



Short communication

Single cigarette purchasers among adult U.S. smokers

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ABSTRACT

Cigarette smoking remains the leading preventable cause of morbidity and mortality. The purchase of single cigarettes, known as loosies, allows for a more affordable cost than a pack of cigarettes. Many of the existing studies on loose cigarettes have used a small non-generalizable sample. This study examined the socio-demographic characteristics of loosie purchasers among adult cigarette smokers in the United States. Data from the 2006/07–2014/15 Tobacco Use Supplement to the Current Population Survey were analyzed. The socio-demographic characteristics of loosie users were examined by multivariable logistic regression. In 2014–2015, approximately 5.4% of adult smokers reported purchasing loosies compared to 3.7% in 2006–2007. Men (OR 1.22, 95% CI 1.10–1.35), non-Hispanic Blacks (OR 3.30, 95% CI 2.89–3.77), Hispanics (OR 1.97, 95% CI 1.67–2.32), and those living in a metropolitan area (OR 1.16, 95% CI 1.02–1.33) had significantly higher odds of single cigarette purchase. Single cigarette use also varied by age, marital status, employment, and geographic region. Menthol cigarette smokers had higher odds of purchasing loosies compared to non-menthol smokers. Likewise, cigarette quit intention was significantly associated with odds of buying loosies. The prevalence of single cigarette purchases among smokers appears to be lower in a national sample compared to previous estimates reported in specific populations. However, certain subpopulations were more likely to purchase a single cigarette and may contribute to persistent disparities among racial and ethnic minorities. Preventing the sale of loosies may improve the health outcomes of underserved communities, specifically those with low socioeconomic status.

1. Introduction

Since the landmark 1964 Surgeon General's report on the health effects of cigarette smoking, the nation has made efforts to combat the tobacco epidemic. Per capita cigarette consumption declined 72% from 1963 to 2012, and the prevalence of past-month smoking decreased from 43% in 1965 to 14% in 2017 (National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health, 2014). However, cigarette smoking persists as the leading cause of preventable death in the United States and is responsible for more than 480,000 deaths each year (National Center for Chronic Disease Prevention and Health Promotion (US), 2014). One measure used to reduce tobacco consumption is legislation that allows for tobacco price control through increasing taxes (Paoletti et al., 2012). Raising cigarette taxes is a highly effective tobacco control strategy (Chaloupka et al., 2012; Chaloupka, 2014), nevertheless, evidence also shows that increased cigarette taxes may lead to compensatory behaviors, including some smokers looking for alternative cheaper sources. For

instance, a cigarette excise tax increase in New Jersey was associated with smokers substituting cigarettes with an alternative product (cigars) that had no corresponding tax increase (Delnevo et al., 2004).

Another way smokers minimize the impact of cigarette tax is by buying individual or single cigarettes (also referred to as loosies). Loosies are typically obtained from low- or no-tax sources, and, as they are not sold by the pack or carton, allow smokers to buy the quantity they can afford at that time (von Lampe et al., 2018). In 2013, New York City smokers reported purchasing loosies at costs ranging from \$0.33 to \$1.00, for an average cost of \$0.93 per cigarette (Guillory et al., 2015; von Lampe et al., 2018). For comparison, illegal packs, often untaxed or taxed at a lower rate, cost about \$0.35–\$0.40 per cigarette and legal packs cost about \$0.52–\$0.63 per cigarette (von Lampe et al., 2018). In 2009, the Family Smoking Prevention and Tobacco Control Act (FSPTCA) began restricting the sale of loosies, which are often sold without warning labels, non-taxed, and may contribute to underage smoking (Family Smoking Prevention and Tobacco Control Act, 2009). However, the purchase of loosies remains prevalent. In

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2014, states issued at least 98 warning letters to retailers for single cigarette sales, but likely many more illegal single cigarette sales are undocumented (Baker et al., 2015). In 2013, New York City smokers reported regularly purchasing loosies from bodegas and corner stores (von Lampe et al., 2018). Smokers looked for cues, such as seeing others leave with a loosie or a lighter hanging from string, to know where to buy loosies (von Lampe et al., 2018). Sellers often use code words or only sell to people they know to prevent being discovered by authorities (von Lampe et al., 2018). Loose cigarettes are also often sold by individuals without a license (Guillory et al., 2015; Stillman et al., 2014; Latkin et al., 2013).

There is some evidence that purchasing loose cigarettes is more prevalent among specific populations. A convenience sample study of African-American young adult smokers (ages 18–24) in Baltimore found that almost 77% had purchased loosies during the past month (Stillman et al., 2007). Among bar-going young adults in New York, 47% of smokers reported that they had purchased loosies (Guillory et al., 2015). There is evidence that non-daily smokers, those with a recent quit attempt, and smokers with quit intention have higher odds of single cigarette use (Guillory et al., 2015; Thrasher et al., 2011). Prior studies have also reported that smokers who are low-income, are younger than 40, and non-White have greater odds of purchasing loose cigarettes (Guillory et al., 2015; Thrasher et al., 2011; Thrasher et al., 2009). Most existing research has examined the purchasing of loose cigarettes in specific socioeconomic and geographic subgroups, and also used a small non-generalizable sample (Guillory et al., 2015; Latkin et al., 2013; Stillman et al., 2007). The current study examines the demographic characteristics associated with purchasers of loose cigarettes in the United States using a large, nationally representative sample.

2. Method

2.1. Data

Data from the Tobacco Use Supplement to the Current Population Survey (TUS-CPS) were used. The TUS-CPS is a large household survey among the civilian non-institutionalized population 16 years of age and older in the United States. The CPS, administrated by the U.S. Census Bureau and sponsored by the National Cancer Institute, is a monthly labor force survey conducted in more than 50,000 households across the country. Since 1992, the TUS-CPS has been conducted periodically as the supplement component of the CPS. The present study used data from the 2006–07, 2010–11, and 2014–15 survey cycles of the TUS-CPS and restricted the study sample to 78,471 current adult smokers aged 18 and older. Current smokers were defined as individuals who smoked at least 100 cigarettes in their lifetime and smoked cigarettes every day or some days at the time of the survey.

2.2. Measures

The primary dependent variable of interest, loosie use, was defined with an affirmative response to the survey question, “In the last 2 months, have you bought any single or individual cigarettes?” Individual characteristics were obtained from the TUS-CPS, including age (18–24, 25–34, 35–44, 45–54, or 55+), sex (male or female), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, or non-Hispanic other races), education level (high school diploma, general educational development (GED) or less; some college or Associate in Arts (AA) degree; or bachelor’s degree and above), marital status (yes or no), employment status (yes or no), metropolitan status (yes or no), geographic region (Northeast, Midwest, South, West), current smoking status (every day, some days), menthol cigarette use (yes or no), and 30-day quit intention (yes or no).

2.3. Statistical analyses

Sample characteristics were described by a single cigarette purchase status (yes vs. no). Unweighted counts (n) and weighted column percentages (%) were reported for sociodemographic variables, current smoking status, and quit intention. Descriptive statistics and Rao-Scott Chi-Square tests were used to compare characteristics by loosie use status. Multivariable logistic regression models were used to examine the association between sociodemographic characteristics and the odds of single cigarette use status while adjusting for individual characteristics. Separate stratified analyses were performed for males and females. All analyses took into account the sample design of TUS-CPS. All tests were two-sided and used a 5% significance level. All of the statistical analyses were performed using SAS 9.4 (SAS Institute Inc, Cary, NC).

3. Results

Among 78,471 current smokers, 2699 (4.1%) reported buying individual cigarettes in the two months prior to the survey, and the remaining 75,772 reported that they had not purchased single cigarettes. In 2014–2015, approximately 5.4% of adult smokers reported purchasing loosies compared to 3.7% in 2006–2007. Sociodemographic characteristics, current smoking status, menthol cigarette use, and quit intention of current smokers differed significantly between current smokers who bought loose cigarettes and those who did not (Table 1). Current smokers who purchased loosies tended to be younger, male, Black, and Hispanic. Additionally, they tended to be less educated, unmarried, unemployed, and from a metropolitan area.

Table 2 reports the multivariable analysis of sociodemographic characteristics of loosie users. Those aged 18–24 (OR 2.36, 95% CI 1.98–2.81), 25–34 (OR 1.47, 95% CI 1.26–1.72), 35–44 (OR 1.40, 95% CI 1.20–1.64), 45–54 (OR 1.29, 95% CI 1.11–1.50) were more likely to use loosies when compared to adults 55 and older. Being male (OR 1.22, 95% CI 1.10–1.35), non-Hispanic Black (OR 3.30, 95% CI 2.89–3.77), Hispanic (OR 1.97, 95% CI 1.67–2.32) were all significantly associated with higher odds of loosie use. Living in a metropolitan area (OR 1.16, 95% CI 1.02–1.33) was significantly associated with higher odds of buying loose cigarettes. Being married, employed, and having some college education or an AA degree were negatively associated with loosie use. Smoking daily was also negatively associated with single cigarette purchase (OR: 0.83, 95% CI 0.73–0.94), while menthol cigarette use (OR 1.48, 95% CI 1.33–1.65) and quit intention (OR 1.21, 95% CI 1.07–1.37) were positively associated with loosie use. Smokers in the Northeastern, Midwestern, and Western U.S. regions had higher odds of purchasing loose cigarettes compared to those in the Southern region. Though males had higher odds of loosie use, the separate stratified analyses conducted for males and females were largely consistent with the full sample results.

4. Discussion

This study examined the sociodemographic characteristics of adult smokers in the United States who purchase single cigarettes. About 5.4% of current smokers in 2014/15 reported buying loose cigarettes in the two months before the survey, which is lower than previous estimates among subpopulation groups (Guillory et al., 2015; Latkin et al., 2013; Stillman et al., 2007). In a study of young adult bar patrons in New York City, about 15% of non-daily and 4% of daily smokers reported that their last cigarette was a loosie (Guillory et al., 2015). In keeping with prior studies, we found that everyday smokers had lower odds of loosie use than some day smokers (Guillory et al., 2015; Thrasher et al., 2011; Thrasher et al., 2009). Evidence shows that non-daily smokers may choose to purchase single cigarettes when they feel the urge to smoke, rather than to maintain a steady supply (Guillory et al., 2015). In one study, about 40% of smokers reported that, at least

Table 1
Demographic characteristics, current smoking status, and quit intention of current smokers by loosie status.

Characteristics ^a	Loosie cigarette use status		p-value ^c
	Yes n (% ^b)	No n (% ^b)	
Total	2699 (100.0)	75,772 (100.0)	
Age			< 0.0001
18–24	420 (22.8)	6301 (13.1)	
25–34	566 (21.6)	14,932 (20.7)	
35–44	515 (17.6)	15,281 (19.3)	
45–54	601 (19.8)	17,963 (22.7)	
55+	597 (18.1)	21,295 (24.3)	
Sex			< 0.0001
Male	1418 (58.7)	36,931 (53.8)	
Female	1281 (41.3)	38,841 (46.2)	
Race/ethnicity			< 0.0001
Non-Hispanic White	1497 (48.4)	59,785 (74.8)	
Non-Hispanic Black	738 (32.1)	6818 (10.9)	
Hispanic	302 (15.1)	4994 (9.2)	
Non-Hispanic Other races	162 (4.5)	4175 (5.0)	
Education level			< 0.0001
High school diploma, GED, or less	1693 (64.4)	42,729 (56.8)	
Some college or AA degree	739 (26.9)	23,642 (31.0)	
Bachelor degree or higher	267 (8.7)	9401 (12.2)	
Marital status			< 0.0001
Yes	748 (24.3)	31,806 (40.3)	
No	1951 (75.7)	43,966 (59.7)	
Employment status			< 0.0001
Yes	1348 (49.4)	46,509 (62.3)	
No	1351 (50.7)	29,263 (37.7)	
Metropolitan status			< 0.0001
Metropolitan	2109 (85.6)	54,447 (79.8)	
Non-metropolitan	567 (14.4)	20,507 (20.2)	
Smoking status			< 0.0001
Every day	2006 (72.4)	61,324 (79.9)	
Some days	693 (27.6)	14,448 (20.1)	
Menthol cigarette use			< 0.0001
Yes	1161 (51.0)	20,243 (29.8)	
No	1364 (49.0)	53,276 (70.2)	
Quit intention (next 30 days)			< 0.0001
Yes	584 (23.3)	12,820 (17.9)	
No	1959 (76.7)	58,640 (82.1)	
Quit intention (next 6 months)			< 0.0001
Yes	1264 (49.3)	32,036 (43.2)	
No	1348 (50.7)	40,893 (56.8)	
Survey wave ^b			< 0.0001
2006–2007	903 (31.8)	28,127 (35.7)	
2010–2011	765 (28.2)	25,951 (34.1)	
2014–2015	1031 (40.0)	21,694 (30.2)	
Prevalence of loosie purchase by survey wave ^d			< 0.0001
2006–2007	903 (3.7)	28,127 (96.3)	
2010–2011	765 (3.4)	25,951 (96.6)	
2014–2015	1031 (5.4)	21,694 (94.6)	

^a Demographic variables, current smoking status, and quit intention were reported with unweighted counts (*n*) and weighted percentage (%).

^b % = column percentage except survey wave.

^c Rao-Scott Chi-Square tests were used to test significance.

^d Row percentage.

once a week, seeing singles sold triggered the urge to smoke. (Thrasher et al., 2011) In addition, experiencing this urge was associated with higher odds of purchasing loosies (Thrasher et al., 2011).

Individual cigarette sales are associated with quit-related behaviors. In the current study, smokers with intentions to quit in the next 30 days had higher odds of purchasing loose cigarettes. Previous studies have found that smokers with the intention to quit within the next six months have greater odds of loose cigarette use (Guillory et al., 2015; Thrasher et al., 2011; Thrasher et al., 2009). These findings suggest that some smokers may use loosies in attempt to reduce cigarette use, as prior research indicates (Thrasher et al., 2009). Some research shows that those with a past-year quit attempt have higher odds of purchasing loose cigarettes (Guillory et al., 2015). However, other studies found no significant associations with quit attempts and purchasing single

cigarettes (Thrasher et al., 2011, 2009).

The present study found significant disparities in single cigarette purchasing behavior by geographic region. Metropolitan smokers had significantly higher odds of using loosies than non-metropolitan smokers. However, overall cigarette smoking is less common in metropolitan areas in the United States (Centers for Disease Control and Prevention, 2019). The use of loose cigarettes is more in line with patterns of illicit drug use, which is most common in metropolitan areas (Mack et al., 2017). Though overall cigarette use is most prevalent in the Southern and Midwestern United States, smokers in the Northeastern, Midwestern, and Western regions were more likely to buy loosies than those in the Southern region. (Centers for Disease Control and Prevention, 2019)

Certain subpopulations (e.g., racial/ethnic minorities) are more

Table 2
The odds of loosie use by demographic characteristics; stratified by sex using multivariable logistic regression.

	Total OR [¥] (95% C.I. [€])	Male OR [¥] (95% C.I. [€])	Female OR [¥] (95% C.I. [€])
Age			
18–24	2.36(1.98, 2.81)	2.46(1.93, 3.14)	2.18(1.68, 2.82)
25–34	1.47(1.26, 1.72)	1.45(1.16, 1.81)	1.49(1.21, 1.85)
35–44	1.40(1.20, 1.64)	1.43(1.15, 1.78)	1.37(1.10, 1.70)
45–54	1.29(1.11, 1.50)	1.29(1.04, 1.59)	1.28(1.04, 1.57)
55+	ref	ref	ref
Sex			
Male	1.22(1.10, 1.35)	–	–
Female	ref	–	–
Race/ethnicity			
non-Hispanic White	ref	ref	ref
non-Hispanic Black	3.30(2.89, 3.77)	3.17(2.63, 3.82)	3.54(2.94, 4.26)
Hispanic	1.97(1.67, 2.32)	1.96(1.57, 2.44)	2.05(1.59, 2.65)
non-Hispanic Other races	1.09(0.86, 1.39)	1.16(0.85, 1.58)	0.99(0.67, 1.45)
Education level			
High school diploma, GED, or less	ref	ref	ref
Some college or AA degree	0.86(0.77, 0.97)	0.91(0.77, 1.07)	0.81(0.69, 0.95)
Bachelor degree or higher	0.87(0.73, 1.05)	0.96(0.75, 1.22)	0.77(0.59, 0.99)
Marital status			
Yes	0.71(0.63, 0.80)	0.64(0.55, 0.76)	0.82(0.70, 0.96)
No	ref	ref	ref
Employment status			
Yes	0.62(0.55, 0.68)	0.59(0.51, 0.68)	0.67(0.58, 0.78)
No	ref	ref	ref
Metropolitan status			
Metropolitan	1.16(1.02, 1.33)	1.09(0.91, 1.31)	1.27(1.05, 1.53)
Non-metropolitan	ref	ref	ref
Region			
Northeast	1.54(1.34, 1.78)	1.41(1.14, 1.74)	1.70(1.40, 2.07)
Midwest	1.26(1.10, 1.43)	1.36(1.13, 1.63)	1.13(0.94, 1.37)
South	ref	ref	ref
West	1.25(1.08, 1.45)	1.27(1.04, 1.54)	1.22(0.98, 1.52)
Smoking status			
Every day	0.83(0.73, 0.94)	0.82(0.69, 0.98)	0.84(0.71, 1.01)
Some days	ref	ref	ref
Menthol use			
Yes	1.48(1.33, 1.65)	1.61(1.38, 1.87)	1.33(1.14, 1.56)
No	ref	ref	ref
Quit intention (next 30 days)			
Yes	1.21(1.07, 1.37)	1.15(0.97, 1.36)	1.29(1.09, 1.54)
No	ref	ref	ref
Survey wave			
2006–2007	1.18(1.04, 1.34)	1.08(0.90, 1.28)	1.35(1.12, 1.62)
2010–2011	ref	ref	ref
2014–2015	1.59(1.41, 1.80)	1.30(1.09, 1.54)	2.12(1.77, 2.54)

Ref = reference category.

[¥] OR = odds ratio.

[€] C.I. = Confidence Interval.

likely to purchase single cigarettes. Non-Hispanic Black and Hispanic smokers had significantly higher odds of using loosies compared to White smokers in the current study. Guillory et al., likewise found that White smokers had significantly lower odds of their last cigarette being a loosie (Guillory et al., 2015). We also found that menthol cigarette users have higher odds of using loosies than non-menthol smokers. This finding could be a result of consumer preference or an indication of the types of cigarettes most often sold in singles. There is evidence that menthol cigarettes are more popular among Black and Hispanic smokers than White smokers (Rock et al., 2010). Guillory et al. found that 60% of single cigarette purchasers in New York City purchased Newport (Guillory et al., 2015). Likewise, Wackowski et al. reported that menthol cigarettes, such as Newport, were commonly sold as loosies to young adults in New Jersey (Wackowski et al., 2018).

The likelihood of purchasing single cigarettes varies by individual characteristics. In our study, smokers with some college education had significantly lower odds of using loosies than non-college-educated smokers. Guillory and colleagues reported that those with a college education had significantly lower odds of ever purchasing a loose

cigarette (Guillory et al., 2015). Among Mexican smokers, Thrasher et al. found the lowest odds of loosie purchase among smokers with more than a high school education, but the finding lost significance after adjusting for confounders (Thrasher et al., 2009). Younger smokers (aged 18–54) were more likely to report the use of loosies when compared to smokers 55 or older, with the highest odds among the 18–24 age group. Prior evidence also suggests that smokers aged 40 and older buy loosies less frequently than those 18–24 (Thrasher et al., 2011, 2009). In addition, we found that married and employed smokers were less likely to buy loosies than unmarried and unemployed smokers, respectively. These findings suggest that those with less stability may use loosies as a means to continue smoking when purchasing packs is financially difficult.

Loosie use rates are high among socioeconomically disadvantaged populations (Stillman et al., 2014), and therefore, sales of such products impact tobacco control efforts among populations that already have high rates of smoking (Centers for Disease Control and Prevention (CDC), 2011). The sale or availability of loosies provides a more affordable way to purchase cigarettes for those with limited disposable

income and is also a means to minimize the impact of cigarette taxes. However, loosies have proven challenging to regulate, as they may be sold covertly at corner stores and by individual dealers, despite Food and Drug Administration (FDA) restrictions (Food and Drug Administration, HHS, 2010; Latkin et al., 2013; Family Smoking Prevention and Tobacco Control Act, 2009).

Findings should be interpreted in light of limitations. Similar to other self-report surveys, the TUS-CPS is subject to the possibility of inaccurate recall. The TUS-CPS survey was conducted in two languages (English and Spanish), and it remains unclear how potential language barriers may have affected the survey. Moreover, the specific reasons for purchasing a single cigarette versus a pack were not available in the data. Despite these limitations, this study provides a national perspective for individual cigarette purchases that could help inform future research and decision making.

5. Conclusion

The prevalence of purchasing single cigarettes, also known as loosies, appears lower in a national sample compared to previous estimates reported in specific populations. However, smokers who were 18–24, male, non-Hispanic Black, Hispanic, single, unemployed, metropolitan, and less educated were more likely to purchase loose cigarettes within the previous two months. Furthermore, non-daily and menthol smokers, and those with intention to quit in the next 30 days had higher odds of purchasing loosies. Given that loosies are more commonly used among certain populations, eliminating loosies from the market could lead to better health outcomes.

Author contributions

S.A. conceptualized, designed the study, and organized the writing and analyses. L.S. conducted the data analysis. L.M. & K.L. contributed to the writing of the manuscript. C.R. & F.Q. critically reviewed the manuscript. All authors approved the final manuscript as submitted.

Conflict of interest

None.

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