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Smokeless Tobacco Decision-Making Among Rural Adolescent Males in California

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Abstract

Smokeless tobacco (ST) use among US high school males living in rural areas exceeds national levels. Subgroups at heightened risk of ST use have been identified, but less is known regarding ST decision-making within high-risk groups. The study objective was to describe rural adolescent males' perceived ST acceptability, health risks, and social implications and how those perceptions differ between ST users and never-users.

Methods—Semi-structured individual interviews were conducted with a purposeful sample of 55 male students (32 ST ever-users) at three rural California high schools. Interviews were audio recorded and professionally transcribed. Investigators collaboratively developed a codebook based on thematic content and then independently coded transcripts, reconvening frequently to achieve consensus. Coded text was systematically organized into themes following a general inductive approach. ST users and non-users shared multiple ST-related perceptions, including: that ST is a common, normative way of life in rural "country" culture among certain groups; that ST use conveys oral health risks; and that the decision to use (or not to use) is rooted in personal choice. ST users' and never-users' perceptions differed regarding the immediacy, severity, and inevitability of health risks, particularly relative to cigarette smoking. Other differences included perceived parental permissiveness and the expected social benefits of ST use, such as peer acceptance and conveying maturity. Within this population of rural male adolescents, ST users emphasized the social benefits of ST use, while acknowledging but discounting health risks. Differences and similarities in tobacco perceptions among adolescents living in similar environments may inform effective health communication.

Keywords

Smokeless tobacco; Adolescents; Rural health; Health behaviors; Risk perceptions

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CONFICT OF INTEREST:

The authors declare that they have no conflict of interest.

INTRODUCTION

Use of smokeless tobacco (ST), including oral snuff and chewing tobacco, remains a public health problem in the United States. ST is associated with substantial negative health effects, including oral and pancreatic cancer (1), oral mucosal lesions (2), periodontal disease, tooth loss (3), and nicotine dependence (4). Over the past decade, ST use has not declined significantly in the United States, particularly among adolescents (5).

Although adolescent ST use is generally less prevalent than cigarette smoking, certain sub-populations are disproportionately at risk. Nationally, 16% of White high school males report current ST use (5), and use is particularly elevated in rural areas (6–9). Among adolescent males in rural California, ST use is highest among those participating in certain sports or activities, including rodeo, wrestling, baseball, football, and Future Farmers of America (10).

Multiple studies have identified population subgroups at heightened risk of ST use, but less is known about ST-related decision-making within high-risk groups, such as why some youth will become established ST-users while others refrain from ST initiation. In rural Ohio, ST use was seen as deeply rooted in Appalachian culture and enforced through interpersonal factors, social norms, and social networks (11). For adolescents, ST use was viewed as a rite of passage and affirmation of a masculine identity (11). Similarly, a study of male college students in the Midwest found that perceived social benefits of ST use, such as peer camaraderie and shared experiences, outweighed perceived negative health consequences (12). Indeed, perceived health risks have been shown to play a role in ST initiation and maintained use among adolescents. Youth who perceive little or no risk of harm from ST are more likely to be ST-users (10; 13). However, in one study, both ST-users and non-users held diverse views about the health risks of ST relative to cigarettes (14).

While these findings enhance our understanding of ST-related beliefs in susceptible populations, greater geographic diversity across the literature would help to inform broad tobacco policy and educational programs. Furthermore, few published studies examine ST-related decision-making following the recent sharp increase in adolescent use of alternative tobacco products, such as electronic cigarettes. Therefore, the present qualitative study aimed to explore ST perceptions and other factors related to ST initiation and continued use among adolescent male ST-users and never-users in rural California. Specifically, we examined:

1. How do adolescent males perceive the acceptability, health risks, social risks, and potential social benefits of ST use?
2. How do perceptions of acceptability, health risks, social risks, and potential social benefits differ by ST use status?

METHODS

Eligibility and Recruitment

The University of California San Francisco Human Research Protection Program (Institutional Review Board) approved all study procedures. Eligible participants were male high school students (grade 9–12), enrolled in agriculture classes or participating in varsity football, at three rural high schools in Northern California. Schools were purposively chosen based on rural status (15), offering football or agriculture classes (activities shown to be associated with ST use (10)), and school administration support. At class or practice, researchers explained the study, answered questions, and distributed parental consent forms to sign and return (participants age 18-years provided self-consent). Four study researchers (ETC, BWC, MMW, ED) conducted 30–45 minute interviews one week later in private rooms at each school. Individual interviews were conducted, rather than focus groups, to enhance confidentiality, to elicit viewpoints more readily from introverted participants, and to discuss perceived social norms outside a group dynamic. Data were collected between October and December 2015. Participants received a $20 gift-card; each school was given a $150 donation.

Interview Guide

Interviewers defined ST as dip (moist snuff) or chewing tobacco and asked participants about their ST use. Based on their ST experiences, participants were classified into four descriptive categories: never-users (never tried ST), experimenters (tried ST, but never used regularly), former-users (past regular use), and current-users. The interview guide included open-ended questions related to the participant's ST awareness, experiences, future intentions, and perceptions of product appeal, social norms, health risks, and acceptability. Additional questions, including ST use patterns, initiation experiences, and changes in use over time, were asked of current-users, former-users, and experimenters. The interview guide was pilot tested for feasibility and acceptability with 6 adolescent males (4 ST-users and 2 never-users) attending a San Francisco Bay Area high school.

Analysis

Interviews were digitally recorded, transcribed, edited for clarity, and imported into Atlas Ti (Version 7.5.12) for analysis. A thematic analysis was conducted following a general inductive approach (16). Specifically, study investigators (ETC, BWC, ED) read a set of transcripts and coded specific text segments related to study objectives (known as "*open-coding*") (17). Based on their findings, researchers developed an initial codebook. Two investigators (ETC, ED) then independently reviewed an identical subset of transcripts to determine their consistency (*independent parallel-coding*). These researchers then independently coded the remaining transcripts, periodically meeting to review findings and resolved any differences through consensus. As new codes emerged, the codebook was revised and transcripts re-read and re-coded, as needed. Codes most relevant to research objectives were organized into theoretical categories (*axial-coding*). These categories were refined and conceptualized into broad themes, with interconnections between themes supported by the data. Similarities and differences across ST user groups (e.g. ST-users vs. never-users) were identified.

RESULTS

Among the 55 participants, the mean age was 16.5 years (SD: 0.8). Most were White (69%), non-Hispanic/Latino (65%), and in the 11th or 12th grade (41% and 47%, respectively). A majority of participants self-reported having ever used ST (58%). Among ST ever-users, 56% were current-users, 31% were experimenters, and 13% were formers-users (Table 1). For clarity, following each quotation are participants' identification number (P1 through P55), ST use status (*never-user, experimenter, former-user, and current-user*), and age (years).

"Country" Culture

Participants overwhelmingly related ST use with a rural or country way of life. Many participants explained that ST use was part of the tradition and culture of their community. One participant stated, "Around here….these small towns are like little hick towns, like little country towns you'd call it I guess. And that's stuff like hicks do…they grew up around [ST]" (P40, *current-user*, 17). Among all user groups, most participants identified a "typical" ST-user as someone who works in agriculture or enjoys recreational outdoor activities, such as rodeo, hunting, and fishing. Participants described people who use ST as "ag people" (agriculture), "cowboys" or "country guys," suggesting a certain "type" of person who uses ST. Many current-users readily identified with the archetypal persona that they associated with ST use. One participant stated, "The group I hang out with, like boots, blue jeans… they're like cowboys, like country kids – [ST] it's really accepted. It's just like a thing that happens. No one even takes a second look at it" (P47, *current-user*, 17).

The idea that ST use is common and widespread was shared by never-users, with one stating, "He's just using tobacco. It's a normal day society thing. A lot of people use tobacco" (P16, *never-user*, 17). ST use was perceived to be so common among certain groups that it invoked little notice or inquiry, with one participant stating, "We don't think much about it….It's kind of an everyday thing" (P52, *never-user*, 17).

Family Influences

ST use by older male family members reinforced many participants' view of ST use as embedded in rural culture. Some described their first ST experimentation as similar to a rite of passage and taking place in the presence of family members, often older cousins or brothers, but occasionally fathers or uncles. One participant described inter-generational ST use with an air of inevitability, stating, "You just do it, and there's no way…I mean, your dad chewed, your grandpa chewed, great-uncles, and so on….So it's like in your blood" (P23, *current-user*, 16). Family ST use contributed to familiarity and acceptance, reducing barriers to ST experimentation. Describing why he first tried, one participant reported, "My father does it, and I've seen it at school. So I was like, 'All right'" (P8, *former-user*, 16). On the other hand, some never- and former-users cited unwelcome health outcomes experienced by ST-using family members as deterrents to starting or continuing ST use themselves.

Strong anti-tobacco expectations from parents were among never-users' most frequently cited motivations for tobacco avoidance. Never-users and experimenters generally described

parental positions regarding ST as unequivocal and unquestioned, stating: “I know my parents wouldn't want me to [use ST], so I don't. I'm not going to do it” (P27, *experimenter*, 16) and "my mom would probably kill me" (P39, *experimenter*, 17). Parents' ST attitudes extended to other tobacco, alcohol, and illicit substances, with never-users often viewing household consequences as equally severe across substances. In contrast, many ST-users described their parents' attitudes toward their use as disapproving at surface value, yet simultaneously permissive or reluctantly accepting. Some adolescent ST-users explained parental acceptance as aversion to hypocrisy by their ST-using fathers. Other current-users viewed parental acceptance as recognition of their growing autonomy and ability to make independent choices. Said one, "[My parents] think [ST is] gross, but they also think that I'm old enough to make my own decisions” (P47, *current-user*, 17).

Maturity and Independent Choice

For many participants, ST use not only signaled maturity via emulation of older males' activities, but also expressed newly earned independence. While some current-users noted a societal obligation to prevent ST initiation by children, there was consensus that they and their peers had reached an age of independent decision-making. For some, the decision to chew in light of known health risks marked reaching an age that required less protection from potential dangers. One participant explained, “I'm doing it at my own risk, and it's something I decided to do" (P31, *current-user*, 18).

Both ST-users and never-users readily acknowledged the freedom of their peers to make independent decisions about tobacco, describing others' ST use as "their choice" or "their decision," and expressing hesitancy to criticize or impede peers' autonomy, even if disproving of their ST use. The same freedom to decide was seen as extending to non-use, with most never-users, including those who had faced opportunities to try ST, expressing confidence in their ability to say no. Many noted a lack of peer-pressure and believed that their friends respected their decision not to use. Said one, “they accepted that I didn't want to do it” (P3, *never-user*, 15).

Perceived Benefits of ST Use

Peer Acceptance—Despite outwardly acknowledging individuals' freedom in decision-making, social acceptance frequently motivated ST trial and continued use. One participant said, “Maybe what made me want to try was my friends were doing it” (P54, *current-user*, age not reported). ST-users agreed that peers enhanced their curiosity and willingness to try ST. One stated, “One of my really good friends does [ST], so I wanted to see how it is, what's so good about it. So I asked him if I could try some, so I did” (P31, *current-user*, 18). Some participants described aspirations to join an identified peer group, stating, “[ST is] what all the old cowboys do, so I was trying to fit in with them” (P47, *current-user*, 17). Many never-users agreed that desires to “look cool,” “fit in,” or project an older identity motivated ST use among other young males, a notion never-users frequently rejected: “[ST-users] feel it makes them seem cooler and act more mature, when it really is not making them more mature or cooler at all” (P2, *never-user*, 14).

Relaxation and Focus—Many current- and former-users noted that ST could make them feel more “relaxed” and “relieve stress.” One former-user stated, “When you have a bad day… [ST] kind of calms you down, like when you're mad.” (P43, *former-user*, 17). Never-users also ascribed a relaxing effect to ST, noting that others depend on ST to “calm their nerves” and go about daily tasks. One participant stated, “I know people who show horses, and they get super nervous before they run….they're just chewing like crazy because they're so nervous. That's the only thing that can calm them down” (P9, *never-user*, 17). ST-users reported that ST helped them focus while working, playing sports, or doing schoolwork. Some users expressed difficulty concentrating or working without ST: “It just gets my mind straight. Helps me focus” (P49, *current-user*, 17).

Perceived Risks of ST Use

Health and Addiction Risks—Adolescents were highly aware of health and addiction risks associated with ST. When asked what (if anything) are the negatives about using ST, both ST-users and never-users mentioned mouth cancer, tooth loss, and gum disease. Oral cancer or disfiguring jaw removal was a dominant concern. One current-user stated, “The thing I'm worried about is getting cancer. That's like the big thing with chewing, cancer” (P47, *current-user*, 17). A never-user explained that he decided not to use ST because, “I don't want to lose my jaw” (P16, *never-user*, 17). One experimenter summarized oral health consequences: “Your teeth rot away. Makes your breath smell bad. Makes your teeth turn different colors. Gums, you lose your gums. Teeth start to fall out” (P46, *experimenter*, 17).

All user groups acknowledged ST addiction risks. However, some current-users expressed little doubt in their ability to quit, viewing addiction as unlikely or only associated with a threshold of ST use intensity or duration that they did not plan to reach. Alternatively, never-users or experimenters were more wary of ST addiction, citing loss of control over their behavior as a key reason for avoidance. Noting personal experiences with friends and family, one participant stated, “I see what happens to other people when they [use ST]. How they become addicted” (P52, *never-user*, 17).

Risks Relative to Cigarettes—Despite near-universal admission that ST is not harmless, many ST-users framed ST use as an alternative to cigarette smoking with a greatly reduced risk of systemic disease. One current-user stated, “Cigarettes, it goes into your body and through your lungs and into everything like that….chewing tobacco just stays in my mouth” (P20, *current-user*, 16). Localization of health effects to the oral cavity was a commonly presented advantage over cigarettes, for example: “Cigarettes, you have lung damage. Makes your skin all wrinkly. Chew, just your gums and teeth. Your lungs are fine still” (P21, *former-user*, 16). Reducing health risks to others by avoiding second-hand smoke was also frequently mentioned. Alternatively, many never-users perceived all tobacco to have equal or similar risks, which weighed heavily in their decision not to use ST. One never-user stated, “people think cigarettes are more dangerous than ST, but they're both equally dangerous” (P22, *never-user*, 17).

Exceptionalism and Avoidable Risk—Many ST-users viewed health risks as distant in time and avoidable, for example, by quitting before health effects occur. Some ST-users

described health consequences experienced by relatives or presented in anti-tobacco media, but took their own present lack of noticeable health changes as evidence that poor outcomes were unlikely. One current-user stated, “I haven't had any health problems with [ST] since I have been chewing….I know that if I did have a health problem, that would probably motivate me to quit” (P20, *current-user*, 16). Some ST-users offered strategies to mitigate ST-related health risks, such as limiting use, practicing good oral hygiene, or not swallowing tobacco juices. One participant stated, “I know it doesn't happen instantly. I know it takes time, but I just -- that's why I don't do it all the time” (P32, *experimenter*, 17).

However, some participants viewed ST-related risks with greater certainty and urgency. One never-user noted, “Even a small dose of [ST] would still do some damage, even if it's barely noticeable” (P29, *never-user*, 17). Another participant was motivated to quit ST after observing short-term health changes, “In my mind it was like you had to chew it for 30 years for it to cause cancer. But once I figured out that I could get ulcers and stuff, because a couple of my friends got them, that's when I started going down and I started to stop” (P8, *former-user*, 16).

DISCUSSION

In this population of rural adolescent males participating in school activities associated with ST use, several similarities and differences in perceptions emerged that may influence decisions to initiate or continue ST use. Overall, both ST-users and never-users generally viewed ST as common, acceptable, and consistent with the culture of their communities. ST use was perceived by most as a personal choice, and for many, exercising that choice served as a sign of autonomy and independence. Nearly all were aware of health and addiction risks associated with ST.

Despite recognizing health consequences, the perceived severity and probability of associated health risks differed across user groups. Whereas never-users often viewed ST health risks as immediate and equivalent to other tobacco, most ST-users perceived risks as less severe and contingent on long-term use. Similarly, adolescent and adult male ST-users in Ohio expressed awareness of potential ST health consequences, but such consequences were viewed as personally unlikely given their intended short-term use of the product (12).

Current-users frequently positioned ST health risks in comparison to cigarette smoking. Similar perceptions of reduced risk relative to cigarettes have been reported in other rural populations (14; 18), and differences in perceived harm between tobacco products by youth has been associated with tobacco use nationally (19). While ST use does not involve inhalation of toxic combustion products, objectively quantifying harm relative to cigarettes is difficult. Biomarkers of NNK (a tobacco specific carcinogen) have been found at higher levels in adult ST-users than adult smokers (20; 21). Furthermore, toxicant exposure levels vary greatly based on ST brand and type (22; 23).

For ST-users, role modeling by male peers and family members contributed to curiosity, familiarity, and willingness to try ST. Similarly, male college students primarily related ST use to male social bonding, with most participants reporting having initiated ST use to win

approval or emulate admired males (12). In the present study, ST was often viewed as a sign of maturity and independence, a view sometimes reinforcement by perceived permissiveness from parents. Alternatively, participants with little interest in using ST frequently cited strong parental tobacco disapproval. A study of adolescent ST-users and their fathers found that while fathers often established family rules about ST use, their actions could signal unspoken acceptance (24). While both ST-users and never-users often invoked personal choice and independent decision-making to explain ST behaviors, an underlying desire to conform to male social norms and peer and familial expectations appeared.

Multiple participants invoked perceived physiological benefits of ST, including relaxation and focus. Some participants reported stressful situations in which they “needed” ST to calm their nerves or complete daily tasks. However, few participants discussed these symptoms in the context of addiction. It is plausible that such experiences were indicative of developing nicotine dependence, as the sensation of relaxation upon tobacco use may represent relief from symptoms of nicotine withdrawal (25). Signs of nicotine withdrawal include mood changes, craving for tobacco, confusion, depression-dejection, and poor concentration (26; 27). It is also plausible that participant’s perceptions of ST use as a form of “stress relief” or “relaxation” may actually be a coping strategy for dealing with adverse personal experiences. A recent study among a nationally representative sample of adults found that certain adverse childhood experiences were associated with increased odds for current ST use (28). Whether participants were dealing with nicotine withdrawal, stress, or coping with adverse childhood experiences , beliefs that ST, and nicotine generally, offers positive physiological effects was evident among ST-users and never-users. Such perceptions may play an important role in adolescents' willingness to try and use nicotine products.

Implications

Several implications are suggested for tobacco regulation and for health educators and health professionals. Nearly all participants readily expressed awareness of ST associated health risks, yet the tendency to cast those risks in relation to the health risks of smoking was a theme strongly associated with ST use. Therefore, regulatory or public-education communications intending to convey actual ST risks to the public should recognize that messages anchoring ST risk relative to cigarettes may reinforce a perception tied to adolescent use. How to effectively convey comparative risks is a key topic for further research. Additionally, continued ST use despite awareness of health consequences suggests that anti-tobacco messages focused only on health may not be sufficient to prevent ST use among certain high-risk groups. Finally, tobacco control efforts in California have a long history of decreasing and “de-normalizing” cigarette use (29). However, present findings suggest that cigarette de-normalization may not extend to all tobacco. Control measures specific to ST may be necessary to reduce adolescent initiation in high-risk populations. In April 2016, the FDA launched “The Real Cost” Smokeless Tobacco Prevention Campaign, targeting rural teens in certain US media markets (30). Evaluation of the campaign’s effectiveness to change adolescents' ST-related attitudes, beliefs, and intentions is planned.

Limitations

Some study limitations warrant consideration. The study sample was purposefully chosen and, despite consistency with other published findings, results may not reflect the opinions of all male adolescents or rural communities. As with any qualitative analysis, synthesis of participant responses required subjective interpretation, which could have been influenced by researchers' prior expectations. Efforts were taken to minimize such biases, including independent open-coding and independent parallel-coding, with researchers reconvening frequently to keep emerging theories grounded in the data.

Conclusions

Within this population, smokeless tobacco was viewed as intertwined with a rural culture and a desire to convey mature, independent decision-making. While rural male adolescents shared many perceptions regarding smokeless tobacco, ST-users and never-users differed in how they viewed ST-related social rewards and parental expectations. In addition to family and peer influences, a major difference to emerge between ST-users and never-users was the extent to which ST related health risks were perceived to differ from those of other tobacco products. These perceptions and potential misconceptions offer insight for effective health communication in the context of rising popularity of non-cigarette tobacco products. Effective communication of actual ST related harm in a valid, trustworthy way could assist adolescents to make informed decisions regarding tobacco use.

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Table 1

Participant characteristics (N=55)

Characteristic	% (n)
Age in years, $M \pm SD$[A]	16.5 ± 0.8
Not Reported	5.4 (3)
Grade in School	
9th	3.6 (2)
10th	1.8 (1)
11th	41.8 (23)
12th	47.3 (26)
Not Reported	5.4 (3)
Race	
White	69.1 (38)
American Indian or Alaskan Native	3.6 (2)
Other	12.7 (7)
Not Reported	14.5 (8)
Ethnicity	
Non-Hispanic/Latino	65.5 (36)
Hispanic/Latino	27.3 (15)
Not Reported	7.3 (4)
ST Use Status	
Current-user	32.7 (18)
Former-user	7.2 (4)
Experimenter	18.2 (10)
Never-user	41.8 (23)

[A]Mean (M) and Standard deviation (SD)