokok.pdf.

Robertson L (2016). Point-of-sale tobacco promotion and youth smoking: A meta-analysis. *Tob Control*, **25**, 83–9.

Scheffels J, Lavik R (2013). Out of sight, out of mind? Removal of point-of-sale tobacco displays in Norway. *Tob Control*, **22**, doi: 10.1136/tobaccocontrol-2011-050341.

Semarang Regional Regulation (2013). Semarang City Regional Regulation Number 3 of 2013 concerning No Smoking Areas', Semarang. Available at: https://dprd.semarangkota.go.id/packages/upload/file/rrb7Hur.pdf.

State and Community Tobacco Control (2016). Point-of-Sale Report to the Nation: Realizing the Power of States and Communities to Change the Tobacco Retail and Policy Landscape', in. State Community Tobacco Control Research.

Truth Initiative (2017). The truth about tobacco industry retail practices', in, pp 1–23.

WHO (2020). Evidence Brief Tobacco Point-of-Sale Display Bans', in Evidence Brief. WHO Regional Office for EUROPE. doi: 10.1596/33968.

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