Poor Mental Health and Reduced Decline in Smoking Prevalence

Marc L. Steinberg, PhD, Jill M. Williams, MD, Yunqing Li, PhD

Introduction: Although smoking prevalence has been declining for smokers without mental illness, it has been static for those with mental illness. The purpose of this study is to examine differences in smoking rates and trajectories of smoking prevalence in the often-overlooked population of smokers with poor mental health, compared with those with better mental health.

Methods: Data were obtained from the Behavioral Risk Factor Surveillance System from 2001 to 2010 to examine the relationship between poor mental health and current, daily, and intermittent tobacco use in New Jersey. Data were analyzed in 2014.

Results: During 2001–2010, current, daily, and intermittent smoking prevalence was higher in participants with poor mental health than those with better mental health. In addition, with the exception of 2 years, prevalence rates remained unchanged in this 10-year period for those with poor mental health while they significantly decreased for those with better mental health.

Conclusions: The disparity in which smokers with poor mental health are more likely to be current smokers and less likely to be never smokers as compared with those with better mental health has increased over time. These data suggest the need to more closely examine tobacco control and treatment policies in smokers with behavioral health issues. It is possible that tobacco control strategies are not reaching those with poor mental health, or, if they are, their messages are not translating into successful cessation.

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Introduction

Tobacco use is the most common preventable cause of death in the U.S., with more than 443,000 adults dying from tobacco-related illnesses each year.[1] Although there has been a decrease in smoking prevalence since 2005,[2] 18.1% of U.S. adults continue to smoke cigarettes.[2] Prevalence rates are not evenly distributed throughout the population, however, and sharp disparities exist, suggesting that tobacco control efforts may not be reaching all smokers (e.g., those with mental illness, those living in poverty). National Survey on Drug Use and Health (NSDUH) data from 2009–2011 show that adults with mental illness are significantly more likely to be smokers as compared with those without mental illness (36.1% vs 21%). Among smokers, those with mental illness smoked more cigarettes per day than smokers without mental illness. In fact, 30.9% of all cigarettes smoked by adults in the U.S. are smoked by someone with a mental illness.[3] In addition, data from the 2002 NSDUH indicate that adults with serious psychological distress have greater odds of tobacco use than those without serious psychological distress.[4]

Data are beginning to emerge indicating that although smoking prevalence has been dropping for smokers without mental illness, it has been static for those with mental illness.[5–7] The purpose of this study is to examine the relationship between mental health and smoking over time in New Jersey and to add to this literature by looking specifically at daily smokers, intermittent smokers, and quit attempts.

Methods

Data Source

Data were obtained from the Behavioral Risk Factor Surveillance System (BRFSS) for 2001–2010. Data were analyzed in 2014. BRFSS data are a random digit–dialed stratified probability

From the Department of Psychiatry (Steinberg, Williams), Rutgers Robert Wood Johnson Medical School, New Brunswick; and the New Jersey Division of Mental Health and Addiction Services (Li), Trenton, New Jersey

Address correspondence to: Marc L. Steinberg, PhD, Division of Addiction Psychiatry, Rutgers Robert Wood Johnson Medical School, 317 George Street, Suite 105, New Brunswick NJ 08901. E-mail: marc.steinberg@rutgers.edu.

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sample. All 50 states independently conducted telephone surveys to collect data regarding chronic health issues in non-institutionalized, civilian U.S. adults aged ≥18 years. State samples were pooled by CDC to yield national estimates. The data set used in this paper was limited to residents of New Jersey. BRFSS data were weighted for the probability of selection of a telephone number, number of adults in a household, and number of telephones in a household. A final post-stratification adjustment was made for non-response and non-coverage of households without telephones.[8] This methodology accounts for non-responses such as refusals and *do not know* responses in the analyses. There were no differences in missing data between those reporting better or poor mental health in our sample. Rates per 100,000 population were age-adjusted to the 2000 U.S. standard population, except where stratified by age group.[9] Use of this data set did not require IRB review because research using de-identified data sets that are obtained from a commercial or governmental source, providing the investigator will never be given access to the identifier or the link is not considered human subject research, and is not governed by 45 Code of Federal Regulations (CFR) 46 or 21 CFR 50 & 56.

Measures

Respondents were asked the question *Do you now smoke cigarettes every day, some days, or not at all?* Current cigarette smokers were defined as respondents who had smoked ≥100 cigarettes during their lifetime and responded *every day* or *some days*. Daily smokers were defined as those who had smoked ≥100 cigarettes during their lifetime and responded *every day*. Intermittent smokers were defined as those who had smoked ≥100 cigarettes during their lifetime and responded *some days*. Former smokers were those respondents who reported smoking at least 100 cigarettes in their lifetime and who, at the time of the survey, did not smoke at all. Never smokers were those respondents who reported never having smoked 100 cigarettes. Quit attempts were defined as an affirmative answer to the BRFSS item: *During the past 12 months, have you quit smoking for 1 day or longer because you were trying to quit smoking?* This question regarding quit attempts was only asked of current smokers. These definitions are consistent with those of CDC.[10]

Poor mental health was assessed with the BRFSS item *Now thinking about your mental health*, which includes *stress, depression,* and *problems with emotions, for how many days during the past 30 days was your mental health not good?* Participants who reported 14 or greater poor mental health days in the past 30 were defined as having poor mental health. This BRFSS item and cut off score has acceptable criterion validity and test–retest reliability.[11–13] The mean number of poor mental health days in the past 30 days in New Jersey ranged from 2.9 to 3.4 between 2001 and 2010.

Statistical Analysis

SURVEY procedures in SAS, version 9.3, which accounts for the complex survey design of the BRFSS were used for statistical analyses. The PROC SURVEYFREQ procedure was applied to calculate all prevalence estimates with 95% CIs. The PROC SURVEYLOGISTIC procedure was used to estimate the differences in smoking prevalence by mental health status controlling for sociodemographic characteristics. All estimates were weighted to account for individual selection probabilities, non-response, and post-stratification.

Results

Sample

The total sample size ranged from 5,817 respondents in 2002 to 13,359 respondents in 2005. Demographic characteristics of the sample are displayed in Table 1. Although more than half (53.3%) of the sample reported that they were never cigarette smokers, 29.5% reported being former smokers, 12.1% were daily smokers, 4.7% were intermittent smokers, and 0.5% did not answer. Individuals reporting poor mental health were more likely to be current smokers and less likely to be never smokers than those reporting better mental health (chi-square [3]=1,653.60, $p<0.0001$). Almost a fifth (17.5%) of the sample reported >14 days of poor mental health in the last month.

Current Smoking Prevalence

The overall logit model (n=86,061) examining current (i.e., daily and intermittent) smoking prevalence in those with poor and better mental health between 2001 and 2010 was statistically significant (Wald $F[25]=1,847.04$, $p<0.0001$). In addition, participant characteristics such as participant age, sex, race, income, and education were significant predictors of current smoking status in the model (all $p<0.0001$). The logit model (Table 2) revealed significantly greater prevalence of smoking among those reporting poor versus better mental health after adjusting for age, sex, race, income, and education (OR=2.001, 95% CI=1.836, 2.181, $p<0.0001$).

Figure 1 and Table 3 display smoking prevalence by year for those reporting poor versus better mental health. As compared to the 2001 reference year, current smoking prevalence rates were significantly reduced for those with better mental health during the 2001–2010 time period for each year except 2002. By contrast, reductions only occurred in 2008 and 2010 for those reporting poor mental health.

Daily Smoking Prevalence

Like the model for current smoking, the overall logit model (n=81,887) specifically examining daily smoking prevalence in those with poor and better mental health between 2001 and 2010 was statistically significant (Wald $F[25]=1793.74$, $p<0.0001$). In addition, participant characteristics such as participant age, sex, race, income, and education were significant predictors of daily smoking status in the model (all $p<0.0001$). The logit model revealed significantly greater prevalence of daily smoking among those reporting poor versus better mental health