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Other tobacco product and electronic cigarette use among homeless cigarette smokers

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HIGHLIGHTS

- Over half of homeless cigarette smokers also smoke cigars.
- Smokers with greater subsistence difficulties were more likely to use little cigars.
- One-fourth of homeless smokers used an e-cigarette in the past month.
- Participants endorsed several reasons for e-cigarette use; curiosity was most common.

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ABSTRACT

Objective: We determined the prevalence and correlates of other tobacco product and electronic cigarette (e-cigarette) use in a clinic-based sample of homeless cigarette smokers.
Methods: In April–July 2014, we used time-location sampling to conduct a cross-sectional, in-person survey of 306 currently homeless adult cigarette smokers recruited from 5 clinical sites at Boston Health Care for the Homeless Program. We assessed past-month use of large cigars, little cigars, smokeless tobacco, and e-cigarettes. Among those who had used e-cigarettes, we assessed the reasons for doing so. We used logistic regression analysis to identify the participant characteristics associated with the use of each product.
Results: Eighty-six percent of eligible individuals participated in the survey. In the past month, 37% of respondents used large cigars, 44% used little cigars, 8% used smokeless tobacco, 24% used an e-cigarette, and 68% used any of these products. Reasons for e-cigarette use included curiosity (85%) and to help quit conventional cigarettes (69%). In multivariable regression analyses, homeless smokers with greater subsistence difficulties were more likely to use little cigars ($p = 0.01$) and less likely to use e-cigarettes ($p = 0.001$). Non-Hispanic black ($p = 0.01$), Hispanic ($p < 0.001$), and rough-sleeping ($p = 0.04$) participants were more likely to use large cigars. Readiness to quit was not associated with other tobacco product use but was significantly associated with e-cigarette use to help quit smoking ($p = 0.02$).
Conclusions: Health care providers who serve homeless people should consider routine screening for the use of other tobacco products and e-cigarettes to help guide smoking cessation discussions and tobacco treatment planning.

1. Introduction

About three-quarters of homeless adults are current cigarette smokers (Baggett & Rigotti, 2010), and this contributes to high rates of smoking-attributable cancer and mortality (Baggett, Chang, Porneala, et al., 2015; Baggett, Chang, Singer, et al., 2015). Relatively little is known about the extent to which homeless cigarette smokers also use other tobacco products and electronic cigarettes (e-cigarettes).

In a 2013 single-shelter convenience sample of 178 homeless cigarette smokers in Dallas, Texas, 51% of respondents reported concurrent use of other tobacco products or e-cigarettes in the past month (Kish, Reitzel, Kendzor, Okamoto, & Businelle, 2014). Among concurrent users, little cigars (50%) and regular cigars (42%) were the most commonly used products, attributed largely to their lower cost. A considerably smaller proportion (12%) reported e-cigarette use, chiefly to cut down or quit cigarettes. Smokeless tobacco use was uncommon. In unadjusted analyses, participants with more homelessness episodes and

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greater stress were more likely to report use of any of these disparate products, but the correlates of using specific products were not examined. In a 2013 community-based survey of 292 homeless youth cigarette smokers in Los Angeles County, past-month use of little cigars, smokeless tobacco, and e-cigarettes each exceeded the prevalences documented in the Dallas study, with 51% of respondents reporting past-month e-cigarette use and 72% reporting concurrent use of any product (Tucker, Shadel, Golinelli, & Ewing, 2014). In contrast to the Dallas study, e-cigarette use in the youth sample was predominantly for reasons other than quitting smoking. Additionally, the correlates of other product use varied by product type, suggesting that there may be some heterogeneity in which smokers use particular products.

Characterizing the use of other tobacco products and e-cigarettes among homeless smokers could have important implications. Cigar smoking is associated with an increased risk for heart disease, obstructive lung disease, and cancers of the lung and upper aerodigestive tract (Baker et al., 2000; Iribarren, Tekawa, Sidney, & Friedman, 1999; Lee, Forey, & Coombs, 2012; National Cancer Institute, 1998). Dual users of cigarettes and cigars are more likely to inhale cigar smoke (National Cancer Institute, 1998) and may be especially prone to these risks. Additionally, the lower cost of certain cigar products (Delnevo, 2006; Delnevo & Hrywna, 2007) may reduce the financial pressure for homeless people to quit smoking tobacco.

Although smokeless tobacco may pose fewer health risks than smoked tobacco (Hatsukami, Lemmonds, & Tomar, 2004), it nevertheless increases the risk of cardiovascular disease and certain malignancies (Boffetta, Hecht, Gray, Gupta, & Straif, 2008; Boffetta & Straif, 2009; Piano et al., 2010; Teo et al., 2006), and its dual use with cigarettes confers a higher risk for myocardial infarction than smoking alone (Teo et al., 2006). While evidence from Sweden has suggested a potential role for snus in promoting smoking cessation (Foulds, Ramstrom, Burke, & Fagerstrom, 2003; Furberg et al., 2005; Gilljam & Galanti, 2003; Rodu, Stegmayr, Nasic, & Asplund, 2002), controlled experimental (Tonnesen, Mikkelsen, & Bremann, 2008) and longitudinal observational (Kasza et al., 2014; Zhu et al., 2009) studies in the US have shown no benefit of smokeless tobacco use on long-term smoking cessation outcomes, and dual smokeless tobacco use by homeless youth has been associated with less intention to quit smoking (Tucker et al., 2014).

The safety profile of e-cigarettes appears considerably more favorable than that of conventional cigarettes (Farsalinos & Polosa, 2014), but their efficacy in promoting smoking reduction or cessation remains uncertain. Nevertheless, e-cigarette use has increased dramatically among smokers nationally (King, Patel, Nguyen, & Dube, 2015). However, the disparate findings of two prior studies examining e-cigarette use among homeless smokers (Kish et al., 2014; Tucker et al., 2014) suggest the need for additional investigation to clarify the extent of their adoption in this population.

To address these discrepancies and expand the evidence base on this topic, we assessed the prevalence and correlates of past-month other tobacco product and e-cigarette use in a clinic-based sample of homeless adult cigarette smokers in Boston. Among those who had used e-cigarettes, we assessed the reasons for doing so. To explore the potential harm-reducing role of smokeless tobacco use in this sample, we examined its association with past-month average daily cigarette consumption.

2. Methods

2.1. Participants and setting

In April to July 2014, we used time-location sampling (MacKellar, Valleroy, Karon, Lemp, & Janssen, 1996; MacKellar et al., 2007; Muhib et al., 2001; Raymond, Ick, Grasso, Vaudrey, & McFarland, 2010) to conduct an in-person survey of 306 homeless adult smokers using Boston Health Care for the Homeless Program (BHCHP) clinical services. BHCHP serves >11.000 currently and formerly homeless individuals annually in over 90,000 outpatient medical, oral health, and behavioral health encounters through a network of service sites based in emergency shelters, transitional housing facilities, hospitals, and other social service settings in greater Boston (O'Connell et al., 2010) (www.bhchp.org). We constrained our sampling frame to 5 clinical sites that account for about 64% of the annual patient care volume at BHCHP. We stratified our sampling from each of these 5 clinical sites in order to recruit participants in proportion to the estimated number of eligible patients seen at each site in the prior year according to administrative and clinical data collected routinely at BHCHP. Within each clinic stratum, we randomly sampled half-day clinic sessions, which comprised the primary sampling units. During a randomly sampled half-day clinic session, interviewers positioned themselves at a predetermined location within the clinic and consecutively approached patients after their clinic visit to screen them for eligibility.

Eligibility criteria included self-reported proficiency in English, age ≥ 18 years, current cigarette smoking, and current homelessness. We defined current cigarette smoking as having ever smoked ≥100 cigarettes and currently smoking some days or every day (Jamal et al., 2014). Consistent with the U.S. federal definition of homelessness (One hundred eleventh Congress of the United States of America, 2009), we considered individuals to be homeless if they usually slept in an emergency or transitional shelter, a church, an abandoned building, a place of business, a vehicle, anywhere outside, or a hotel or motel in the past 7 days or, if currently staying in an inpatient or residential treatment facility, in the 7 days prior to admission to that facility. In keeping with other surveys of homeless people, we also included individuals who were doubling-up with others in the past 7 days because of not having their own place to live (Grinman et al., 2010; Hwang et al., 2008).

After obtaining informed consent, trained interviewers verbally administered the 159-item questionnaire using an electronic tablet. Consistent with other surveys of homeless individuals, participants received $20 in cash for completing the questionnaire (Kertesz, Hwang, Irwin, Ritchey, & Lagory, 2009; Lebrun-Harris et al., 2013; Tucker et al., 2014). The study was approved by the Partners Human Research Committee.

2.2. Measures

2.2.1. Demographic characteristics

We assessed age, gender, and self-reported race and ethnicity, which we categorized as Hispanic, non-Hispanic white, non-Hispanic Black, and non-Hispanic other. We assessed educational history and classified participants according to whether or not they had attained a high school diploma or equivalency.

2.2.2. Homelessness characteristics

We asked participants about the number of times they had been homeless and the duration of their current homeless episode. We used these variables to classify individuals as chronically homeless if they had experienced ≥4 episodes of homelessness or if their current episode had lasted ≥1 year (Baggett, Lebrun-Harris, & Rigotti, 2013), which is similar to the U.S. federal definition of chronic homelessness (U.S. Department of Housing and Urban Development, 2007). We assessed where participants usually slept at night in the past week, and we grouped responses into the following 3 categories: shelter, rough, or doubled-up. Sleeping rough denotes any arrangement where a person sleeps outside or in a place not intended for human habitation (e.g. car or abandoned building) (U.K. Department for Communities and Local Government, 2010). To gauge participants' material resources, we used a 5-item scale that assesses the frequency (from "never" [0] to "often" [3]) of past-month difficulty finding shelter, food, clothing, a place to wash, and a place to go to the bathroom (Gelberg, Gallagher, Andersen, & Koegel, 1997). These items demonstrated high internal