Preventive Medicine 87 (2016) 200–206

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Exposure and response to current text-only smokeless tobacco health warnings among smokeless tobacco users aged ≥18 years, United States, 2012–2013

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ARTICLE INFO

Article history:
Received 21 May 2015
Received in revised 2 February 2016
Accepted 4 February 2016
Available online 15 February 2016

Keywords:
Warning labels
Smokeless tobacco
Chewing tobacco
Snuff
Snus
Health policy
Tobacco control

ABSTRACT

Introduction. We assessed US adult smokeless tobacco (SLT) users' exposure and response to SLT health warnings, which are currently in text-only format, covering 30% of the two primary surfaces of SLT containers and 20% of advertisements.

Methods. Data were from the 2012–2013 National Adult Tobacco Survey. Past 30-day exposure to SLT health warnings among past 30-day SLT users (n = 1626) was a self-report of seeing warnings on SLT packages: "Very often," "Often," or "Sometimes" (versus "Rarely" or "Never"). We measured the association between SLT health warning exposure and perceptions of SLT harmfulness and addictiveness using logistic regression.

Results. Of past 30-day SLT users, 77.5% reported exposure to SLT health warnings, with lower prevalence reported among females and users of novel SLT products (snus/dissolvable tobacco). Furthermore, exposure reduced linearly with reducing education and annual household income ($p < 0.01$). Among exposed past 30-day SLT users, 73.9% reported thinking about the health risks of SLT, while 17.1% reported stopping SLT use on ≥1 occasion within the past 30 days. Exposure to SLT warnings was associated with perceived SLT harmfulness (AOR = 2.16; 95% CI = 1.15–4.04), but not with perceived SLT addictiveness.

Conclusion. Socioeconomic disparities found in exposure and response to SLT health warnings can be addressed through implementation of large pictorial warnings.

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1. Introduction

Despite the continuing decline in cigarette smoking among US adults over the past decade, smokeless tobacco (SLT) use has remained unchanged (Agaku et al., 2014; SAMHSA, 2014). During 2012, 3.8% (approximately 9 million) of US adults aged ≥18 years reported using SLT every day, some days, or rarely (Agaku and King, 2014). Although cigarettes and other combusted tobacco products account for the overwhelming majority of tobacco-attributable disease and death (US DHHS, 2014), SLT products are linked with several oral and systemic diseases, including dental caries, periodontitis, and oral pre-malignant lesions, as well as oral, esophageal, and pancreatic cancer (Cobb et al., 2010; Colilla, 2010; Greer, 2011; Warnakulasuriya et al., 2010). While pasteurized novel SLT products generally contain lower levels of carcinogenic nitrosamines than fermented traditional SLT products, these lower levels are still 100 to 1000 times higher than the nitrosamine levels in other food products such as beer (Bartsch and Spiegelhalder, 1996; Hecht et al., 2007; Stepanov et al., 2008). Furthermore, all SLT products are efficient nicotine delivery vehicles and lead to tobacco addiction (Hecht et al., 2008).

The tobacco industry continues to market SLT, including several cigarette-branded products, as suitable alternatives to combustible tobacco products such as cigarettes in areas where smoking is prohibited (Carpenter et al., 2009; Mejia et al., 2010). Research shows that smokers might be interested in using SLT to reduce their smoking intensity and smoking-related health risks, or as a smoking cessation aid (Berg et al., 2014). During 2010–2011, 3.1% of US adult cigarette smokers switched to SLT as a smoking cessation aid (Schauer et al., 2014), even though no evidence exists that SLT is effective in promoting long-term cessation from tobacco use. Education is warranted about the harms of all forms of tobacco use, including SLT, and the importance of quitting tobacco use completely using proven methods (WHO, 2008).

Health warnings on tobacco products are an important communication tool to convey the health risks of tobacco use to consumers

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http://dx.doi.org/10.1016/j.ypmed.2016.02.014
0091-7435/Published by Elsevier Inc.

and potential consumers (Hammond, 2011; White et al., 2008). The Comprehensive Smokeless Tobacco Health Education Act of 1986 required health warnings to be displayed on all packages of SLT marketed in the US (Federal Trade Commission, 2000). Effective in July 2010, under authority granted by the Family Smoking Prevention and Tobacco Control Act, SLT health warnings were required to become larger and more visible, covering at least 30% of the two principal sides of the package and featuring one of the following four text-only warnings: (1) "WARNING: This product can cause mouth cancer." (2) "WARNING: This product can cause gum disease and tooth loss." (3) "WARNING: This product is not a safe alternative to cigarettes," or (4) "WARNING: Smokeless tobacco is addictive." (US Food and Drug Administration, 2015). The same warning labels are required in advertising and must comprise at least 20% of the advertisement's area. These changes aim to increase awareness of the health risks associated with SLT use.

Nonetheless, several elements of existing US SLT health warnings do not align with evidence-based, best practices for tobacco packaging and labeling, including the recommendation that warning labels cover 50% or more of the principal display areas and include pictorials (WHO, 2008). A previous study examining the impact of existing US cigarette text-only health warnings found a weak effect in motivating smokers to think about the dangers of cigarette smoking or to make a quit attempt (O'Hegarty et al., 2013). Little information exists on the effectiveness of existing SLT health warnings in eliciting cognitive and behavioral responses among US adult SLT users. To fill this gap in knowledge, we assessed US adult SLT users' exposure and response to existing SLT health warnings, which are currently in text-only format covering 30% of the two primary surfaces of the smokeless container and 20% of advertisements.

2. Methods

2.1. Data source

The 2012–2013 National Adult Tobacco Survey (NATS) is a stratified, national random-digit-dialed landline and cellular telephone survey of 60,192 noninstitutionalized adults aged ≥18 years residing in the 50 US states or District of Columbia. The overall survey response rate was 44.9% (landline = 47.2%, cellular = 36.3%).

3. Methods

3.1. Measures

3.1.1. Tobacco use status

Current users of SLT were defined as those who had met a specified lifetime use threshold for chewing tobacco/snuff/dip (≥20 times); snus (≥1 time); or dissolvable tobacco products (≥1 time) and who now used the product every day, some days, or rarely. Current cigarette smokers were respondents who had smoked at least 100 cigarettes during their lifetime and smoked daily or some days at the time of the survey. We categorized current SLT users based on whether they also smoked cigarettes currently, and also based on the type of SLT product they used, i.e., users of traditional SLT products only; users of novel SLT products only, and combined users of both product types.

Since NATS assesses exposure to SLT health warning labels in the past 30 days, our analytical sample was restricted to n = 1626 current SLT users who reported using an SLT product within the past 30 days (and had conceivably seen an SLT package), consistent with previous research (Johnson et al., 2014). The following question (asked of all current SLT users) was used to determine past 30-day SLT use: "In the past 30 days, was any of the chewing tobacco/snuff/dip; snus; or dissolvable tobacco that you used flavored to taste like menthol, mint, clove, spice, candy, fruit, chocolate, or other sweets?" Any response other than "Did not use any smokeless tobacco products in the past 30 days" (i.e., a response of "Yes" or "No") indicated that the respondent had used an SLT product within the past 30 days.

3.1.2. Exposure variables

The primary exposure was recent exposure to health warnings on SLT packages, defined as a report by a past 30-day SLT user that they had seen health warnings on SLT packages "Very often", "Often", or "Sometimes" (versus "Rarely" or "Never") in the past 30 days.

Secondarily, we also assessed cumulative exposure to health warnings from different sources, inclusive of SLT health warnings. Respondents were asked if they had recently been exposed to health information/warnings on the harmfulness of tobacco use from varied sources including: (1) on cigarette packs within the past 30 days, as indicated by a reported exposure frequency of "Very often", "Often", or "Sometimes" (versus "Rarely" or "Never"); (2) on tobacco advertisements in stores where tobacco products are sold within the past 30 days, as indicated by an affirmative ("Yes") response; and (3) listings of the harmful chemicals contained in tobacco products within the past 12 months, as indicated by an exposure frequency of "Often", or "Sometimes" (versus "Rarely" or "Never"). For each respondent that reported exposure to SLT health warnings, we computed a cumulative measure of exposure to tobacco health warnings, ranging from 1 (exposure to health warnings on SLT packages only), to 4 (exposure to health warnings from all assessed sources, inclusive of SLT packages). Our aim was to determine whether additional exposures to other non-SLT health warnings among those already exposed to a SLT health warning would further influence perceptions of SLT harm or addictiveness.

3.1.3. Outcome variables

The primary outcome of interest was a cognitive (thinking about the health risks of SLT use) or a behavioral (stopping SLT use) response to SLT health warning labels on at least one occasion within the past 30 days, similar to previous research (Agaku et al., 2015). Both measures were assessed in NATS only among persons who reported having seen a SLT health-warning label within the past 30 days. Within the survey, a cognitive response was defined as any response other than "never" (i.e., "Very often", "Often", "Sometimes", or "Rarely") to the question "How often, if at all, have you thought about the health risks of using smokeless tobacco in the past 30 days?" A behavioral response was defined as any response other than "never" (i.e., "Many times", "A few times", or "Once") to the question "In the past 30 days, have the health warnings on smokeless tobacco packages stopped you from using smokeless tobacco when you were about to?"

Our secondary outcomes were perceptions of respondents regarding the harmfulness and addictiveness of SLT products. Both measures were assessed in NATS among all respondents, regardless of their exposure status to SLT health-warning labels within the past 30 days; we thus compared these measures between exposed and non-exposed past 30-day SLT users. Within the survey, the perception that SLT use is harmful was defined as a response of "Moderately harmful", or "Very harmful" (vs. "Not at all harmful") to the question "How harmful do you think using smokeless tobacco is to a person's health?" Similarly, the perception that SLT use is addictive was defined as a response of "Moderately addictive", or "Very addictive" (vs. "Not at all addictive") to the question "Overall, would you say that smokeless tobacco use is—…?"

3.1.4. Socio-demographic variables

Socio-demographic characteristics assessed were sex (male or female); age (18–24; 25–44; 45–64; or ≥65 years); race/ethnicity (Hispanic; non-Hispanic white; non-Hispanic black; or non-Hispanic other); education (< high school; high school/General Education Development certificate; some college, no degree; associate degree; bachelor's degree; or post-graduate degree); annual household income (≤$19,999; $20,000–$49,999; $50,000–$99,999; or ≥$100,000); and US Census region (Northeast; Midwest; South; or West).