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## Interviews with smokers about smokeless tobacco products, risk messages, and news articles

**Olivia A. Wackowski, PhD, MPH [Assistant Professor],**

Center for Tobacco Studies, Department of Health Education & Behavioral Science, Rutgers School of Public Health, 335 George Street, Suite 2100, New Brunswick, NJ 08903, USA  
wackowol@sph.rutgers.edu (best contact info) 732-235-9731

**M. Jane Lewis, DrPH, MA [Associate Professor], and**

Center for Tobacco Studies, Department of Health Education & Behavioral Science, Rutgers School of Public Health, 335 George Street, Suite 2100, New Brunswick, NJ 08903, USA

**Cristine D. Delnevo, PhD, MPH [Professor, Director]**

Center for Tobacco Studies, Chair, Department of Health Education & Behavioral Science, Rutgers School of Public Health, 335 George Street, Suite 2100, New Brunswick, NJ 08903, USA

### Abstract

**Background**—Smokeless tobacco products (SLT) and their communication have been topics of discussion in harm reduction debates, but little is known about smokers’ perceptions of existing SLT risk messages. This study aimed to explore smokers’ perceptions of SLT and snus products and news stories with different risk messages about them.

**Methods**—We conducted interviews with 30 smokers assigned to read one of three constructed news stories about SLT and snus with different messages about their risks relative to cigarettes: 1) a “favorable” version (describing SLT/snus as a “safer” smoking alternative); 2) a “cautious” version (describing SLT/snus as having various risks); and 3) a “mixed” version (both stating SLT risks and potential reduced risk benefits).

**Results**—Smokers felt somewhat more informed about snus after article reading and largely found quoted sources to be credible. Though some exposed to favorable SLT/snus messages appeared to modify their beliefs about the products’ acceptability and risks, many were left unchanged given pre-existing SLT risk perceptions influenced by prior SLT warnings, observed effects in known users, and concerns about SLT’s mode of use. Willingness to use/not use snus in the future was also influenced by non-risk related factors (e.g., preference for smoking rituals). Many referenced e-cigarettes as being safer and more attractive smoking alternatives.

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Correspondence to: Olivia A. Wackowski.

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**Competing interests:** None

**Ethics Approval:** The Institutional Review Board for the Rutgers Biomedical and Health Sciences School approved this study under exempt review.

**Conclusions**—Exposure to reduced-risk SLT information may have some impact on smokers’ SLT perceptions and interest, but this might be limited by a variety of negative SLT beliefs and growth of other smoking alternatives. Future research should explore SLT risk message effects with larger samples and different study designs.

### Keywords

smokeless tobacco; snus; news; risk perceptions; harm reduction; risk communication

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## INTRODUCTION

While smokeless tobacco (SLT) consumption in the United States has increased over the last decade,[1] its use is considerably lower (3.6% of adults) than that of smoking (17.8%),[2] and is largely used by males (7.1%) versus females (0.4%).[3] Although SLT is addictive and has been associated with oral and pancreatic cancer[4] and heart disease,[5] research suggests it may have lower risks than smoking when used exclusively,[6-10] and may reduce harm for smokers unable or unwilling to quit tobacco use.[7, 10-11] Much discussion has focused on *snus*, a Swedish style of moist snuff with low levels of carcinogenic tobacco-specific nitrosamines (TSNAs).[7,12] In Sweden, snus use is more prevalent than smoking among males and is believed to have played a significant role in the decline of male smoking and lung cancer rates.[7] In contrast, snus is fairly new in the United States. Between 2009 and 2010, the two major US cigarette companies (Philip Morris and Reynolds American) both nationally launched snus products under their cigarette brand names (i.e., Camel Snus, Marlboro Snus), advertising them (particularly to smokers) as spit-free, convenient, discreet, and more “acceptable” forms of SLT which can be used anywhere.[13]

Promoting SLT for harm reduction has been debated in public health - some argue this might encourage dual product use, deter quitting, and encourage new users who misperceive reduced-risk messages as meaning SLT is safe.[8-9, 14-15] Others argue that not informing individuals about relative risks could prevent smokers from switching to lower harm products because they think all tobacco products are equally harmful.[10,16-18] Numerous surveys have found that a majority of smokers perceive SLT to be as or more harmful than cigarettes.[17-23] However, few studies have explored smokers’ SLT perceptions qualitatively, which may reveal underlying reasons for their SLT risk perceptions and motivations (which may or may not be information-based). Research on whether exposure to reduced-risk information could change smokers’ SLT risk perceptions and interest is also scant and somewhat mixed. One focus group study found that smokers did not believe tobacco health information (including information on comparative risks) to be very valuable in thinking about switching to SLT.[24] One study measuring effects of health information found that while exposure to a brochure with anti-smoking information increased smokers’ SLT demand, exposure to pro-SLT information did not.[25] Another found that young Canadian smokers exposed to product images with SLT health warning labels had decreased willingness to try SLT, while those exposed to images with a reduced-risk message (i.e., that using SLT is less harmful than smoking) had both higher odds of reporting correct beliefs about SLT/cigarette relative risks, and willingness to try SLT as a cessation aid.[23]

Despite lack of consensus on how to communicate the relative risks of SLT to the public, a content analysis of SLT news articles suggests that risk messages about SLT and snus are omnipresent and thus may already be influencing people's knowledge and beliefs about these products.[26-27] Moreover, news articles also included mixed information about SLT (i.e., suggestions that SLT is safer than smoking and warnings against its use), which could arguably present readers with a "nuanced" understanding of SLT, as some researchers have called for,[22] or potentially leave readers unclear about the overall "take away" message regarding SLT's relative risks.[14, 28]

This paper adds to the limited qualitative and information-related research about SLT to begin addressing a number of relatively simple but fundamental research questions relevant to current SLT concerns and policy issues. What do smokers think about SLT, SLT news stories, and different types of SLT risk messages? How might smokers respond to news stories with mixed (and potentially conflicting) information about the risks of SLT or snus? What do they think about the studies and sources cited in SLT news articles? We aimed to begin exploring these questions by conducting interviews with smokers exposed to news stories with different SLT and snus risk messages.

## METHODS

This study was designed to address our broad research questions stated above and as a first qualitative step to inform the development of an experimental study aimed at testing the impact of news stories on smokers' SLT risk perceptions and use intentions (including hypotheses, study measures, etc.). We conducted 30 semi-structured interviews with current smokers who were asked to read one of three different news stories about SLT and snus to which they were assigned (i.e., "cautious", "favorable", or "mixed"). The stimulus articles were short news stories (approximately 460 words) constructed by our research team, as informed by our previous content analysis of SLT news.[26-27] They included content adapted from a 2007 *USA Today*[29] and a 2008 *Associated Press* news article[30] about SLT and snus and were designed to look like online news articles (including a picture of Camel Snus Frost). All three articles began the same, i.e., by discussing the introduction of Camel and Marlboro Snus, what snus is, the relative growth and decline of the SLT and cigarette market, respectively, and the tobacco industry's hopes for snus to be seen as a modern and acceptable SLT product. However, each article version was manipulated to include or exclude certain SLT/snus risk information based on the three story conditions (see Table 1). The stimulus news articles are available from authors.

Eligible participants had to be adult (at least 18) current smokers (i.e., have smoked 100 cigarettes in their lifetime and now smoke "everyday or "some days") with access to a computer, Internet and phone. Smokers who had ever tried or used SLT were eligible but current SLT users were not.

Participants were recruited from a central New Jersey Craigslist.org ad. A screening script was used to determine eligibility, baseline SLT risk perceptions and use intentions. Specifically, participants indicated how harmful they believed SLT products were relative to cigarettes ("less", "as", or "more" harmful), and how interested they would be in using SLT

in the future on a scale of 1-5 (i.e., from “not at all” to “very interested”). We used these variables to assign participants to a news article condition such that groups could be approximately even in terms of gender, and pre-existing SLT risk perceptions and interest. We also asked participants about their ever use, risk perceptions and use intentions for cigars so that participants were not primed to believe the study would focus exclusively on SLT.

Participants were emailed their story to read approximately 5-10 minutes before their scheduled phone interview (average, 23 minutes; range, 13-43 minutes). During the interviews, participants were asked open-ended questions about their experience with and perceptions of SLT and snus, including their acceptability, popularity and perceived risks, particularly as compared to smoking. They were also asked about their interpretations and/or impressions of SLT risk messages and quotes in the article, quoted sources, their overall experience and thoughts about the story, and any changes in their SLT perceptions. After the interview, participants were debriefed about the purpose and design of the study and mailed a \$50 gift card. Interviews were conducted between February and March 2014. The interview recordings were transcribed and then coded using Atlas.ti qualitative software, using a list of codes developed deductively a priori based on our research questions and relevant previous studies [24,27,31-33] and inductively based on repeated reading of the transcripts and memos. All 30 interviews were conducted and transcripts coded by the primary author (OW) while another co-author (MJL) reviewed 15 coded transcripts and interview memos (five from each condition) for agreement. Coded text was re-reviewed to summarize major themes and results across groups/ news story conditions, including those reflective of information learned and/or perceptions changed. Illustrative quotes were selected to reflect themes (some have been edited for brevity or clarity). This study was approved by the Rutgers University IRB.

## RESULTS

Participant number was equal in terms of gender (five males and five females in each story condition). Most were daily smokers (28/30) with at least some college education (26/30), and the average age was 37 (range, 20 to 66). Participants referred to online news (13/30) and television (13/30) as their main news sources and most (19/30) read the news (online or print) at least once a day. During recruitment, one-third (10/30) rated SLT products as being “less harmful” than cigarettes while the majority indicated they were “as” (16/30) or “more harmful” (4/30), and the average rating (on a scale of 1-5) of their future interest in using SLT was a 2.8.

### Awareness of Snus

Most participants (23/30) had heard of snus before and seen it in stores. However, few (6/30) had tried snus and most who did thought snus was “gross” and/or didn’t like the taste. Participants believed cigarette companies had developed snus to offer smokers alternatives to deal with indoor smoking bans, high cigarette prices, and smoking unacceptability. Some also thought companies were trying to offer safer alternatives or have products they could *market* as healthier. However, participants largely perceived that companies’ primary motivation was to offset declining cigarette sales (see Table 2, Perception 1).

## Perceived Popularity and Acceptability of SLT

Across groups, many participants acknowledged that SLT has benefits (e.g., smoke-free/odorless, cheaper than smoking, and available for use in quitting smoking), and agreed it was becoming more popular. Several participants knew people who currently or recently used SLT, and the visibility and availability of snus in stores also contributed to perceptions that SLT is increasing in popularity and acceptance (see Table 2, Perception 2). However, participants across groups largely thought SLT products overall are “gross” and “disgusting”, perceptions attributed to the spitting associated with SLT, its taste and its direct contact with the mouth. Participants based these perceptions on their own SLT experiences and on seeing others using SLT. Many also did not believe that SLT products were becoming more popular because they did not know or see anyone who used them, still associated SLT with “traditional” users (“I associate it with rednecks, hunters, and baseball players”), and/or because they believed SLT use was largely limited to older generations (see Table 2, Perception 3). Several also acknowledged that while snus appeared to be popular in Sweden/Scandinavia, they didn’t think it was popular in the US. In contrast, several participants brought up e-cigarettes during the interview, which they perceived as being a popular smoking alternative.

## Perceptions of Snus versus Traditional Moist Snuff

Despite many negative general SLT perceptions, most recognized that there were differences between snus and traditional moist snuff/dip such as being spit-free (although some were skeptical of whether this was really true), less “bulky”, and being pouched, a characteristic seen as making the product “cleaner” (no loose tobacco in mouth), more convenient and easy to use. For these reasons snus was seen as potentially more discreet and socially acceptable relative to traditional dip. Across groups participants also noted differences in the packaging of snus compared to traditional SLT, calling it “fashionable”, “cool”, “modern”, “sexy”, “flashy”, “sharper” and more “noticeable” in stores. Participants across all groups largely believed there were no health risk differences between snus and other SLT, but some thought snus’ pouches made them safer because pouches could minimize tobacco portion size, the possibility of swallowing tobacco and direct contact of tobacco with the body. In contrast, for some participants snus’ advertised spit-free characteristic contributed to perceptions that snus might actually be *more* harmful than moist snuff, either because they believed that users would be swallowing the spit (which raised concerns about pancreatic and stomach cancer), or because they believed snus potentially had extra additives that made it spit-free (Table 2, Perception 4).

## Safety of Snus and Smokeless Tobacco versus Cigarettes

With respect to risks relative to cigarettes, some participants noted that they thought SLT products were safer than cigarettes (even before reading the article) but that they nevertheless posed risks and were not safe. However, many across groups expressed the idea that SLT and cigarettes posed “different risks” or a trade off in risks (particularly less risk for lung cancer but more risk for oral cancer), and thus one was not necessarily safer than the other overall (Table 2, Perception 5). Cautious and mixed story participants also recalled reading in the article that snus may be associated with heart disease and have at least two

carcinogens. Some were surprised to learn from the article about snus' association with pancreatic cancer, which was perceived as being a very risky and scary cancer type. A common theme across groups was the idea that "tobacco is tobacco" and thus different forms similarly contain nicotine, carcinogens and "chemicals" and likely pose similar risks. One person noted that she also thought snus was as harmful as cigarettes because she'd never heard about it being safer:

"It [the article] doesn't say that it is safer, that's how I know that it isn't....If it was, it would be on the news, and TV saying that it's safer than cigarettes. But they're not. That's how I know they're not." (female, age 39, cautious condition)

In addition, some participants (in the cautious and mixed groups only) said they thought SLT products are or could be even *more* harmful than cigarettes because of the way SLT is used, ie., that it has direct and longer periods of contact with the body/mouth (Table 2, Perception 6). Some explained that the short term and visual effects of SLT (which were more obvious to see, unlike the effects on your lungs) could lead to perceptions that SLT products are very harmful or more harmful than cigarettes, and they recalled effects they'd seen in people they knew (Table 2, Perception 6).

### Feelings of Uncertainty and Unknown Risks

Despite the comments shared above, several participants across groups had difficulty describing their perceptions about the health risks of SLT and/or snus relative to cigarettes because they felt like they didn't really know how they compared, and several contradicted themselves throughout their interview. The article's point that, because snus is new, there are unknown things about it and how it will be used, largely had a negative effect on snus perceptions. Some expressed skepticism about trying a product on which little was known and concerns that over time negative health effects would be discovered, as with the case after cigarettes' introduction. Some suggested that snus could turn out to be even more harmful than cigarettes (see Table 2, Perception 7). However, a few people felt that the "unknown" surrounding snus didn't impact their product impressions because the same could be said for many new products, as everything is new at some point.

### Not Safe Alternative Statement

Participants in the Cautious and Mixed story conditions were asked what they thought was meant by the statement "this product is not a safe alternative to cigarettes", as made by a researcher in the article. Some thought it meant that SLT is not safe because it has chemicals in it, can be "harmful in its own way" and/or that "the jury is not out yet" on the comparative safety between snus and cigarettes. Several thought it suggested a message that although some might think SLT is less harmful than cigarettes, it really isn't, and/or that smokers shouldn't turn to SLT when trying to quit smoking. Several also thought it gave the impression that SLT is just as harmful as cigarettes (Table 2, Perception 8).

### Perceptions of Reduced-Risk Study Results and Quotes

Participants in the "favorable" and "mixed" story conditions were asked what they thought about the Swedish study results which found that snus users had lower cancer risks than smokers and did not have an increased risk of oral cancer. Several thought that the findings



made sense, were “promising” or important, and/or made them more open to considering snus (Table 2, Perception 9). However, many were surprised and some skeptical of the findings (particularly the lack of association with oral cancer) given that historically they had heard that SLT causes oral cancer, their observations of SLT’s effects on users they knew, and the prolonged direct contact of SLT with the mouth (Table 2, Perception 10). Several people also noted that there weren’t enough details about the study to judge its credibility/relevance, that more information was needed, and/or commented that Swedish results wouldn’t necessarily hold up in the US. Others suggested that ultimately the research didn’t make a big difference on their snus perceptions because they believed the product was still harmful.

Participants in the “favorable” and “mixed” conditions were also asked what they thought about a researcher’s included quote, which stated that smokers should be advised to quit completely, but also be told about lower risk alternatives. Several agreed with the statement, noting that quitting smoking is difficult and that it made sense for smokers to try safer alternatives. While one participant called it an “honest” statement, others believed it sent the wrong message because both products are harmful.

### Perceived Sources in Article

Participants recalled individuals quoted in the articles as being doctors, university researchers or professors, health professionals and/or “public health officials”. They largely found these sources to be “credible” and “trustworthy”, because these people were experts, highly educated, and because most studies come from universities. Also, many commented that the person’s title (i.e., “Doctor”) or the name and organizational status itself carried significant credibility (Table 2, Perception 11). However, some wondered if those who had described snus as less harmful were smokers themselves or funded by tobacco companies. One person also noted that the number of people supporting a perspective was important (Table 2, Perception 11).

### Information Learned from Article and “Takeaway” Risk-Related Messages

Across groups, participants indicated having learned about snus in general from the article (e.g., spit-free, popular in Scandinavia, more socially acceptable), with one person noting that the article had informed her much more than the several coupons she had received for snus. Additional observations are described by group below.

**Cautious Group**—Cautious group participants indicated the article’s overall takeaway message about the relative risks of snus versus cigarettes was that snus is dangerous and harmful, is ultimately not really different than traditional dip, is not a safe alternative to smoking and/or that its safety is inconclusive. Several noted that with respect to risks the article included the type of information they already knew, or “what you would expect to read”. No cautious story readers said that the article changed their mind in terms of their SLT risk perceptions.

**Favorable Group**—In contrast, favorable group participants all consistently noted that the article left readers with the message that snus *is* a safer alternative to smoking, and that it’s

something people should be open-minded about. However, while several indicated that the article had changed their perceptions about the product's safety ("...I have gotten a lot of different views on it and I do believe that it is less harmful after reading this"; female, age 28, favorable condition), not all were convinced:

"The article is kind of blatantly saying that it's less harmful... but I think it's kind of nonsense.... because any time you're taking something into your body that's not supposed to be there, you have a risk of cancer....it's kind of crap because I know at the end of the day my risks are probably very similar." (female, age 20, favorable condition)

**Mixed Message Group**—As with favorable group participants, several readers of the "mixed" story were surprised to learn that snus and/or SLT is safer than they thought but others' opinions were left unchanged. When asked what they thought the article's overall takeaway message was with respect to relative risks, one person thought the article communicated that snus is indeed safer than cigarettes and four people thought it conveyed that snus isn't a safer alternative and/or that its risks are inconclusive. However, half (5/10) of participants thought the article reflected mixed perspectives and take home messages (e.g., that although snus may be safer, it is not necessarily safe; it comes with "pros and cons"). Mixed condition participants also largely indicated that the "debating" amongst public health professionals portrayed in the article wasn't surprising, was "typical" of most issues, and didn't impact their impressions. One person suggested that the debating appeared "truthful" and "honest". However, a few indicated that the debating could make it harder to form one's opinions about the products:

"...when you have article going back and forth, you don't really have anything back your opinion up. So I guess, it does make it harder..." (male, age 21, mixed condition)

### **Willingness to Use Snus in the Future**

Finally, similar numbers of participants across groups indicated that they would or might try snus in the future (cautious 6, favorable 7, mixed 6). While a few (mostly favorable story participants) mentioned reduced-risks as a possible reason, others mentioned that they might try snus for situations where they couldn't smoke (e.g., traveling), or "just to try it". Several noted that while they might be open to trying a sample or snus from a friend, they wouldn't necessarily purchase snus. Participants not interested in snus cited similar reasons across groups, noting that they liked the experience of smoking (inhaling, exhaling, holding cigarette, smoking socially), and remained concerned about SLT acceptability issues (spitting, tobacco in mouth, not "womanly"). Some had been sufficiently turned off by previous experiences trying SLT (getting sick, not liking taste) to know that they didn't want to experiment with snus.

## **DISCUSSION**

This is the first study to both explore smokers' perceptions of SLT and snus in general *and* based on exposure to select news stories about them. Our results suggest that smokers felt



somewhat more informed about snus after reading their assigned news article and that stories with favorable snus messages may have some impact on improving smokers' risk and acceptability perceptions and willingness to try snus. However, some felt the "pro-SLT" information included in the stories "sent the wrong message" and questioned the credibility of "pro-SLT" message sources. Furthermore, many were left unconvinced that SLT and snus is (or could be) a safer alternative, a finding consistent with a previous qualitative study in which the moderator attempted to explain that studies have shown SLT poses lower cancer risk.[24] These perceptions appeared to be influenced by several factors:

- 1. Previous SLT warning information.** The reduced-risk messages in the stories ran counter to what participants felt they had always heard and been taught about SLT in school and in the media (particularly that it causes oral cancer). Indeed, risk perception and psychology literature suggest that people may judge an object's risk based on what they can easily recall about it (i.e., make use of "availability heuristics") and that once formed, people's beliefs systems or "mental models" can be slow and difficult to change in the face of contrary evidence.[34-35] It should also be noted that several participants interpreted the statement "SLT is not a safe alternative to cigarettes", the same warning used on SLT ads and packaging, as essentially meaning that the products are equally harmful. This may lend support to previously expressed concerns that this statement, although literally true, may mislead individuals into thinking that SLT and cigarettes are equally harmful.[36-38]
- 2. A sense of intuition.** In the absence of having expert knowledge about the comparative risks of different tobacco products, one way lay people may judge such risks is through use of intuition, a "traditional" tool used in risk perception. [35] Our study was consistent with others in finding that smokers' believe switching from smoking to SLT represents trading in some risks for others, [24,31] that they mistakenly believe SLT users have a higher risk of oral cancer than smokers,[18, 39] and that SLT risk perceptions are impacted by SLT's mode of delivery, i.e., its prolonged direct contact with the mouth.[18, 24,32, 33] Another qualitative study also found that this direct contact with the mouth made smokers feel like they would have less control over their nicotine and toxin exposure with SLT versus cigarettes, which they perceived they could better control by varying their inhalation levels and by exhaling and "blowing out" toxins.[24] Given that these perceptions may seem intuitive and logical, it may be difficult for smokers to accept that SLT use may have lower oral cancer risks or that some forms like snus may not have a clear oral cancer association. Our study was also consistent with other qualitative research in finding that people's SLT/cigarette relative risk perceptions are influenced by the idea that "tobacco is tobacco",[24] which may also appear to be a reasonable belief when smokers lack understanding about the impact of tobacco combustion on health consequences.[18]
- 3. Social and emotional information.** Participants also based their risk perceptions on the visual and graphic negative effects they had observed in SLT prevention programs or in people they personally knew. Although smokers may rationally

know smoking is harming their bodies, the outwardly visible effects of SLT use may increase perceptions about the prominence and severity of SLT risks. Indeed, risk perception literature suggests that people judge risk not only based on the probability of harm but also on qualitative and affective features such as perceived severity and dread. The graphic nature of certain risks may also increase their memorability and susceptibility to availability bias, potentially leading people to think they are more risky than they really are.[35,40]

This study also found that while about half of “mixed” condition readers correctly identified that snus has pros and cons (may be safer but not safe) as the “takeaway” message, almost half perceived the overall article message to be that snus isn’t a safer alternative and/or that its risks are inconclusive. This may suggest that for some people, mixed risk messages may cancel each other out, leaving people to walk away with the idea most familiar to them to begin with – in this case, that SLT is not a safe alternative. More research is needed on this topic. However, it was encouraging to find that the portrayed debating within the tobacco control community did not turn readers off and was found to be “normal” and “expected”.

This study was also consistent with some prior work in finding that the “newness” of snus and uncertainty about its potential risks had a negative effect on participants’ perceptions and use intentions.[24,31] Yet, participants generally had more positive perceptions about and interest in e-cigarettes, despite also being new with unknown risks. Indeed, participants’ SLT interest was influenced by factors other than relative risks, such as their perceived convenience, acceptability and satisfaction (or lack thereof). Despite the stated reduced-risk benefits, some simply were not interested in snus because they continued to find SLT to be “gross” and/or believed it would not fulfill aspects they enjoyed about smoking, such as the act of inhaling and exhaling, the hand-to-mouth motion, and the social aspect of smoking, perceptions also noted in previous studies.[24, 31-33] Another study also found that smokers enjoyed the act of having to go outside and “take a break” to smoke, a perceived benefit that SLT use negated.[24] As such, these immediate types of risks and rewards may weigh more heavily for some smokers than the potential long term reduced-risk health benefits of switching to snus.

This study is subject to several limitations. Participants read stories in their own environment (rather than in a lab), and while this approach may have greater external validity, participants may have varied in their level of attention in reading the article. However, the fact that the articles were short and that most participants were able to correctly describe what the article they read was about and its intended “take-away” risk messages increases our confidence in participants’ attention. Participants only read one story about SLT and snus, and the small sample size and qualitative nature of our design precludes us from making precise determinations of exposure effects. Future research should continue to explore this issue using a larger nationally representative sample and more formal experimental survey design.

Nevertheless, these preliminary qualitative results suggest that exposure to reduced-risk SLT information may influence smokers’ perceptions about and interest in snus, but that perhaps strong and repeated exposure to such messages from credible sources may be needed to overcome deeply ingrained SLT attitudes and beliefs. Such messages may also need to come

consistently from health professionals and researchers, as messages seen as coming from a small number of individuals might not be trusted. This might be accomplished in part by replacing the traditional “this is not a safe alternative to cigarettes” message in SLT educational materials and warning labels with more nuanced information about SLT and cigarette comparative risks, a move some have called for [38, 41-42] and has been proposed by one snus company, a proposal currently under FDA consideration.[43] However the best methods for presenting such messages, and the likelihood of unintentionally attracting new users still needs to be researched and weighted appropriately. Furthermore, smokers’ willingness to use SLT appears to be strongly influenced by non-risk factors (e.g., perceived acceptability), and thus reduced-risk SLT information may ultimately have limited impact, particularly given the growing popularity of e-cigarettes, which appear to already be seen by smokers as both less harmful and enjoyable acceptable cigarette alternatives.

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### WHAT THIS PAPER ADDS

- Qualitative studies about smokers' smokeless tobacco (SLT) product and risk perceptions are limited, and research on whether exposure to reduced-risk information could change smokers' SLT risk perceptions and interest is also scant.
- This is the first study to both explore smokers' perceptions of SLT and snus in general *and* based on exposure to select news stories about them with differing risk messages.
- Our results suggest that exposure to reduced-risk SLT information may influence smokers' perceptions about and interest in SLT and snus, but strong and repeated exposure to such messages from credible sources may be needed to overcome deeply ingrained SLT attitudes and beliefs.
- Results also suggest, however, that reduced-risk SLT information may ultimately have limited impact given the influence of non-risk related factors (e.g., perceived acceptability) on smokers' SLT interest, and the growing popularity of e-cigarettes.



**Table 1**

## Description of news story conditions

All conditions	<ul style="list-style-type: none"> <li>Described new snus products as modern, more attractive and acceptable forms of smokeless tobacco (SLT)</li> </ul>
“Cautious” condition	<ul style="list-style-type: none"> <li>Referred to SLT risks, including links to heart disease, oral and pancreatic cancer.</li> <li>Referred to study finding Camel Snus has at least two carcinogens</li> <li>Included warnings from quoted researchers/health professionals that snus is addictive, “not a safe alternative to cigarettes”, and that there is much about it still unknown.</li> </ul>
“Favorable” condition	<ul style="list-style-type: none"> <li>Made no references to SLT health risks/consequences. Instead, included:</li> <li>References from health professionals, research studies describing snus as seemingly safer than cigarettes.</li> <li>Brief description of Swedish construction worker study finding snus users had lower cancer risks than smokers, and no increased oral cancer risk.</li> <li>Researcher quote that smokers should be encouraged to quit tobacco entirely, but also be told that SLT products have fewer risks than cigarettes.</li> </ul>
“Mixed” condition	<ul style="list-style-type: none"> <li>Presented risk messages found in “cautious” and “favorable” versions (i.e., references to new SLT products as safer than cigarettes; to SLT health risks; and messages that SLT is not a safe smoking alternative).</li> <li>Risk information presented under subheading, “A debate over the potential risks versus benefits”.</li> </ul>

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Selected example quotes of smokers' perceptions of SLT/snus products, risk messages and news stories

Table 2

<p><b>1</b> Profit-related perceptions about cigarette companies motivations in creating snus</p> <ul style="list-style-type: none"> <li>• "I don't think they're really motivated to better people's health, I think it's about the bottom line. They want to continue making money and this is their ingenious way to market tobacco to people..." (female, age 49, mixed condition)</li> <li>• "Any way to make money, that's what big tobacco's all about. Increase in their profits at the expense of everybody else. So I just think, like, they can put it in a new can and sell it, that's exactly what they're doing." (female, age 20, favorable condition)</li> </ul>
<p><b>2</b> Store-based perceptions about snus' popularity and about users of smokeless tobacco</p> <ul style="list-style-type: none"> <li>• "I see them all the time in stores. So apparently people are buying them, otherwise they wouldn't carry them." (male, age 30, mixed condition)</li> <li>• "It's like they actually know what you're talking about [when asking for slt at store counter]; they keep it in stock, so I guess someone's buying it." (male, age 31, favorable condition)</li> </ul>
<p><b>3</b> Perceptions about users of smokeless tobacco</p> <ul style="list-style-type: none"> <li>• "I associate it with rednecks, not that I want to hurt anybody's feelings. I associate it with rednecks, hunters, and baseball players..." (female, age 48, favorable condition)</li> <li>• "I think the older crowd, older generation, like maybe 50 above, I see them more doing it. I don't see a lot of young people doing the smokeless, the snuff or the snus..." (female, age 50, cautious condition)</li> <li>• "Not popular really for people in their 20's you know. When you're outside the bar at night, you don't see people just standing there with the snus in their mouth, they're usually having a cigarette." (female, age 24, cautious condition)</li> </ul>
<p><b>4</b> Perceptions that snus may be more harmful than traditional moist snuff</p> <ul style="list-style-type: none"> <li>• "Why is it that every other smokeless tobacco you have to spit out and this one you can just keep in your mouth? What products are they putting in there to prevent that?" (male, age 24, cautious condition)</li> <li>• "If anything I would say it would be worse because you're not spitting, I mean you're keeping this whole entire thing in your mouth, the whole entire time." (male, age 24, cautious condition)</li> </ul>
<p><b>5</b> Perceptions that SLT and cigarettes pose "different risks" or a trade off in risks</p> <ul style="list-style-type: none"> <li>• "I think you're really just choosing between the more likelihood to get lung cancer and the more likelihood to get mouth cancer..." (male, age 31, favorable condition)</li> <li>• "...Just cause it's not putting smoke in your lungs, it's definitely deteriorating your mouth and your gums, and your teeth, and your esophageal cavity....I mean I would say it's less harmful to your lungs than cigarettes, but not less harmful to your body as a whole." (female, age 28, mixed condition)</li> </ul>
<p><b>6</b> Perceptions that SLT are very harmful or more harmful than cigarettes</p> <ul style="list-style-type: none"> <li>• "For some reason, I thought they were overall more harmful to you... I just feel like it's more so just getting into your body by just sitting there....your incidence of oral cancer's higher, but seems as though it's going to seep into your body and it's going to increase your risk in other areas..." (female, age 56, mixed condition)</li> <li>• "I keep looking at when it's just sitting in your mouth. It's absorbing more, cause it's just sitting there, where a cigarette you're puffing and pulling it away from your mouth..." (female, age 50, cautious condition)</li> </ul>

- “Yea I said that [SLT is “more harmful” than cigarettes] because of some experiences seeing people dipping....They had these big, disgusting, sores in their mouth, so I said health wise, it affects you sooner than smoking. Like it could take 20 years of smoking to get lung cancer...” (female, age 39, cautious condition)
- “...ever since I was a little kid, anyone who chewed that stuff...their gums were messed up... (male, age 40, favorable condition)

**7** Perceptions about snus’ unknown risks

- “..I don’t want to try a product that the people who are selling it to me don’t exactly know what it is.” (female, age 23, cautious condition)
- “In the long run, there will be studies that come out say they’re worse. I know cigarette smoking is terrible for you, but at least we know long term exactly what it does to you. (male, age 24, cautious condition)

**8** *Perceptions of statement, “this product is not a safe alternative to cigarettes”*

- “To me it’s saying, you might as well stick to cigarettes, but either way neither one of them is good.” (female, age 50, cautious condition)
- “Well I mean that statement means to me everything I thought about the product before I read [the article]. I do believe that if I’m going to take the risk of using tobacco products, it’s all going to be the same risk.” (female, age 23, cautious condition)

**9** Perceptions that Swedish study results seemed important or “promising”

- “I feel like that information should be a little bit more publicized....If more people knew if they could get their nicotine buzz, and it doesn’t endanger people around you...I think more people would use the smokeless tobacco.” (male, age 20, favorable condition)
- “I was like wow, that’s pretty cool actually. The first thing that came to mind was that we’re eventually going to be taking a trip [an airplane trip]...maybe I should consider using this... cause it’s not what I thought it was.” (female, age 48, mixed condition)

**10** Surprised and skeptical reactions to Swedish study results

- “I almost don’t believe it. Just because of what I’ve read or even like what I’ve heard or watched videos about people having the smokeless tobacco, there at a higher risk of mouth, or tongue, or jaw, or whatever cancer...I remember my 8th grade year, they made us watch a video about a guy who used chewing tobacco and they made us watch the surgery of him getting his whole jaw taken out and stuff. It was horrifying. ...It just like makes me think these people are really trying hard to get people to buy their product.” (female, age 20, favorable condition)
- “I mean from what I’ve heard, you know all in the past and even from the dentist, is that having the tobacco right in your mouth is a big major cause of oral cancer. They’re almost saying in this article that they don’t cause oral cancer.” (female, age 56, mixed condition)

**11** Perceptions of quotes article sources

- “I don’t know them personally, but I mean if there’s a doctor in front of their name. It definitely makes them more trustworthy.” (male, age 24, cautious condition)
- “The American Cancer Society -that’s a big spokesperson you want in an article, you want their opinion on this product... When you do see credible people it tends to make the article more credible.” (female, age 23, cautious condition)
- “...usually if it’s just one person making a statement, you don’t know...I keep thinking ‘were you paid?’ Do you have money invested in a tobacco field? If it’s a whole bunch of people, then I feel more comfortable.” (female, age 48, mixed condition)