Health Equity Implications of Past Year Quit Attempts among Current Adult Smokers: Rhode Island, 2011–2015

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Cigarette smoking is the leading cause of preventable disease and death in the US.[1] Promoting quitting is one of four core components of state-based tobacco control programs.[2] Cigarette smoking among US adults decreased from 42% in 1965 to 18% in 2012, partially due to increased successful quits among smokers.[1] Helping smokers quit contributes to reductions in tobacco-related disease, death, and health care costs.[3] Quitting smoking anytime is beneficial, but smokers who quit before age 35 have comparable premature mortality rates to persons who never smoked.[4]

Interventions proven to help smokers quit include cessation counseling (e.g., Quitlines), use of cessation medications (e.g., nicotine replacement therapy [NRT]), and health systems change focused on treating tobacco dependence during routine clinical care.[2] State-based tobacco control programs concurrently implement other population-based interventions such as mass-reach media campaigns, increased price of tobacco products due to high taxes, and comprehensive smoke-free policies.[2] These interventions help create environments that motivate smokers to quit, direct smokers to cessation services, and support quit attempts by making it easier to stay quit.

Healthy People 2020 set a target to increase quit attempts among adult smokers to 80%.[5] In 2015, 15.5% of Rhode Island (RI) adults smoked cigarettes, and 60.6% tried to quit in the previous year. National data also indicate that the majority of smokers try to quit, and certain groups are more likely to make a quit attempt. In the US, quit attempts were more likely among younger smokers, smokers with more than a high school education, and non-Hispanic black smokers.[4] Understanding variations in quit attempts among RI smokers can help increase successful quits by targeting services to smokers who are ready to quit, but may need extra support to prevent relapse.

METHODS

We combined five years (2011-2015) of weighted data from the RI Behavioral Risk Factor Surveillance System (BRFSS) (*N*=31,200). Years were combined to obtain sample sizes sufficient to examine smoking and quit attempts by race/ethnicity. The BRFSS is conducted annually by the RI Department of Health with support from the Centers for Disease Control and Prevention (CDC). The BRFSS uses a multistage cluster design based on random digit dialing of landline and cell phones to select a representative sample from each state's noninstitutionalized civilian population aged ≥18 years. Additional information about BRFSS methodology is available at: http://www.cdc.gov/brfss/

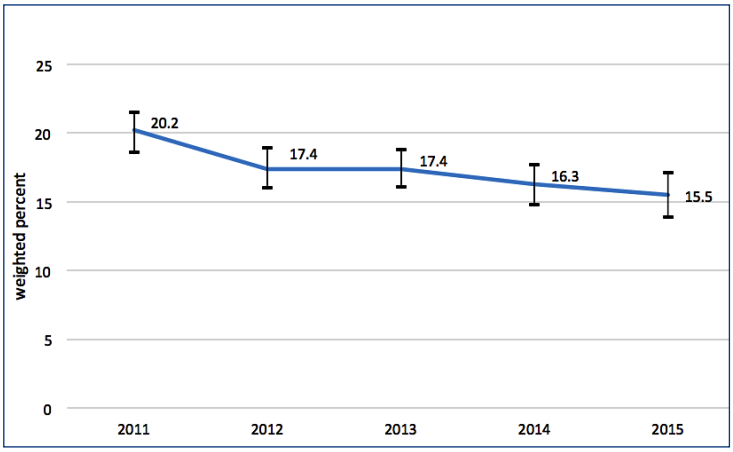
The 2011-2015 combined data were used to determine the proportion of adults who were current smokers, and examine demographics associated with smoking. Current smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetime and also reported currently smoking "every day" or "some days" at the time of the survey. Next, we determined the proportion of current smokers who reported a quit attempt, and examined how quit attempts varied by demographic and other tobacco-related variables. Quit attempts were defined as an attempt to stop smoking in the past year lasting one or more days. Other tobacco variables came from state-added questions about a healthcare provider's recommendation to quit (in past year) and secondhand smoke exposure in the home (in past 7 days); a new weighting variable was created to account for the varying landline and cell-phone allocation across survey years. Weighted percentages and 95% confidence intervals (CIs) were calculated. Significant differences between groups were determined from non-overlapping CIs. Analyses were conducted in SAS Version 9.4.

RESULTS

Current smoking declined among Rhode Islanders from 20.2% (95% CI=18.8-21.7) in 2011 to 15.5% (95% CI=14.0-17.0) in 2015 (**Figure 1**). For combined years 2011-2015, current smoking was 17.4% (**Table 1**). Smoking was significantly higher among males (19.4%) than females (15.6%); significantly higher among uninsured adults (31.5%) than insured adults (15.5%); highest among adults aged 25-44 (23.5%) and lowest among adults aged ≥65 years (7.9%); highest among adults with <high school education (27.8%) and lowest among adults with ≥some college education (12.8%); highest among adults earning ≤$25,000/year (27.1%) and lowest among adults earning ≥$75,000/year (9.6%). Among racial/ethnic groups, Hispanic adults smoked significantly less (14.6%) than non-Hispanic white adults (17.5%). Smoking was slightly higher among non-Hispanic black adults (19.3%) than non-Hispanic white and Hispanic adults, but not statistically significant.

Of current smokers in 2011–2015, 62.0% made a quit attempt (**Table 2**). Quit attempts were significantly higher among non-Hispanic black smokers (76.2%) than non-Hispanic white

Figure 1. Current Smoking among RI Adults: 2011-2015



Data Source: 2011-2015 RI BRFSS

Table 1. Current adult smokers, Rhode Island: 2011-2015

Characteristic	Weighted Percentage	95% CI
Sex		
Male	19.4	(18.3 -20.4)
Female	15.6	(14.8 - 16.3)
Age Group		
18-24	15.7	(13.4 - 18.1)
25-44	23.5	(22.1 - 24.9)
45-64	17.8	(17.0 - 18.7)
65+	7.9	(7.2 - 8.6)
Race/ethnicity		
Non-Hispanic white	17.5	(16.8 - 18.2)
Non-Hispanic black	19.3	(16.0 - 22.6)
Hispanic	14.6	(12.5 - 16.6)
Other Race, non-Hispanic	19.7	(16.5 - 23.0)
Education		
<High School	27.8	(25.4 - 30.3)
High School/GED	21.1	(19.8 - 22.4)
≥Some College	12.8	(12.1 - 13.5)
Income		
<$25,000/year	27.1	(25.5 - 28.7)
$25,000-$49,999/year	19.2	(17.8 - 20.7)
$50,000-$74,999/year	15.6	(13.9 - 17.3)
$75,000+/year	9.6	(8.7 - 10.6)
Health Insurance		
Yes	15.5	(14.8 - 16.1)
No	31.5	(28.9 - 34.1)
Quit Attempt Past Year		
Yes	62.0	(60.0 - 64.0)
No	38.0	(36.0 - 40.0)

Data Source: 2011-2015 RI BRFSS

smokers (60.2%). No other differences by race/ethnicity were statistically significant. Quit attempts were significantly higher among smokers whose health care provider advised them to quit (65.6%) than smokers who were not advised (55.2%). Quit attempts were significantly higher among smokers who reported no exposure to secondhand smoke in their home (67.0%) compared to exposed smokers (54.7%). No other differences were statistically significant, but quit attempts were slightly higher among younger adults aged 18-24, and slightly higher among adults earning ≤$25,000/year.

Table 2. Current smokers who made a quit attempt (past year), Rhode Island: 2011-2015

Characteristic	Weighted Percentage	95% CI
Sex		
Male	61.6	(58.6 - 64.6)
Female	62.5	(59.9 - 65.1)
Age Group		
18-24	67.2	(59.4 - 74.9)
25-44	63.8	(60.4 - 67.1)
45-64	58.8	(56.1 - 61.5)
65+	60.0	(55.3 - 64.0)
Race/ethnicity		
Non-Hispanic white	60.2	(58.0 - 62.5)
Non-Hispanic black	76.2	(69.0 - 83.4)
Hispanic	68.3	(61.1 - 75.6)
Other Race, non-Hispanic	63.7	(54.6 - 72.8)
Education		
<High School	61.0	(55.8 – 66.0)
High School/GED	60.8	(57.5 – 64.0)
≥Some College	63.6	(60.8 – 66.3)
Income		
<$25,000/year	65.5	(62.1 - 68.8)
$25,000-$49,999/year	58.7	(54.6 - 62.8)
$50,000-$74,999/year	61.7	(55.9 - 67.5)
$75,000+/year	61.5	(56.4 - 66.7)
Health Insurance		
Yes	61.9	(59.7 – 64.1)
No	62.1	(57.3 – 66.9)
Advised to Quit by Health Care Professional*		
Yes	65.6	(62.5 - 68.8)
No	55.2	(48.3 - 62.0)
Secondhand smoke exposure in home**		
Yes	54.7	(48.7 – 60.7)
No	67. 0	(63.6 – 70.3)

Data Source: 2011-2015 RI BRFSS
*2011-2015 (N=26,757)
**2011,2013-2015 (N=25,720)

DISCUSSION

The burden of smoking continues to be concentrated among adults of low socioeconomic status. Most RI smokers were low-income, uninsured, and had less than a high school education. Data highlight the persistent health equity implications for tobacco control. Most smokers made a quit attempt in the past year suggesting the majority want to quit, but often do not succeed. Quit attempts varied by race and were highest among non-Hispanic black smokers. Findings underscore the need to ensure that evidence-based cessation services reach vulnerable populations ready to quit.

RI cessation programs prioritize the delivery of free, evidence-based cessation services (counseling and NRT) to low-income smokers and uninsured/underinsured smokers. Currently, smokers can access free counseling and NRT (supported by public funds) through the RI Quitline or group counseling led by a Tobacco Treatment Specialist at community health centers. While RI has reduced barriers to cessation services for poor smokers, this study provides new data showing that race is associated with quit attempts. Over 75% of non-Hispanic black smokers tried to quit, exceeding other racial/ethnic groups. National data indicate non-Hispanic black smokers make more quit attempts, but fail more than non-Hispanic white or Hispanic smokers.[6] One explanation for failed quit attempts among non-Hispanic black smokers is lower utilization of evidence-based cessation services.[6] Additionally, higher rates of menthol cigarette use among non-Hispanic black smokers may contribute to disparities in cessation.[6] More research is needed to understand how utilization patterns vary by race, as well as how risk and protective factors specific to non-Hispanic black smokers influence cessation. Compared to non-Hispanic whites, non-Hispanic blacks smoke fewer cigarettes, start smoking later, are exposed to more tobacco advertising, and suffer higher mortality from smoking-related diseases.[7] A practical next step for RI is to increase use of culturally-tailored mass media campaigns designed to engage non-Hispanic black smokers in evidence-based cessation services (i.e., CDC's TIPS campaigns).[7]

Quit attempts were more likely when a health care provider advised smokers to quit. Smokers expect their providers to advise them to quit, and are receptive to their advice.[2] About 80% of smokers visit a provider each year creating opportune moments for providers to intervene.[2] Health systems change in RI aims to integrate cessation interventions into routine clinical care, and ensure that all patients are screened for tobacco use, advised to quit, offered cessation treatment, and referred to the Quitline (through Quitworks-RI) or group counseling. Finally, smokers who reported no exposure to secondhand smoke in the home were more likely to have tried to quit. There is strong evidence that smoke-free homes simultaneously reduce secondhand smoke exposure while increasing cessation by creating barriers to smoking.[8] RI's *Live Smoke Free* program partners with Public Housing Authorities (PHAs) and affordable multi-units to implement smoke-free policies that simultaneously link low-income residents to cessation services.

Findings are subject to at least three limitations. Only current smokers with an unsuccessful quit attempt were included; this study does not provide data about successful quits in the past year. Secondhand smoke exposure was measured with a 7-day recall; while this variable can assess smoke-free homes,[8] it measures recent behavior more than rule-making. Missing responses may increase potential for bias.

Tobacco control has a robust evidence base to inform state-based cessation interventions designed to work synergistically and not be punitive to smokers.[2] RI has successfully implemented best practice interventions. RI has the 3rd highest state cigarette tax – purposefully calculated to provide public health benefit and not be regressive, or harmful to poor smokers.[9] RI has a comprehensive indoor workplace smoke-free ban, and 22 of 25 PHAs have smoke-free housing policies designed to eliminate secondhand smoke exposure and help smokers quit. Despite progress, tobacco-related disparities persist. Updated data underscore longstanding social determinants related to smoking and indicate racial/ethnic disparities in quit attempts. Findings highlight the importance of making evidence-based cessation services available and acceptable to non-Hispanic black smokers. Interventions for non-Hispanic black smokers should be tailored to their unique risk factors and behavioral patterns. Future directions include further research about service utilization by race, as well as media interventions that increase non-Hispanic black smokers' engagement in cessation services.

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