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Title: The display and advertising of roll-your-own tobacco at points-of-sale in Argentina, Guatemala, Mexico, and Peru.

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Abstract

Introduction: While roll-your-own tobacco consumption is highest in Europe, increased sales are reported in Latin America. We are unaware of any research that explores the display and advertising of roll-your-own tobacco in this region.

Methods: An observational study was conducted at tobacco-selling points-of-sale (N=2,081) near schools in cities in Argentina, Guatemala, Mexico, and Peru between April and July 2023. In each of the 16 cities (four per country) schools were randomly selected and stratified according to neighbourhood socioeconomic status, with all points-of-sale located in pre-established routes around schools observed. A codebook was used to assess the display of roll-your-own tobacco and accessories (i.e. rolling papers and filters) and the presence of advertising for these products. Logistic regressions were employed to estimate the association between the display of roll-your-own tobacco and accessories (defined as being visible at the point-of-sale) and type of point-of-sale, neighbourhood socioeconomic status, and city.

Results: Apart from a single store in Guatemala, roll-your-own tobacco and accessories were only observed in Argentina, at 110 (21.5%) points-of-sale. In Argentina, roll-your-own tobacco and accessories were more likely to be displayed in convenience and neighbourhood stores compared to kiosks, in high and middle socioeconomic neighbourhoods compared to low socioeconomic neighbourhoods, and in Cordoba and Santa Rosa than in Quilmes and San Salvador de Jujuy. Advertising for RYO tobacco (1.8%) and accessories (3.1%) at POS was uncommon.

Conclusion: This study provides insight into roll-your-own tobacco penetration in multiple Latin American countries, finding that the display of this product is largely restricted to Argentina.

Implications

Increasing sales of roll-your-own tobacco have been reported in Latin America. Despite this, there is limited academic research on the consumption of roll-your-own tobacco in this region and no research on its presence at the point-of-sale. This study provides insight into roll-your-own tobacco and accessories penetration in Argentina, Guatemala, Mexico and Peru, finding that display of this product at points-of-sale is generally limited to Argentina. Continued monitoring of the display and marketing of this product is needed across these countries. Research in Argentina exploring how roll-your-own tobacco and accessories are perceived by smokers and young people would be of value.

INTRODUCTION

Factory-made cigarettes continue to dominate the global tobacco market, but there has been an increase in the consumption of roll-your-own (RYO) tobacco¹, which is loose tobacco used to manually roll cigarettes. While Europe has long been the largest market for RYO tobacco, tobacco industry journals have noted increased sales in Africa, Asia, Latin America, the Middle East and Oceania¹. Despite this reported growth, there appears to be limited academic research on RYO tobacco in some of these regions. In Latin America, for instance, few studies have explored RYO tobacco use² and we are unaware of any research exploring the display and advertising of RYO at tobacco-selling points-of-sale (POS).

Low price is considered the key reason for RYO tobacco use in high-income countries³⁻⁵. However, other drivers have been identified, including the taste, the misperception that RYO tobacco is less harmful, less addictive, more natural, and more eco-friendly than conventional cigarettes, and the enjoyment of rolling and customising cigarettes, which is also seen as a ritual to interact with others³⁻⁶. Some of these drivers may be related to the marketing of RYO tobacco and/or the accessories typically used with this product (rolling papers, filters). For instance, manufacturers have introduced a range of more environmentally friendly rolling papers, which some RYO smokers have indicated are likely to be less harmful to their health⁵. Very little is known however about the impact, if any, that RYO marketing has on consumer behaviour, partly due to the lack of research and limited understanding of how RYO tobacco and accessories are marketed.

One way that tobacco and nicotine-containing products and accessories can be marketed is at the POS. Laws on the display and advertising of tobacco products at POS vary across Latin America. Certain countries (Brazil, Colombia, Guyana, Mexico, Panama, Suriname, Uruguay, Venezuela) prohibit all forms of tobacco advertising at POS, including the open display of tobacco products, whereas others (Bolivia, Chile, Costa Rica, Ecuador, El

Salvador, Honduras, Paraguay) restrict tobacco advertising at POS, and yet others (Belize, Guatemala, Nicaragua, Peru) have no POS restrictions⁷. In Argentina regulations vary by province; some (e.g. Cordoba and La Pampa, where Santa Rosa is located) have local laws prohibiting POS advertising and the display of tobacco products, while others (e.g. Buenos Aires and Jujuy) follow the national law that permits the advertising and display of tobacco products. Research in the region has explored the availability and advertising of cigarettes at POS and compliance with existing regulations^{8,9}, but there is an absence of research on the display and advertising of RYO tobacco and accessories.

The objective of this study was to assess the display and advertising of RYO tobacco and accessories at POS in four Latin American countries: Argentina, Guatemala, Mexico, and Peru.

METHODS

Design

For this cross-sectional study, we observed 2081 POS near schools in Argentina, Guatemala, Mexico, and Peru between April and July 2023. The study was conducted in four cities in each country: Cordoba, Quilmes, San Salvador de Jujuy, and Santa Rosa in Argentina; Guatemala City, Quetzaltenango, San Antonio, and Tecpan in Guatemala; Guadalajara, Mexico City, Monterrey, and Oaxaca in Mexico; Arequipa, Pucallpa, San Juan de Miraflores (Lima), and Trujillo in Peru. Cities in each country were chosen for their agricultural and livestock activities (rural) or their industrial activities (urban).

Procedure

In each country, cities were divided into geographical areas classified according to their socio-economic status (high, middle, and low). Areas with middle and high schools were randomly selected according to their socio-economic status (SES). Then, a pre-established route around each school was followed assessing all the POS in the path, until the total

number of observed POS per city was reached, with approximately one-third of the sample in each SES. The number of areas and schools visited per city can be found in the Supplementary Table 1. The route around schools was created using a modified TPackSS methodology^{10,11}, as this is an established approach used in various countries. When pre-established routes overlapped due to visiting schools close to each other in the same area, POS in the overlapping sections were recorded only once.

To collect information at the POS we used a checklist developed from past research^{8,12,13}. It assessed general POS information (store type, location, etc), the display and advertising of nicotine and tobacco products and accessories, prevention signage, and compliance with the law. The checklist was completed at each POS using the KoboCollect® App (www.kobotoolbox.org/) on a mobile phone. The study received approval from the Ethics Committees of the research institutions in each of the four countries and from the University of Stirling.

Analysis

The display of RYO tobacco was almost exclusively observed in Argentina, with only one POS in Guatemala displaying this product and none in Mexico and Peru. Therefore, the analysis focuses on the display and advertising of RYO tobacco and accessories in the four cities in Argentina. Two of them, Cordoba and Santa Rosa, are in provinces with restrictive laws prohibiting the display of tobacco products. The other two, Quilmes and San Salvador de Jujuy, are in provinces where the national law applies, which allows the display of tobacco products at POS.

For analytical purposes, we reclassified the POS type variable, from the original categories (Kiosk, Neighbourhood store, Supermarket, Convenience store, and Petrol station) into three categories: 1. Kiosk: characterised as an informal store with restricted access, where sales are conducted from outside, often through a window on the exterior of a house; 2.

Neighbourhood store: an informal retailer, which offers a broad range of products and which you enter to make the purchase; 3. Convenience store: defined as a store providing additional services like money transfers and bill payments, may be part of a chain, and adopts a more formal structure. Due to the limited number of Supermarkets (N=15) and Petrol stations (N=13) observed, we collapsed them into other categories sharing similar characteristics. Supermarkets were included in the Neighbourhood Store category, as they sell a variety of products and in Argentina they typically share a similar level of informality. Petrol Stations, being formal shops usually affiliated with chains were categorised under Convenience Stores.

Logistic regression models were employed to examine the association between the display of RYO tobacco and the display of accessories, as dependent variables, and the independent variables SES (high, middle, or low), city (Cordoba, Quilmes, San Salvador de Jujuy, and Santa Rosa), and type of POS (kiosk, neighbourhood store or convenience store). Odds ratios (OR) and their corresponding 95% confidence intervals (CI) were estimated. Data analysis was performed in R¹⁴.

RESULTS

Within Argentina, 512 POS were visited, with 129 (25.2%) in Cordoba, 146 (28.5%) in Quilmes, 132 (25.8%) in San Salvador de Jujuy, and 105 (20.5%) in Santa Rosa. Table 1 shows the distribution of POS per city by store type and SES.

RYO tobacco was observed in 110 (21.5%) POS, 40 (31.0%) in Cordoba, 19 (13.0%) in Quilmes, 20 (15.2%) in San Salvador de Jujuy, and 31 (29.5%) in Santa Rosa (see Supplementary Figure 1). Among those, 52 (47.7%) displayed flavoured RYO tobacco, 77 (70.6%) placed the RYO tobacco less than 50cm from the cash register, and 69 (63.3%) less than 50cm from toys or candy. Accessories (rolling papers or filters) were observed in 129 (25.2%) POS, 47 (36.4%) in Cordoba, 15 (10.3%) in Quilmes, 19 (14.4%) in San Salvador de Jujuy, and 48 (45.7%) in Santa Rosa. Advertising was uncommon, observed for RYO tobacco

in just 2 (1.8%) POS and for accessories in 4 (3.1%) POS.

Table 2 shows the results of the univariate and the multivariate logistic regressions. All independent variables (type of POS, SES, city) were significantly associated with the display of RYO tobacco and accessories. In the two multivariate models, middle and high SES were associated with an increased display of RYO tobacco and accessories compared to low SES (OR: 4.47, CI 2.25 - 9.54 and OR: 3.11, CI 1.71 - 5.86 for middle SES; OR: 4.28, CI 2.14 - 9.17 and OR: 3.08, CI 1.67 - 5.84 for high SES). Convenience and neighbourhood stores had greater odds of displaying RYO tobacco and accessories than kiosks. Finally, the cities of Cordoba and Santa Rosa were associated with an increased display of RYO tobacco and accessories than Quilmes and San Salvador de Jujuy.

DISCUSSION

The study provides insight into the penetration of RYO tobacco in multiple Latin American countries. Aside from a single retailer in Guatemala, the display of this product was only observed in Argentina. This is consistent with the reported growth of RYO tobacco in the country¹⁵. The reasons behind the growing popularity of RYO in Argentina, reportedly used by 10% of adult smokers¹⁶, are not clear. This might be linked to Argentina's ban on the sale of e-cigarettes and heated tobacco products, leading tobacco companies to instead focus on alternative products for Argentina. However, e-cigarettes and heated tobacco products are also banned in countries such as Mexico, where the use of RYO has not yet become popular.

Our observations indicate that RYO tobacco is more commonly displayed in high SES areas in Argentina, suggesting that consumption will be higher among those who are more affluent. In high-income countries, RYO tobacco consumption increases as SES decreases, due to its lower cost¹⁷. As lower taxes on RYO tobacco in Argentina, compared to factory-made cigarettes, also result in lower prices, our findings suggest that motivations beyond price may be driving the higher presence of RYO tobacco in affluent neighbourhoods.

This may reflect a market segmentation strategy¹⁸, where tobacco companies offer a tailored product for consumers with higher purchasing power who may want to use tobacco that is (erroneously) viewed as more environmentally friendly and less harmful. As a higher initial outlay is required to purchase RYO, given pack sizes are typically larger and the need for accessories such as papers and filters (if not included), this may also explain why tobacco companies target retailers in areas where consumers would find it easier to afford. This strategic targeting of higher SES consumers might serve to increase visibility, with the aim being to capture a broader consumer base in the future. Given the lack of research on this topic, exploring patterns of RYO tobacco consumption in Argentina by SES and the reasons for choosing this product would be of significant value.

RYO tobacco and accessories were predominantly observed in Cordoba and Santa Rosa. Both cities are in provinces with per capita household incomes above the national average, whereas Quilmes and San Salvador de Jujuy are in provinces with incomes below it¹⁹. As RYO tobacco and accessories were more prevalent in areas with high SES, city-level income may be a contributing factor to the heightened presence of these products in Cordoba and Santa Rosa. Even if this is the case, this finding is noteworthy as Cordoba and Santa Rosa, unlike Quilmes and San Salvador de Jujuy, have restrictive local tobacco control laws. In these cities, the advertising and the open display of tobacco products, and accessories in the case of Cordoba, are banned at POS. Therefore, the RYO tobacco packs observed in this study are illegally displayed at POS. Research with retailers exploring their understanding of these regulations, and any communication with tobacco company representatives about the laws, would be of value, but the findings underscore the need to monitor compliance with regulations.

This study has several limitations. The sample is not representative of all the countries included. However, the cities in each country were intentionally selected to increase diversity.

To ensure sample heterogeneity, areas within each city were stratified based on SES, and quotas were established (one-third of the sample to each level). Although the codebook captured whether RYO tobacco and accessories were visible at the POS, and if there was any advertising of these products, we are unable to offer additional detail on the variety and types of RYO and accessories displayed at the POS, or the number and content of adverts. We are also unable to provide more detail about the promotional characteristics of RYO packaging or compliance with warning regulations, which may be a fruitful area of future research.

The tobacco industry is introducing new products in Latin America to enhance its sales^{12,20}, with cigarettes with flavour capsules in the filter as a particularly successful example²¹. While we found that RYO tobacco was generally limited to Argentina, continued monitoring in the region is needed to explore whether tobacco companies make this product more widely available, and how consumers respond.

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Declaration of Interests

None declared.

Data Availability

Data will be available for sharing, upon reasonable request to Crawford Moodie (c.s.moodie@stir.ac.uk), when all planned articles are published or in July 2025.

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Table 1: Types of points of sale according to socioeconomic status per city in Argentina

Store type*	Socioeconomic Status			TOTAL
	Low	Middle	High	
<i>Cordoba</i>				129 (25.2%)
Kiosk	20	13	13	
Neighbourhood Store	20	27	29	
Convenience Store	3	4	0	
<i>Quilmes</i>				146 (28.5%)
Kiosk	49	33	17	
Neighbourhood Store	10	14	13	
Convenience Store	0	2	8	
<i>San Salvador de Jujuy</i>				132 (25.8%)
Kiosk	11	5	1	
Neighbourhood Store	34	39	39	
Convenience Store	0	2	1	
<i>Santa Rosa</i>				105 (20.5%)
Kiosk	2	1	1	
Neighbourhood Store	19	43	34	
Convenience Store	2	1	2	
<i>Total Points of Sale</i>	170 (33.2%)	184 (35.9%)	158 (30.9%)	512 (100%)

*15 Supermarkets were considered as Neighbourhood Stores and 13 Petrol Stations as Convenience Stores.

Table 2: Crude and adjusted OR for the display of RYO and RYO accessories in Argentina

Predictors	RYO				RYO accessories			
	Crude OR	CI (95%)	Adjusted OR*	CI (95%)	Crude OR	CI (95%)	Adjusted OR**	CI (95%)
<i>SES</i>								
Low	1		1		1		1	
Middle	5.05	2.67 - 10.29	4.47	2.25 - 9.54	3.66	2.10 - 6.61	3.11	1.71 - 5.86
High	5.58	2.91 - 11.45	4.28	2.14 - 9.17	3.90	2.21 - 7.12	3.08	1.67 - 5.84
<i>Type of Point of Sale</i>								
Kiosk	1		1		1		1	
Neighbourhood Store	7.34	3.67 - 16.84	6.97	3.20 - 16.96	4.76	2.74 - 8.80	3.25	1.70 - 6.50
Convenience Store	29.62	10.54 - 91.18	27.12	9.26 - 86.83	7.91	3.04 - 20.70	6.15	2.24 - 16.93
<i>City</i>								
Cordoba	1		1				1	
Quilmes	0.33	0.18 - 0.61	0.44	0.21 - 0.89	0.20	0.10 - 0.37	0.24	0.12 - 0.48
San Salvador de Jujuy	0.40	0.21 - 0.72	0.27	0.14 - 0.51	0.29	0.16 - 0.53	0.22	0.11 - 0.41
Santa Rosa	0.93	0.53 - 1.63	0.52	0.28 - 0.96	1.47	0.87 - 2.49	0.97	0.54 - 1.72
* RYO ~ SES + Type of POS + City					** RYO accessories ~ SES + Type of POS + City			