Motives and perceptions regarding electronic nicotine delivery systems (ENDS) use among adults with mental health conditions

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HIGHLIGHTS

\begin{itemize}
\item Adults with and without mental health conditions (MHC) reported perceptions of ENDS
\item Current smokers with MHC thought more about how ENDS might improve their health
\item Former smokers with MHC thought less about how ENDS might harm their health
\item Smokers with MHC may be especially optimistic about health benefits of ENDS
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ABSTRACT

Background: Smoking rates are disproportionately high among adults with mental health conditions (MHC), and recent research suggests that among former smokers, those with MHC are more likely to use electronic nicotine delivery systems (ENDS). This study investigated reasons for ENDS use and related risk perceptions among individuals with versus without MHC.

Methods: Among adult current ENDS users (n = 550), associations between self-reported MHC diagnoses and motives for ENDS use and ENDS risk perceptions were examined, stratified by smoking status.

Results: There were no significant associations between MHC status and ENDS motives or perceptions in the overall sample. However, current smokers with MHC indicated thinking more about how ENDS might improve their health, and former smokers with MHC reported thinking less about how ENDS might harm their health, compared to their counterparts without MHC. Former smokers with MHC rated several reasons for ENDS use (e.g., less harmful than regular cigarettes; to quit smoking; appealing flavors) as more important than did those without MHC.

Conclusions: Current and former smokers with MHC may be especially optimistic about health benefits of ENDS. However, they might also be prone to health risks of continued ENDS use or concurrent use with traditional cigarettes. It will be important for public health messaging to provide this population with accurate information about benefits and risks of ENDS.

1. Introduction

Cigarette smoking rates are disproportionately high among adults with mental health conditions (MHC) (CDC, 2013; Chou, Goldstein, Smith, et al., 2016; Schroeder & Morris, 2010; Williams, Steinberg, Griffiths, & Cooperman, 2013; Ziedonis, Hitman, Beckham, et al., 2008). Smokers with MHC also tend to have higher levels of tobacco dependence and more difficulty quitting (Forman-Hoffman, Hedden, Galsheen, Davies, & Colpe, 2016; Schroeder & Morris, 2010; Ziedonis et al., 2008). Individuals with MHC are at heightened risk for tobacco-related morbidity and mortality (Williams et al., 2013). There is an urgent need to identify effective harm reduction and smoking cessation
strategies for smokers with MHC, and although more research is needed, electronic nicotine delivery systems (ENDS; e.g., e-cigarettes) could have potential in this regard (Caponnetto, Auditore, Russo, Cappello, & Polosa, 2013; Pratt, Sargent, Daniels, Santos, & Brunette, 2016). Two U.S. nationally representative surveys suggest that adults with MHC use ENDS at higher rates than those without MHC (Cummins, Zhu, Tedeschi, Gamst, & Myers, 2014; Spears, Jones, Weaver, Pechacek, & Eriksen, 2017). In a 2012 survey, among current smokers, those with MHC were more likely to have used e-cigarettes (Cummins et al., 2014). In 2015, former smokers with MHC were more likely to have used ENDS than those without MHC (Spears et al., 2017). However, reasons for using ENDS and risk/benefit perceptions among individuals with MHC, as well as how they might differ from those without MHC, are unclear. An understanding of these factors will be critical to inform public health messaging about ENDS for this priority population.

Recent studies have increased our knowledge of reasons for ENDS use in general adult populations (e.g., Etter & Bullen, 2011; Patel, Davis, Cox, et al., 2016; Pechacek, Nayak, Gregory, Weaver, & Eriksen, 2016; Pepper & Brewer, 2014; Rass, Pacek, Johnson, & Johnson, 2015; Soule, Rosas, & Nasim, 2016). ENDS users commonly report using these products in efforts to quit or reduce smoking, to be considerate of others, or as a way to self-administer nicotine when smoking is not allowed (Etter & Bullen, 2011; Patel et al., 2016; Pechacek et al., 2016; Pepper & Brewer, 2014; Rass et al., 2015; Soule et al., 2016). Although there is a relative dearth of ENDS-related research among individuals with MHC, recent studies have begun to examine this topic. Hefner et al. (Hefner et al., 2016) reported that among current smokers with MHC, e-cigarette users reported the ability to use these products in non-smoking areas, saving money, and reducing harm to others as reasons for use. Perceived health benefits and reducing or quitting smoking are common reasons for e-cigarette use among patients with schizophrenia (Miller, Wang, Wong, Paletta, & Buckley, 2016). Recent studies suggest that approximately half of smokers who were patients in community mental health centers were interested in e-cigarettes to help them quit smoking (Chen, Baker, Brownson, et al., 2017), and among smokers with serious mental illness, those using e-cigarettes indicated greater intent to quit smoking (Prochaska & Grana, 2014). In a nationally representative survey, former smokers with MHC were twice as likely to have switched to ENDS in a past smoking quit attempt than those without MHC (Spears et al., 2017). Scant research has directly compared reasons for ENDS use among adults with vs. without MHC; Cummins et al. (Cummins et al., 2014) found that reasons for using ENDS did not differ significantly by MHC status.

Almost 40% of adults misperceive that ENDS are equally or more harmful than regular cigarettes, a percentage that has tripled in the last four years (Majeed, Weaver, Gregory, et al., 2017). It will be important to understand whether individuals with MHC are more or less prone to misperceptions about ENDS, compared to those without MHC. Although little research has examined ENDS risk perceptions among people with MHC, a recent study found that only 34% of patients with schizophrenia considered e-cigarettes less harmful than traditional cigarettes (Miller et al., 2016). Miller, Tiday, Rohsenow, & Higgins (2017) found that although there were no differences in negative expectations, smokers with severe psychological distress indicated more positive expectations of ENDS (i.e., for positive social effects and weight control) than those without severe distress. It is possible that smokers with MHC are more optimistic about the potential benefits of ENDS than those without MHC.

Continued research is needed to understand whether individuals with MHC have more or less positive perceptions of ENDS compared to those without MHC, and it will be important to examine this question separately among current, former, and never smokers. For example, it might behoove current smokers with MHC to consider the reduced harm caused by ENDS compared to traditional cigarettes. Conversely, it would be concerning if never smokers with MHC perceive ENDS as “safe,” as these devices are not harmless (Grana, Benowitz, & Glantz, 2014; Harrell, Simmons, Correa, Padhy, & Brandon, 2014). This study sought to elucidate reasons for ENDS use, ENDS risk perceptions, and thoughts about potential health harms and benefits of ENDS among adult ENDS users with vs. without MHC.

2. Methods

2.1. Procedure and sample

Data were drawn from the 2015 Tobacco Products and Risk Perceptions Survey conducted by the Georgia State University (GSU) Tobacco Center of Regulatory Science. This cross-sectional survey involved a probability sample and representative oversample of cigarette smokers from GfK’s KnowledgePanel (a probability-based web panel designed to be representative of non-institutionalized U.S. adults (GfK, 2016)). Data were collected between August–September 2015, and participants were provided with small cash-equivalent compensation. This study was approved by the GSU Institutional Review Board.

A total of 8135 KnowledgePanel members were invited to participate. Of the 6909 completers, 38 from the general population sample and 2 from the smoker augment sample were excluded for not answering more than half the survey questions, yielding a sample of 6051. Following closure of the survey, a study-specific post-stratification weight was computed using an iterative proportional fitting (raking) procedure to adjust for survey non-response and oversampling of smokers. Demographic and geographic distributions from the most recent Current Population Survey were employed as benchmarks for adjustment, and included gender, age, race/ethnicity, education, household income, census region, metropolitan area, and internet access. Participants who indicated current ENDS use (n = 550) were included in this study.

2.2. Measures

2.2.1. Demographic characteristics

Gender, age, race/ethnicity, education, and annual household income were obtained from GfK profile surveys.

2.2.2. Mental health condition (MHC)

Participants were asked if they had ever been “diagnosed by a doctor or other qualified medical professional” with several medical conditions, including the following MHCs: anxiety disorder, bipolar disorder, depression, mood disorder, schizoaffective disorder, schizophrenia, and other mental conditions. Participants were coded as having MHC if they reported any of the above (Cummins et al., 2014). Participants also indicated whether they had ever seen a psychiatrist, psychologist, or social worker for counseling or therapy.

2.2.3. Smoking status

Participants who reported smoking at least 100 cigarettes in their lifetime were asked, “Do you currently smoke cigarettes every day, some days, or not at all?” Those who responded “every day” or “some days” were considered current smokers, and those who responded “not at all” were considered former smokers. Participants who denied having smoked at least 100 cigarettes in their lifetime were considered never smokers.

2.2.4. ENDS use

Participants were provided a description of ENDS (e.g., e-cigarettes, e-cigars, vape pens, personal vaporizers/mods) and shown pictures of prototypical devices. Then, participants indicated whether they had ever used ENDS. Those who reported having used ENDS were asked, “Do you now use electronic vapor products every day, some days, rarely, or not at all?” Those who responded “every day,” “some days,” or “rarely” were considered current ENDS users and included in this study (Hu, Neff, Agaku, et al., 2016; Weaver, Kim, Glasser, et al., 2017).
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