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Smoking behavior and demographic risk factors in Argentina: A population-based survey ☆

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Summary
Background: Demographic and socioeconomic factors associated with smoking behavior were evaluated in a nationwide household survey in Argentina to describe the status of the tobacco epidemic.
Methods: Face-to-face interviews with adults, age 20 and older, assessed smoking status, frequency, and age of initiation. Multivariate logistic regression was used to compare social and demographic characteristics.
Results: Of the 43,863 participants, 38% of men and 24% of women were current smokers, and 20% of current smokers smoked occasionally. For older men and women, smoking was less prevalent and their probability of quitting higher. Men with more than high school education were less likely to be current smokers. Rates for women did not differ by education.
Conclusions: The lower smoking rates among men with more education suggest that Argentina has begun to transition to the next stage of the tobacco epidemic. Tobacco control policy must direct efforts to change smoking behavior.
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Introduction

Cigarette smoking is the single most important cause of premature death and disability in developed countries [1,2], but rates of smoking have fallen particularly among the better educated groups. This trend was first observed among men and in the U.S. it has been accelerated by public health interventions to control tobacco use [3,4]. Estimates suggest that smoking accounts for one in 10 adult deaths worldwide, and that by 2030, this proportion will further increase to one in six [5]. The smoking epidemic is rapidly shifting to the developing world with steady increases in cigarette consumption especially among men reaching prevalence rates about 50%, even though a smaller proportion of women (9%) smoke world-wide [3,4].

The course of the smoking epidemic is predictable, and the assessment of phases can facilitate the determination of appropriate public policies and anti-smoking interventions. The smoking epidemic has been described in the context of the epidemiologic stages based on prevalence rates, smoking consumption, and mortality rates attributable to tobacco use and Lopez and colleagues used these criteria to propose four stages of the cigarette epidemic [6]. Smoking prevalence among adults becomes a powerful indicator of the course of the smoking epidemic, and differences in smoking prevalence by sex and age can mark the various stages of the epidemic. Stage I is characterized by relatively low prevalence rates for both men and women. Greater smoking prevalence marks stage II, the peak stage of the epidemic, with rates ranging from 40% to 60%. Stage III indicates the initiation of the epidemic's decline, particularly among middle-aged and older men. Finally, stage IV is marked by a steady decline in smoking rates among both men and women. Interestingly, social class is not mentioned as a contributing factor to smoking prevalence and consumption.

Argentina, a middle-income country in Latin America, offers a unique opportunity to examine the evolution of the smoking epidemic with a typical increase in cigarette consumption during the second half of the 20th century. This has been paralleled by an increase in cigarette smoking attributable deaths, which accounted for 16% of all deaths among those 35 years and older in 2000 [7]. As the smoking epidemic takes its course and more women continue to smoke, it is expected that the number of smoking-related deaths will increase among women, and the pattern will more closely resemble that of the developed world. This study had as its objective, to assess the demographic and socioeconomic factors associated with smoking behavior in a representative nationwide household survey of Argentina with a view to inform tobacco control policy.

Methods

Data source

Data were obtained from a nationwide household Living Standard Survey, conducted by two federal government agencies in Argentina — SIEMPRO (Systems of Information, Evaluation and Monitoring of Social Programs) and INDEC (National Institute of Statistics and Census) in 2001. These data and their corresponding methods manuals are available for public use at http://www.siempro.gov.ar/.

Sampling procedures

The survey was based on a two-staged sampling procedure. The first stage consisted of selecting towns of 5000 or more inhabitants as the primary sampling units. This was followed by the selection of census areas as secondary units, with a probability of selection that was proportional to the number of housing units occupied or under construction and registered in the National Population Census completed in 1991. The probability of selecting any one census area was proportional to its size, so that larger census areas were more likely to be selected. Households were then randomly selected from within the census areas, and we attempted to recruit every eligible adult 20 years of age and older from these selected households.

Study procedures

Face-to-face interviews were conducted with individual participants by trained fieldworkers using a structured questionnaire. If selected household members were not available for interview, then attempts were made to interview another household member (a proxy), who responded on the selected household member's behalf. Selected participants responded for himself/herself, but proxies were permitted to complete the interview on behalf of another household member. Data were collected on a variety of household characteristics, as well as individual social, demographic, and health factors.

Measures

Smoking behaviors were assessed using two questions: ''Do you smoke or did you ever smoke?'' (*Yes* or *No*), and ''How many cigarettes do you smoke per day?'' (*do not smoke now, smoke occasionally, up to 5 cigarettes per day, between 6 and 19 per day, 20 or more per day*). Based on this information, a variable was created that classified individuals into one of three groups: never smokers (those who indicated that they never smoked), current smokers (those who reported that they do smoke and smoke at least occasionally), and former smokers (those who indicated that they used to smoke, but do not do so anymore, not even occasionally). In addition, the survey asked at what age respondents smoked their first cigarette among those who smoked, but there are no additional questions about smoking and quitting behavior history from former smokers. The two main comparisons in this study were (1) current *versus* non-smokers (including never and former) and (2) current *versus* former smokers, among those who ever smoked.

Individual predictor variables included age (subdivided into four categories: 20–34, 35–49, 50–64, and 65 years and older), employment status at the time of the interview, marital status (single; divorced, separated, or widowed; and married or living together), health insurance, income, and educational level. Health insurance included subcategories of public insurance for seniors (system for retired and disabled persons and their dependents), private insurance through employer or purchased, and no insurance. Income was presented in quintiles, with the first quintile representing 20% of the households with the lowest income per capita, and the highest quintile representing 20% with the highest income per capita. Educational level was categorized as having completed: less than elementary school, elementary school, partial high school, high school, or at least some college. Respondent's status indicated whether the respondent was answering for him/herself or as proxy for another household member.

Geographic variables of urban size and region of the country were defined. Cities where respondents resided were classified into three groups according to population size: 5000–99,999; 100,000–499,999; and 500,000 and larger. The country was divided into the following six geographic regions: Northeast provinces (Corrientes, Misiones, Chaco, and Formosa), Buenos Aires Metropolitan Area (Capital Federal and the 24 cit-ies surrounding Buenos Aires), Central Provinces (Cordoba, La Pampa, Entre Rios, Santa Fe, and the remainder of Buenos Aires province not included in the metropolitan area), Northwest Provinces (Jujuy, Salta, Tucuman, Catamarca, La Rioja, and Santiago del Estero), Central West Provinces (Mendoza, San Juan, and San Luis), and Patagonian Provinces (Neuquen, Rio Negro, Chubut, Santa Cruz, and Tierra del Fuego) Fig. 1.

Statistical analyses

Primary analyses included an assessment of the prevalence of tobacco use and a description of social and demographic factors. Because gender was a strong determinant of smoking rates, the analyses were stratified by respondent sex.

Secondary analyses included logistic regression models of the two binary smoking indicators: current *versus* non-smokers (never plus former) and current *versus* former smokers. These models explored the associations of each of the demographic characteristics with smoking status. Odds ratios and 95% confidence intervals are reported. In the multivariate models, referent categories were defined as older age (65 years and older), proxy respondent, currently employed, public insurance, first income quintile, less than elementary schooling, never married, living in largest urban area, and the Northeast Provinces. Given the large sample size, we report significance levels as less than 0.01.

Although a multi-stage area sampling design was used, the public use data did not include cluster identifiers. Therefore, analyses did not model the effects of the area clusters. The full sample weights were rescaled to reflect the total sample size and were incorporated into all analyses. Statistical analyses were conducted using SAS [8].

Results

The present analysis was restricted to 43,863 respondents 20 years and older, which included 23,423 women (53.4%) and 20,440 men (46.6%). The overall response rate was 86.7%. The sample was representative of approximately 96% of the urban population and 84% of the total population of Argentina.

Table 1 presents the demographic description of the sample. The average age was 43.9 (SD 17.3) years, more than half (55.6%) were employed, 63% were married or lived with a partner, and over one-third (39%) were uninsured. Although 39%
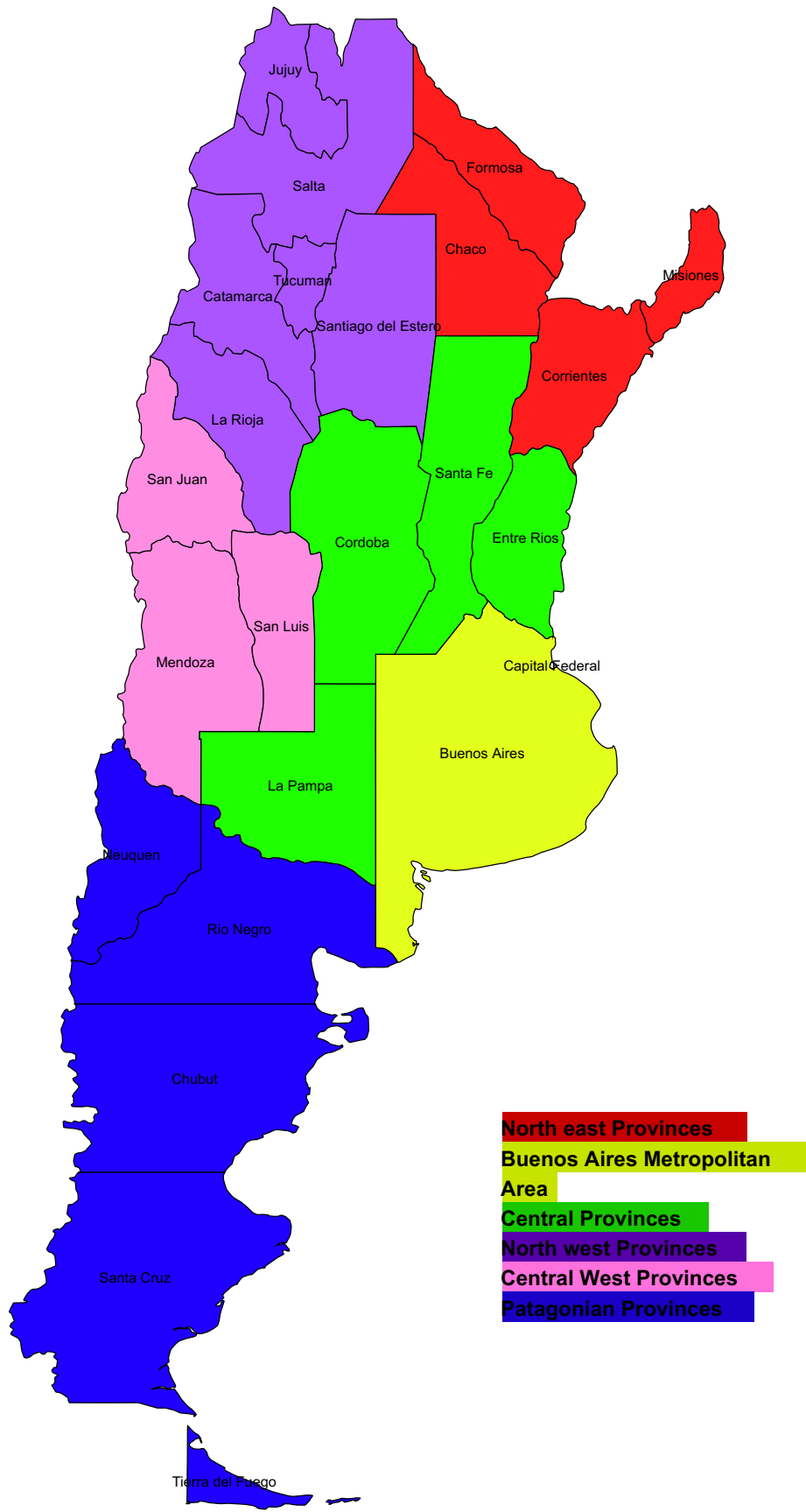
Figure 1

Table 1 Demographic characteristics, SIEMPRO survey, Argentina, 2001

Characteristics	Women, $n = 23,423$ (%)	Men, $n = 20,440$ (%)	Total, $n = 43,863$ (%)
Age (in years)			
20—34	34.7	36.8	35.7
35—49	29.0	29.6	29.3
50—64	20.0	20.4	20.2
⩾65	16.3	13.2	14.8
Employment status			
Unemployed	57.8	28.8	44.4
Employed	42.2	71.2	55.6
Health insurance			
Public	11.5	7.7	9.7
Private	51.8	50.6	51.3
No insurance	36.7	41.6	39.0
Income level			
1st Quintile	21.9	22.6	22.2
2nd Quintile	17.6	17.6	17.6
3rd Quintile	18.0	17.9	17.9
4th Quintile	21.5	20.8	21.1
5th Quintile	21.1	21.2	21.1
Educational level			
Less than elementary	29.0	28.2	28.6
Completed elementary	21.0	23.3	22.1
Partial high school	9.1	11.6	10.3
Completed high school	14.8	14.5	14.6
Some college	26.1	22.4	24.4
Marital status			
Single	17.9	22.2	19.9
Divorced/separated/widowed	23.7	9.6	17.2
Married/cohabiting	58.4	68.2	63.0
Urban size			
5000—99,999 inhabitants	24.1	24.7	24.4
100,000—499,999 inhabitants	15.9	15.7	15.8
⩾500,000 inhabitants	60.0	59.7	59.9
Geographic region			
Northeast	6.4	6.5	6.4
Buenos Aires-Metropolitan Area	41.5	41.5	41.5
Central	32.0	31.8	31.9
Northwest	9.3	9.3	9.3
Central West	6.5	6.3	6.4
Patagonia	4.3	4.6	
Respondent status			
Proxy	28.7	55.6	41.1
Self	71.3	44.4	58.9

completed high school or some college, 28.4% had less than 7 years of formal education. A majority of the respondents (59.9%) lived in cities of 500,000 or more inhabitants, while less than half (41.5%) lived in the metropolitan area of Buenos Aires.

Smoking behavior

Table 2 shows that less than one-third of the sample (30.6%) was classified as current smokers with marked gender differences (37.9% of men and 24.3% of women). Among current smokers, 40.8%

Table 2 Smoking behavior by sex, Argentina, 2001

	Women, n = 23,555 (%)	Men, n = 20,075 (%)	Total, n = 43,630 (%)
Smoking status			
Never smoked	64.3	42.2	54.1
Current smoker	24.3	37.9	30.6
Former smoker	11.4	19.9	15.3
	n = 5689 (%)	n = 7613 (%)	n = 13,302 (%)
Number of cigarettes smoked (among current smokers)			
Occasionally	21.7	18.2	19.7
$\leqslant$5 Cigarettes per day	25.0	18.2	21.1
6—19 Per day	37.0	36.1	36.5
$\geqslant$20 Per day	16.3	27.5	22.7
	n = 8048 (%)	n = 10,857 (%)	n = 18,905 (%)
Age first smoked a cigarette			
$\leqslant$12	3.5	8.2	6.2
13—15	26.7	34.0	30.9
16—18	35.5	37.3	36.6
19—21	16.5	13.7	14.9
22—24	5.3	2.9	3.9
25—29	5.0	2.1	3.3
$\geqslant$30	7.5	1.9	4.3

All comparisons between men and women by categories of smoking status, number of cigarettes smoked and age first smoked were statistically significant at $p < 0.0001$.

were occasional smokers or reported fewer than 5 cigarettes per day, and more than one-third (36.5%) reported smoking between 6 and 19 cigarettes per day. The majority (73.7%) began smoking prior to age 19.

Prevalence rates by age, income, and education are shown in Figs. 2—4. In terms of age, the highest prevalence was among those 35—49 years of age

(33.5% for women and 44.7% for men) and the lowest was in the 65 and older group (6.9% for women and 17.6% for men). For smoking prevalence and age categories, trend tests for both the linear and quadratic tests were significant at $p < 0.0001$ for both men and women and the test statistics for the linear trend were larger than that for the quadratic trend. Among men, smoking prevalence
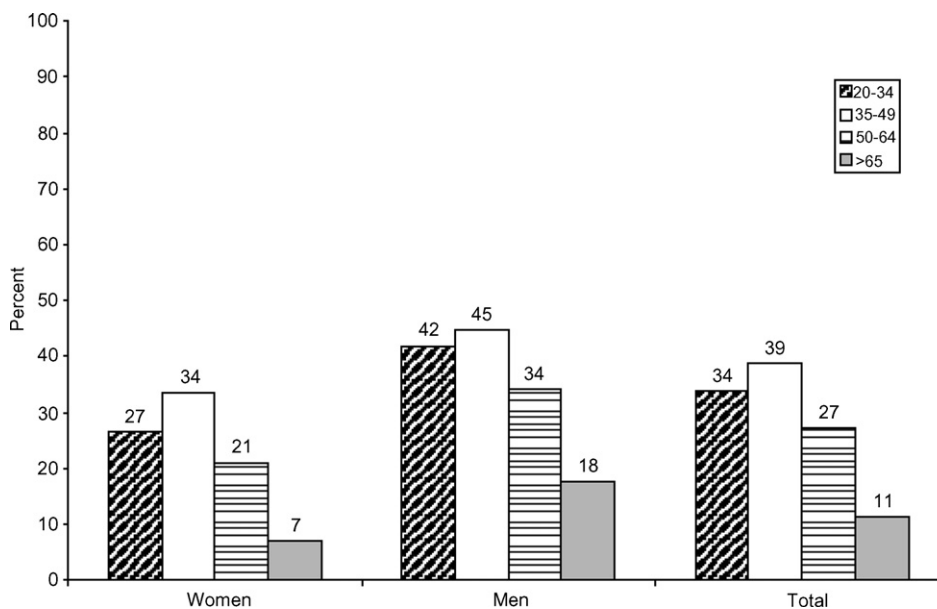
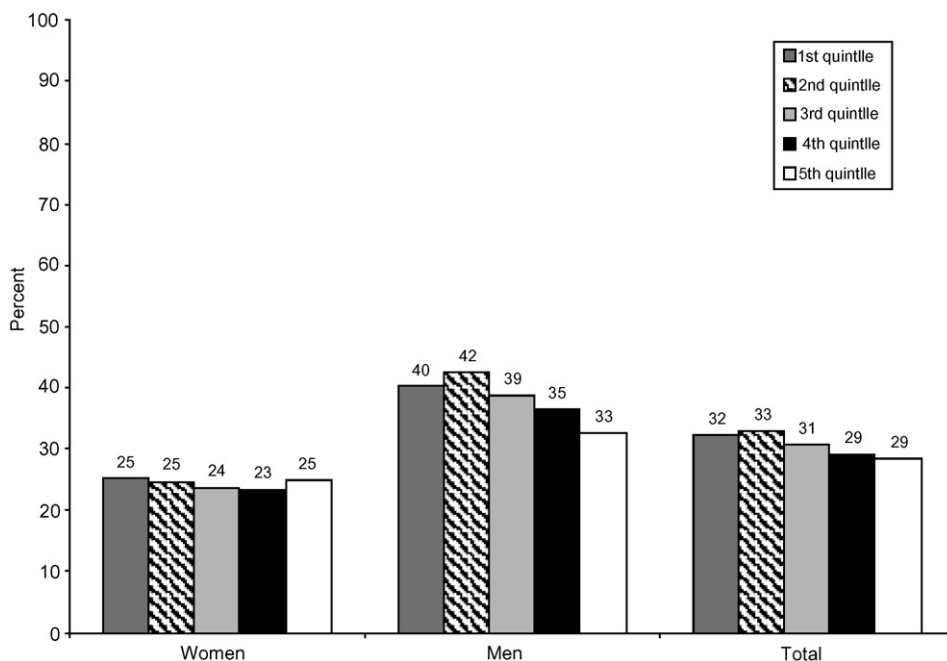**Figure 2** Prevalence of smoking by age.

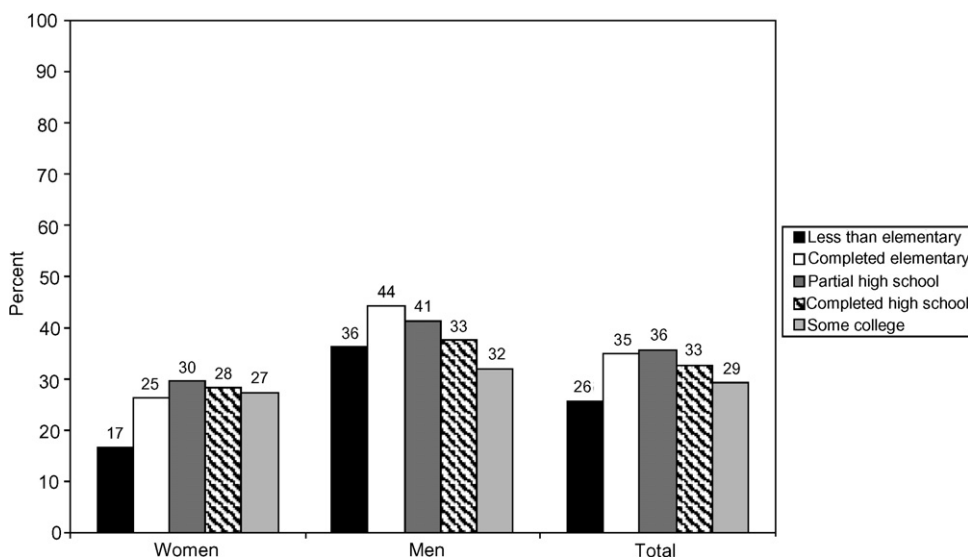**Figure 3** Smoking prevalence by income.

Figure 4 Smoking prevalence by education level.

decreased as income increased, with the overall highest rate reported among those in the second quintile (42.4%) and the lowest rate by those with the highest income (32.5%). For women, the prevalence did not vary by income level, with the highest smoking rates among the lowest and highest quintiles (25.2% and 24.9%, respectively). Smoking prevalence across income quintiles showed trend significance only for men and in this comparison the linear statistic was larger than the quadratic statistic. Smoking rates increased with education among women and peaked among those with partial high school (29.6%) and decreasing slightly thereafter. Among men, smoking prevalence peaked in those who completed elementary school (44.2%), and the rates progressively decreased with more education. For smoking prevalence and education, trend tests for both the linear and quadratic tests were significant at $p < 0.0001$ among men and women.

Multivariate analyses

Among both men and women, those aged 20–34, 35–49, and 50–64 years were more likely to smoke than those 65 and older (Table 3). Employment was related to smoking among men, with the unemployed being less likely to smoke (OR 0.86, CI 0.8–0.93). Among women, those with private insurance and those with no insurance were more likely to smoke than those receiving public insurance for the retired (OR 1.83, CI 1.55–2.16 and OR 1.97, CI 1.66–2.33, respectively). Among men, only the uninsured were more likely to smoke than those with public insurance (OR 1.70, CI 1.44–2.00).

Table 3 Predictors of current smoking by sex, Argentina, 2001

Characteristics	Women			Men		
	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Age (in years)						
20–34	4.72	4.00, 5.57	<0.0001	3.19	2.76, 3.70	<0.0001
35–49	6.28	5.34, 7.38	<0.0001	3.30	2.86, 3.80	<0.0001
50–64	3.34	2.85, 3.91	<0.0001	2.04	1.77, 2.34	<0.0001
⩾65	1.00	—	—	1.00	—	—
Employment status						
Employed	1.00	—	—	1.00	—	—
Unemployed	0.99	0.93, 1.06	0.80	0.86	0.80, 0.93	<0.001
Health insurance						
Public	1.00	—	—	1.00	—	—
Private	1.83	1.55, 2.16	<0.0001	1.22	1.04, 1.44	0.02
No insurance	1.97	1.66, 2.33	<0.0001	1.70	1.44, 2.00	<0.0001
Income level						
1st Quintile	1.00	—	—	1.00	—	—
2nd Quintile	1.01	0.92, 1.12	0.79	1.07	0.97, 1.17	0.16
3rd Quintile	0.98	0.89, 1.09	0.75	0.99	0.90, 1.08	0.76
4th Quintile	1.08	0.98, 1.19	0.14	1.01	0.92, 1.11	0.77
5th Quintile	1.12	1.01, 1.25	0.03	0.95	0.86, 1.05	0.28
Educational level						
Less than elementary	1.00	—	—	1.00	—	—
Completed elementary	1.11	1.01, 1.23	0.03	0.97	0.89, 1.05	0.44
Partial high school	1.29	1.14, 1.46	<0.0001	0.91	0.82, 1.01	0.08
Completed high school	1.28	1.14, 1.42	<0.0001	0.83	0.75, 0.92	<0.001
Some college	1.13	1.01, 1.25	0.03	0.67	0.60, 0.74	<0.0001
Marital status						
Single	1.00	—	—	1.00	—	—
Divorced/separated/widowed	1.80	1.61, 2.02	<0.0001	1.71	1.51, 1.95	<0.0001
Married/cohabitating	1.03	0.94, 1.13	0.56	1.14	1.05, 1.25	0.01
Urban size						
5000–99,999 inhabitants	0.77	0.69, 0.85	<0.0001	0.83	0.75, 0.91	0.0002
100,000–499,999 inhabitants	0.81	0.73, 0.91	<0.001	0.91	0.82, 1.02	0.1
⩾500,000 inhabitants	1.00	—	—	1.00	—	—
Geographic region						
Northeast	1.00	—	—	1.00	—	—
Buenos Aires-Metropolitan Area	1.32	1.11, 1.56	<0.001	1.07	0.92, 1.25	0.38
Central	1.41	1.21, 1.64	<0.0001	1.08	0.94, 1.23	0.29
Northwest	1.06	0.89, 1.27	0.48	1.31	1.12, 1.52	<0.001
Central West	1.30	1.07, 1.57	<0.01	1.21	1.02, 1.44	0.03
Patagonia	1.93	1.59, 2.34	<0.0001	1.29	1.07, 1.54	<0.01
Respondent status						
Proxy	1.00	—	—	1.00	—	—
Self	1.11	1.03, 1.19	<0.01	1.02	0.96, 1.08	0.61

Income levels had no significant effect on smoking behavior among men or women. However, women who completed some high school and those who graduated from high school both had a greater likelihood of smoking than those with less than an elementary school education (OR 1.29, CI 1.14—1.46 and OR 1.28, CI 1.14—1.42, respectively). Among men, those with completed high school education and those with some college were less likely to smoke (OR 0.83, CI 0.75—0.92 and OR 0.67, CI 0.60—0.74, respectively) compared to those with less than an elementary level education.

Among both women and men, those who were divorced, separated, or widowed were more likely to be smokers than those who were single (OR 1.80, CI 1.61—2.02 and OR 1.71, CI 1.51—1.95, respectively), as were men who were married or co-habitating (OR 1.14, CI 1.05—1.25). Men and women who lived in urban sites with less than 100,000 population were less likely to smoke than those in cities with more than 500,000 (OR 0.77, CI 0.69—0.85 and OR 0.83, CI 0.75—0.91, for women and men, respectively), as were women living in areas with 100,000—499,999 inhabitants (OR 1.81, CI 0.73—0.91).

Smoking was not uniform among the different regions of the country. Among women, those living in the Metropolitan area, Central, Central West and Patagonia were significantly more likely to smoke than those living in the Northeast. Among men, those living in the Northwest and Patagonia were more likely to smoke. Among women, those who responded to the survey themselves compared to those with proxy responses were more likely to smoke (OR 1.11, CI 1.03—1.19).

Predictors of former smoker status

For both women and men, those in younger age groups were less likely to be former smokers than those in the 65 and older age group (Table 4). For both sexes, those with private or with no insurance were less likely than those receiving public insurance for the retired to be former smokers.

Among women, respondents in the 4th income quintile were less likely to be former smokers compared to women in the lowest income group (OR 0.82, CI 0.70—0.96). Among men, those in the 5th quintile were more likely to be former smokers than those in the 1st quintile (OR 1.17, CI 1.01—1.34). Women who had completed high school were less likely to be former smokers than those with the least education (OR 0.73, CI 0.61—0.86), while men with some college education were more likely to be former smokers (OR 1.32, CI 1.15—1.51).

Respondents who were married or living with a partner (both women and men) were more likely to be former smokers than those who were single (OR 1.69, CI 1.44—1.99 and OR 1.92, CI 1.65—2.24, respectively). Men living in the Northwest region were less likely than those living in the Northeast to be former smokers (OR 0.73, CI 0.58—0.92). Both women and men who responded to the survey for themselves were more likely to be former smokers than those who had a proxy respond for them (OR 1.68, CI 1.48—1.90 and OR 1.32, CI 1.21—144, respectively).

Discussion

This study examined the prevalence of tobacco use and the relationship between smoking status and demographic factors in a population-based sample of over 40,000 adults in Argentina. By applying point prevalence data and multivariate analysis to the stage model of the tobacco epidemic in developed countries, we examined the position of Argentina in the tobacco epidemic progression with regards to cigarette smoking behavior only. The smoking prevalence rates found in this study were similar to those reported by the World Health Organization [9], although somewhat lower than in other surveys. It is noteworthy that nearly half of the smokers reported occasional smoking or 5 or fewer cigarettes per day, which is a pattern observed among Latin American populations in the U.S.

The prevalence rates appear to be lower than those described by Lopez as characteristic of Stage II or Stage III [6]. While it is possible that there will be an increase in smoking in the future, the data derived from this study seem to suggest a movement towards a decline in smoking and a transition towards Stage III on the smoking continuum when using cigarette smoking behavior only. Examination of smoking behavior by demographic and socioeconomic predictors supports this explanation with the higher proportion of former smokers among older respondents. The age distribution of women smokers also supports the notion that Argentina is transitioning to Stage III, with fewer women smoking, aged 50—59 years.

A transition toward Stage III is also characterized by a decline in smoking among persons of more privileged social classes. In Argentina, the lower smoking prevalence by increasing education among men suggests a pattern consistent with countries in the third stage of the smoking epidemic. Among men those from higher income levels and with more education were more likely to be former smokers. Argentinean women's rate of smoking increased with education, but reached a plateau for women who achieved some high school education. We also found a higher probability of smoking

Table 4 Predictors of quitting smoking among ever smokers by sex, Argentina, 2001

Characteristics	Women			Men		
	Odds ratio	95% CI	*P*	Odds ratio	95% CI	*P*
Age (in years)						
20—34	0.28	0.22, 0.34	<0.0001	0.14	0.11, 0.17	<0.0001
35—49	0.29	0.23, 0.36	<0.0001	0.23	0.20, 0.28	<0.0001
50—64	0.44	0.35, 0.54	<0.0001	0.49	0.41, 0.57	<0.0001
⩾65	1.00	—	—	1.00	—	—
Employment status						
Employed	1.00	—	—	1.00	—	—
Unemployed	0.97	0.88, 1.08	0.62	1.08	0.97, 1.21	0.16
Health insurance						
Public	1.00	—	—	1.00	—	—
Private	0.73	0.58, 0.91	<0.01	0.77	0.63, 0.93	<0.01
No insurance	0.70	0.55, 0.88	<0.01	0.57	0.47, 0.69	<0.0001
Income level						
1st Quintile	1.00	—	—	1.00	—	—
2nd Quintile	0.88	0.75, 1.02	0.10	0.97	0.84, 1.11	0.64
3rd Quintile	0.86	0.73, 1.01	0.06	0.87	0.76, 1.00	0.05
4th Quintile	0.82	0.70, 0.96	0.01	1.11	0.97, 1.26	0.14
5th Quintile	1.16	0.99, 1.36	0.06	1.17	1.01, 1.34	0.03
Educational level						
Less than elementary	1.00	—	—	1.00	—	—
Completed elementary	1.00	0.86, 1.16	1.00	0.97	0.86, 1.10	0.68
Partial high school	1.06	0.89, 1.27	0.53	1.11	0.95, 1.28	0.19
Completed high school	0.73	0.61, 0.86	<0.001	1.00	0.86, 1.15	0.95
Some college	0.93	0.79, 1.09	0.36	1.32	1.15, 1.51	<0.0001
Marital status						
Single	1.00	—	—	1.00	—	—
Divorced/separated/widowed	1.15	0.96, 1.39	0.13	1.07	0.88, 1.30	0.52
Married/cohabiting	1.69	1.44, 1.99	<0.0001	1.92	1.65, 2.24	< 0.0001
Urban size						
5000—99,999 inhabitants	1.13	0.97, 1.33	0.12	1.09	0.94, 1.25	0.25
100,000-499,999 inhabitants	1.22	1.02, 1.45	0.03	1.14	0.97, 1.33	0.10
⩾500,000 inhabitants	1.00	—	—	1.00	—	—
Geographic region						
Northeast	1.00	—	—	1.00	—	—
Buenos Aires-Metropolitan Area	1.17	0.89, 1.54	0.25	1.14	0.91, 1.43	0.26
Central	1.09	0.85, 1.39	0.51	1.11	0.91, 1.36	0.32
Northwest	1.11	0.83, 1.46	0.49	0.73	0.58, 0.92	<0.01
Central West	1.32	0.99, 1.77	0.06	1.09	0.85, 1.40	0.49
Patagonia	1.32	0.99, 1.77	0.06	1.29	1.00, 1.66	0.05
Respondent status						
Proxy	1.00	—	—	1.00	—	—
Self	1.68	1.48, 1.90	<0.0001	1.32	1.21, 1.44	<0.0001

among those who were married or cohabiting compared to single individuals which differs from European studies [10,11]. The lower level of smoking in small urban areas compared to other urban areas may reflect the higher income for residents of the larger cities and is consistent with smoking patterns in the developed [12,13] and developing world [14—16]. However, no differences in quitting patterns were present by urban size.

In the second stage of the smoking epidemic, tobacco control policies are generally not well developed, as is the current situation in Argentina. However, there appears to be gradual progress in tobacco control in Argentina. While education

and information about the hazards of tobacco are inconsistent and sporadic, smoking free public places, particularly in hospitals and public offices, are becoming more common, although smoke-free workplaces are not yet the rule [17,18]. In October 2006 the city of Buenos Aires implemented a ban on smoking in most restaurants and bars, thus second-hand smoking is likely to decrease substantially.

Argentina is far from reaching the fourth stage of the tobacco epidemic, when smoking becomes socially unacceptable and prevalence rates decline further. As Argentina's lung cancer mortality among men increases, this will be an indicator that Argentina has advanced to the fourth stage, but at this time it is about half that of the U.S. [19]. For Argentina to complete the transition to the third stage and move to a gradual and steady decrease in smoking, there will be a need for more public education, access to cessation methods, and further changes in societal norms. Hopefully, globalization of tobacco control and the economic development of Latin America will accelerate the transitions between stages.

Despite the large sample of this study, there are several limitations. First, the survey was designed to measure the social and economic conditions of the population and was not intended to measure its health status. Therefore, few questions about health-related risk factors were included, with only three items related to tobacco consumption. A second limitation is the large proportion of the responses that were elicited from someone in the household other than the targeted respondent. Proxy reporting is a low-cost mechanism to elicit smoking information, however, this method probably underreports smoking, particularly in larger households where knowledge of smoking patterns of all household members may be less reliable [20]. This also may apply to relatives of occasional smokers, who may not be aware of the behavior of the smoker. Despite these drawbacks, proxy reporting remains a major source of epidemiological data for countries in the developing world where surveillance is essential, but resources are limited.

In conclusion, this analysis provides initial evidence that Argentina has begun to transition to Stage 3 in the tobacco epidemic. The fact that men with more education are less likely to report current smoking compared to those with less formal education is encouraging. However, overall prevalence remains among the highest in the Americas, and rates among women exceed those in most countries of the world. Tobacco control interventions will need to be developed and adapted to reach smokers with limited formal education, particularly women.

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