

RESEARCH REPORT

ADDICTION

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Adolescent use of nicotine pouches in four Latin American countries: A cross-sectional survey

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Funding information

This work is part of the 'Removing the
Marketing Power of Cigarettes' (REMAP)
project, funded by the Medical Research
Council (MR/X004279/1).

Abstract

Background and Aim: Nicotine pouches are novel products with rapid global sales growth. Our aim was to explore use and perceptions of nicotine pouches among adolescents in Latin America.

Design: Cross-sectional school surveys between March and August 2025.

Setting: Sixteen cities, four each in Argentina, Guatemala, Mexico and Peru.

Participants: Adolescents aged 12–17 years (n = 12 785).

Measurements: Use of, and susceptibility to, nicotine pouches, through survey questions about frequency of use, brands and flavours used, access, and harm compared to cigarettes and e-cigarettes.

Results: Self-reported ever use was 6.0%, highest in Peru (9.1%) and lowest in Argentina (3.2%). Ever use was higher among males, those with higher family affluence scores, and those who had ever vaped or smoked tobacco. The rate of current (past 30 day) nicotine pouch use was 2.4%. Those reporting current use typically used pouches infrequently (1–3 days in the last month). The most commonly used brands were Velo (24.4%) and Zyn (18.1%), with pouches most likely to be given to them by someone (26.3%) or giving someone else money to buy them (15.8%). Fruit (20.3%) and mint/menthol (17.3%) were the most common flavours reported. More than one-third of the sample indicated that nicotine pouches were more harmful (somewhat/a lot) than cigarettes (38.7%) and e-cigarettes (36.7%).

Summary: Nicotine pouch use among adolescents in four Latin American countries appears to be relatively uncommon but higher than in previous youth surveys. Access to nicotine pouches appears to be largely informal, fruit and mint/menthol flavours are most common, and many adolescents appear uncertain about harm compared with cigarettes and e-cigarettes.

KEYWORDS

adolescents, Latin America, nicotine pouches, public health, quantitative, survey

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INTRODUCTION

Nicotine pouches are a nascent category of oral products. Most sales are in the United States and Europe [1], but these products are increasingly entering new markets. All major tobacco companies have nicotine pouch brands, with the global market leaders Zyn (Philip Morris) and Velo (British American Tobacco) [2]. There are also many non-tobacco manufacturers selling these products [3].

As a novel product, there is relatively limited research on nicotine pouches [4]. Although academic interest has grown, few studies have explored adolescent nicotine pouch use. In the Netherlands, 0.3% of 13- to 17-year-olds reported ever using nicotine pouches in 2020, with none of the sample (0.0%) reporting current use [5]. In the United Kingdom (UK), 3.3% of 11- to 18-year-olds reported ever use in 2024, with 1.2% reporting current use [6]. In the United States (US), between 2023 and 2024 the Monitoring the Future Study found an increase in ever nicotine pouch use (3.0% vs. 5.4%), past 12-month use (2.4% vs. 4.6%) and current (past 30-day) use (1.3% vs. 2.6%) among adolescents [7]. The National Youth Tobacco Survey in 2024 found that 1.8% of middle- and high-school students reported current nicotine pouches, an increase from 1.5% in 2023 [8]. In Pakistan, 2.6% of 10- to 16-year-olds reported past-month nicotine pouch use in 2024 [9]. In the United States and Pakistan, current pouch use exceeds that of all other tobacco or nicotine products except for e-cigarettes [8, 9].

It is not clear why nicotine pouches may appeal to youth. Content analyses of nicotine pouch advertising in the United States found the most common claims made were about convenience of use, the ability to choose nicotine strength, product innovation and freedom [2, 10]. These themes may appeal to younger audiences, as may less commonly identified themes such as the absence of odour and discreetness [10]. Advertising on social media, such as TikTok, may also help normalise use [11] and be viewed favourably by younger audiences [12]. Recent evidence suggest that nicotine pouch marketing on social media platforms portrays these products as trendy, discreet and less harmful, which might increase their appeal among younger audiences and normalise the use of such products [13, 14]. Nicotine pouches are also available in a panoply of flavours [3], which may increase appeal [15].

The medium and longer-term risks associated with nicotine pouch use are not well understood [16]. A scoping review suggests they are less toxic than cigarettes [17], but the risks identified include nicotine dependence, nausea, vomiting, cardiovascular issues and arterial stiffness, mouth irritation and oral lesions, light-headedness and feelings of intoxication [18–21]. For those who use these products, particularly nicotine naïve children and adolescents, acute nicotine toxicity is a concern [22, 23], especially given the very high levels of nicotine reported for some products [3]. Few studies have explored comparative harm, but one study found that about two-thirds of 16- to 17-year-olds considered nicotine pouches to be less harmful than, or as harmful as, cigarettes, smokeless tobacco and e-cigarettes [24]. Another study found that young adults (19- to 23-year-olds) did not perceive nicotine pouches to be more or less harmful than cigarettes or e-cigarettes [16]. Qualitative research with children in Pakistan

found mixed perceptions of the risks associated with Velo nicotine pouches, with some viewing them as more harmful than cigarettes because of adverse reactions and others as potentially less harmful, a perception influenced by the products' resemblance to confectionery and absence of health warnings [25].

Duren *et al.* [26] examined regulatory approaches across 67 countries. They identified 33 countries, in which nicotine pouches were sold, with 20 regulating these products. The most common policies were banning or limiting the ability to sell nicotine pouches, minimum purchase age requirements and advertising restrictions. These products are now available in many Latin American countries. At the time of the study, in 2025, they were subject to regulation in Peru, where they are treated as tobacco products (with sales to minors prohibited and warnings required to cover at least 30% of packs) [27], but not in Argentina, Guatemala or Mexico [26].

In the four countries that are the focus of this study, rates of adolescent smoking vary (Argentina: 20.2%, Mexico: 19.8%, Guatemala: 17.1% and Peru: 7.2%), with adolescent smoking in Peru among the lowest in Latin America and in Argentina, Mexico and Guatemala among the highest [28]. E-cigarette use among adolescents is less common (Argentina: 7.1%, Peru: 6.3%, Guatemala: 5.6%, Mexico: 2.6%) [28, 29]. For nicotine pouches, there is no research with adolescents in these countries or in Latin America. Given the dearth of research on nicotine pouches with adolescents and absence of research in Latin America, we explored adolescents' perceptions and use of nicotine pouches in Argentina, Guatemala, Mexico and Peru. The findings may help policy makers in these countries to understand how popular these novel products are with adolescents and how they are viewed and what regulatory action, if any, they consider appropriate.

METHODS

Design and sample

Cross-sectional school surveys with 12- to 17-year-olds ($n = 12\,785$) were conducted between March and August 2025 in middle- and high-schools in four cities in Argentina (Cordoba, Quilmes, San Salvador de Jujuy and Santa Rosa), Guatemala (Quetzaltenango, Guatemala City, Tecpan and San Antonio), Mexico (Guadalajara, Mexico City, Monterrey and Oaxaca) and Peru (Arequipa, Pucallpa, San Juan de Miraflores and Trujillo).

Measures

The survey collected information on perceptions and use of different tobacco (cigarettes, roll-your-own tobacco) and nicotine products (electronic cigarettes, nicotine pouches), hypothetical tobacco control policies and socio-demographic characteristics. It was part of the 'Removing the Marketing Power of Cigarettes' (REMAP) project. The survey was developed by the REMAP team and informed by past research. Several items were refined through cognitive interviews in

each study country and pilot surveys in Guatemala, Mexico and Peru. The pilot data are not included in the final dataset.

For nicotine pouches, participants were informed that ‘This section is about nicotine pouches. These are small pouches which contain nicotine-containing powder. The pouches are typically white and flavoured. People use them by placing a pouch between their upper lip and gum.’ They were shown an accompanying image (see Figure 1).

Trial and susceptibility

Trial was assessed with ‘Have you ever tried a nicotine pouch?’, with response options ‘yes’ and ‘no’. There were two questions on susceptibility, ‘Do you think that you will use a nicotine pouch at any time during the next 12 months?’ and ‘If one of your friends offered you a nicotine pouch would you use it?’ Response options were: definitely yes, probably yes, probably not, definitely not [30, 31]. Participants were classed as non-susceptible if they answered ‘definitely not’ to both questions, and susceptible if they did not answer ‘definitely not’ to both questions. Participants with missing data for either question were coded as missing on susceptibility.

Frequency of use and products used

Participants were asked ‘During the past 30 days, on how many days did you use nicotine pouches?’ with response options: I have never used a nicotine pouch, I have not used a nicotine pouch in the past 30 days, 1 to 3 days, 4 to 9 days, 10 to 19 days and 20 to 30 days [32]. With respect to products used, we asked ‘If you have ever tried a nicotine pouch, what brand or brands of nicotine pouches have you tried?’, with response options: I have not tried a nicotine pouch, I have tried a nicotine pouch but do not know the brand, Velo, Zyn, Ace, Juice Head, Gritt, Bagz, other and do not know. Participants could select more than one brand. The brands mentioned were based on those identified in one or more of the countries in January 2025.

Flavour, source of last pouch used

Participants were asked ‘Last time that you used a nicotine pouch, what flavour was it?’ Response options were: I have never used a nicotine pouch, tobacco flavour, mint or menthol flavour, fruit flavour,

candy or desserts flavour, drinks flavour, other flavour, do not know. These categories were taken from past research [24]. In terms of source, participants were asked ‘In the past 30 days, where did you get nicotine pouches?’ Response options: I have not had any nicotine pouches in the past 30 days, someone gave to me, I took from someone, I gave money to someone else to buy for me, I bought from a street vendor or street stand (news stand, food place), I bought at a corner store (neighbourhood store, kiosk), I bought at another type of store (e.g. convenience store, supermarket, tobacconist or pharmacy), I bought at a vending machine, I got another way.

Comparative harm

Participants were asked ‘Do you think that nicotine pouches are more, less or equally harmful than cigarettes?’ with response options: a lot more harmful than cigarettes, somewhat more harmful than cigarettes, equally harmful, somewhat less harmful than cigarettes, a lot less harmful than cigarettes and do not know. They were asked the same question with respect to vapes [33].

Procedure

Secondary schools were contacted directly by the respective country teams, or through local or regional education authorities or ministry officers, with an overview of the study provided.

Schools were approached based on involvement in earlier (qualitative) research as part of the REMAP project, ministry of education referrals or invitations. There was no inclusion criteria for schools, except that only public schools with over 500 pupils were eligible in Peru and only private schools offering both lower and upper secondary levels in Guatemala.

Approval to conduct the study was required from school principals, area co-ordinators or local education authorities. Fifty-five secondary schools (between 8 and 25 in each country) agreed to participate, with an overall response rate of 65% (29% in Argentina, 63% in Guatemala, 71% in Mexico and 100% in Peru). For schools that agreed to take part, virtual or in-person meetings with school staff (head teachers or administrators) were arranged to co-ordinate the study.

Surveys were administered during regular school hours in classroom settings, and class sizes ranged from 7 to 45 students. Researchers from the REMAP project administered the survey in each class, explaining that it was voluntary, anonymous and confidential and instructing participants on how to complete it. They remained in the class until all participants had completed the survey to collect them and answer any queries. Teachers were not present in classrooms except in Argentina, where they had a non-participatory role. Paper surveys were used in all schools for consistency, with participants given pens/pencils for completion where needed. We opted for a paper survey given potential challenges with using electronic devices in certain study locations (e.g. in study sites such as Pucallpa, in the Peruvian jungle) where electricity outages are common and



FIGURE 1 Image of nicotine pouches shown to participants.

internet accessibility intermittent. Surveys lasted up to 90 minutes. Participants received a small incentive (such as pencils, rulers or a snack) for participation in all countries except Guatemala.

Passive parental consent was used in Guatemala, Peru and Argentina (except for those under the age of 13 in Argentina where there was active consent) and active consent in Mexico. Participant written assent was given in class at the time of survey administration in Argentina, Peru and Mexico, with verbal assent in Guatemala.

Surveys were merged across countries. The cleaning process involved checking that participants did not contradict their earlier responses. Where this occurred, responses were retained to the point where they were consistent and recoded to missing where inconsistent. For example, if a participant responded that they had never tried pouches and then in a subsequent question asking what brand pouches they had tried gave a brand rather than responding 'I have never used pouches' then the brand question was recoded to missing.

Ethics

Ethics approval was obtained from ethics committees in the Hospital de Clínicas, Universidad de Buenos Aires (Argentina); Institutional Ethics Committee of Socios En Salud-Sucursal (Perú); National Institute of Public Health (Mexico); Comité de Ética del Instituto de Nutrición de Centroamérica y Panamá (Guatemala); and General University Ethics Panel (Scotland).

Analysis

Descriptive statistics were used to present ever use and susceptibility and broken down by socio-demographic characteristics and ever cigarette and vape use. Differences in prevalence of nicotine pouch ever use by country were examined using logistic regression adjusted for age, gender, family affluence scale tertile and smoking and vaping behaviour.

The influence of smoking and vaping on nicotine pouch use was examined using mixed effects logistic regression models. Random effects were fitted for 'country' and 'school'. Each variable was individually regressed on the dependent variable. Next, a fully adjusted model was run. The dependent variable was nicotine pouch ever use as a binary outcome. Independent variables (fixed effects) were ever smoking and ever vaping, and the multi-variable analysis was adjusted for age, gender and family affluence scale tertile. Likelihood ratio tests comparing the full model with both random effects and a reduced model (without either one or both of the random effects) determined whether the random effects should be retained in the final model.

To examine differences between countries in prevalence of susceptibility to pouches among participants who have never used pouches we used a logistic regression adjusted for age, gender, family affluence scale tertile and smoking and vaping behaviour. A mixed effects logistic regression model was used to examine whether vaping or smoking behaviour is associated with susceptibility to pouches, with

the dependent variable 'susceptibility' to using nicotine pouches. Random effects were fitted for 'country' and 'school' and the model was adjusted for age, gender and family affluence scale. For this outcome, only those who had never used nicotine pouches were included in the analysis sample. The analysis was not pre-registered on a publicly available platform, therefore, all results should be considered exploratory.

Differences between countries in harm perceptions were assessed using an ordinal regression adjusted for age, gender and family affluence. The effect of ever nicotine pouch use on harm perceptions was examined using a mixed effects ordinal regression adjusted for age, gender, family affluence scale tertile, with random effects for country and school. For these analyses of harm perceptions, 'do not know' responses were recoded to missing. Analysis was conducted in Stata version 17.

The number of participants removed from the analysis because of inconsistent responding is reported. A sensitivity analysis was conducted to examine predictors of ever use, comparing results with and without participants who had inconsistent responses to later pouch questions (recoded as missing).

RESULTS

A total of 12 785 adolescents (12–17 years) participated. Of these 262 did not answer the questions on nicotine pouches, leaving 12 523 for this analysis.

Nicotine pouch ever use

Six percent ($n = 753$) reported having used a nicotine pouch, more common in males and those in the high and middle affluence tertiles (Table 1). Use was more common in Peru (9.1%), Mexico (5.9%) and Guatemala (5.5%) relative to Argentina (3.2%). Having tried a cigarette or a vape were significant predictors of ever pouch use in the bivariate associations. In the adjusted logistic regression with country as the independent variable, the differences between Argentina and Guatemala [adjusted odds ratio (aOR) = 1.86, 95% confidence interval (CI) = 1.40–2.47, $P < 0.001$], Mexico (aOR = 1.79, 95% CI = 1.37–2.35, $P < 0.001$) and Peru (aOR = 3.43, 95% CI = 2.65–4.44, $P < 0.001$) were statistically significant.

Cigarette and vape use were significant predictors of having tried pouches in the adjusted mixed effects logistic regression after controlling for socio-demographic factors. The random effects for country and school were statistically significant by the likelihood ratio test so were retained in the regression analysis. Results are consistent under sensitivity analysis as shown in the last column of Table 1.

Frequency of use and source

Participants who had inconsistent responses across the use, frequency, source, brand and flavour questions were recoded to missing

TABLE 1 Ever pouch use by socio-demographic variables, ever smoking and vaping.

Variable	Values	Yes (%)	Bivariate OR (95% CI) P-value	Adjusted OR (95% CI) P-value	Sensitivity analysis adjusted OR (95% CI) P-value
Age	12 years	58 (5.1)	Ref	Ref	Ref
	13 years	120 (6.2)	1.28 (0.92–1.77) 0.141	1.05 (0.73–1.48) 0.802	1.24 (0.80–1.92) 0.330
	14 years	163 (7.2)	1.47 (1.07–2.02) 0.016	1.07 (0.77–1.50) 0.687	1.14 (0.75–1.74) 0.538
	15 years	154 (6.0)	1.28 (0.93–1.77) 0.130	0.81 (0.58–1.15) 0.239	0.83 (0.54–1.27) 0.384
	16 years	148 (5.7)	1.21 (0.87–1.68) 0.246	0.73 (0.52–1.04) 0.080	0.77 (0.50–1.18) 0.227
	17 years	110 (5.5)	1.33 (0.94–1.89) 0.108	0.75 (0.52–1.10) 0.141	0.83 (0.52–1.33) 0.441
Gender	Male	412 (7.0)	1.52 (1.30–1.78) <0.001	1.45 (1.23–1.72) <0.001	1.74 (1.41–2.15) <0.001
	Female	303 (4.9)	Ref	Ref	Ref
	Other	8 (9.8)	2.08 (1.42–3.04) <0.001	1.90 (1.25–2.89) 0.003	1.44 (0.81–2.56) 0.215
	Prefer not to say	26 (10.1)	Combined with 'other'	Combined with 'other'	Combined with 'other'
	Missing	4 (4.0)	Excluded	Excluded	Excluded
Tried vape	No	224 (3.0)	Ref	Ref	Ref
	Yes	519 (10.3)	4.02 (3.40–4.74) <0.001	3.20 (2.65–3.88) <0.001	5.17 (4.02–6.65) <0.001
	Missing	10 (32.3)	Excluded	Excluded	Excluded
Tried cigarette	No	356 (12.2)	Ref	Ref	Ref
	Yes	394 (4.1)	3.51 (3.00–4.10) <0.001	2.27 (1.89–2.72) <0.001	2.65 (2.13–3.31) <0.001
	Missing	3 (15.0)	Excluded	Excluded	Excluded
Family affluence scale	Low	165 (4.7)	Ref	Ref	Ref
	Middle	231 (5.3)	1.26 (1.02–1.56) 0.031	1.21 (0.98–1.51) 0.082	1.50 (1.13–1.99) 0.005
	High	300 (7.0)	1.64 (1.33–2.02) <0.001	1.48 (1.19–1.83) <0.001	2.06 (1.57–2.70) <0.001
	Missing	57 (13.7)			
Total	—	753 (6.0)	—	11 943	11 014

Values in bold indicate statistical significance $P < 0.05$.

Sensitivity analysis excludes those with later inconsistent answers.

All analyses presented are adjusted for a random effect of school and country.

Abbreviation: CI, confidence interval.

($n = 1037$). Current (past 30 day) use of these products was 2.4% (283/11748), highest in Peru (4.5%), Mexico (2.2%), Guatemala (1.4%) and Argentina (1.2%). Among those who had used nicotine pouches, 38.7% used pouches on 1 to 3 days, 20.7% on 4 to 9 days, 12.8% on 10 to 19 days and 27.8% on 20 to 30 days of the past 30 days. The most common ways of obtaining pouches in the past 30 days for those who had used nicotine pouches was being given them (26.3%), giving someone else money to buy them (15.8%), taking a pouch without permission (12.4%) or getting them from a street vendor (10.5%) or corner store (10.2%).

Brands and flavours

Among people who currently use nicotine pouches, the most common brands were Velo (24.4%), Zyn (18.1%), Gritt (14.3%), Ace (13.9%), Juice Head (8.7%), Bagz (5.6%) and other brands (4.5%). Nearly one in five did not know which brand(s) they used (19.2%). With respect to the flavour of the last pouch used, fruit (20.3%) was most common, followed by mint or menthol (17.3%), tobacco (15.4%), candy or

desserts (10.9%), drinks (9.0%) and other flavours (4.5%). One in seven (14.3%) did not know the flavour, and 8.3% of people did not answer this question.

Susceptibility

Among the 11 578 participants who had never used pouches and who answered both questions on susceptibility, 1674 (14.5%) were susceptible to using pouches. Males had higher odds of susceptibility compared to females (aOR = 1.20, 95% CI = 1.08–1.34, $P < 0.001$), as did participants who identified as other gender or preferred not to say (aOR = 1.57, 95% CI = 1.16–2.12, $P = 0.004$) (see Table 2). Susceptibility was highest in Guatemala (17.7%), followed by Mexico (15.5%), Peru (12.8%) and Argentina (12.1%). In the adjusted logistic regression model, participants in Guatemala (aOR = 1.67, 95% CI = 1.42–1.96, $P < 0.001$) and Mexico (aOR = 1.28, 95% CI = 1.10–1.50, $P = 0.002$) demonstrated significantly increased odds of being susceptible compared to participants in Argentina. There was no difference between those in Peru and Argentina (aOR = 1.11, 95% CI = 0.94–1.32,

TABLE 2 Susceptibility to pouches among those who have never used nicotine pouches by socio-demographic variables, ever smoking and ever vaping.

Variable	Values	Yes (%)	Bivariate OR (95% CI) P-value	Adjusted OR (95% CI) P-value
Age	12 years	133 (12.5)	Ref	Ref
	13 years	245 (13.6)	1.10 (0.87–1.38) 0.438	1.05 (0.82–1.34) 0.685
	14 years	324 (15.7)	1.29 (1.04–1.61) 0.023	1.06 (0.84–1.35) 0.609
	15 years	346 (14.7)	1.19 (0.95–1.49) 0.125	0.90 (0.71–1.15) 0.403
	16 years	358 (14.8)	1.24 (0.99–1.56) 0.059	0.83 (0.65–1.06) 0.136
	17 years	268 (14.3)	1.17 (0.92–1.49) 0.189	0.77 (0.60–1.00) 0.048
Gender	Male	820 (15.2)	1.20 (1.08–1.34) 0.001	1.18 (1.05–1.32) 0.005
	Female	776 (13.4)	Ref	Ref
	Other	15 (20.6)	1.57 (1.16–2.12) 0.004	1.41 (1.02–1.96) 0.039
	Prefer not to say	42 (18.6)	Combined with 'other'	Combined with 'other'
	Missing	21 (22.6)	Excluded	Excluded
Tried cig	Yes	683 (27.3)	3.19 (2.84–3.57) <0.001	1.98 (1.74–2.24) <0.001
	No	984 (10.9)	Ref	Ref
	Missing	7 (43.8)	Excluded	Excluded
Tried vape	Yes	972 (22.1)	2.67 (2.39–2.97) <0.001	2.42 (2.13–2.77) <0.001
	No	693 (9.7)	Ref	Ref
	Missing	9 (50.0)	Excluded	Excluded
Family affluence scale	Low	477 (14.6)	Ref	Ref
	Middle	548 (13.5)	0.93 (0.81–1.07) 0.296	0.87 (0.75–1.00) 0.045
	High	571 (14.5)	1.04 (0.90–1.20) 0.587	0.96 (0.83–1.11) 0.555
	Missing	78 (23.9)		
Total	—	1674 (14.5)	—	11 107

Values in bold indicate statistical significance $P < 0.05$.

All analyses presented are adjusted for a random effect of school and country.

Abbreviation: CI, confidence interval.

$P = 0.200$). Participants who had tried vapes (OR = 3.19, 95% CI = 2.84–3.57, $P < 0.001$) or cigarettes (OR = 2.67, 95% CI = 2.39–2.97, $P < 0.001$) had higher odds of susceptibility compared to those who had not. The relationship between vape use and cigarette use and nicotine pouch susceptibility remained statistically significant after adjustment for socio-demographic variables.

Harm

Approximately two-fifths (42.8%) of the sample did not know how harmful nicotine pouches are relative to cigarettes. Just under two-fifths (38.7%) thought that pouches were more harmful than cigarettes and 5.4% that they were less harmful (Table 3). In a mixed effects ordinal regression participants who had used nicotine pouches had higher odds than participants who had not of perceiving pouches as being less harmful than cigarettes (aOR = 2.19, 95% CI = 1.86–2.59, $P < 0.001$). Responses varied by country, with 32.5% of participants in Argentina thinking pouches were more harmful than cigarettes, 38.8% in Guatemala, 49.8% in Mexico and 33.1% in Peru. In an adjusted ordinal regression, participants had lower odds of

perceiving pouches as being in a lower harm category relative to cigarettes in Mexico (aOR = 0.55, 95% CI = 0.49–0.63, $P < 0.001$) and Peru (aOR = 0.77, 95% CI = 0.67–0.88, $P < 0.001$) relative to Argentina. Participants in Guatemala did not differ from Argentina in perceptions of harm of pouches and cigarettes (aOR = 0.89, 95% CI = 0.78–1.02, $P = 0.092$).

Approximately two-fifths (43.2%) did not know how harmful nicotine pouches were relative to vapes. Over a third (36.7%) thought that pouches were more harmful than vaping and 6.6% that they were less harmful. In a mixed effects ordinal regression, those who had used nicotine pouches were more likely than those who had not used nicotine pouches to perceive pouches as being less harmful than vapes (aOR = 1.90, 95% CI = 1.61–2.25, $P < 0.001$). Responses varied by country with 31.3% of participants in Argentina thinking pouches were more harmful than vapes, 36.1% in Guatemala, 32.3% in Peru and 46.2% in Mexico. In an adjusted ordinal regression, participants had lower odds of perceiving pouches as being less harmful than vapes in Mexico (aOR = 0.66, 95% CI = 0.59–0.75, $P < 0.001$) and Peru (aOR = 0.73, 95% CI = 0.64–0.83, $P < 0.001$) relative to Argentina but the difference with Guatemala (aOR = 0.98, 95% CI = 0.87–1.12, $P = 0.829$) was not statistically significant.

TABLE 3 Harm perceptions of nicotine pouches relative to vapes and cigarettes.

		Country				
Relative pouchharm—All		Argentina, n (%)	Guatemala, n (%)	Mexico, n (%)	Peru, n (%)	Total, n (%)
All, pouch harm relative to cigs	More harmful than cigs	965 (32.45)	1087 (38.75)	1686 (49.82)	1095 (33.05)	4833 (38.74)
	Same harm as cigs	402 (13.52)	429 (15.29)	402 (11.88)	399 (12.04)	1632 (13.08)
	Less harmful than cigs	197 (6.62)	173 (6.17)	159 (4.70)	148 (4.47)	677 (5.43)
	Do not know	1410 (47.41)	1116 (39.79)	1137 (33.60)	1671 (50.44)	5334 (42.75)
All, pouch harm relative to vapes	More harmful than vapes	925 (31.27)	1014 (36.06)	1563 (46.19)	1069 (32.34)	4571 (36.69)
	Same harm as vapes	385 (13.02)	461 (16.39)	451 (13.33)	384 (11.62)	1681 (13.49)
	Less harmful than vapes	212 (7.17)	212 (7.54)	241 (7.12)	158 (4.78)	823 (6.61)
	Do not know	1436 (48.55)	1125 (40.01)	1129 (33.36)	1695 (51.27)	5385 (43.22)
Total		2958	2812	3384	3306	12 460
People who have used pouches, pouch harm relative to cigs	More harmful than cigs	33 (35.48)	60 (40.00)	114 (58.16)	110 (36.79)	317 (42.95)
	Same harm as cigs	20 (21.51)	26 (17.33)	24 (12.24)	62 (20.74)	132 (17.89)
	Less harmful than cigs	13 (13.98)	22 (14.67)	25 (12.76)	63 (21.07)	123 (16.67)
	Do not know	27 (29.03)	42 (28.00)	33 (16.84)	64 (21.40)	166 (22.49)
People who have used pouches, pouch harm relative to vapes	More harmful than cigs	36 (39.56)	51 (34.69)	102 (52.31)	129 (43.43)	318 (43.56)
	Same harm as cigs	13 (14.29)	27 (18.37)	40 (20.51)	54 (18.18)	134 (18.36)
	Less harmful than cigs	19 (20.88)	28 (19.05)	21 (10.77)	49 (16.50)	117 (16.03)
	Do not know	23 (25.27)	41 (27.89)	32 (16.41)	65 (21.89)	161 (22.05)
Total		91	147	195	297	730

Abbreviation: cigs, cigarettes.

DISCUSSION

We found that 6.0% of our adolescent sample reported ever using nicotine pouches, with 2.4% having used them in the past 30 days. Those who currently used nicotine pouches were most likely to have obtained them by being given them by someone they know, to have given someone else money to buy them or to have taken them without permission. Velo and Zyn were the most common brands used, with fruit and mint/menthol flavours most common. Approximately one in six students who had never used pouches was susceptible. Participants were more likely to view pouches as more harmful than vapes and cigarettes rather than less harmful.

Reported ever pouch use in this study was higher than in previous adolescent surveys. That youth nicotine pouch use is trending upward, at least in countries where data is available, may be a factor. It may also be related to high tobacco use in most of our study countries—Argentina, Mexico and Guatemala are among the five countries in Latin America with the highest rates of adolescent tobacco use [28]—given that nicotine pouch use was associated with ever use of cigarettes, in line with past research [26, 34]. However, this explanation does not account for the findings in Peru given that smoking rates are much lower than for the other three countries yet ever use (and also current use) of nicotine pouches was higher. In addition, at the time of the study Peru was the only country where nicotine pouches were regulated as tobacco products. As such, it is not clear why use was higher in Peru, but we believe that nicotine

pouches entered the Peruvian market earlier than in the other countries, which may help explain this finding. That adolescent e-cigarette use in Peru is higher than in most of the other countries [28] might also reflect greater openness to trying newer nicotine products. Future qualitative research exploring adolescents' exposure to, engagement with and perceptions of nicotine pouches in Latin America would be of value. With respect to current use, across the four countries the findings are very similar to past research in the United States [7] and Pakistan [9], with the findings for regular use (at least 20–30 days of the past 30 days) reflecting those found in the United States [8]. One in six of those who had never used nicotine pouches were susceptible to future nicotine pouch use.

Consistent with previous research, those who had used nicotine pouches reported not buying them [35]. An online survey in Australia found that among 16- to 17-year-olds the most common source was from friends, with qualitative research in Scotland finding that children accessed nicotine pouches mainly from older pupils or peers or older siblings [36]. We found fruit and mint/menthol flavours to be most common, reflecting past findings [8, 37, 38]. The third most common flavour was tobacco. This may reflect confusion about the product, which may be seen as tobacco products by some young people as the most common brands used (Velo, Zyn) are sold by tobacco companies. There may also be uncertainty about flavour as participants may not see the packaging at the point of consumption, because they are given or take individual pouches from others or as a result of the use of

concept descriptors on packaging (e.g. Velo Tropic Breeze), which suggest a taste, aroma or sensation but do not specify a flavour [39].

Approximately two-fifths of the sample indicated that they did not know how harmful nicotine pouches may be relative to cigarettes and vapes, consistent with research with young adults where approximately half the sample were uncertain as to whether pouches were more or less harmful than cigarettes or vapes [16]. These findings may be related to the novelty of the product, which participants may have been unfamiliar with or unsure of, despite the survey including an image and explanation of these products. For those providing a response, they were more likely to perceive nicotine pouches as more harmful than smoking and vaping. This pattern was the same for those who had used nicotine pouches. These findings contrast with a survey in the United States with young adults that found nicotine pouches to be viewed as less harmful (and less addictive) than cigarettes and vapes [35]. These differences may be related to the setting and sample. Health perceptions of nicotine pouches may be shaped by the way these products are marketed, with research in the United States finding that advertising of leading brands often features claims like 'tobacco-free' or 'smoke-free' [2], terms that may be associated with reduced harm and addictiveness [21]. How nicotine pouches are marketed in our four Latin American countries is not clear. Our adolescent sample may be less aware than older samples of the risk profiles of different nicotine products, or they may have interpreted harm differently. Children in Pakistan, for instance, appeared to view risk through a short-term lens, for instance, some considered nicotine pouches more harmful than cigarettes because of adverse reactions (vomiting and headaches) following use [25]. These views may be shaped by personal experience or seeing or hearing about their peers experiencing negative short-term effects such as nausea, sickness, headaches, oral problems, fainting and convulsions [18–21, 40]. Future qualitative research should explore young people's views of product harm of pouches in comparison with other products and the reasons behind these perceptions.

Our study was cross-sectional and although it provides a snapshot of nicotine pouch use in several Latin American countries in 2025, it offers no insight into trends in use. For practical reasons, the sample was selected from a small number of schools in four locations in each country, which limits generalisability. In addition, the survey was reliant on recall and self-report, which can present biases and inaccuracies. Eligibility criteria were adapted for each country to reflect local contexts, which may have influenced sample characteristics. Participants were shown an image of nicotine pouches, rather than actual products, which may limit external validity [41]. Nevertheless, the use of an image and description of nicotine pouches is recommended by past research [6] and found to improve nicotine pouch measurement accuracy [42], and the image and introductory text were also tested through cognitive interviews. Paper and pencil surveys have potential limitations, being found to increase the amount of missing data in comparison with computer-assisted surveys [43]. We used paper surveys because in some rural areas schools lacked adequate computer resources and internet access.

Given the market developments identified in some countries, for instance, pouches in the United Kingdom have been identified with high levels of nicotine or using pack imagery related to anime, violence and drugs [3, 44], monitoring market changes in Latin America is needed. Similarly, because there are various other novel non-combustible nicotine products, such as nicotine lozenges, gums, tablets and sticks [37, 45], future research should explore marketing of these, as well as use and polyuse, particularly among children and adolescents [46].

AUTHOR CONTRIBUTIONS

Georgia Alexandrou: Writing—review and editing; writing—original draft. **Crawford Moodie:** Conceptualization; methodology; formal analysis; writing—original draft; writing—review and editing; funding acquisition. **Catherine Best:** Methodology; formal analysis; writing—review and editing. **Inti Barrientos-Gutierrez:** Supervision; writing—review and editing; funding acquisition. **Carlos Miguel Aguilar:** Writing—review and editing. **Mariel Palacios:** Writing—review and editing. **James F. Thrasher:** Writing—review and editing; funding acquisition.

ACKNOWLEDGEMENTS

We thank the participants and schools for generously dedicating their time to this study. We also acknowledge the support of the collaborating institutions and departments in each of the four countries for their assistance with participant recruitment.

DECLARATION OF INTERESTS

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study will be available on reasonable request from the data manager (C.B.) from April 2027.

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How to cite this article: Alexandrou G, Moodie C, Best C, Barrientos-Gutierrez I, Aguilar CM, Palacios M, et al. Adolescent use of nicotine pouches in four Latin American countries: A cross-sectional survey. *Addiction*. 2026. <https://doi.org/10.1111/add.70617>