

Eliminating Disparities in Young Adult Tobacco Use: The Need for Integrated Behavioral Healthcare

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ABSTRACT

OBJECTIVES: There is limited data available specific to young adult tobacco use in Rhode Island. This study examines whether young adult cigarette and e-cigarette use varies by sociodemographics, mental health, and use of other substances.

METHODS: This cross-sectional web-based survey was administered during the COVID-19 pandemic, from May to October 2020.

RESULTS: A total of 12.9% of young adults reported current cigarette or e-cigarette use. Young adults who currently used cigarettes or e-cigarettes were more likely to be white, non-Hispanic, younger, and have depressive symptoms, a depression diagnosis, suicide ideation, engage in harmful drinking, alcohol dependence, current marijuana use, and frequent marijuana use.

CONCLUSIONS: To address the needs of disproportionately affected young adults, steps must be taken to integrate comprehensive, barrier-free, widely promoted coverage of tobacco cessation treatment in all behavioral healthcare settings.

KEYWORDS: young adults, tobacco, behavioral health, Rhode Island

of U.S. high school students were using traditional tobacco products, 24% reported past 30-day e-cigarette use.⁶ After 2015, rates of use for tobacco products, including e-cigarettes, continued to rise for four consecutive years, reaching a peak in 2019. That year, 53.3% of high school students had ever used a tobacco product; 31.2% had used a tobacco product within the past 30 days; and e-cigarettes were the most common product used. Rhode Island saw similar trends; in 2019, 33.3% of high school students were using any tobacco product, and e-cigarettes were the most commonly used product.⁷

Due to a combination of the COVID-19 and legislation that raised the minimum legal purchase age for tobacco products to 21 and banned the sale of flavored e-cigarettes, national prevalence rates in teens slightly declined.⁸ However, due to the lack of data on the Rhode Island young adult population, little is known on the baseline rates of cigarette or e-cigarette use, or which subpopulations are disproportionately affected. Understanding who is disproportionately affected and common comorbidities of cigarette and e-cigarette use can help inform more targeted interventions for high-risk populations. To address this need, we used data from 2020 Rhode Island Young Adult Survey to determine whether characteristics of cigarette and e-cigarette use vary by sociodemographics, mental health, and use of other substances.

INTRODUCTION

Tobacco use is the leading cause of premature death worldwide, with 6 million deaths per year attributed to tobacco use.¹ Many users started in their youth or young adult years, and they are at high risk for adverse health outcomes. In Rhode Island, an estimated 16,000 children under the age of 18 will prematurely die from smoking.² While the hazards of tobacco smoking are well-established,³ the body of evidence on the health consequence of using e-cigarettes, otherwise known as vaping, is still evolving due to their novelty. Among important early findings include reports that e-cigarettes can cause similar effects on the body as traditional cigarettes, such as scarring of the lung tissue, respiratory disease, dangerous ingestion levels of heavy metals, and oxidative stress at the molecular level.^{4,5}

In 2015, youth tobacco use rates declined to historical lows while e-cigarette use accelerated. While only 10.8%

METHODS

Sample

The Rhode Island Young Adult Survey (RIYAS) is a behavioral health survey of young adults aged 18–25 years who resided in Rhode Island for at least part of the year and spoke English or Spanish. This self-reported, cross-sectional, web-based survey was administered in 2020 from May through October. Recruitment was primarily through paid Instagram ads and was supplemented by posts to Facebook community groups and email to three institutions of higher education. Surveys took 15 minutes on average and respondents received \$10 electronic Amazon gift cards. Of the 546 completed surveys, 528 (97%) provided valid race/ethnicity data and were included in the analytic sample. This study was approved by the Johnson & Wales Institutional Review Board.

Measures

The primary outcome, current cigarette or e-cigarette use, was assessed based on two survey questions. Anyone who responded “yes, in the past month” to either of the following questions was defined as engaging in current cigarette or e-cigarette use, respectively: “Have you ever smoked all or part of a cigarette?” or “Have you ever used E-cigarettes such as JUUL or other brands?”

Mental health measures included anxiety symptoms, depressive symptoms, depression diagnosis, and suicide ideation. Anxiety symptoms were assessed via the validated Generalized Anxiety Disorder-7, a screening tool for past two-week anxiety among the general adult population.⁹ A continuous score was generated based on 7 items with responses on a 4-point Likert scale. A cut-off score of 10 or higher was used to identify those with likely anxiety disorder.¹⁰ Past week depressive symptoms were assessed via the validated Center for Epidemiologic Studies Short Depression Scale,¹¹ which is used to create a continuous score based on 10 items with responses on a 4-point Likert scale. A cut-off score of 10 or more was considered depressive disorder.¹² Depression diagnosis was operationalized by positive responses to the question, “During the past 12 months, has a medical professional told you that you have depression?” Suicide ideation was measured by “yes” or “no” response to the survey question, “During the past 12 months, did you ever seriously consider attempting suicide?”

Substance use measures included harmful drinking, alcohol dependence, current marijuana use, and frequent marijuana use. Harmful drinking and alcohol dependence were assessed by the validated AUDIT score generated from 10 items.¹³ Scores of 8 or more were considered harmful drinking and scores of 15 or more were considered alcohol dependence.¹⁴ Current marijuana use was defined as those who responded “yes, in the past month” to the question “Have you ever used marijuana (weed, pot, mary jane, grass)?” Frequent marijuana users were those who reported use for 15 or more days of the past 30.

Important covariates were sexual and gender identity, race/ethnicity, age, and social status. Social status was assessed via the MacArthur Scale of Subjective Social Status, which assesses perceived social status relative to others in their community, where 1 indicates “worst off” and 10 indicates “best off”.¹⁵

Statistical Analysis

Descriptive and bivariate statistics were assessed by the outcome, current cigarette or e-cigarette use (Table 1; Table 2). Bivariate tests included chi-square tests for categorical variables and t-tests for continuous variables. Adjusted odds of current cigarette or e-cigarette use were calculated using multivariable logistic regression for each mental health measure and each substance use measure while controlling for covariates – sexual and gender identity, race/ethnicity,

Table 1. Sociodemographic and Behavioral Health Characteristics of 2020 Rhode Island Young Adult Survey and Current Cigarette or E-cigarette Users

Characteristics	RIYAS n = 528 (%)	Current Cigarette or E-cigarette Use n = 68 (%)	P-value
Heterosexual Male	106 (20.1)	20 (29.4)	0.082
Heterosexual Female	280 (53.0)	29 (42.7)	
Sexual or Gender Minority	142 (26.9)	19 (27.9)	
White, non-Hispanic	361 (68.4)	56 (82.4)	0.008
Non-white or Hispanic	167 (31.6)	12 (17.7)	
Social Ladder (mean; SD)	6.30 (1.69)	5.99 (1.63)	0.094
Age (mean; SD)	20.54 (2.24)	19.72 (1.88)	0.001
Anxiety Symptoms	165 (31.3)	28 (41.2)	0.058
Depressive Symptoms	233 (44.1)	41 (60.3)	0.004
Depression Diagnosis	115 (21.8)	22 (32.4)	0.024
Suicide Ideation	64 (12.1)	15 (22.1)	0.007
Harmful Drinking	88 (16.7)	27 (39.7)	<0.001
Alcohol Dependence	19 (3.6)	8 (11.8)	<0.001
Current Marijuana Use	151 (28.6)	38 (55.9)	<0.001
Frequent Marijuana Use	66 (12.5)	23 (33.8)	<0.001

Note: P-values were calculated using chi-square tests for categorical characteristics and t-tests for continuous characteristics.

Table 2. Current Cigarette and E-cigarette Use in the 2020 Rhode Island Young Adult Survey

Nicotine Use Behavior	n (%)
Current Cigarette Use Only	9 (1.7)
Current E-cigarette Use Only	44 (8.3)
Current Cigarette and E-cigarette Use	15 (2.8)
Current Cigarette or E-cigarette Use	68 (12.9)

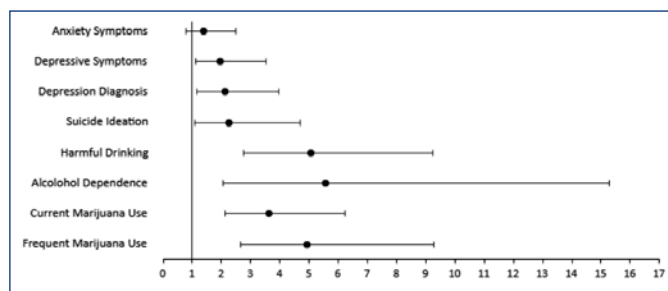
age, and social status (Figure 1). Statistical significance was assumed at a threshold of $p < 0.05$ and all analyses were conducted using Stata version 15.¹⁶

RESULTS

The RIYAS sample was predominantly heterosexual female (53.0%), white, non-Hispanic (68.4%), and had a mean age of 20.5 (Table 1). Among the sample, 68 (12.9%) currently used cigarettes or e-cigarettes, with 4.6% reporting current cigarette use and 11.2% reporting current e-cigarette use (Table 2). Among current cigarette users, 62.5% also currently used e-cigarettes, while among current e-cigarette users, 25.4% also currently used cigarettes.

Bivariate results suggest those who currently used cigarettes or e-cigarettes were more likely to be white,

Figure 1. Adjusted Odds of Young Adult Current Cigarette or E-cigarette Use by Behavioral Health Outcomes



Note: Multivariable logistic regressions were used to calculate adjusted odds while controlling for sexual and gender identity, race/ethnicity, age, and social ladder.

non-Hispanic ($p = 0.008$), younger ($p = 0.001$), and have depressive symptoms ($p = 0.004$), a depression diagnosis ($p = 0.024$), suicide ideation ($p = 0.007$), engage in harmful drinking ($p < 0.001$), alcohol dependence ($p < 0.001$), current marijuana use ($p < 0.001$), and frequent marijuana use ($p < 0.001$).

After adjustment for covariates, all mental health measures (except anxiety symptoms) and substance use measures were significantly associated with increased odds of current cigarette or e-cigarette use. Odds of cigarette or e-cigarette use increased with anxiety symptoms [1.41 (95%CI: 0.79, 2.50)], depressive symptoms [1.98 (95%CI: 1.11, 3.54)], depression diagnosis [2.15 (95%CI: 1.16, 3.97)], suicide ideation [2.27 (95%CI: 1.10, 4.68)], harmful drinking [5.06 (95%CI: 2.77, 9.23)], alcohol dependence [5.58 (95%CI: 2.04, 15.30)], current marijuana use [3.63 (95%CI: 2.11, 6.24)], and frequent marijuana use [4.94 (95%CI: 2.64, 9.28)].

DISCUSSION

The goal of these analyses was to establish baseline characteristics of young adult nicotine users in Rhode Island by sociodemographics and other behavioral health outcomes. Current cigarette and e-cigarette use was prevalent among young adults, with 12.9% using e-cigarettes or cigarettes. However, e-cigarette use was far more common with 11.2% reporting current use. Current cigarette or e-cigarette use disproportionately occurred in those who were younger, white, non-Hispanic, and who had co-morbid mental illness, such as depression and suicidal ideation. Similarly, users of nicotine products, in general, were far more likely to engage in other substance use and abuse including harmful drinking and frequent marijuana use. In fact, the odds of alcohol dependence were 5.6 times greater in those who used cigarettes or e-cigarettes.

Young Adult Cigarette and E-Cigarette Use

Young adult-specific data for Rhode Island is typically not available from other surveillance systems, which is a distinct novelty and benefit of the RIYAS. For example, current cigarette and e-cigarette use prevalence among young adults

(aged 18–24 years) in the 2020 Rhode Island Behavioral Risk Factor Surveillance System (BRFSS) are unavailable due to small sample size and lack of assessment, respectively.¹⁷ However, findings from the 2019 Rhode Island Youth Risk Behavior Surveillance Survey (YRBSS) suggest a higher prevalence of current e-cigarette use among high school students (30.1%) than among this young adult sample (11.2%), although current cigarette use among high school students was comparable (4.2% versus 4.6%).¹⁸ Further, Rhode Island high school students who currently used e-cigarettes did not differ by sex, but white students were more likely to use than other race/ethnicities, which is similar to RIYAS participants. Higher prevalence of e-cigarette use in high school students is also consistent with our findings that younger young adults were more likely to use cigarettes or e-cigarettes. E-cigarette use in high school students may be higher due to increased availability to minors relative to other substances like marijuana and alcohol, appealing flavors, low costs, and discrete designs, while older young adults may transition from e-cigarettes to other substances as they reach the legal minimum purchase age and the substances become more accessible.¹⁹

Findings herein also suggest that young adults suffering from poor mental health or engaging in other substance use or abuse are significantly more likely to also engage in cigarette or e-cigarette use. This finding is consistent with other research in the general population²⁰ and among young adults.²¹ To reach those at high risk, tobacco treatment for young adults must be integrated into behavioral healthcare. Studies suggest that smoking cessation does not interfere with behavioral health treatments and, in fact, can improve mental health^{22,23} and make substance relapses less likely.^{20,24}

Interventions to Address Disproportionately Affected Young Adults

Current treatments and interventions for young adult tobacco use in Rhode Island includes the Rhode Island Nicotine Helpline, or “My Life, My Quit,” an independently run, free service that connects young people with one-on-one cessation support.^{25,26} Tailored mental health quitline programs, which include additional calls, longer duration of combination nicotine-replacement therapy, and specific attention to mental health issues, are a novel and important way to address the dual needs of this population.²⁷

Another effective intervention is Screening, Brief Intervention, and Referral to Treatment (SBIRT) at the point-of-care.²⁸ When used as part of an evidence-based approach, SBIRT is effective in prevention and early intervention of tobacco use in young adults, but barriers to implementation must be addressed and it must be targeted to young adults with symptoms of poor mental health and substance use disorders. Additionally, SBIRT is not consistently implemented in practice settings, nor is it necessarily covered by insurance or provider reimbursements.

Under the Affordable Care Act, insurance companies must cover some level of tobacco cessation treatment, but coverage varies dramatically between plans. Some policies cover pharmacotherapy, counseling services, and/or quitlines,²⁹ but coverage may be limited to specific cessation medications, the number of weeks on a specific pharmacotherapy, sessions of individual counseling per year, the number of quit attempts per year, or impose yearly or lifetime dollar limits. Similarly, insurance coverage for step therapy,³⁰ one approach to tobacco cessation, often requires that a patient try and fail cheaper treatments before receiving coverage for more expensive medications, which makes it more likely that participants become discouraged or run out of coverage. These barriers to sustained treatment affect the success of those attempting to quit nicotine products, especially among those already struggling with mental health or substance abuse. Research strongly suggests that comprehensive, barrier-free, widely promoted coverage of these treatments increases treatment utilization and quit rates.³¹

Eliminating barriers to tobacco cessation services, such as integrating tobacco cessation programming into all behavioral health services, is essential to effectively address nicotine use in young adults.³² Important steps include implementing tobacco-free policies inside and on the campuses of behavioral health settings,³³ increasing tobacco use and dependence screenings in mental health and substance use treatment settings,³⁴ and engaging health professions outside the behavioral health field, such as pharmacists, for the implementation of cessation treatment.³⁵

Limitations

While this study provides novel findings specific to young adult cigarette and e-cigarette use in Rhode Island, it is not without limitations. This study is comprised of a convenience sample of young adults and may not be representative of the young adult population in Rhode Island. However, to our knowledge, this is the largest young adult-specific surveillance study in Rhode Island to date. All measures were self-reported and therefore could be influenced by social desirability and recall bias. Though valid and reliable assessments for anxiety symptoms, depressive symptoms, harmful drinking, and alcohol dependence were used, these should not be considered synonymous with a diagnosis. Also of note, this study specifically assessed current cigarette or e-cigarette use, but did not assess the use of other tobacco products such as cigars, pipes, or smokeless tobacco. Despite these limitations, this study highlights the subpopulations of young adults in Rhode Island most likely engaged in cigarette and e-cigarette use, as well as the significant co-occurrence of this use with poor mental health and other substance use.

CONCLUSIONS

Young adults in Rhode Island are a high-risk population for cigarette and e-cigarette use, particularly those with mental health conditions and/or substance use disorders. To strive for health equity, steps must be taken to integrate comprehensive, barrier-free, widely promoted coverage of cessation treatment in all behavioral healthcare settings.

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