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ORIGINAL PAPER

One-Time Education Sessions to Help American Indian Smokeless Tobacco Users Quit

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Abstract

American Indian (AI) smokeless tobacco use rates are the highest of all racial/ethnic groups within the United States. Despite this, no effective cessation program currently exists that acknowledges the cultural significance of tobacco among many American Indian tribal nations. Participants were smokeless tobacco users, over 18 years of age, and were recruited through community partners. We modified the All Nations Snuff Out Smokeless Tobacco group-based program to be delivered as a one-time education session intervention. This was delivered to 80 participants and follow-up data was collected by self-report at 6-months. The mean age of participants was 35 and most were male (70%). A majority (69%) grew up on a AI reservation; the mean age of first smokeless tobacco use was 16 years of age. Of program completers reached for 6-month post baseline, 46% reported 0 days of SLT use; 13.5% of participants reduced; while 36% reported continued daily use. In intention to treat analysis those lost to follow-up are considered current users, the quit rate was 12.5% and among those who were still using, 4.0% reduced their use. In this study, a one-time education session intervention was effective for those who prefer an individual based approach to quitting SLT use. Follow up strategies to increase participant retention at 6-months should be explored.

Keywords American Indians · Smokeless tobacco cessation · Cultural tailoring · Community-based participatory research

Introduction

American Indians have the highest prevalence of smokeless tobacco use in the U.S. at 8.4% compared to non-Hispanic Whites (4.5%), and more than triple that of other racial/ethnic groups (1.4% for non-Hispanic Blacks and 1.3% for Hispanics) [1]. Smokeless tobacco use has risen in some American Indian communities where there has traditionally been a lower prevalence of use over the past 30 years [2, 3]. Our previous research reports smokeless tobacco prevalence as high as 10% among American Indian adults and 19% among American Indian tribal college students [4–8]. A high prevalence of smokeless tobacco use is also found among American Indian youth. The National Youth Tobacco Survey reports 16% of American Indians in grades 6 through 12 use smokeless tobacco [9].

The current literature does not report a natural quit rate among American Indian smokeless tobacco users. However, American Indians have more difficulty quitting cigarette smoking than other racial or ethnic groups, and are less likely to pursue quit attempts and the least likely to maintain

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long-term abstinence [10]. The quit ratio for American Indians who have ever smoked is 41% compared to 51% for non-Hispanic Whites [11]; only 5% of American Indians who attempt to quit are able to successfully remain tobacco free for 3 months or more [11]. Past year quit attempts among American Indian smokers are also lower (52%) than for non-Hispanic Whites (53%), non-Hispanic Blacks (63%), Hispanics (56%), and Asians (69.4%) [10]. Based on our previous research, it is likely that American Indian smokeless tobacco users face very similar difficulties in quitting smokeless tobacco use [5, 7, 8, 12, 13].

Cultural factors are also an important consideration for American Indian smokeless tobacco users. The tobacco plant has a vital role in the traditional belief systems of many American Indian tribes throughout the U.S. [7, 14]. The spiritual significance of tobacco is an important part of prayer and ceremonial activities [7, 14]. This cultural significance requires culturally tailored cessation interventions and education surrounding any recreational use of tobacco [15]. The impact of traditional use on cessation among American Indians is not yet fully understood, though our previous research shows that American Indian smokers have had greater success at quitting through culturally tailored cessation programming [4] and are more likely to remain quit when they use the plant for spiritual purposes without smoking it [7].

Despite high rates of recreational use and associated health problems and the unique relationship between American Indians and tobacco, a scarcity of research on smokeless tobacco cessation has been reported in the literature. Few tobacco cessation programs targeted for American Indians have been developed and a majority of this work has been in smoking cessation [16–20]. Our own program, All Nations Breath of Life (ANBL), is a culturally tailored smoking cessation program for American Indians. The efficacy trial conducted on reservations produced a 21% cessation rate compared to 12% in a non-tailored Current Best Practices comparison arm [4]. The program produced a similar cessation rate in a single-arm study in an urban setting (22.1% cessation rate) [6]. The ANBL program includes group based behavioral support sessions led by American Indian community facilitators, weekly telephone calls, free pharmacotherapy, culturally tailored curriculum, and incentives. Though ANBL is efficacious for American Indian smokers, it is unlikely that the program would work for smokeless tobacco users for a variety of reasons. Smokeless tobacco has a higher nicotine content than cigarettes (3.6–4.5 mg for smokeless tobacco vs. 1.8 mg in cigarettes). Nicotine is absorbed more quickly in cigarettes (7 s vs. up to 30 min), but ceases after the cigarette is extinguished; absorption can last for up to an hour after smokeless tobacco use [21].

To our knowledge, there are no culturally tailored smokeless tobacco cessation programs that have demonstrated efficacy or effectiveness among American Indians. An intervention tested among Alaska Native pregnant women to address both smokeless tobacco use and smoking found success with retention (83%), but not abstinence (0% biochemically verified abstinence rate) [22]. The "Enough Snuff" self-help program promotes an American Indian tailored version, "Enough Snuff: A guide to quitting smokeless tobacco for American Indians" but no results or information on effectiveness is available [23]. To address this need among American Indian smokeless tobacco users, we took the ANBL smoking cessation program and modified it to create the All Nations Snuff Out Smokeless (ANSOS) culturally tailored smokeless tobacco cessation program. During our pilot test of ANSOS, we discovered the need for a condensed version of the program that could be delivered to participants through a one-time education session. Here, we report the results of that education program, All Nations Snuff Out Smokeless-Short (ANSOS-S).

Methods

Study Design and Participation

The ANSOS-S one-time education cessation intervention is a condensed version of the ANSOS group-based program. The ANSOS program was developed through community-based participatory research methods over several years (described elsewhere) [24]. Participant and facilitator feedback after multiple iterations of the ANSOS group-based pilot program identified the need for a more individualized approach to SLT cessation. Participants who completed the program and participants who dropped out indicated a desire for a more individualized and shorter program for a variety of reasons, including different stages of readiness to quit, an inability to commit to a longer program, access issues to the program in their location, transportation, etc. To address this need, modifications were made to the ANSOS program to make it a one-time individual education session focused on what facilitators determined was the most important information (see Table 1 for information provided in ANSOS-S education sessions). The primary component is an abbreviated version of the educational curriculum delivered in one session, with topics including: preparing to quit, why American Indians use smokeless tobacco, coping with withdrawal, pharmacotherapy, traditional tobacco, stress reduction, and weight management during cessation. All study procedures were approved by the University of Kansas Medical Center Human Subjects Monitoring Committee, IRBs from participating tribal colleges, and tribal councils from participating tribes.

Table 1 Information provided in education sessions

Baseline survey	Demographics
	Chewing tobacco use
	Traditional tobacco use
	Smoking history
	Tobacco marketing exposure
	Mental health
	Diet and physical activity
	Identity and discrimination
Educational curriculum topics covered	Nicotine replacement therapy
	Preparing to quit
	Why do people chew?
	Chew and native people
	Coping with withdrawal
	Stress reduction and relaxation techniques
	Friends, family, and quitting chewing tobacco
	Weight management during chewing cessation
	Traditional tobacco
Materials and incentives	$20 gift card for baseline survey
	$10 gift card for salivary cotinine (*optional*)
	Program t-shirt
	Educational curriculum booklet
	$20 gift card for 6 month follow up (*optional*)
	$10 gift card for salivary cotinine at 6 months (*optional*)

Recruitment

A total of 80 participants completed the one-time education session and accompanying survey. Recruitment occurred throughout the Midwest and Northern Plains on reservations and in rural communities, in urban/suburban areas, and at two tribal colleges. Participants were recruited through word of mouth, flyers and posters in places frequented by AI (such as tribal health centers and administrative offices), partner organizations, at community events such as powwows and health fairs. Eligibility criteria included self-identified American Indian, age 18 and older, use of smokeless tobacco in the last 30 days, and interested in quitting or reducing their use of smokeless tobacco. Participants were excluded if their use of smokeless tobacco was not current within 30 days or if they had no regular telephone service with which we could reach them at 6 months to check on their use of smokeless tobacco.

Potential participants were screened by American Indian team members on site at recruitment events. Eligible participants were given the option to complete the intake process and one-time education session intervention immediately at that location or at a later time and place. The session included consenting of the participant through a verbal and written informed consent process, a survey focused on demographic information and tobacco characteristics, an optional saliva sample to measure cotinine levels, the education session itself, a $20 gift card for their time spent completing the survey, a $10 gift card for the optional saliva sample, and a t-shirt.

Measures and Data Collection

Data collection occurred at baseline and 6 months post-baseline through the REDCap (Research Electronic Data Capture) [25] on-line database system. Where Internet service was unavailable, paper surveys were used and later doubled entered to ensure accuracy. The baseline survey consisted of questions related to demographic information, smokeless tobacco and other tobacco product user characteristics, nicotine dependence, cessation self-efficacy, social environment, depression and anxiety, and traditional tobacco use.

To address our primary aims of the ANSOS-S intervention to determine program feasibility and acceptability and estimate the cessation rate of the culturally tailored intervention for future efficacy testing; participants were contacted at 6 months post-baseline to complete a survey. The 6-month follow up occurred through in person contact, over the telephone, or through email. Three contact attempts were made through text or phone calls before the participant was deemed lost to follow up. Those who responded either agreed to meet to complete the survey and optional saliva sample, completed the survey over the phone with

a facilitator, or were sent a link to the survey via email for completion on-line. Gift card incentives ($20) were mailed to participants who completed the 6-month follow up survey over the phone or who completed after being emailed the 6-month survey link.

Demographic Questions

Demographic information captured included age, sex, education level, employment status, income, where the participant grew up (on a federal Indian reservation, tribal trust land, rural area, suburban area, in an urban area, or on a military base), and physical activity level.

Smokeless Tobacco User Characteristics

Saliva samples were collected at baseline and at 6 months. Our primary endpoint was salivary cotinine verified point prevalence abstinence defined as no smokeless tobacco use in the previous 30 days, at 6 months post-baseline [26]. We also obtained participant self-reported smokeless tobacco status. Participants were asked a series of questions about their use of smokeless tobacco that included the history of their use, including age at first use and years of use, past quit attempts and length of quit time, amount of smokeless tobacco used per day, other recreational tobacco and traditional use, and duration of use.

Nicotine Dependence

To assess nicotine dependence and anticipated withdrawal symptoms, a combination of validated scales, the Severson Smokeless Tobacco Dependence Scale [27], the Fagerstrom Tolerance Questionnaire [28], the Glover-Nilsson Smokeless Tobacco Behavioral Questionnaire [29] were used. None of these scales have been validated with AI. We plan to combine our results from this pilot test with results from some of our other programs to determine the scale that is most suitable for American Indians.

Motivation and Confidence to Quit

We assessed participant motivation and confidence to quit by asking "On a scale of 1 to 10, how motivated are you that you could quit smokeless tobacco? (1 = not motivated and 10 highly motivated) and "On a scale of 1 to 10, how confident are you that you could quit using smokeless tobacco? (1 = not confident and 10 highly confident). We assessed quitting history by asking "How many times during the last 12 months have you stopped using smokeless tobacco for one day or longer because you were trying to quit?", and "What was the longest amount of time you were able to quit smokeless tobacco?". To assess readiness to quit, we asked, "Are you seriously thinking about quitting smokeless tobacco? (within 30 days, within the next 6 months, within the year, next year, not seriously thinking about it).

Statistical Analysis

Data for analysis was captured for all 80 participants. Categorical variables were summarized with percentages and continuous variables were summarized by mean, standard deviation and range. Data management and statistical analyses were performed using SAS software (version 9.4) (Copyright © 2002–2012 by SAS Institute Inc., Cary, NC, USA. All Rights Reserved).

Results

A total of 80 participants consented into the program and completed the baseline survey; 22 completed the 6-month follow up (28% retention rate). At baseline, the mean age of participants was 35 and the majority were male (70%). The majority grew up on an American Indian reservation (69%), had children (64%), and had achieved at least some higher education beyond high school (67.5%). Most (43%) reported daily smokeless tobacco use, and preferred smokeless tobacco (69%) over other types of tobacco, 28% of participants preferred cigarettes; the mean Fagerstrom Test of Nicotine Dependence score was 9.39 (SD = 3.24). Approximately 38% of participants were seriously considering quitting within the next 30 days, while 35% were not ready or unsure about quitting. Participants were moderately motivated (6 on a scale of 1–10) to quit and confident (7 on a scale of 1–10) in their ability to quit. Approximately one-half of participants (51%) reported dual use of smokeless tobacco along with cigarettes or some other tobacco product. The majority had made a 24-h quit attempt in the last 12 months (65%). Seventy percent of participants reported traditional tobacco use. Table 2 includes full demographic information.

Of the 22 completers at 6 months, 46% reported no use of smokeless tobacco in the past week, with 13.5% reporting a reduction in use at their previous level; 36% reported continued use. In intention to treat analysis with those lost to follow-up considered current users, the quit rate was 12.5% and reduction is an additional 4.0%. Complete participant tobacco characteristics at 6 months are included in Table 3.

Discussion

To our knowledge, this was the first study to test the feasibility, acceptability, and potential cessation rate of a brief culturally tailored smokeless tobacco cessation intervention

Table 2 Participant demographic information

	ANSOS-S participants N (%)
Gender	
Male	56 (70)
Female	24 (30)
Age (mean, ± std, range)	35 ± 13 (19–70)
Race/ethnicity	
American Indian alone	50 (65)
American Indian in combination with another	27 (35)
Where participant grew up	
Reservation or tribal trust land	54 (69)
Rural area	6 (8)
Urban/suburban/military area	12 (15)
Multiple places	6 (8)
Current living situation	
Married/living with partner	27 (34)
Other	53 (66)
Children in the home	
Yes	51 (64)
No	29 (36)
Highest grade of school completed	
High school or less	26 (32.5)
Some college, 2-year degree, or other post-secondary certification, 4-year college or graduate degree	54 (67.5)
Current college student	
Yes	28 (35)
No	52 (65)
Athletic participation	
Yes	38 (47.5)
No	42 (52.5)
Current employment	
Yes	48 (61)
No	31 (39)
Age at first use of SLT (mean, ± std, range)	16 ± 6 (5–40)
Tobacco use	
SLT only	39 (49)
SLT and cigarettes	23 (29)
SLT and some other product(s)	18 (22)
Preferred tobacco use	
SLT preferred	54 (69)
Cigarettes preferred	22 (28)
Some other product(s) preferred	2 (3)
Number of 24-h quit attempts in last 12 months	
0	28 (35)
1–2	29 (37)
3–9	20 (25)
10 or more	2 (3)
Longest amount of time quit from SLT in days (mean, ± std, range)	355 ± 730 (0–4380)
Seriously thinking about quitting SLT	
Yes, within the next 30 days	27 (38)
Yes, within the next 6 months	6 (8)
Yes, within the next year	14 (19)
Not sure/no	25 (35)

Table 3 Participant tobacco characteristics at baseline and 6 months

	Baseline N (%)	6 months N (%)
Days per week using SLT		
0	0 (0)	10 (46)
1	7 (9)	1 (4.5)
2	9 (11)	1 (4.5)
3	11 (14)	1 (4.5)
4	6 (8)	0 (0)
5	8 (10)	0 (0)
6	4 (5)	1 (4.5)
7	34 (43)	8 (36)
Motivation to quit (mean, ± std, range)	6 ± 2.87 (1–10)	5 ± 2.84 (1–10)
Confidence in ability to quit (mean, ± std, range)	7 ± 3.19 (1–10)	3.5 ± 2.15 (1–7)
Current smoker		
Yes	37 (56)	3 (43)
No	29 (44)	4 (57)
Current user of other tobacco products		
Yes	18 (22.5)	N/A
No	62 (77.5)	N/A
Traditional tobacco use		
Yes	53 (70)	4 (57)
No	23 (30)	3 (43)
Spouse uses SLT		
Yes	11 (14)	0 (0)
No	69 (86)	7 (100)
Spouse smokes		
Yes	20 (25)	1 (14)
No	60 (75)	6 (86)
Severson SLT Dependence Scale-Short Score (mean, ± std, range)	7.03 ± 4.49 (0–18)	8.50 ± 5.72 (3–19)
Glover-Nilsson SLT Behavioral Questionnaire Score (mean, ± std, range)	17.06 ± 7.17 (0–32)	N/A
Fagerstrom Tolerance Questionnaire for SLT (mean, ± std, range)	9.39 ± 3.24 (3–17)	N/A

for American Indians. Of those who responded to follow up at 6 months, 60% had either quit smokeless tobacco or reduced to 3 days per week or less. Those who did not quit were encouraged to join the full ANSOS program and were provided with counseling about the benefits of decreased use. It is possible that brief intervention such as this could be used as a tool for American Indian smokeless tobacco users who are not yet ready to quit but may be ready to reduce their use. It is possible that a one-time education session followed by a waiting period could be used as a recruitment tool for a cessation program. We plan to explore these possibilities in future studies.

A majority of participants in this pilot (38%) were seriously contemplating quitting smokeless tobacco use in the next 30 days. In our pilot of the full ANSOS program, 26% of participants were seriously contemplating quitting in the next 30 days [30]. It is possible those individuals who feel ready to quit may be more likely to participate in a brief intervention. This needs to be explored in a larger study to determine the appropriate length of a cessation program for American Indian smokeless tobacco users with different levels of readiness to quit.

Over half of the participants in this pilot were dual users; they used smokeless tobacco along with either cigarettes or another tobacco product. The extent of dual use throughout American Indian communities needs to be explored, with particular attention to the primary forms of tobacco being used and if smoking policies have impacted use of smokeless tobacco among American Indian smokers. A cessation program that addresses the dual use of smokeless tobacco along with smoking cigarettes or using other tobacco products is warranted. A combination of ANSOS and our culturally tailored smoking cessation program may provide the best cessation rates given high rates of dual use.

Although pharmacotherapy was an option as part of this program, no participant chose to use it; reasons for this lack of use must be explored. There is evidence that varenicline increases smokeless tobacco abstinence in the

general population [31], similar approaches to smokeless tobacco cessation among American Indians should be considered if community members are willing to consider the use of pharmacotherapy. In our work among American Indian smokers, varenicline was acceptable and the majority of participants wanted to use it [6]. During the formative work for ANSOS, focus group participants and community advisors told us they were unlikely to try any pharmacotherapy for smokeless tobacco cessation because they did not believe it would work [24]. It is possible that education about why it might work would change smokeless tobacco user's minds. This information was covered in ANSOS-S, but it is possible that additional information or more of a focus on pharmacotherapy would have changed participants' minds about its use. It is unknown if it would have changed the quit rate.

This small pilot study provides insights into what may assist American Indian smokeless tobacco users to quit. Though 80 participants started the program, only 22 were able to be reached for follow-up. The quit rate among participants who were reached for follow-up was 46%, but loss to follow-up leaves us with a 12.5% quit rate. A larger study of ANSOS-S must include more attention to participant retention. It is possible that if participants had some contact over the 6 months, even minimal such as through a monthly text message, retention could be improved. We plan to ask participants and community advisors about ways to better retain participants so that we can truly test the efficacy of a shortened version of ANSOS. It is likely that a program somewhere between the intensive 12-week group-based program and the one-time education session is the ideal.

Conclusion

There are no evidence-based culturally tailored smokeless tobacco cessation programs for American Indians. The ANSOS-S one-time education intervention is a culturally tailored smokeless tobacco cessation program that has shown some efficacy. Results from this study indicate a need and preference for a brief intervention that provides an individualized approach to smokeless tobacco cessation. These findings also support the need for additional studies that enhance long-term smokeless tobacco abstinence among American Indians.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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