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# Analysis of roll-your-own tobacco pack design and warning compliance in Argentina

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## ABSTRACT

**Introduction** Packaging is a key marketing tool for tobacco companies and an important means of communicating product-related risks to governments. While research has explored promotional characteristics of cigarette packs and compliance with warnings on cigarette packs, studies on roll-your-own (RYO) tobacco packaging are limited.

**Methods** We purchased a convenience sample of unique RYO packs (n=116) between November 2022 and May 2024 in five cities in Argentina, where RYO tobacco has increased in popularity. We developed a checklist to examine the presence of pack design features and compliance with on-pack warnings and conducted a descriptive analysis.

**Results** The sample included 50 brands. Most packs were pouches (94.0%) and contained 30 g of tobacco (74.1%). About half (51.7%) were flavoured, most commonly fruit (43.3%), vanilla (21.7%) and chocolate (15.0%). Unflavoured packs frequently featured 'natural' or 'additive-free' descriptors (51.8%) and light colours (48.2%), while flavoured packs predominantly used flavour descriptors (88.3%) and bright colours (86.7%). Nearly half the packs (46.6%) were locally produced, with 48.1% highlighting their Argentinian origin. In terms of warning compliance, 47.4% of packs failed to display a warning image covering 50% of the front of the pack. The warning image (90.5%) and message (81.9%) were frequently obscured by a tax stamp.

**Conclusions** The findings help understand how tobacco companies promote RYO via the packaging. Additionally, this exploratory study could serve as a template for other studies on RYO tobacco.

## INTRODUCTION

Packaging is a crucial marketing tool for tobacco companies, especially when other forms of advertising are banned or restricted.<sup>1,2</sup> Tobacco product pack graphics (eg, colour, descriptors) and structure (eg, size, quantity and shape) can influence consumer perceptions and behaviours<sup>3–5</sup> and mislead consumers into believing that certain products or brand variants are less harmful than others.<sup>6–9</sup> Tobacco packaging is also important for communicating the potential risks associated with product use through the use of on-pack warnings.<sup>10</sup>

Unlike other products such as cigarettes,<sup>11–13</sup> cigars,<sup>14</sup> waterpipes,<sup>15</sup> pipe tobacco<sup>16</sup> or electronic cigarettes<sup>17</sup>—where both pack design and warning compliance have been examined—studies on roll-your-own (RYO) tobacco, which is loose tobacco used for rolling cigarettes, are limited, focusing on the perceptions of pack warnings.<sup>18–20</sup> RYO is

## WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Tobacco packaging allows both tobacco companies and governments to communicate with consumers.
- ⇒ Research has explored how tobacco companies use the packaging to promote cigarettes and also compliance with on-pack warnings.

## WHAT THIS STUDY ADDS

- ⇒ This is the first study to comprehensively document pack design for roll-your-own tobacco and compliance with health warning requirements.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Our study offers insight into the design of roll-your-own packaging, and how pack colours, descriptors, other design features and flavours are being used to communicate product-related attributes.
- ⇒ With respect to current policy, there was high non-compliance with warnings and the obscuring of warning images and text by tax stamps.

most prevalent in Europe, but sales have increased in Latin America,<sup>21</sup> particularly in Argentina, where it is used by 10% of adults who smoke.<sup>22</sup> Factory-made cigarettes remain the most popular tobacco product, used by 22% of adults.<sup>22</sup> In Argentina, health warnings on tobacco packs must cover 50% of each side of the pack, with a pictorial image on the pack front and text on the pack reverse.<sup>23</sup> Packs must also contain information on smoking cessation services, with the use of external wrapping that obscures warnings prohibited.

We contribute to the literature by examining RYO pack characteristics, assessing differences between flavoured and unflavoured products, and health warning compliance in Argentina.

## METHODS

### Design and sample

We analysed RYO tobacco packaging as part of the 'REmoving the MARKeting Power of cigarettes' (REMAP) project, which explores tobacco industry strategies in four Latin American countries (Argentina, Guatemala, Mexico, Peru), focusing on their impact on adolescents (<https://remap.stir.ac.uk/>). A convenience sample of RYO packs (n=116) was purchased between November 2022 and May 2024 in five cities in Argentina (Buenos Aires City,



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Cordoba, Quilmes, San Salvador de Jujuy, Santa Rosa). We aimed to obtain a diverse sample of RYO tobacco, covering a wide range of brands and flavours, including multiple flavour variants from the same brand. The sample was not intended to represent the entire market but to support an exploratory analysis of RYO packaging.

### Procedure

Based on the Tobacco Packaging Surveillance System (TPackSS) methodology and previous studies,<sup>14 16</sup> we developed a checklist to code pack features: pack structure, pack graphics and warning compliance. The team agreed on the coding criteria, with all packs single coded. In addition, we photographed each pack, with all images available on the REMAP website.

### Analysis

We conducted a descriptive analysis of pack characteristics. We registered the price (converted to US\$), flavour, pack type, pack material and tobacco quantity (online supplemental figure 1).

Next, we analysed the *pack graphics*, examining the use of colours, descriptors (indicating the product is natural, good quality or environmentally friendly), images, language, origin and heritage (online supplemental table 1). For descriptors, we documented the specific wording used on packs.

Finally, we analysed *warning compliance* with the national law,<sup>23</sup> which requires 50% of the surface area to be occupied by the health warning, full visibility of both the warning text and image, and use of warnings corresponding to the period 2022–2024.

### RESULTS

The sample included 116 RYO packs from 50 brands, with about half (51.7%) containing flavoured tobacco (table 1). The average cost for 30 g packs (74.1% of the sample) was US\$4.9 per pack (SD=1.8), ranging from US\$1.4 to US\$10.5. The most common flavours were fruit (43.3%), vanilla (21.7%), chocolate (15.0%), mint/menthol (8.3%) and coffee (6.7%).

#### Pack structure

Most packs contained 30 g of tobacco (74.1%), with fewer packs containing 40 g (12.9%), 50 g (7.8%) or other quantities (5.2%). Almost all RYO tobacco products came in pouches (94.0%) (online supplemental figure 1), with other pack types being boxes (5.0%) and one cylindrical pack (1.0%). Packs were typically made of plastic (46.6%) or laminated paper (42.2%).

#### Pack graphics

One-third of packs (31.0%) featured descriptors like ‘natural’ or ‘additive-free’. 29.3% of packs used lighter colours (brown and/or green), reinforcing this natural image. Around half of unflavoured packs used such descriptors (51.8%) and colours (48.2%), compared with only 11.7%, for both descriptors and colours, of flavoured packs ( $p<0.05$ ). Flavoured RYO packs were generally brightly coloured, with 86.7% associated with the flavour, and the majority (88.3%) featuring flavour descriptors. These characteristics were more common in flavoured RYO packs ( $p<0.05$ ). A small proportion of flavoured RYO packs (15.0%) used numbers to denote flavours. 75% included quality descriptors such as ‘premium’ or ‘high quality’, with 71.7% of flavoured and 78.6% unflavoured packs displaying these terms.

Almost half the packs (46.6%) were from Argentina, with nearly half of them (48.1%) emphasising it through descriptors like ‘100% Argentine’ or the national flag. Heritage-related

**Table 1** Characteristics of RYO tobacco packs by type (flavoured and unflavoured)

Characteristics of RYO tobacco packs	RYO tobacco type		Total n=116 (100%)
	Flavoured n=60 (100%)*	Unflavoured n=56 (100%)†	
Flavour			
Fruit	26 (43.3%)	—	26 (22.4%)
Vanilla	13 (21.7%)	—	13 (11.2%)
Chocolate	9 (15.0%)	—	9 (7.8%)
Mint/menthol	5 (8.3%)	—	5 (4.3%)
Coffee	4 (6.7%)	—	4 (3.4%)
Other: Amarula, guarana, liquorice	3 (5.0%)	—	3 (2.6%)
Pack structure			
Tobacco quantity (g)			
30	46 (76.7%)	40 (71.4%)	86 (74.1%)
40	11 (18.3%)	4 (7.1%)	15 (12.9%)
50	1 (1.7%)	8 (14.3%)	9 (7.8%)
Other: 35, 45, 100, 150	2 (3.3%)	4 (7.1%)	6 (5.2%)
Pack type			
Pouch	55 (91.7%)	54 (96.4%)	109 (94.0%)
Other: box, cylindrical pack	5 (8.3%)	2 (3.6%)	7 (6.0%)
Pack material			
Plastic	19 (31.7%)	35 (62.5%)	54 (46.6%)
Laminated paper	30 (50.0%)	19 (33.9%)	49 (42.2%)
Other: metallised paper, paper, cardboard	11 (18.3%)	2 (3.6%)	13 (11.2%)
Pack graphics			
Main pack colour refers to the flavour	52 (86.7%)	1 (1.8%)	53 (45.7%)
Flavour and/or intensity descriptors	53 (88.3%)	34 (60.7%)	87 (75.0%)
Numbers indicating flavour or variety	9 (15.0%)	2 (3.6%)	11 (9.5%)
Main pack colour 'Natural'	7 (11.7%)	27 (48.2%)	34 (29.3%)
Natural descriptors	7 (11.7%)	29 (51.8%)	36 (31.0%)
Eco-friendly descriptors	4 (6.7%)	6 (10.7%)	10 (8.6%)
Quality descriptors	43 (71.7%)	44 (78.6%)	87 (75.0%)
Illustration theme			
Flavour	17 (28.3%)	0 (0%)	17 (14.7%)
Tobacco related	1 (1.7%)	14 (25.0%)	15 (12.9%)
Other: animals, historical figures, etc	29 (48.3%)	25 (44.6%)	54 (46.6%)
Indication of the place of origin	60 (100.0%)	52 (92.9%)	112 (96.6%)
Place of origin			
Argentina	25 (41.7%)	29 (51.8%)	54 (46.6%)
Europe	31 (51.7%)	21 (37.5%)	52 (44.8%)
Other: Uruguay	4 (6.7%)	2 (3.6%)	6 (5.2%)
Language			
English and Spanish	29 (48.3%)	31 (53.6%)	60 (51.7%)
English only	22 (36.7%)	7 (12.5%)	29 (25.0%)
Spanish only	9 (15.0%)	12 (21.4%)	21 (18.1%)
Other: German, French or Aymara	0 (0.0%)	7 (12.5%)	7 (6.0%)
Heritage			
Indication of brand age or heritage	14 (23.3%)	12 (21.4%)	26 (22.4%)
Warning compliance			
Warning not covering half of the pack (text)	13 (21.7%)	19 (33.9%)	32 (27.6%)
Warning not covering half of the pack (image)	24 (40.0%)	31 (55.4%)	55 (47.4%)
Message is not fully visible	43 (71.7%)	52 (92.9%)	95 (81.9%)
Image is not fully visible	53 (88.3%)	52 (92.9%)	105 (90.5%)
Outdated health warning	51 (85.0%)	34 (60.7%)	85 (73.3%)
*Percentages on this column were calculated based on total number of flavoured RYO packs (n=60).			
†Percentages on this column were calculated based on total number of unflavoured RYO packs (n=56).			
RYO, roll-your-own.			

descriptors (eg, 'we started in 1887, we are tobacco experts') were identified on 22.4% of packs.

### Special/limited editions

We identified three special/limited editions. One of these (Sayri) involved artwork developed in collaboration with local artists, with the same artwork painted as murals in public spaces and the packs featuring a QR code to access their location (online supplemental figure 2). Another (Van Kiff) included stickers to decorate objects (online supplemental figure 3). The final special edition pack (Las Hojas) was linked to trap music and encouraged consumers to 'leave their mark' on everything they do (online supplemental figure 4).

### Health warning compliance

Nearly half the packs (47.4%) had a warning image not covering the mandatory proportion, and most had warnings obscured by tax stamps (90.5% image, 81.9% text). Additionally, 73.3% displayed outdated warnings for the period when they were purchased (2022–2024) (table 1).

## DISCUSSION

We analysed a sample of RYO packs sold in Argentina. The results help to understand how pack structure and graphics are being used in the marketing of RYO tobacco. Unflavoured RYO packs frequently included descriptors like 'natural' or 'additive-free' that may be associated with reduced harm,<sup>24–27</sup> alongside light colours that may signal a more natural product. Flavoured packs use vibrant colours and flavour-related descriptors. These findings suggest a strategic use of pack colours and descriptors. Additionally, our results showed that many packs were non-compliant with health warning regulations, particularly in terms of size and visibility.

Tobacco companies use colours and descriptors on cigarette packs to create an impression of reduced risk. People who smoke associate lighter coloured packs and descriptors like 'organic', 'natural' and 'additive-free' with lower harm.<sup>7 9 24–27</sup> It is argued that tobacco companies use a similar strategy for RYO tobacco, aimed at building or reinforcing the misperception that RYO tobacco is a less harmful alternative to factory-made cigarettes.<sup>28–31</sup> We found that about one-third of RYO packs, particularly unflavoured packs, used 'natural' descriptors and light pack colours.

We found a wide variety of flavoured RYO tobacco available in Argentina, typically referencing flavours through bright packaging colours, imagery and product names. While it is not unusual for adults to use flavoured tobacco and nicotine products, research shows that flavours can increase product appeal to young people.<sup>32 33</sup> The popularity of capsule cigarettes in Latin America may help explain why so many flavoured RYO tobacco variants are available.<sup>34</sup>

Pack size, quantity, opening style and shape also play a key role.<sup>1 6 35</sup> The RYO tobacco packs we analysed had a wide price range potentially reflecting a strategy to target different market segments. Price-related strategies play a key role in tobacco marketing, including price promotions<sup>14</sup> and the absorption of tax burdens.<sup>36</sup> Low price is a key factor in explaining RYO tobacco consumption in high-income countries.<sup>31 37</sup>

Special/limited editions have long been used for promoting cigarettes and new products, such as nicotine pouches.<sup>38</sup> One special edition, encouraging users to 'leave their mark' on everything they do, aligns with the broader concept of rolling cigarettes as a ritual, a perception commonly held by RYO tobacco

users who view the process as an opportunity to customise their cigarettes according to their preferences.<sup>28 31 39</sup> The special/limited-edition RYO packs we found used art as a metaphor for personal creativity and freedom.

Many packs in our study did not comply with health warning regulations. As warnings must match the period of release, our findings suggest that some packs were either launched with outdated warnings, violating the law, or remained unsold for extended periods. A clearer violation was the lack of warning visibility, a legal requirement<sup>23</sup> often unmet.

In terms of limitations, first, we used a purposive, non-probabilistic sample. We did so because there were no published data or national records of RYO tobacco sales in Argentina that could be used to guide sample selection, as with previous studies.<sup>14 16</sup> Instead, we included all brands and most variants encountered in the points of sale visited to achieve a diverse sample. Additionally, we supplemented our selection with online searches to ensure comprehensive brand coverage. One further limitation is that a single coder coded all the data. Although no formal intercoder reliability testing was conducted, a double-checking process was implemented, and any uncertainties or cases requiring clarification were discussed with the broader research team to ensure consistency and rigour. Finally, we could not determine whether the packs complied with regulations on descriptors. Compliance with Resolution 143/2022,<sup>40</sup> banning terms suggesting reduced harm (eg, 'no additives' or 'natural') or explicit flavour references, was required as by January 2023. However, since the packs were purchased before and after this deadline and their release dates are unknown, it remains uncertain. This may account for some packages using numbers to denote flavours, while others explicitly named them.

In conclusion, as with other tobacco products, RYO tobacco pack design is used to communicate product-related messages. Given the rise in RYO tobacco sales in some countries,<sup>21</sup> greater attention is needed on how the packaging is used to promote these products and compliance with health warning regulations. This includes understanding how people who smoke—particularly young people—perceive these packs and flavours, and whether the industry is exploiting regulatory gaps, as our findings suggest. Although focused on Argentina, the patterns observed may not be unique to this context, offering a template for similar studies in other countries.

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