Cultural buffering as a protective factor against electronic cigarette use among Hispanic emergency department patients

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HIGHLIGHTS

- Spanish-speaking Hispanics are half as likely to report e-cigarette ever-use.
- Loss of Hispanic cultural buffering may increase e-cigarette use.
- Cultural buffering was stronger in higher-income neighborhoods against e-cigarette use.
- Experimentation is the most frequent reason for e-cigarette use among Hispanics.

ARTICLE INFO

ABSTRACT

Introduction: Hispanics in the U.S. historically use tobacco at lower rates than other racial and ethnic groups. Cultural buffering, the process by which aspects of traditional Hispanic culture delay the adoption of unhealthy behaviors, is believed to be a protective factor against tobacco use. Electronic cigarettes (e-cigarettes) are a new tobacco product that have not been extensively studied, and it is unknown if cultural factors that protect against tobacco use will buffer against e-cigarette use among the Hispanic population.
Methods: This cross-sectional study was conducted at the emergency department (ED) in a safety-net hospital in 2014. Patients visiting the ED participated in a survey assessing demographics and substance use. Cultural buffering was operationalized as participants' primary language spoken at home. Multivariate logistic regression and generalized estimating equations examined the association between Hispanic cultural buffering and e-cigarette ever-use.
Results: Of the 1476 Hispanic ED patients (age: $46.6M \pm 14.5SD$, 49.3% male), 7.6% reported e-cigarette ever-use and 11.1% reported current combustible cigarette use. In adjusted models, Spanish speakers were half as likely to report e-cigarette ever-use (O.R.: 0.54, 95% C.I.: 0.34–0.84, $p = 0.007$), compared with English speakers. Combustible cigarette use remained the most significant factor associated with e-cigarette ever-use (O.R.: 9.28, 95% C.I.:7.44–11.56, $p < 0.001$). In higher-income neighborhoods, English speakers reported e-cigarette ever-use at higher rates than Spanish speakers (28.2% vs. 5.9%, $p < 0.001$).
Conclusions: Cultural buffering was protective against e-cigarette ever-use, especially in higher-income neighborhoods. These results support research on culturally-sensitive prevention programs for new and emerging tobacco products in Hispanic communities.

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1. Introduction

Hispanics represent 17% of the U.S. population (U.S. Census Bureau, 2015a), and traditionally use tobacco products at lower rates than non-Hispanic Whites and African Americans (Agaku, King, & Dube, 2014). Cultural buffering, a process in which traditional norms and values decrease the likelihood of the adoption of unhealthy behaviors (Taylor & Sarathchandra, 2015), is believed to be protective against tobacco use among Hispanics (Baezconde-Garbanati, Soto, & Unger, 2012; Maher et al., 2005; Morales, Lara, Kington, Valdez, & Escarce, 2002). Accordingly, the gap in tobacco use between Hispanics and non-Hispanics tends to narrow with acculturation (Anand & Downs, 2013)—the process in which Hispanic immigrants adopt typical elements of American culture and behaviors and/or lose or abandon traditional Hispanic values and identifications (Hummer, Powers, Pullum, Gossman, & Frisbie, 2007; Schwartz, Unger, Zamboanga, & Szapocznik, 2010).

The extant literature demonstrates that cultural buffering is protective against combustible cigarette use (Maher et al., 2005; Marin & Perez-Stable, 1995; Palinkas et al., 1993), however, it is unknown if a similar relationship exists between cultural buffering and electronic cigarette (e-cigarette) use among the Hispanic population. Studies have shown that Hispanic cultural values such as *familism*, a feeling of connectedness with one's immediate and extended family, may provide social support and adaptive coping strategies that buffer against stress and substance use (Allen et al., 2008; Cuellar, Arnold, & Gonzalez, 1995; Unger et al., 2002). Research also suggests that acculturation may erode the more conservative views on tobacco use that are predominant in traditional Hispanic culture, resulting in higher rates of substance use (Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998). Taken together, these findings support the hypothesis that Hispanic culture may be protective against new tobacco products such as e-cigarettes.

After decades of progress towards reducing tobacco consumption, the increasing popularity and intense marketing of e-cigarettes may pose a new threat to public health by potentially creating new nicotine-dependent users (especially adolescents and young adults) who may progress to combustible cigarette smoking (Barrington-Trimis et al., 2016; Leventhal et al., 2015; Rigotti, 2015; Unger, Soto, & Leventhal, 2016). Among Hispanics in the U.S., the overall awareness of e-cigarette products has increased dramatically from 36% to 73% between 2010 and 2013 (King, Patel, Nguyen, & Dube, 2015), with research indicating that television ads, other people, and the internet are common sources of information about e-cigarettes (Pepper, Emery, Ribisl, & Brewer, 2014; Zhu et al., 2013). E-cigarette users, particularly youth and young adults, report using e-cigarettes for experimentation and sensory satisfaction (Allem, Forster, Neiberger, & Unger, 2015; Dutra & Glantz, 2014; Zhu et al., 2013). While users also report using e-cigarettes to quit smoking, the long-term effectiveness of e-cigarettes for smoking cessation is unknown (Green, Bayer, & Fairchild, 2016), and there is concern regarding the potential risks of e-cigarette use (e.g., unknown levels of nicotine, harmful flavorings and chemicals) (Barrington-Trimis, Samet, & McConnell, 2014; Cameron et al., 2014).

In the U.S., Hispanics represent a socially and economically diverse population with heterogeneous tobacco use patterns. Among Hispanics, higher socioeconomic status and education levels are associated with lower levels of tobacco use (Echeverría, Gundersen, Manderski, & Delnevo, 2015; Kaplan et al., 2014). As with the general U.S. population, neighborhood characteristics such as unemployment and poverty predict lower smoking cessation rates (Cano & Wetter, 2014). Additionally, geospatial data demonstrate that the prevalence of cigarette smoking is higher among residents who live close to tobacco outlets, especially in higher poverty census tracts (Cantrell et al., 2015). Thus, it is important to consider the effects of neighborhood environment on tobacco consumption patterns to parse the influence of socioeconomic factors within the Hispanic population.

This study examined whether individual-level cultural buffering, measured by speaking Spanish at home, was protective against the *ever-use* of e-cigarettes (i.e., use of an e-cigarette product at least once). We hypothesized that participants who spoke Spanish at home would demonstrate lower levels of e-cigarette ever-use after controlling for relevant covariates. In subsequent analyses, we controlled for neighborhood poverty rates, hypothesizing that doing so would strengthen the association between cultural buffering and e-cigarette use. The results of this study may provide insight into factors influencing e-cigarette use among underserved, low-income Hispanics living in urban metropolitan areas for which data on e-cigarette use is scarce.

2. Methods

2.1. Participants

Study participants were patients visiting the emergency department (ED) at the Los Angeles County + University of Southern California (LAC + USC) Medical Center between May and August 2014. A systemic sampling strategy was used to survey patients who visited the ED from 7 a.m. to 12 a.m., on Monday through Sunday. Inclusion criteria included being 18 years of age. Exclusion criteria were: 1) critical illness upon ED arrival; or 2) altered mental state (i.e. confusion, disorientation at time of recruitment) that prevented participants from providing informed consent. Of the 5050 ED patients who were screened for eligibility, 2920 did not meet the study's eligibility criteria and 231 declined to participate. Of the 1899 enrolled participants who completed the questionnaire, 423 (22%) non-Hispanics were excluded from the Hispanic-focused analysis of this study. The USC Institutional Review Board approved this study and all participants provided written informed consent.

2.2. Procedure

Following eligibility screening, participants responded to an investigator-developed questionnaire that was administered by trained research assistants. All survey questions were translated into Spanish by native speakers and back-translated to confirm accuracy as in previous research (Maneesriwongul & Dixon, 2004). All responses were collected on electronic tablets, and the survey took 15–20 min to complete. Participants received no compensation for completing the questionnaire.

2.3. Measures

Questionnaire items assessed demographics and substance use, specifically focusing on combustible cigarette and e-cigarette products. The primary outcome was lifetime ever-use of e-cigarettes (assessed with the question, "Have you ever used an e-cigarette product, even one time?"), with images of e-cigarettes shown on the electronic tablets to aid in recall. Current use of e-cigarettes was assessed with the question, "Do you currently use e-cigarettes every day, some days, rarely, or not at all", with response options "every day", "some days" or "rarely" indicating current use. Questions assessing combustible cigarette use were adapted from the National Adult Tobacco Survey Questionnaire (King, Dube, & Tynan, 2012), and measured participants' use of combustible cigarettes during the past 30 days. The main predictor was cultural buffering, operationalized as the primary language spoken at home by the participants (assessed with the question, "What is the primary language spoken in your home?"). Several previous studies have successfully used language spoken at home, both English and Spanish, as a proxy for cultural buffering in studies examining associations with health outcomes (Lee, O'Neill, Ihara, & Chae, 2013; Schachter, Kimbro, & Gorman, 2012).

Covariates included age, sex, education level, country of birth (U.S. vs. foreign born), presence of chronic disease and neighborhood poverty rates—as these items have been shown to be associated with combustible cigarette and e-cigarette use. Presence of chronic disease was measured by participants' self-report of chronic conditions based on a checklist included in the questionnaire. Neighborhood poverty was defined as a neighborhood with 20% or more residents living under 138% of the poverty level (Bishaw, 2014), as noted in the American Community Survey (U.S. Census Bureau, 2015b). Poverty data were merged with the residential ZIP code provided by study participants, and neighborhood poverty rates were categorized into four groups: 1) <20%; 2) 20–29%; 3) 30–39%; and 4) ≥40% to determine the potential clustering effect on e-cigarette ever-use, cultural buffering and other covariates.

2.4. Data analysis

Preliminary analyses calculated descriptive statistics for study variables, and tests of linearity were conducted for all predictors (i.e., age). Student's t-tests and chi-square tests evaluated differences in demographic characteristics and smoking behavior by primary language spoken at home. Hierarchical multivariate logistic regression models were