Published in final edited form as:
Addict Behav. 2013 April ; 38(4): 1958–1965. doi:10.1016/j.addbeh.2012.12.007.

Level of Cigarette Consumption and Quit Behavior in a Population of Low-Intensity Smokers – Longitudinal Results from the International Tobacco Control (ITC) Survey in Mexico

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Abstract

Background—Mexican smokers are more likely to be non-daily smokers and to consume fewer cigarettes per day than smokers in other countries. Little is known about their quit behaviors.

Aim—The aim of this study is to determine factors associated with having made a quit attempt and being successfully quit at 14-month follow-up in a population-based cohort of adult Mexicans who smoke at different levels of intensity.

Design—A longitudinal analysis of wave-III and wave-IV (2010) Mexican administration of International Tobacco Control Policy Evaluation Project was conducted.

Setting—This study was conducted in six large urban centers in Mexico

Participants—The participants of this study comprised 1206 adults who were current smokers at wave-III and 41 who were followed to wave-IV.

Measurements—We compared three groups of smokers: non-daily smokers—who did not smoke every day in the past 30 days (n=398), daily light smokers who smoked every day at a rate of ≤5 cigarettes per day. Data on smoking behavior, psychosocial characteristics and socio-demographics were collected at baseline and after 14 months.

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Contributors: Authors Kamala Swayampakala and Dr. James Thrasher designed the study, conducted the analysis and wrote the first draft of the manuscript. Author Dr. Matthews J Carpenter provided inputs with the literature review, statistical analysis and discussion. Authors Luz Myriam Reynales Shigematsu, Ana-Paula Cupertio, andCarla J. Berg provided inputs on the literature review and discussion sections of the manuscript and all authors contributed to and have approved the final manuscript.
Conflict of Interest: None declared

Findings—In multivariate logistic regression predicting having made a quit attempt at follow-up, significant factors included being a non-daily smoker versus a heavy daily smoker (ORadj = 1.83, 95%CI: 1.19–2.83), less perceived addiction ((ORadj = 1.86, 95%CI: 1.20 – 2.87), greater worry that cigarettes will damage health (ORadj = 2.04, 95%CI: 1.16 – 3.61) and having made a quit attempt in the past year at baseline (ORadj = 1.70, 95%CI: 1.23 – 2.36). In multivariate logistic regression predicting being successfully quit at one-year follow-up, significant factors included being a non-daily smoker versus a heavy daily smoker (ORadj = 2.54, 95%CI: 1.37–4.70) and less perceived addiction (not addicted: ORadj = 3.26, 95%CI: 1.73 – 6.14; not much: ORadj = 1.95, 95%CI: 1.05 – 3.62 versus very much).

Conclusions—Mexican adult smokers who are non-daily smokers were more likely than daily heavy smokers to have attempted to quit during follow-up and to succeed in their quit attempt. Future research should determine whether tobacco control policies and programs potentiate this tendency and which interventions are needed to help heavier smokers to quit.

Keywords

Light smoker; Mexican smoker; Non-daily smoker; Quit intentions; Quit attempt; Quit

1. Introduction

Little is known about non-daily and daily low-level smokers, also called as light smokers or “chippers” (Shiffman & Paty, 2006), particularly in non-western countries. For a long time, these “chippers” were viewed as having a transient smoking behavior associated with either initiation or quitting (Janson, 1999; McCarthy, Zhou, & Hser, 2001; Zhu, Sun, Hawkins, Pierce, & Cummins, 2003). However, considerable research suggests that light smoking can be a consistent pattern of use (Hassmiller, Warner, Mendez, Levy, & Romano, 2003; Shiffman & Paty, 2006). Although light smokers experience greater morbidity and mortality than never smokers (Bjartveit & Tverdal, 2005; “Changes in cigarette related disease risks and their implications for prevention and contro. Smoking and tobacco control monograph 8,” 1997), they are less likely than heavier smokers to be advised about cessation or to be referred to cessation services (Schane, Glantz, & Ling, 2009; Shiffman, Kassel, Paty, Gnys, & Zettler-Segal, 1994).

Tobacco use has been increasing in low- and middle-income countries and declining in high income countries (WHO, 2008). Smokers who are below the poverty line smoke fewer cigarettes per day than smokers living at or above the poverty line (CDC, 2007). Because of the relatively higher prevalence of poverty in low- and middle-income countries, the global expansion of tobacco use is likely to generate more light and intermittent smokers. Also, data from developed countries indicate that as a result of strong tobacco control policies, some smokers quit smoking while some become light and intermittent smokers (Farkas, Gilpin, Distefan, & Pierce, 1999; Farrelly, Evans, & Sfekas, 1999; Messer, Mills, White, & Pierce, 2008). Under the World Health Organization's Framework Convention on Tobacco Control (WHOFCTC), many developing countries are combating tobacco use by implementing strong tobacco control policies. If smokers in developing countries react to the policies the same way smokers from developed countries have reacted, the population of light and intermittent smokers is likely to grow in the years to come (Fagan & Rigotti, 2009).

Mexican smokers and Hispanic/Latino smokers in the United States (US) are more likely to be non-daily smokers and to consume a lower number of cigarettes per day (CPD) compared to smokers from majority ethnic groups in western countries. For example, nationally representative survey data from 2009 in Mexico indicate that 52% of current smokers smoke

less than daily and 77% of Mexican daily current smokers consume 10 or less CPD (PAHO-INSP, 2010). This profile contrasts strikingly with smokers in the US, where non-daily smokers constitute only 25% of current smokers (CDC, 2007). Within the US, a higher percentage of Hispanic/Latino smokers are non-daily smokers (35%) compared to black (24%) and Non-Hispanic White (25%) smokers. Even among daily smokers, US Hispanic/Latinos are over four-and-half times more likely to smoke five or fewer CPD (Trinidad et al., 2009). In general, Hispanic/Latino smokers show less nicotine dependence compared to other ethnic groups (Perez-Stable, Marin, & Posner, 1998; Rodriguez-Esquivel, Cooper, Blow, & Resor, 2009b). Among Latinos, smokers with lower-levels of consumption report less tobacco dependence and experience fewer cravings during the quit attempt compared to heavier smokers (Reitzel et al., 2009), suggesting that quitting may be easier for this subpopulation.

Some population-based longitudinal studies show that low-intensity smokers have greater intentions to quit and greater success at quitting compared to heavy smokers (Boulos et al., 2009; Cooper et al.; Hyland, Levy, et al., 2005; Hyland, Rezaishiraz, Bauer, Giovino, & Cummings, 2005; Tong, Nguyen, Vittinghoff, & Perez-Stable, 2009). However, these results may not generalize to Mexico, where socio-cultural and perhaps even biological factors may promote low consumption intensity as normative. We identified only one longitudinal study that examined quit behavior among Latinos (Reitzel et al., 2009). This was a randomized clinical trial that evaluated telephone counseling intervention tailored for Spanish speaking Latino smokers. This study found that light smokers (defined as smoking 1–5 CPD or 6–10 CPD), were no more likely to quit than moderate / heavy Latino smokers. However, due to small sample size (N=280), this study might have been underpowered to detect differences. This study was a clinical trial and not observational and hence these data does not suggest the natural trajectory of quitting in this group. The study sample included Spanish-speaking Latinos from Texas. Latino populations in the US comprise people with Mexican, Puerto Rican, Cuban, and other Latin American and Spanish Caribbean heritage. In US studies, all these Latinos get grouped together as `Hispanic'. However, about 63% of the US Latinos report having Mexican heritage (Ennis, Rios-Vargas, & Albert, 2011). Studies have consistently shown that Mexican Americans have lower consumption intensities than Cubans and Puerto Ricans (CDC, 1998; Haynes, Harvey, Montes, Nickens, & Cohen, 1990). Hence, though the overall consumption levels of Hispanics reported in the US Latino studies might be lower than the Non-Hispanic Whites, the Mexican consumption levels are much lower. Studies show that the level of acculturation is an important predictor of smoking behaviors among Mexican Americans and Central Americans (Perez-Stable et al., 2001). Given that the Mexican smokers have much lower consumption patterns, the generalizability of studies conducted on US Latinos to Mexicans is limited. No population-based longitudinal studies have determined whether non-daily or light smoking among Latinos predicts subsequent quit behavior.

This research aims to better understand quit behavior in a population that smokes with a much lower intensity than is found in other research on quit behavior. The study purpose is twofold: 1) To determine socio-demographic and psycho-social differences between non-daily, light and heavier smokers in a population-based sample of urban Mexican smokers; and 2) to examine whether consumption intensity predicts subsequent quit behavior.

2. Materials and Methods

2.1 Sample

Population-based representative data were analyzed from adult (18 years or older) current smokers (i.e., having smoked at least 100 cigarettes in their lifetime and having smoked at least once in the previous week) who participated in wave-III (November/December 2008)

and wave-IV (January/February 2010, i.e., follow-up of 14 months) of the Mexico administration of the International Tobacco Control (ITC) Policy Evaluation Project (Fong et al., 2006; J. Thrasher et al., 2010; Thrasher, Boado, Sebrie, & Bianco, 2009). Wave-III data were collected in seven cities, although only six (i.e., Mexico City, Monterrey, Guadalajara, Puebla, Tijuana, Mérida) were considered for the present analysis due to the replacement of one city for another at wave-IV. A stratified, multi-stage sampling strategy was used within the urban limits for each city. Within selected block groups, face-to-face interviews were conducted with a random sample of smokers (for details see Thrasher et al (2009)) (Thrasher et al., 2009).

The wave-III sample (N=1649) was comprised of 73% (524/717) wave II participants from the three cities (i.e., Mexico City, Guadalajara, Tijuana) who were successfully reinterviewed. To maintain relatively uniform sample size within tracts, a replenishment sample was comprised of randomly selected smokers who lived in census tracts that experienced the greatest loss to follow-up. To increase the precision of estimates involving Mexico City, the sample size was increased for this city at wave III using identical sampling procedures to select new block groups and randomly select an additional 142 eligible smokers. In wave-III, samples were also drawn from three new cities (Puebla, Monterrey, Mérida) following the same sampling procedures (n=816). The follow-up protocol involved visiting households up to 10 times at different times and days in order to reinterview participants. Sampling weights were developed to reflect the probability of selection of respondents and rescaled to equal the sample size within each city, in order to produce more efficient estimates (Korn EL, 1999) and to avoid having Mexico City observations overwhelm observations from other cities. The study protocol was approved by the Mexican National Institute of Public Health.

2.2 Measures

2.2.1 Smoking behavior—Baseline (i.e., wave III) consumption intensity was determined by asking participants to report daily or non-daily smoking, as well as the average number of cigarettes they smoked on the days that they smoked. Smokers were classified as non-daily smokers (i.e., those that did not smoke every day in the past 30 days, but smoked at least once in the past 30 days), daily light smokers (i.e., those who smoked 5 or fewer CPD) and daily heavy smokers (i.e., those who smoked more than 5 CPD). These categories generally reflect tertiles of consumption intensity, but are also informed by previous research that has considered the low-level of smoking among Latinos (Zhu, Pulvers, Zhuang, & Baezconde-Garbanati, 2007).

2.2.2 Quit attempts and cessation—At both waves, smokers were also asked if they had attempted to quit in the interval between survey administrations, and those who answered affirmatively were classified as having made a quit attempt. At follow-up, participants were asked if they had quit smoking and if so, for how long. Those who had quit for at least 30 days at the followup assessment were considered quitters, as per the recommendation by the International Agency on Research for Cancer (IARC) for the survey research (IARC, 2009) For short clinical trials a period of 4 weeks or more abstinence is recommended (Hughes et al., 2003)

2.2.3 Psycho-social variables—The following questions were asked at baseline (i.e., wave III). Self-perceived addiction was assessed with a single item, whose response options (not addicted, yes but not much, yes very much) were recoded to dummy variables with highest perceived addiction as the referent group. Perceived health impact was assessed with questions about whether smoking had damaged their health and how worried they were that smoking will damage their health in the future. Responses for both questions (not at all,

somewhat, very much) were recoded to dummy variables with “not at all” as the reference group. Injunctive social norms were assessed with a standard question on whether important people think they should not smoke. The 5-point Likert response options were collapsed to reflect agreement (1) versus disagreement or neither agree nor disagree (0). Participants were asked if they had consulted a medical doctor or health professional in the previous year, and those that had were asked if they had received cessation advice, pamphlets on how to quit or had been channeled to other cessation services. Two dummy variables were constructed to reflect whether participants did not go to the doctor (1) or they had gone to the doctor and received any advice (1), with going to the doctor and not receiving advice as the reference group (0).

2.2.4 Socio-demographic variables—Socio-demographic data were collected using standard questions on age (18–24 years, 25–39 years, 40–54 years, 55 years and older), sex (male and female), marital status (married, single, other), education (less than middle school, middle school, technical/vocational course, high school, university graduate), and household income (0–3,000, 3,001–5,000, 5,001–8,000, more than 8,001 pesos per month).

3. Statistical Analysis

Data were analyzed using SAS, version 9.2. Attrition analyses were conducted without adjustment for the sample design and weighting; however all other analyses were adjusted for the complex sampling design effect and sampling weights. Chi-square tests were conducted to determine the differences in the survey sample that was successfully followed-up from wave-III to wave-IV to the sample that was lost to follow-up. For all other analyses, the analytic sample comprised those who were successfully followed. Survey-adjusted prevalence estimates and omnibus chi-square tests were conducted to determine baseline differences between smokers at different levels of consumption. Logistic regression was used to estimate crude and adjusted relative risks of having attempted to quit during the follow-up period and being quit for 30 days or more at follow-up. In the multivariate analyses for these outcomes, interactions between level of consumption and age group were examined to assess whether young smokers who consumed cigarettes at low levels were less likely to quit than more established, older smokers. However, because no statistically significant interactions were observed, the aggregated data were presented.

4. Results

4.1. Survey sample characteristic

Of the 1,649 participants who were smokers at baseline (i.e., wave III), 1,206 (73%) were successfully followed-up (i.e., wave IV) and 443 (27%) were lost to follow-up. Compared to the attrition sample, participants who were followed-up were more likely to be female (38.7% vs 31.6%), older, have lower educational achievement, and be more likely to have attempted to quit in the previous year (35.4% vs 30%). However those who were lost to follow-up were no different than those who were followed up with regard to consumption status (nondaily 36.8% vs. 33.2%; daily light 28.4% vs. 30.7%; daily heavy 34.8% vs 36.2%, respectively p-value 0.372) (Results not shown in tables).

4.2. Prevalence and correlates of baseline cigarette consumption intensity

At baseline (i.e., wave-III), 33.2% were non-daily smokers, whereas 30.7% smoked daily at a rate of 5 or fewer cigarettes per day (CPD) and 36.2% reported smoking daily at a rate of more than 5 CPD. The mean CPD for each of these three groups was 1.4, 3.4 and 12.7 respectively. People who smoked non-daily were younger, were more likely to be married, had lower education and had lower household income (see Table 1). Lower smoking

intensity (≤5 CPD) was also associated with baseline perceptions of oneself as less addicted to smoking, being less worried about smoking having already damaged their health, not having gone to the doctor in the previous year, greater intentions to quit, and having attempted to quit in the previous year.

4.3. Predictors of attempting to quit

Logistic models were estimated, regressing report of having made a serious quit attempt during the period between survey administrations on study variables (Table 2). In bivariate models, non-daily smokers were more likely to try to quit than daily smokers who smoked more than 5 CPD (OR = 2.56), although no more likely to do so when compared to those who smoked less than 5 CPD. Smokers who perceived themselves as not addicted (OR = 2.55) or only a little addicted (OR = 1.46) were more likely to have attempted to quit during the follow-up compared to smokers who perceive themselves very much addicted. Although already experienced smoking-related harms did not predict quit attempts, worry about experiencing future smoking-related harms did. Finally, smokers who at baseline intended to quit and who had attempted to quit in the preceding year were more likely to attempt to quit during the follow-up period, compared to those who did not intend to quit (OR = 1.68) and when compared to those who had not tried to quit in the year before baseline (ie., wave-III) survey administration (OR = 1.87). In multivariate adjusted models, these predictors generally remained statistically significant, except for quit intention, which became non-statistically significant.

4.4. Predictors of being quit at follow-up

About 17% had successfully quit by the follow-up period. The mean period of time that people had been quit was 7.4 months, the median was 7 months, and the range was 13 months. Logistic models were estimated regressing 30-days or more of abstinence at follow-up on study variables (Table 3). In bivariate models, both non-daily smokers and daily smokers who smoked 5 or fewer CPD were more likely to be quit than daily smokers who smoked more than 5 CPD (OR = 4.12 and OR = 2.47, respectively). Those with university degrees were also more likely to be quit than those with a secondary school education or less. Smokers who perceived themselves as not or only a little addicted were more likely to have quit compared to smokers who perceived themselves as very much addicted. Neither perceptions of current or future smoking-related harms predicted being quit. Finally, both intending to quit and past year quit behavior predicted being quit (OR=1.6 and OR = 1.56, respectively). In multivariate models, the statistically significant bivariate predictors remained statistically significant, with the exception of baseline quit intention, quit behavior in the previous year, and the comparison between daily smokers who smoked 5 or fewer CPD and daily smokers who smoked more than 5 CPD.

5. Discussion

The present study is the first population-based longitudinal study to examine the relationship between smoking intensity and socio-demographics, psycho-social factors and cessation behavior among Mexican smokers. Several key findings emerged from this study. Most notably, our study found that compared to daily heavy smokers, non-daily smokers were more likely to intend to quit, to attempt to quit, and to succeed in their quit attempt, which is consistent with other studies among diverse ethnic groups (Boulos et al., 2009; Hyland, Rezaishiraz, et al., 2005; Zhu, Wong, Tang, Shi, & Chen, 2007). However, lighter daily smokers were no more likely to try to quit or to quit than the heavier smokers. This may be partly explained by the low CPD among the heavier daily smokers, which was substantially lower than is found for heavier daily smokers in the developed countries (i.e., 12.7 CPD vs. 18.9) (Hassmiller et al., 2003). Though this daily heavy smoking group has low levels of

smoking compared to heavy smokers from the developed countries, their smoking pattern does not predict future quit behavior. We did not find that either the less perceived tobacco dependence or the increased quit attempts among daily light smokers transform to eventual quitting. Though the link between intentions to quit and eventual quitting behavior was identified in previous studies (Boulos et al., 2009; Hyland, Rezaishiraz, et al., 2005; Zhu, Wong, et al., 2007), it was very modest association (Boulos et al., 2009; Zhu, Wong, et al., 2007). This finding suggests that the daily light smokers might need some help to successfully quit. Tobacco control policies may do just that, as one recent study found that a tax increase in Mexico produced greater quit rates among light smokers than among heavy smokers, even though heavy smokers were more likely to decrease their consumption (Saenz-de-Miera et al., 2010). Other policies may work similarly.

About two-thirds (64%) of Mexican smokers were either non-daily smokers or daily smokers who consume ≤5 CPD. The prevalence of light smoking has been found to be even greater in the 2009 administration of the Global Adult Tobacco Survey (PAHO-INSP, 2010), which used a more liberal definition for smoking that involved having smoked in the last 30 days instead of in the prior week, as in ITC-Mexico. However, the prevalence of light smoking in our study was comparable to Mexican immigrants in the US (Reitzel et al., 2009; Rodriguez-Esquivel, Cooper, Blow, & Resor, 2009a; Zhu, Pulvers, et al., 2007). Compared to heavier smokers (i.e., daily smokers smoking > 5 CPD), non-daily smokers in our sample were younger, more likely to be married, have lower educational attainment and lower household income. Studies of light smokers in the US population have found some similar results, such as low-level smokers being younger (Boulos et al., 2009; Tong et al., 2009). However, previous studies among Latino smokers in the US have not found any differences in demographics by smoking intensity (Reitzel et al., 2009; Zhu, Pulvers, et al., 2007). Even though people of Mexican heritage comprise the majority of US Latinos, Mexican Americans are different from Mexicans, and even recent immigrants are more likely to migrate from rural areas, which were not captured in our sampling frame. Furthermore, US Latinos come from many backgrounds (Cuba, Puerto Rico, South and Central America) and often smoke at higher intensities than people of Mexican heritage. Our study of Mexican smokers suggests that lower SES groups appear more likely to limit their consumption, which may reflect lesser resources for purchasing cigarettes.

As expected, nondaily and light smokers were less likely to perceive themselves as addicted to the smoking and were less worried that smoking had damaged their health. This is consistent with the other studies of Latino smokers (Reitzel et al., 2009; Rodriguez-Esquivel et al., 2009b) as well as research on “chippers” (chronic non-daily and low-level smokers) who appear less dependent on tobacco (Shiffman & Paty, 2006). This group of low-intensity smokers may not recognize the health risks associated with their smoking, which may make them less likely to identify themselves as smokers when they see a clinician (Schane et al., 2009; Shiffman et al., 1994). Prior research also finds that light smokers are more likely to report planning to quit in the next 30-days and to assume that quitting is easier for them (Owen, Kent, Wakefield, & Roberts, 1995). All of these factors might be playing a role in light smokers failing to receive cessation help from doctors. Our results suggest that this scenario plays out in Mexico, as lighter smokers in our sample were less likely to receive cessation advice or materials from their doctors. Interventions aimed at this group should emphasize the dangers of smoking, even at low-levels (An et al., 2009; Bjartveit & Tverdal, 2005; Luoto, Uutela, & Puska, 2000). Indeed, our results suggest that this strategy is viable, given that light smokers were just as likely as heavy smokers to worry about the future consequences of smoking.

Our study did not shed light on why Mexican smokers smoke at such lower intensities, a pattern which appears to have been established for at least two decades (Franco-Marina,

2007). The classic model of addiction suggests that cigarette consumption increases to a level where regular nicotine administration helps smokers avoid withdrawal symptoms (Education, States, Service, & General, 1988). The Latino smokers in US report less addiction and have lower serum cotinine levels than Non-Hispanic US smokers (Perez-Stable, Marin, Marin, & Benowitz, 1992; Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1995). Nevertheless, Latino smokers have similar nicotine metabolism rates as Non-Hispanic White smokers, whereas African-American and Asian smokers have lower nicotine metabolism levels (Benowitz, Perez-Stable, Herrera, & Jacob, 2002; Perez-Stable, Herrera, Jacob, & Benowitz, 1998). Although, other genetic factors related to addiction may operate differently amongst people of Mexican heritage, the Mexican pattern of smoking may also result from cultural or social factors. Indeed, studies of chippers suggest similar social reasons for smoking, instead of physical dependence (Shiffman, 1989; Shiffman & Paty, 2006). Indeed, some research comparing Latinos to Non-Hispanic Whites supports this contention (Perez-Stable, Marin, et al., 1998)Latinos were more likely to view their smoking as due to social and environmental cues, and they are more likely to cite concerns about family and interpersonal relations as important reasons to quit. Given these findings, cessation interventions aimed at low intensity Latino smokers could capitalize on social forces that are relatively more influential among Mexican smokers, such as Mexican society disapproving smoking, and the importance of protecting the family and children from the dangers of second-hand smoke (Thrasher, Perez-Hernandez, Swayampakala, Arillo-Santillan, & Bottai, 2010). Indeed, many of the policies implemented under the rubric of the WHO-FCTC aim to make smoking socially unacceptable. Future research should determine whether such policies and programs are more effective in countries with smoking patterns like Mexico.

5.1. Strengths, limitations and future directions

The present study is subject to some limitations. Participants' smoking status and intensity was determined by self-report, and is potentially subject to bias, particularly social desirability biases that may have resulted in underestimates of consumption levels. Hence, our results might overestimate the proportion of non-daily and light smokers in the Mexican population. Nevertheless, the results are generally consistent with those that have been found in other surveys (Franco-Marina, 2007; PAHO-INSP, 2010). Although we did not conduct biochemical verification of abstinence, previous research involving earlier survey administration in the study cohort found reasonable correlations between self-reported consumption level and saliva cotinine (Fix et al.). Also, we did not examine trajectories of smoking, other than quit behavior. Hence we do not know whether this light smoking behavior is established or whether light smokers were reducing their smoking frequency and intensity as a prelude to quitting. We compared the consumption intensities of those who remained smokers from wave-III to wave-IV. There was no clear pattern of upward or downward trajectories in consumption from baseline to follow-up. About 35% of nondaily smokers increased consumption intensity, 32% of heavy smokers decreased intensity, and the same percentage of daily light smokers increased just as they decreased their intensity. Future longitudinal studies should explore this issue.

Differential attrition may have biased some of our results, as those who were not followed up were more likely to be male, younger, have higher educational attainment, and be marginally less likely to have attempted to quit at baseline. However, there was generally no difference with regard to key study variables, suggesting that the bias is unlikely to be great. The study was conducted in six of the major cities of Mexico: hence, the results cannot be generalized to the entire nation. Nevertheless, these six cities are amongst the largest cities in Mexico, include all major regions of the country, and three-fourths of Mexicans live in urban areas (INEGI, 2006)

In summary, nondaily smokers in Mexico perceive themselves less addicted to tobacco, but are more likely to attempt to quit and eventually succeed in their quit attempts compared to daily heavy smokers. Future research should determine more about the contexts that promote smoking in this group, the trajectories of this pattern over time, and whether lighter smokers are more sensitive to tobacco control policies.

Acknowledgments

Role of Funding Sources: Funding for data collection and analyses on this study came from Consejo Nacional de Ciencia y Tecnología (CONACyT Convocatoria Salud-2007-C01-70032) and the US National Cancer Institute (P01 CA138389).

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Highlights

- 64% of Mexican smokers were either non-daily smokers or light daily smokers
- Non-daily smokers were more likely to attempt to quit than heavy daily smokers
- Non-daily smokers were more likely to quit compared to heavy daily smokers

Table 1

Characteristics of Mexican smokers at different levels of cigarette consumption

		Level of Consumption			
Characteristics*		**Non-Daily (n=398)**	**≤ 5 CPD (n=368)**	**>5 CPD (n=434)**	**p-Value**
Sex					0.3946
	Male	62.0%	59.0%	63.0%	
	Female	38.0%	41.0%	37.0%	
Age					<**0.0001**
	18 – 24	26.8%	21.8%	15.2%	
	25 – 39	39.6%	33.4%	31.5%	
	40 – 54	20.0%	26.1%	32.6%	
	≥55	13.6%	18.7%	20.7%	
Education					**0.0005**
	< Middle School	25.3%	28.3%	34.8%	
	Middle School	35.4%	28%	26.0%	
	Technical / Vocational	6.8%	9.2%	10.1%	
	High School Complete	22.2%	21.0%	17.5%	
	University or PG	10.3%	13.6%	11.6%	
Marital Status					<**0.0001**
	Married	66.8%	57.6%	63.8%	
	Single	26.6%	27.8%	23.3%	
	Other	6.6%	14.6%	13.9%	
Income					<**0.0001**
	0 – 3,000	23.7%	26.6%	24.5%	
	3,000 – 5,000	32.4%	18.9%	23.5%	
	5,001 – 8,000	19.1%	19.5%	21.8%	
	8,001 or more	15.9%	16.3%	20.6%	
	Missing	8.9%	18.8%	9.6%	
Mean Cigarettes per day (CPD)		1.4	3.4	12.7	
Perceived Addiction					<**0.0001**
	Not Addicted	46.4%	27.3%	6.5%	
	Yes, not much	41.1%	46.2%	31%	
	Yes, very much	12.5%	25.9%	62.5%	
Has smoking damaged your health?					**0.001**
	Not at all	34.6%	37.3%	31.4%	
	Somewhat	44.6%	36.3%	38.0%	
	Very much	20.8%	26.4%	30.6%	
Worried that smoking will damage your health?					0.4239
	Not at all	7.2%	10.0%	8.4%	
	Somewhat	33.3%	32.6%	30.4%	
	Very much	59.5%	57.4%	61.2%	
Important people think you should not smoke		75.9%	77.4%	79.1%	0.4141

Characteristics*	Level of Consumption			
	Non-Daily (n=398)	≤ 5 CPD (n=368)	>5 CPD (n=434)	p-Value
Received some help / advice to quit smoking at doctor's office in past year?				**0.0176**
Yes	10.2%	15.4%	17.0%	
No	14.2%	12.7%	12.6%	
Did not go to the Doctor in the past year	75.6%	71.8%	70.5%	
Made a quit attempt in the past year (Baseline)	43.0%	38.7%	29.4%	<**0.0001**
Intended to quit in the next 6 months (Baseline)	24.5%	19.3%	18.4%	**0.0244**
Made a quit attempt during 14 months of followup*	57.0%	42.0%	34.1%	<**0.0001**
Quit for 30 days or more at followup*	26.0%	18.2%	9.2%	<**0.0001**

* all variables shown assessed at baseline (i.e., wave 3), except for followup quit behavior, which was assessed 14 months after the initial assessment.

Table 2

Descriptives, bivariate and multivariate adjusted logistic models of attempting to quit over 14 months of follow up

Baseline Independent variables		Bivariate analyses n=538		Multivariate analysis *	
	%	OR (95% CI)	p-Value	AOR (95% CI)	p-value
Entire population	44.6%				
Sex			0.8124		0.9922
Male	45.3%	1		1	
Female	44.3%	0.96 (0.71–1.31)		0.99 (0.72–1.38)	
Age			0.9139		0.4661
18 – 24	43.6%	0.85 (0.54–1.35)		0.67 (0.38–1.16)	
25 – 39	44.8%	0.89 (0.59–1.36)		0.71 (0.44–1.15)	
40 – 54	44.4%	0.88 (0.58–1.35)		0.72 (0.46–1.15)	
≥55	47.5%	1		1	
Education			0.4409		0.1683
< Middle School	44.4%	1		1	
Middle School	46.9%	1.10 (0.75–1.61)		1.26 (0.83–1.91)	
Technical / Vocational	37.3%	0.74 (0.45–1.23)		0.95 (0.54–1.64)	
High School Complete	42.7%	0.93 (0.61–1.43)		1.24 (0.75–2.04)	
University or PG	50.1%	1.30 (0.77–2.19)		**2.01 (1.11–3.63)**	
Marital Status			0.0572		0.0804
Married	48.2%	**1.48 (1.06–2.07)**		**1.59 (1.06–2.40)**	
Single	38.6%	1		1	
Other	40.4%	1.08 (0.65–1.80)		1.36 (0.71–2.58)	
Income			0.2743		0.3371
0 – 3,000	48.6%	1		1	
3,000 – 5,000	47.9%	0.96 (0.65–1.45)		0.80 (0.52–1.23)	
5,001 – 8,000	37.9%	0.65 (0.42–1.00)		**0.61 (0.38–0.98)**	
8,001 or more	42.4%	0.78 (0.50–1.21)		0.69 (0.42–1.16)	
Missing	46.4%	0.92 (0.57–1.48)		0.81 (0.47–1.38)	
Level of Consumption			**<0.0001**		**0.0133**
Non-Daily Smoker	57.0%	**2.56 (1.80–3.64)**		**1.83 (1.19–2.83)**	
Daily, ≤5 CPD	42%	1.40 (0.99–1.98)		1.14 (0.77–1.70)	
Daily, > 5 CPD	34.1%	1		1	
Perceived Addiction			**<0.0001**		**0.0184**
Not Addicted	58.3%	**2.55 (1.77–3.68)**		**1.86 (1.20–2.87)**	
Yes, not much	44.5%	**1.46 (1.03–2.06)**		1.26 (0.86–1.85)	
Yes, very much	35.4%	1		1	
Worried that smoking will damage your health?			**0.008**		**0.0357**
Not at all	31.4%	1		1	
Somewhat	40.7%	1.50 (0.85–2.67)		1.63 (0.90–2.97)	
Very much	49.2%	**2.12 (1.20–3.67)**		**2.04 (1.16–3.61)**	

Baseline Independent variables		Bivariate analyses n=538		Multivariate analysis *	
	%	OR (95% CI)	p-Value	AOR (95% CI)	p-value
Close people think you should not smoke	45.2%	1.03 (0.74–1.44)	0.8717	0.96 (0.67–1.39)	0.8366
Made a quit attempt in the past year	54.8%	**1.87 (1.37–2.54)**	**<0.0001**	**1.70 (1.23–2.36)**	**0.0014**
Intended to quit in the next 6 months	55.2%	**1.68 (1.17–2.42)**	**0.005**	1.32 (0.90–1.93)	0.1564

* estimates adjust for all variables included in the table.

Table 3

Descriptives, bivariate and multivariate adjusted logistic models of being quit at 14 months follow up

Independent variables		Quit Status at Wave IV (n= 191 (15.8%)			Multivariate analysis*	
		%	OR (95% CI)	p-Value	AOR (95% CI)	p-value
Sex	Male	17.3	1	0.7921	1	0.8255
	Female	16.5	0.95 (0.64–1.40)		0.97 (0.61–1.53)	
Age				0.4808		0.5432
	18 – 24	17.5	0.78 (0.42–1.42)		0.69 (0.31–1.51)	
	25 – 39	15.0	0.65 (0.37–1.14)		0.59 (0.28–1.22)	
	40 – 54	16.1	0.70 (0.40–1.24)		0.75 (0.37–1.48)	
	≥55	21.5	1		1	
Education				**0.0015**		**0.0014**
	< Middle School	15.3	1		1	
	Middle School	18.4	1.25 (0.73–2.14)		1.40 (0.75–2.62)	
	Technical / Vocational	8.8	0.53 (0.25–1.16)		0.67 (0.27–1.67)	
	High School Complete	12.1	0.76 (0.43–1.35)		0.95 (0.44–2.02)	
	University or PG	30.6	**2.45 (1.31–4.55)**		**3.42 (1.51–7.71)**	
Marital Status				0.4657		0.1789
	Married	16.9	1.15 (0.73–1.80)		1.41 (0.82–2.49)	
	Single	15.0	1		1	
	Other	21.3	1.53 (0.78–2.99)		**2.23 (0.95–5.25)**	
Income				0.7051		0.7893
	0 – 3,000	16.4	1		1	
	3,000 – 5,000	15.8	0.96 (0.56–1.66)		0.89 (0.50–1.57)	
	5,001 – 8,000	16.1	0.98 (0.55–1.75)		0.93 (0.48–1.81)	
	8,001 or more	16.8	1.03 (0.55–1.92)		0.93 (0.41–2.10)	
	Missing	22.2	1.46 (0.80–2.67)		1.36 (0.68–2.74)	
Level of Consumption				<**0.0001**		**0.0092**
	Non-Daily Smoker	26.0	**4.12 (2.42–7.03)**		**2.54 (1.37–4.70)**	
	Daily, ≤5/day	17.4	**2.47 (1.43–4.27)**		1.66 (0.91–3.04)	
	Daily, > 5 / day	7.9	1		1	
Perceived Addiction				<**0.0001**		**0.0013**
	Not Addicted	29.0	**4.73 (2.81–7.98)**		**3.26 (1.73–6.14)**	
	Yes, not much	16.8	**2.34 (1.38–3.96)**		**1.95 (1.05–3.62)**	
	Yes, very much	7.9	1		1	
Worried that smoking will damage your health?				0.388		0.6908
	Not at all	19.6	1		1	
	Somewhat	14.4	0.69 (0.34–1.39)		0.79 (0.36–1.71)	
	Very much	18.0	0.90 (0.46–1.77)		0.94 (0.45–1.98)	
Important people think you should not smoke		16.3	0.81 (0.51–1.30)	0.3836	0.87 (0.55–1.39)	0.647
Made a quit attempt in the past year (Baseline)		21.1	**1.56 (1.05–2.32)**	**0.0269**	1.32 (0.87–2.00)	0.1896
Intended to quit in the next 6 months		22.7	**1.60 (1.01–2.54)**	**0.0476**	1.40 (0.88–2.23)	0.1577

* estimates adjust for all variables included in the table.