

Adults With Asthma Who Smoke – A Neglected Population?

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THE LONG-TERM HEALTH CONSEQUENCES OF CIGARETTE SMOKING ARE well-established¹ and may be especially acute for adults with asthma.^{2,3} Because they experience respiratory symptoms, adults with asthma might be expected to avoid cigarette smoking. Yet the prevalence of cigarette smoking among adults with a history of asthma exceeds 20% in most studies.⁴⁻⁷

This study has two objectives. First, we examine the correlates of smoking among adults with current asthma. Second, we compare asthma-related quality of life and medication use among adults with asthma who smoke to that of adults with asthma who do not smoke. Lower socioeconomic status (SES) has been linked to worse asthma control and above-average rates of asthma-related emergency department visits and hospitalizations.^{8,9} We hypothesized, however, that adults with asthma who smoked would have worse asthma-related quality of life and be more likely to use short-acting beta2-agonists for quick relief of asthma symptoms, regardless of level of education, than low SES adults with asthma who do not smoke.

METHODS

We used data from the 2008 – 2009 **Rhode Island Behavioral Risk Factor Surveillance System (BRFSS)** and 2008 – 2009 Rhode Island Adult Asthma Call Back Survey. The BRFSS is an ongoing state-based, random-digit-dialed telephone health survey system tracking health conditions and risk behaviors of adults aged 18 and older in the United States. The Asthma Call-Back Survey is conducted approximately two weeks after the BRFSS with respondents who report an asthma diagnosis. Participant responses to the Callback Survey are then linked to their responses on the BRFSS.¹⁰

A multivariate logistic regression was used to estimate the predictors of current smoking among adults with current asthma. BRFSS respondents who currently smoked either everyday or some days were classified as “smokers” and those who never smoked or were former smokers were classified as “non-smokers.” Potential explanatory variables included sociodemographic characteristics (sex, age, marital status, race/ethnicity and level of education), general health status, mental health status (recent depression, ever diagnosed with depression) and asthma-related outcomes (symptoms of asthma disturbed sleep past 30 days, symptom-free past two weeks, and use of short-term asthma relief medications). The role of binge drinking, defined as males who reported consuming five or more drinks or women who reported consuming four or more drinks on one occasion at least once over the last 30 days, was also explored. In our study, SES was measured by respondent’s level of education. Other objective measures of SES are income, occupational status and wealth. The BRFSS only includes a question on household income, however,

and 14.5% of the respondents were unwilling to answer this question. Sampling weights that corrected for unequal probabilities of sample selection were applied to the 1,234 Rhode Island BRFSS respondents with current asthma and the 579 adults with current asthma included in the Rhode Island Asthma Call-back survey to obtain two statewide representative samples.

RESULTS

The prevalence of current cigarette smoking was substantial (Table 1). Nearly one-fifth of adult asthmatics (17.6%) and 16.1% of non-asthmatic adults currently smoked cigarettes. A higher percentage of children with current asthma lived in households with a smoker than did non-asthmatic children but the difference between the two groups was not significant (18.6% vs. 15.7%, $p = 0.53$). Among adults with current asthma, those who had < 12 years of education were nearly three times as likely to be current smokers as persons with more education. Those reporting recent depression were 2.7 times as likely to be current smokers than the reference group (Table 2). Among adults with current asthma, being a smoker was associated with worse asthma-related quality of life, regardless of level of education, as compared with low or high SES adults with current asthma who were non-smokers (Figure 1). Low SES adults with asthma who were non-smokers were as likely as smokers with asthma to report depression (recent or ever being diagnosed), but both groups

Table 1. Prevalence of current smoking among Rhode Island adults with and without asthma and in households with and without a child with asthma

| | |
|--|--------|
| Estimated number and percent of Rhode Island adults ages 18 and older with current asthma | |
| | 84,516 |
| | 10.3% |
| Percent of adults with asthma who smoke | 17.6% |
| Percent of non-asthmatic adults who smoke | 16.1% |
| | |
| Estimated number and percent of Rhode Island children under age 18 with current asthma | |
| | 26,323 |
| | 11.7% |
| Percent of children with asthma in households with adult smoker | 18.6% |
| | |
| Percent of non-asthmatic children in households with adult smoker | 15.7% |

Data source: 2008-2009 Rhode Island Behavioral Risk Factor Surveillance System combined file, weighted data. Rhode Island Department of Health, Center for Health Data and Analysis.

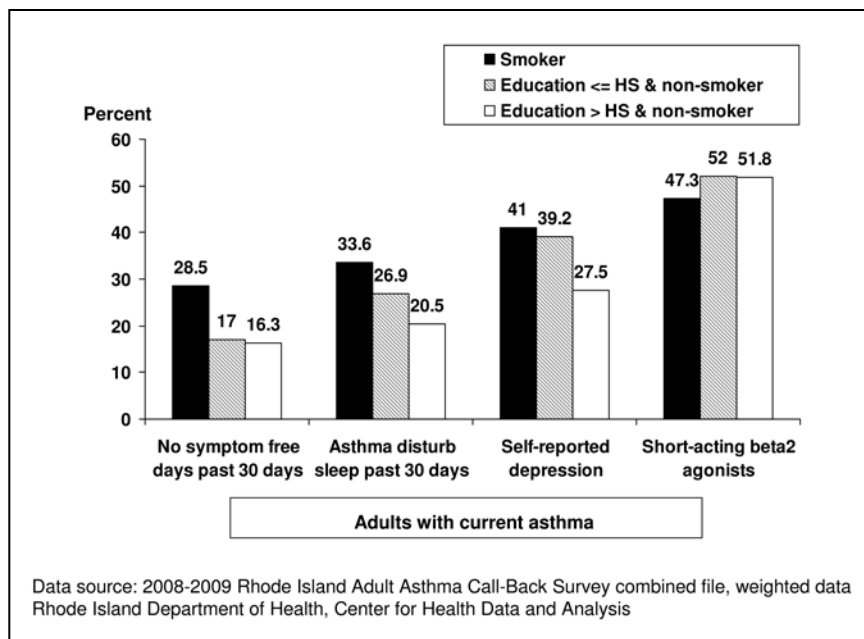


Figure 1: Quality of life among Rhode Island adults with current asthma.

were more likely to report depression than high SES adults with asthma who were non-smokers. No significant differences in use of short-acting beta2 agonists were found across the three groups of adults with current asthma.

DISCUSSION

The present study assessed factors associated with smoking in a sample of Rhode Island adults with current asthma. Results showed that lower SES and recent depression were associated with smoking, independent of other factors. These findings are consistent with previous studies finding significant associations between lower SES¹¹⁻¹³ and depression¹⁴⁻¹⁶ and tobacco use in the general U.S. population. Our results also indicate that the prevalence of cigarette smoking is similar in adults with and without asthma (17.6%, and 16.1%, respectively); a finding also reported in a recent analysis of Rhode Island's 2000 BRFSS where 25.2% of adults with asthma were current smokers compared to 23.2% of non-asthmatic adults.⁷ However, this study is, to our knowledge, the first to assess asthma-related outcomes comparing smokers, regardless of level of education, to low and high SES non-smokers. It is noteworthy that in a sample of adults with current asthma, smokers were more likely than lower SES adults who were non-smokers to have worse asthma outcomes, suggesting that smoking appears to add to the risk of having

poor asthma-related health/quality of life, beyond that which would be predicted by SES. It must also be noted that our assessment of asthma-related outcomes among low and high SES adults who smoked was hampered by small sample sizes ($n = 50$ and 34 , respectively). Asthma outcomes are clearly socially patterned, with low SES populations especially burdened by asthma due to higher exposures to indoor and outdoor asthma triggers (e.g., exposure to cockroaches, urban pollution, community violence), thus increasing risk for asthma exacerbations.^{8,17} Therefore, our findings need to be replicated in larger samples of adults with current asthma who smoke.

Three clinical recommendations warrant discussion. Primary care physicians are urged to consider smoking status as a vital sign, asking patients at every visit, especially those with current asthma, whether they smoke. Resources for patients who are ready to quit include Rhode Island's free Quitline at 1-800-QUIT-NOW, and other cessation resources such as prescription and over the counter medicines, and counseling services whose coverage is required by law through all Rhode Island insurance plans. Research shows that smokers are two times as likely to quit when the cessation intervention is conducted by a physician.¹⁸ Equally important is assessing whether patients with asthma who smoke are coping with depression. Nationally, 50% of the cigarettes purchased are done so by people with diagnosed mental health disorders.^{19,20} Yet the psychological component of smoking addiction may be one of the most challenging to deal with. Stressful situations or periods of depression may be enough for patients with asthma to continue smoking despite having a disease complicated by cigarette smoking. Third, physicians are urged to tell all of their patients to make their homes and cars 100% smoke-free, and to adopt policies that include asking patients with asthma about their home environment and exposure to secondhand smoke. A current health systems change initiative of the Asthma Control Program at the Rhode Island Department of Health is the implementation of the Breathe Easy At Home intervention. Through a shared website, doctors, nurses and other health

Table 2. Significant determinants of current smoking among Rhode Island adults with current asthma

| Variable | Adjusted odds ratio | 95% Confidence interval | Pr > ChiSq |
|--------------------------------|---------------------|-------------------------|------------|
| Educational level | | | |
| Less than 12 years | 2.80 | 1.28 — 6.10 | 0.0099 |
| Age group | | | |
| 18 — 64 years | 2.81 | 1.61 — 4.88 | 0.0002 |
| Recent depression past 30 days | | | |
| 1 to 13 days | 1.07 | 0.55 — 2.07 | 0.8330 |
| 14 to 30 days | 2.72 | 1.58 — 4.67 | 0.0003 |
| Binge drinker | | | |
| Yes | 2.02 | 0.94 — 4.33 | 0.0699 |

Reference groups: Educational level greater than 12 years, age 65 years and older, no recent depression, and not a binge drinker. Sex, race/ethnicity and marital status were not associated with current cigarette smoking controlling for other covariates.

Data source: 2008-2009 Rhode Island Behavioral Risk Factor Surveillance System combined file, weighted data. Rhode Island Department of Health, Center for Health Data and Analysis.

professionals can refer families with a child who has asthma for housing inspections if they suspect substandard housing conditions may be triggering a child's asthma.²¹ In conclusion, there are a variety of factors that contribute to why patients with asthma smoke. Different approaches are likely needed to motivate these smokers to quit smoking.

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Disclosure of Financial Interest

The authors and or spouses/significant others have no financial interests to disclose.

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