

Title: Attitudes and Behaviors of Smokeless Tobacco Use and its Cessation Practices Among Dental Practitioners and the South Texas Community

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BACKGROUND AND SIGNIFICANCE

Smokeless tobacco (ST) is under-studied compared to all other tobacco products.¹ Disparity related to ST use, both globally and within the United States (US), remains a significant public health threat.¹ More than 2 in every 100 (2.4%) adults aged 18 or older reported current use of ST products in the US. This represents 5.9 million adults.² Smokeless tobacco use is a predominant behavior in white males in the US, yet recent data show a high prevalence amongst immigrant populations (Indian, Bangladeshi, Pakistani, Afghani, Vietnamese, Mexican-Hispanics, and Burmese).³ For example, a recent study showed the prevalence of cultural ST use was 13% among California's Asian Indians.¹ A study of 602 participants in New York City showed that 28.2% of South Asian individuals reported ever using ST, and 12.9% reported current use of ST.⁴

The paucity of research on ST use behaviors in immigrant populations exists despite high prevalence and a distinct cultural and traditional belief connected to its use. Trends show the explosive growth of these populations is relatively recent and primarily attributed to immigration.⁵ In San Antonio, Texas, 278,700 immigrants compose 12% of cities total population.⁵ In 2019, the City of San Antonio responded to an influx of immigrants and created the Migrant Resource Center, which welcomed 32,343 immigrants with medical and dental needs.⁶ Smokeless tobacco use is a significant behavior among certain South Asians and Southeast Asian communities. In the US, ST generally refers to moist snuff or chewing tobacco. However, the term "smokeless tobacco" is broad and refers to over 30 different types of products, including those indigenous ST products that are most frequently used in South Asia, including but not limited to paan, paan masala, zarda, betel quid with tobacco, and gutka.³

Health effects linked to ST use include oral cancer, pancreatic cancer, oral diseases such as periodontitis, precancerous lesions, risk factors for cardiovascular diseases, diabetes, reproductive health effects, and overall mortality.⁷ Moreover, there is conclusive evidence that betel quid chewed with and without tobacco, tobacco with lime, and other tobacco mixtures increase the risk of oral cancer.⁷ In addition, a recent study conducted in San Antonio found that most (80%) Southeast Asian and South Asian participants recognized and knew where to buy arcana nut betel quid (ANBQ). The study also demonstrates that ANBQ is widely available in San Antonio, Texas.⁸

Flavored ST products are increasing in popularity among youth and young adults. The prevalence of past 30-day ST use was 3.1% among high schoolers and 1.2% among middle school students.⁹ However, in 2019, Truth Initiative observed a concerning number of young people reporting the use of oral nicotine products. For example, Truth Initiative tracking shows that 13% of 15–24-year-olds surveyed in Fall 2020 were past 30-day users of pouches. Oral nicotine pouches and lozenges, a new tobacco product category that includes brands such as Zyn, On! and Velo that come in many flavors proven to appeal to youth, is growing in popularity. According to Nielsen sales data reported in an industry news article, Zyn nicotine pouch dollar sales in convenience stores increased 470% in the first half of 2020.⁹ A study of the high schoolers (majority Mexican Hispanic population) evaluated the risk factors and signs for oral cancer. In addition, it examined their prevalence of ST use. Modeling with multivariate logistic regression revealed that among current cigarette smokers, regular alcohol use was the strongest associated risk [OR=15.7; 95% CI=10.9-22.5] followed by use of ST [OR=2.4; 95% CI=1.4 4.1].¹⁰

The concerning use of ST is not limited solely to the varying cultures and age groups. It includes military personnel. Study shows that the prevalence of ST use in the United States Air Force (USAF) exceeds civilian use rates.¹¹ Military personnel are twice as likely as civilians to use ST. In 2014, 3.3% of the US population reported current ST use, whereas 14.5% of active-duty USAF and 13.1% of Navy personnel used ST.¹² A cross-sectional survey of USAF technical training school personnel at Joint Base San Antonio-Lackland and Fort Sam Houston was conducted ($N = 14,810$). The results expressed that 16% of Airmen had ever and 10% regularly used ST.¹³

San Antonio has a multicultural population due to diverse racial/ethnic groups from around the world and would benefit from a study to understand the attitudes and behaviors of the diverse population, including immigrants, young adults, and other community members (military, various sports, and occupations), regarding ST practices. Conducting a needs assessment is an important first step in developing an ST control and prevention program. It can increase understanding of how ST is used in the community and target limited

resources. Needs assessments can also highlight cultural considerations for ST cessation and prevention programs, - such as the difference between commercial (occupational) and cultural/traditional uses of ST in communities. For example, rural communities in the US may have deep cultural ties to tobacco use and production. Some activities linked to rural Texas cultures, such as rodeos, hunting, and mining, are associated with tobacco sponsorship or disproportionately high levels of tobacco use. On the other hand, certain traditions, cultural beliefs, and ceremonious events in South Asian and Southeast Asians communities are related to ST use. In addition, among young adults, new and socially appealing flavored smokeless products are gaining popularity. Hence, it is important to understand the problem to develop tailored ST prevention and cessation materials that specifically address the cultural implications of ST use.

It is also important to assess the attitudes and behaviors of dental practitioners who treat these communities at large. As primary healthcare providers, dental professionals are uniquely positioned to advocate for the cessation of ST products.¹⁴ In addition, the dental office is an excellent place to introduce cessation practice and track improvements in patients' oral health.¹⁵ Unfortunately, there is a lack of data showing the knowledge and awareness of dental practitioners about ST use, especially among immigrant populations and young adults.

The purpose of this proposed research is to conduct a needs assessment study to investigate the attitudes and behaviors of smokeless tobacco use and its cessation practices in the South Texas Oral Health Network (STOHN), a dental practice-based research network and the south Texas community.

STUDY AIMS

The proposed research has the following aims.

Aims: 1: Conduct surveys and key informant Interviews/focus groups with the targeted south Texas community (immigrant populations, young adults, and other populations [military & sports]) to investigate the attitudes and behavior towards smokeless tobacco practices. We will conduct a survey with 80 community members and key informant interviews/focus groups with 20 community members. The survey will be done using REDCap, and the key informant interviews/focus groups will be held in person or via zoom. Needs assessments of the community can help to answer the following questions, among many others:

1. How many people in the community are using ST?
2. Who is using ST in the community? Are there any specific populations that have a disproportionately high percentage of use?
3. What kind of ST is being used in the community? (chewing, snuff, dip, indigenous ST products)
4. If young adults are using ST, how are they accessing it?
5. What organizations focus on ST prevention and cessation in the community and may be potential partners?
6. What are local ST policies?
7. Are there any national or state data sources on ST in the community?

Please see **(Table 1)** the guidance plan below that will be used to approach community needs assessment.

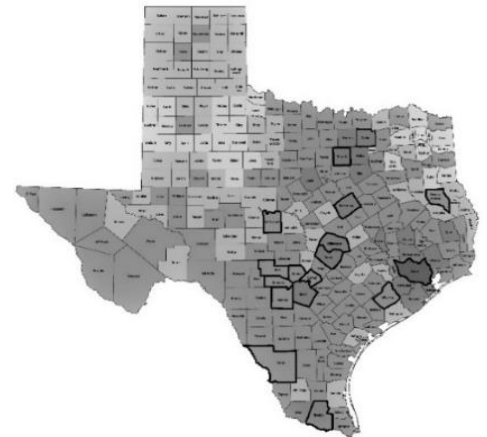
Table 1: Guidance for Needs Assessment	Focus Areas/Questions
Describe the makeup of the community (e.g., immigrant populations) to provide a context within which to collect ST use data	<ol style="list-style-type: none"> a. Describe the types of information that best describes the community b. Describe the sources of information c. Describe the cultural/traditional beliefs and problems you heard about ST use
Does ST use issues matter to people in the community?	<ol style="list-style-type: none"> a. How important are these issues to the community (e.g., perceived importance (cultural/traditional beliefs/stress management) vs. consequences)? b. What methods will the study team use to listen to the community (e.g., key informant interviews, concerns surveys, focus groups)
Describe what matters to key collaborators (UTHSCSA Investigators, STOHN Dental Practitioners, and El Bari Community Center)	<ol style="list-style-type: none"> a. What do collaborators want to know about the situation (e.g., who is affected, how many, what factors contribute to the problem)? b. Prioritized populations and subgroups that intend to benefit from the effort c. What methods the study team will use to gather information (e.g., surveys, interviews)
Describe the evidence indicating whether the ST practices should be a priority issue	<ol style="list-style-type: none"> a. The community-level indicators (e.g., rate of oral cancers and oral health issues, e.g., periodontal disease, etc.) related to the issue b. How frequently the ST use occurs (e.g., number of adults and young adults reporting ST to use in the past 30 days)? c. How many people are affected by ST use and the severity of its effects?

	<p>d. How feasible is it to address the issue?</p> <p>e. Possible impact and consequences of addressing the ST practices</p>
Describe the barriers and resources for addressing the ST practices	<p>a. Barriers or resistance to solving ST use (e.g., denial or discounting of the problem or cultural/traditional) and how they can be minimized (e.g., reframing the issue or language interpreters)</p> <p>b. What resources and assets are available (community champions), and how can the study investigators tap into those resources?</p> <p>c. Cultural and traditional context or situation that might make it easier or more challenging to address this issue</p>

Aim 2: Conduct surveys with South Texas Dental practitioners from STOHN and other dental organizations to investigate the attitudes and behaviors of smokeless tobacco and its cessation practices. We will survey 100 dental practitioners. The survey will be done using REDCap. Dental practitioners' needs assessments can help answer the following questions, assess ST prevalence in their patient population, and educate them regarding ST.

1. Do you ask your patients about any ST use?
2. Within the last 30 days, what percentage of your patients reported use of ST?
3. Do you believe they are aware of the oral health effects of your patients who use ST?
4. Of the types of ST, which ones are you most aware of?
5. Would you be comfortable providing smokeless cessation in your practice?
6. Would you be interested in a study about ST?

Figure 1 STOHN Counties in Texas



WORK PROPOSED

Approach: This research will employ a needs assessment strategy that includes conducting surveys and key informant interviews/focus groups targeting community members 18-year-olds and older ST users presenting to dental practices in the STOHN) or at community organizations and events. The needs assessment will also include dental practitioners' members of STOHN other dental organizations such as Texas Dental Associations (TDA), San Antonio District Dental Society (SADDS), and Hispanic Dental Society. The STOHN study coordinators will utilize the STOHN's established communication methods to inform dental practitioners about the study opportunity. The priority will be to select dental practitioners based on geographic region (Figure 1). The El Bari Community Health Center collaborators and its partners will engage and recruit community members. It is anticipated that enrollment of dental practitioners and community members may take up to 6 months. We will recruit 100 dental practitioners and 100 community members. Participating practitioners will be compensated \$20 for completing a survey, a total of \$2,000. Participating patients will receive \$20 for completing a study or interview/focus group, a total of \$2,000.

Information On Collaborating Partners:

The South Texas Oral Health Network

(<http://iims.uthscsa.edu/STOHN/home>) is a UT Health San Antonio-based program supported by the Clinical and Translational Science Award (CTSA), with 202 dentists, dental hygienists, and other specialists in 45 Texas counties (Figure 1) across the state STOHN dental practitioners see approximately 516,000 patients annually. The patient population is diverse, with the largest racial and ethnic groups including non-Hispanic whites (29%) and Hispanics (25%) (see Table 2).

El Bari Community Health Center (<https://elbarichc.org>) consists of dedicated professionals who have come together to volunteer their time and establish the El Bari Community Health Center. The founding team's vision is that the El Bari Center will provide a charity clinic for the medically underserved of San Antonio at a time when many residents of our city remain in need. Their mission is to provide care for patients who lack health insurance and cannot afford medical care. This includes those whose income falls under 150% of the poverty level and are not eligible for Medicare, Medicaid, or Carelink. Their

Table 2: South Texas Demographics	
Dental Practitioners	(N=213)
Title	
Dentist	169
Dental Hygienist	30
Other Specialist	6
Non-practicing	8
Sex	
Male	94
Female	118
Dental Patients (N≈516,000)	
Total 18-29 (N≈103,200)	
Race (%)	
Non-Hispanic white	36%
Hispanic	41%
African American	12%
Other	11%
Sex (%)	
Male	40%
Female	60%
Insurance Status (%)	
Private insurance	
Medicare/Medicaid	
No insurance/Fee	

strategic location and the staff's experience also allow us to provide culturally competent care to anyone who has made San Antonio their home (immigrant populations).

Data Analysis: For Aims 1 and 2, we will utilize descriptive statistics to describe knowledge, attitudes, and behaviors on the surveys. Given the larger sample size (n=100 in each group), we will also conduct logistic regression analyses to examine the association between ST practices and the need for cessation programs, controlling for patient characteristics such as age, gender, race/ethnicity, and ST behaviors (frequency, dependence, quit attempts). In addition, the qualitative interview/focus group data will be analyzed using the sequential exploratory design is grounded in a 10-Step Framework for patient engagement.¹⁶ The guide will be developed to capture foundational information necessary to assess community needs and resources outlined in Table 2. With participants' consent, discussions will also be audio-recorded and transcribed to supplement session notes. Using the notes and audio recordings, the interviewer will develop reports for each interview/focus group, including reflections on the activity (e.g., barriers and facilitators to data collection, thoughts on emergent themes). Data collection and analysis will occur concurrently as ongoing findings may affect what types of data are collected and identify which themes have approached saturation and those that require further clarification. We will follow a modified 4-step grounded theory approach for data analysis: Feedback on feasibility, acceptability, and workflow within practices will be coded for themes to identify strengths/weaknesses of proposed processes.¹⁷⁻²⁰ Two qualitative researchers from the study team will independently review and code each transcript to identify relevant themes inductively (steps 1 and 2). Themes will be adapted, added, and dropped until both coders agree on the final themes (step 3). A similar process will be undertaken to deductively code quotes/units (e.g., words, phrases, sentences, or sections) to themes previously identified and score each quote/unit in terms of relevance to the matched theme. Coding will again be performed independently, followed by a discussion of the ranked scores until a consensus is reached (step 4). Exemplary quotes that best illustrate an identified theme will be chosen for each theme. The frequency of codes in each theme will also be recorded. The coding process will be facilitated using NVivo 12.0 software.

Significance, Innovation, and Impact of the Proposed Study: This study is highly significant. It adds current and timely information on ST use and practices among communities, specifically immigrant populations, and evaluates dental practitioners' attitudes and behavior regarding ST use and cessation practices. The collaboration and partnership between a dental practice-based research network (dental practitioners) and a community health center are innovative and help close the smokeless tobacco research gap. In addition, current study findings will yield ST information and cessation strategies to disseminate throughout STOHN, the National Dental PBRN, and other Texas dental practitioners to combat the burgeoning ST use among communities across Texas and nationally.

Study Feasibility: STOHN has successfully developed, implemented, and disseminated study results for 14 research studies. STOHN has been highly successful in meeting recruitment goals and implementing impactful studies. However, suppose recruitment from the STOHN network fails to meet our targeted sample size (n=100 practitioners). In that case, STOHN has the necessary infrastructure, staff, and technical support to recruit from a pool of over 15,000 Texas dental practitioners. In addition, STOHN has an excellent relationship with the El Bari Community Health Center and has the reach in the community to recruit community members (n=100). Surveys with dental practitioners will be conducted online and in brief, allowing for flexibility concerning timing and location of completion and reducing the burden on dental practitioners and study coordinators. The key informant interviews/focus group with community members will be conducted online and in-person. Practitioners and community members will be recruited on a rolling basis to minimize staff time burden and make participant recruitment and retention more manageable and feasible.

Dissemination: Data from the study will inform the study team in dissemination planning. Interested members of the STOHN PBRN will be asked to serve as advisory panel members who, in combination with the study team, will guide the dissemination and implementation of the dental education program. In addition to planned dissemination throughout the STOHN PBRN and the National Dental PBRN membership – which has access to 6,000 dental practitioners nationally – a key mission of the advisory group will be to advise on mechanisms for the dissemination of the intervention and collaboration. Dissemination of study findings will occur through peer-reviewed publications and conference presentations.

Future Direction: In summary, this study will provide pilot needs assessment data on ST use and cessation practices. The results will lead to the development of innovation cessation community targeted programs to identify changes in knowledge and intention to quit ST. ***We anticipate that the information generated from this study will provide direction for future national-level research by informing the submission of an R01 application <https://grants.nih.gov/grants/guide/pa-files/par-18-847.html> to the National Institute of Dental and Craniofacial.***