



Internet All Nation Breath of life (I-ANBL) a Tribal College Student Engaged Development of an Internet-based Smoking Cessation Intervention

Journal of Health Disparities Research and Practice

Volume 13 | Issue 3

Article 1

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2020

Internet All Nation Breath of life (I-ANBL) a Tribal College Student Engaged Development of an Internet-based Smoking Cessation Intervention

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Recommended Citation

Pacheco, Joseph A.; Lewis, Charley; Pacheco, Christina M.; Hale, Jason W.; Williams, Jessica A. R.; Daley, Sean M.; Daley, Christine M.; and Choi, Won S. (2020) "Internet All Nation Breath of life (I-ANBL) a Tribal College Student Engaged Development of an Internet-based Smoking Cessation Intervention," *Journal of Health Disparities Research and Practice*: Vol. 13: Iss. 3, Article 1.

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Abstract

Background: Compared to non-Hispanic white college students, American Indian (AI) tribal college students have the highest smoking prevalence in the U.S. (~34%). Culturally-tailored smoking cessation programs have proven to be successful in reducing smoking rates but may require new methods to reach college students. Currently, there is little documentation on the development and success of Internet-based smoking interventions for AI tribal college students.

Objectives: To develop an Internet-based smoking cessation program (Internet-All Nations Breath of Life or I-ANBL) with tribal college students.

Methods: We conducted six focus groups (n=41) at a tribal college. Focus groups included tribal college students who smoked and groups were stratified by sex. Transcripts were analyzed using insider and outsider perspectives. After analysis, an Internet-based smoking cessation program was developed, based on insight gained.

Results: Numerous suggestions for creating the program were offered. There was consensus on the need for a variety of visuals including cultural images, videos, and interactive content. The students also suggested the integration of familiar platforms such as Facebook™.

Conclusion: When culturally tailoring a web-based smoking cessation program for tribal college students, it is important to incorporate cultural aspects and recognize gender differences. One important aspect is to recognize that for many AI, tobacco is a sacred plant and images of tobacco should be respectful. Now that this intervention has been developed, next we will test it for efficacy in a randomized controlled trial.

Keywords: American Indians, tribal college, tobacco, program development, smoking cessation, community-based participatory research

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Cover Page Footnote

We want to thank the staff, faculty, and students at our partner Tribal college for all of their hard work; without them, this project could not have been completed.

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Journal of Health Disparities Research and Practice
Volume 13, Issue 3, Fall 2020, pp. 1-15
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School of Public Health
University of Nevada, Las Vegas

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Journal of Health Disparities Research and Practice Volume 13, Issue 3, Fall 2020

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INTRODUCTION

American Indians (AI) have poorer health outcomes and greater disease burden when compared to other racial/ethnic groups in the United States (Indian Health Service). Smoking is a major contributor to the adverse health outcomes faced by AI. A significant proportion of deaths caused by cardiovascular disease, the leading cause of death for AI, can be attributed to smoking (Espey et al., 2014). Many health programs have attempted to combat the well-known adverse health outcomes linked to smoking. Some successful initiatives include the use of public service announcements (i.e., the Truth Campaign™), quitlines and increasing the cost of tobacco through taxation (National Center for Chronic Disease Prevention and Health Promotion & Office on Smoking and Health, 2012).

In addition to more traditional measures, the use of community-based participatory research (CBPR) methods has proven to be very successful in the development of smoking cessation interventions (Andrews, Newman, Heath, Williams, & Tingen, 2012; C. M. Daley et al., 2010), particularly with marginalized communities. CBPR involves community members, key stakeholders, and researchers, each with equitable involvement in all aspects of the research process (Burhansstipanov, Christopher, & Schumacher, 2005). CBPR has been used to develop effective smoking interventions, specifically for AI (Jernigan, 2010)(Andrews et al., 2012)(Choi et al., 2016; C. M. Daley et al., 2010). There is a great need for smoking cessation programs for AI peoples. When compared to non-Hispanic white college students, AI tribal college students have higher smoking prevalence (~34%) (Choi et al., 2015). Unfortunately, while some culturally-tailored smoking cessation programs for AI exist (Choi et al., 2016; Daley et al., 2017; Glover & Hodge, 1999; Hodge, Fredericks, & Rodriguez, 1996; Johnson, Lando, Schmid, & Solberg, 1997), they fail to target tribal college students, who experience unique stressors and have hectic schedules dictated by classes and extra curricular activities.

Attempts to integrate AI tribal college students into current intervention efforts requires a clear understanding of their current needs and quitting challenges. This integration can be difficult given publication bias generally limits reporting on how health interventions are developed (Hoddinott, 2015). To ensure successful smoking cessation interventions, further descriptions of community involvement in intervention development are essential. Accordingly, this paper, drawing on focus group data, explains the development of Internet-All Nations Breath of Life (I-ANBL), an Internet-based smoking cessation program, with engaged tribal college students assisting with development.

METHODS

Building on a previously established relationship and working within the principles of CBPR, we worked with key stakeholders to combat smoking among students at a tribal college in the Northern Plains. This population was selected because we have worked with students and administrators at this college for more than five years, there are high smoking rates among students and faculty, and students and administrators expressed an interest in making the campus smoke-free. With the help of our community advisory board (CAB), who provided feedback throughout

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our study, we conducted focus groups, developed an intervention study arm, and outlined incentives that would be offered.

Focus Groups

Our goal was to gain insight into students' perspectives on commercial tobacco use, which is mass produced and sold for profit, and how to best create a web-based smoking cessation program specifically for tribal college students. To guide the development of I-ANBL, we conducted six focus groups in November 2013 with tribal college student smokers. We stratified the groups by sex (3 male groups and 3 female groups) because of the possible differences there might be for aesthetics, stressors, and comfort in sharing. We had a total of 41 participants across the 6 groups. All study procedures were approved by the University of Kansas Medical Center's Institutional Review Board, as well as the Institutional Review Board at the participating tribal college. All participants were individually consented prior to participating in the focus groups, and both written and verbal informed consent was obtained.

The partner tribal college serves a rural reservation area but has a nationwide enrollment of both AI and non-AI students. Study participants were recruited through word-of-mouth, flyers, and school broadcast emails. Participants verbally agreed that they met the following eligibility criteria: 1) 18 years of age or older; 2) self-identified as AI; 3) currently enrolled in at least one credit at the participating tribal college, and 4) current or former recreational cigarette smoker (self-defined). Participants were provided a meal card for the school cafeteria and a \$25 gift card for their time. All participants filled out a demographic survey before beginning the group discussion.

The moderators for each focus group were matched by gender and race. Moderators were all formally trained in qualitative methods and were a part of the research team. An additional member of the research team, who in some cases was not AI, assisted the moderators by taking notes and consenting latecomers. The moderator's guide was drafted by an AI member of the research team who was formally trained in qualitative methods. The final moderator's guide was reviewed by the study's qualitative expert (CM Daley). The guide included an introduction, open-ended questions, potential follow-up questions and instructions on how to recap major topic areas discussed at the end of the focus groups. The assistant moderators were asked to note nonverbal body language (for example head shakes for agreement/disagreement) and to summarize topics discussed. These summaries allowed participants to clarify issues covered in the group and to add any additional feedback. Each focus group lasted between 60 and 90 minutes. Groups were digitally recorded and transcribed verbatim.

Transcripts were analyzed using CBPR methods developed by this team that includes both an emic (insider) and etic (outsider) perspective (C. M. Daley et al., 2010). Three members of the research team (two AI emic, one non-AI etic) hand-coded the transcripts using a codebook developed during several prior qualitative tobacco focused projects in AI communities. Coders met regularly during the process to make iterative changes to the codebook as needed for this study. Approximately 10% of the codes were cross-checked for consistency by the lead qualitative researcher; few to no differences were found. Each coder, individually, came up with a list of thematic statements. Another qualitative researcher on the team compiled all thematic statements into one list. This list was sent to both AI and non-AI coders, as well as the lead qualitative researcher (non-AI) and one additional AI member of the research team for final determination of

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wording. Once the list of themes was finalized, AI coders were instructed to identify appropriate quotations from the focus group transcripts to represent the themes.

RESULTS

Focus Group Demographics

The mean age of our sample (n=41) was 29.3 years with slightly more males (56.1%) than females (43.9%). The vast majority of participants identified as AI solely or in part (82.9%) and 75% were enrolled in a tribe. All participants consented (verbally and with signature) that they were AI. Most participants grew up on a reservation or tribal trust land (78%), 15% grew up in an urban area, and 12% grew up in a rural area, not on a reservation. Twenty-six participants (63%) had children, and half (51%) were employed. Half were in their first year of college (51%), 27% were in their second year, 10% were in their 3rd year, the remaining 12% were in their fifth and sixth years of college.

Focus Group Themes

The main topics discussed in the six focus groups were recreational smoking, health, and program development. The themes and subthemes within each topic area are listed in table 1. The overall findings regarding recreational smoking included initiation due to influence from family and friends and smoking continuation due to stress and addiction. When asked about health consequences, participants identified respiratory changes once they began smoking as their main concern. These findings are similar to other focus groups that our research team has conducted with AI in this age group (Choi et al., 2006).

Table1. Focus group themes.

	<u>Across</u>	<u>Female</u>	<u>Males</u>
Topic	Theme	Subtheme	Subtheme
Recreational Smoking	<ol style="list-style-type: none"> 1. Participants began smoking primarily due to the influence of people around them; they continue to smoke due to stress, addiction, habit, or social influence. 2. The negative physical aspects of smoke/smoking and the poor influence on children were identified as facilitating factors to quit smoking. (Female) 3. The negative impact on health and family members were identified as facilitating factors to quit smoking (Male) 	<ul style="list-style-type: none"> • Participants often started smoking due to the influence of friends and family members who smoke. • The “cool” persona of smoking also influenced some participants to start. • Reasons to continue use included stress, triggers, school, addiction, peer pressure, family or friend influence and social habit. • Pregnancy and the negative influence on children were seen as reasons to quit smoking. 	<ul style="list-style-type: none"> • Participants often started smoking due to the influence of friends and family members who smoke. • The “cool” persona or curiosity of smoking also influenced some participants to start. • Participants frequently discussed the use of alcohol in association with smoking initiation and continued use. • Participants identify the cost of cigarettes as a facilitator to quit.
Health	<ol style="list-style-type: none"> 1. Participants believe that smoking has negative impacts on physical health. 	<ul style="list-style-type: none"> • Participants identified respiratory changes (i.e. increase asthma exacerbations, coughing), a decreased ability to exercise, and infertility as negative health effects caused by smoking. 	<ul style="list-style-type: none"> • Participants identified decreased ability to workout, respiratory changes, high blood pressure, and cancer as negative health effects caused by smoking.

Table1. Focus group themes continued.

	<u>Across</u>	<u>Female</u>	<u>Males</u>
Topic	Theme	Subtheme	Subtheme
Program Development	2. Participants had numerous suggestions for creating a web-based program to quit smoking.	<ul style="list-style-type: none"> • Participants suggested program content include a variety of visuals, videos and interactions. • Participants felt it was important to have familiar and consistent support from peers and facilitators. • Money and NRT aids were identified as potential incentives by participants. 	<ul style="list-style-type: none"> • Participants suggested that program design include a variety of visuals and cultural designs in bright/bold colors. • Participants wanted a facilitator who is a former smoker. • Money, food, and NRT aids were identified as potential incentives by participants. • Program content should include recreational vs. traditional/ceremonial

Program Development

Both males and females expressed a desire for an assortment of textual content, imagery, and videos. A female participant stated, “I think a combination of both where you could go into different documents if you wanted to but then [see] some videos... A video would be more visual and so it would be more set into your head and will connect with what you have read...” This sentiment was observed throughout all focus groups. Another major suggestion in regards to imagery was the use of images that show how smoking impacts someone's health. A male participant recommended, “...people need to see more vivid imagery. Rather, cause they've been told smoking is bad their entire life. So I think for people to actually see it...that's where I think people will get the most...value.” Other participants showed agreement through verbal and non-verbal agreement. Participants in other groups also made references to this type of imagery.

Participants were passionate about what color scheme should be used throughout the website. The suggested color schemes ranged from pastel to bright and bold. This difference was observed between the different genders. A female participant proposed:

Pastel colors.... I'd be more relaxed or like, okay, no stress, I'm seeing nice colors. But if they are red and yellow and they're out there I'd be like... your level of alertness goes up and I want to smoke to calm...back down again.

In contrast, a male participant felt that bright and bold colors would be better. With one participant stating, “bright colors, you know, bright always works. You guys all have bright shirts, you know and cool logos can stand out.” These sentiments were echoed throughout both male and female groups.

There were varying views about how the content on the website should be delivered. Some participants wanted games like trivia. This was expressed in more detail by a female participant, *... I would want trivia. Like because when I sit down and I watch [the] Dr. Oz show and like they're like showing me things. I don't know, just like maybe giving us information, like, “Did you know you're killing so many taste buds per cigarette?”.... I'm just such a sucker for trivia. I'm like, “Oh! I didn't know that.”*

Other participants recommended a delivery format like Facebook™. A female participant explained the importance of a check-in feature and support board,

If it were in some sort of format like Facebook ... and you were actively trying to quit, you know it's the same thing they have the weight loss support group pages... if you were actively trying to quit and you went to a page where you could see other people and kind of either post on there and stuff or get support saying I'm having a really tough day, I feel like smoking. So maybe some type of...Facebook format. I would check it daily probably.

Both males and females echoed the above sentiments, through similar suggestions and both verbal and non-verbal agreement.

There was consensus around the idea that the program should include monetary incentives, nicotine replacement therapy (NRT), and the support of a facilitator. When it came to monetary incentives, there were many suggestions on what types of incentives could be given. Many participants suggested a need to reach milestones to receive monetary incentives. A female participant proposed making the program competitive:

... here's some incentives and you know kind of like we do the Biggest Loser weight loss thing, whoever can stay quit smoking the longest... pay \$10 to join and whoever stays quit for a six month period gets the pot or something. You know

what I mean? You're still doing the money thing, you're doing it as a group and you're going to be watching all the people you work with and, um, maybe encouraging so it works with the Biggest Loser program on campus, and they have those machines that you have to blow into to show if you've been smoking or not.

Similarly, a male participant suggested:

The lowest amount of cigarettes per person smoked that day or that week or whatever, they get a \$10 gift card.

Requests for NRTs included the patch and gum. Participants also discussed how NRTs have been helpful in the past, with one participant stating, "So I've quit a few times with the patch and then went back into it... But it's part of my lifestyle, so it's been really difficult." Other participants also had success using the nicotine patch, but disliked the taste of the nicotine gum.

When discussing the facilitator role, the consensus was that the facilitator needed to be someone who was trusted by participants. The facilitator should also be a former smoker who had gone through the process of quitting. When asked if the facilitator should be AI, a female participant stated:

I think more than being Native American, I would at least want somebody that has been through [quitting] like I have or, you know, was a smoker and quit too and was successful... but I don't think it would matter if they were Native or not, to me.

Another female participant elaborated on the level of contact the facilitator should have with the participants:

... I've seen programs to where you get your information, you have a little support here and there, but overall, they're not consistently there with you. And I'm saying they can't be by your side or pop up out of the middle of nowhere every time you're smoking a cigarette. But just that, I think if you had someone who were to call you on a weekly [basis], "So how's it going?"

Other suggestions by male participants included that the program's content needs to distinguish between traditional/ceremonial vs. commercial/recreational tobacco. All participants were interested in learning about the significance and use of traditional tobacco among different tribes. With one participant sharing their knowledge about traditional tobacco:

For recreational use, you know, people abuse it all the time, but in the ceremony, they use tobacco for prayer, you know, you're making prayer tithes. You offer it to the elders when you want to...if you want to go ask them, you need help, you need a question, you know, you offer them tobacco and they'll help you. They'll use that tobacco and pray for you. That's just what I know growing up. No matter what there's going to be tobacco in religion, you know, in Native American perspective.

Development of Program and Platform

To develop the I-ANBL program, we included curriculum from a previously developed culturally-tailored materials from our successful original ANBL in-person smoking cessation program (Daley et al., 2017). Information gained from the focus groups aided the development of the website and additional audiovisual content. For our web-based intervention, we chose a VLE (Virtual Learning Environment, Moodle™ - Version 2.7, 2017) to deliver the tailored curriculum; this is an uncommon approach for web-based tobacco cessation projects. However, we chose Moodle™ in part because the students at our recruitment location were familiar with it, as it was already in use as the online platform for all classes at that institution. Also, Moodle™ is open-

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sourced and highly customizable. Although other institutions may use a different VLE, most have a similar online platform which will have varying levels of customizability. Using a VLE platform is advantageous because it allows us to deliver the I-ANBL program content and gather data concerning well-being and personal progress easily. To ensure constant and immediate support to participants, we offered an online chat feature using the PureChat© plugin. This plugin allows participants to chat with a study member during set hours, to provide technical support and any to answer questions that may arise during the participant's progress in the program. Also, web links/phone numbers for emergency help situations and a way to contact our project managers via email were incorporated.

Development of Treatment Arm

Using the ANBL curriculum as a starting point, we developed an opt-in 8-week program with two follow-up points (12 weeks and six months post-baseline). The Moodle™ VLE system allowed participants to be organized into groups and enrolled in the study at different time points. Moodle™ uses plugins to allow for content delivery, surveys or quizzes within the program, and embedded links to external data collection instruments like REDCap™ (Version 6.11.5 - © 2017 Vanderbilt University). The overall view of the web pages, images, videos, voice-based audio files and quizzes within Moodle™ were tailored for AI college students based on input from focus group participants. For example, we used Native imagery from multiple Tribes (e.g., images of sweet grass - a sacred plant for many AI groups, and pictures of cultural events) and video and voice recordings of Native people. The content of the educational curriculum was already tailored to American Indians because it was taken directly from the original culturally-tailored ANBL smoking cessation program (Daley et al., 2017).

Development of Comparison Arm

For the comparison arm we chose a web-based heart-healthy diet program named Internet-Fruit and Vegetables (I-FV), which was adapted from “Honoring the Gift of Heart Health,” a culturally tailored program developed by the Centers for Disease Control and Prevention specifically for AI to reduce their risk of heart disease (*Honoring the Gift of Heart Health*, 2006). Web-based materials for the comparison group were similar to the intervention arm in that they included similar navigation in Moodle™, cultural tailoring, surveys and quizzes, and overall study flow. Content in I-FV was aimed at improving diet and nutrition, as well as encouraging daily physical activity. All smoking cessation information was removed from the comparison arm, though participants will be asked about their smoking habits in surveys at the same time points as those in the intervention arm.

Using CBPR methods, the decision to use the CDC’s program was made with approval from our CAB. Minor changes were made to the CDC’s program to incorporate comments from our CAB. Another reason for selecting the heart-healthy diet program was to test the efficacy of our web-based smoking cessation program. Behavioral changes that result in a more healthy lifestyle could lead to a reduction in smoking (Warburton, 1992).

Incentives

Both the I-ANBL and I-FV programs offer the same participant incentives. Incentives include a \$20 gift card at the initial intake (informed consent process, an overview of Moodle™, and baseline survey completion), \$40 gift cards at the 12 week and six month follow-up time points, a bonus \$10 gift card if the participant completes at least five weeks of the program, and an additional \$20 gift card if the participant completes all eight weeks of the program. Participants

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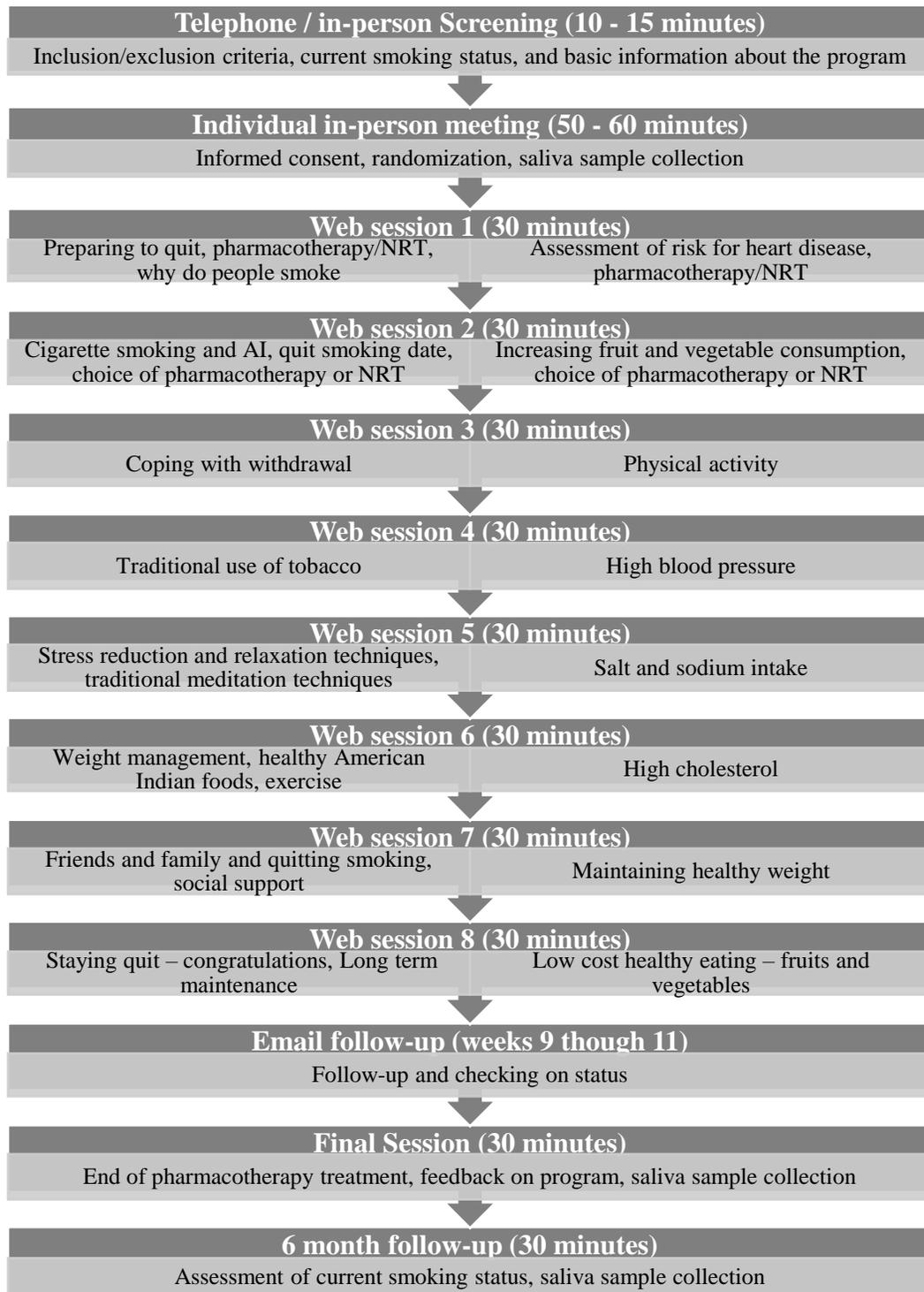
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also receive an additional \$10 gift card for each optional saliva sample provided. Saliva samples are collected at baseline, 12 weeks, and six months. These visits are conducted in-person for accuracy purposes. Saliva provided at baseline enables characterization of salivary cotinine levels among tribal college students, which has not been previously reported. Individuals who self-report being abstinent from recreational smoking for at least seven days are asked to provide a saliva sample, if they consented to saliva testing. These saliva samples provide biochemical verification of smoking status at 12 weeks and six months.

Pharmacotherapy is provided free of charge to students regardless of study arm. Pharmacotherapy is distributed through a partnership with the tribal pharmacy. Pharmacotherapy choices include prescription medications varenicline and bupropion (physician approval and prescription required) or a nicotine replacement therapy (i.e., patch, gum, or lozenge). A weekly comparison of the two programs is provided in Figure 1.

Figure 1. Program Timeline



DISCUSSION

The Internet is extensively used to access a variety of information including smoking and health information (Backinger et al., 2011; Cobb, 2010; Grannis, 2001; Tualii, Bush, Bowen, & Forquera, 2010; Westmaas, Abroms, Bontemps-Jones, Bauer, & Bade, 2011). Individuals aged 18 to 29 years, which includes most college students, use the Internet the most, with over 97% having access to it in some form ("Internet/Broadband Fact Sheet," 2017). Using the Internet to reach AI smokers in this age group could potentially reduce smoking prevalence in this underserved population. Yet, most initiatives have lacked the use of the Internet to target college-aged smokers, more specifically AI tribal college students.

In this study, information gained from AI college students highlighted important cultural aspects and gender differences that should be taken into consideration when developing a smoking cessation intervention. For many AI, tobacco is a sacred plant that is used in ceremonies and for spiritual practices, such as prayer, and must be respected. Being sensitive to cultural needs is important in the development of any intervention. Focus groups participants explained the importance of family and the respect of elders when it comes to their smoking decisions. Understanding these relationships and how to integrate them into the main intervention can aid in the overall success of participants on their journeys to quit commercial cigarette use. Also, to ensure relatability to the material, participants stressed the importance of using Indigenous imagery. Being sensitive to varying viewpoints can be challenging especially when there is a split between genders. Learning the wants and needs of our potential study population and overcoming varying views will aid in the success of participants as they engage in the smoking cessation program.

While we developed this program for AI college students attending tribal colleges and universities, we believe it can be widely used for all AI college students regardless of the type of college/university they are attending. We utilized tribal college students for the development of this program for appropriate cultural tailoring and creation of materials. The adaptability of our program is likely because it was modeled after an existing program (ANBL) that has been proven to be successful in variety of AI communities (Choi et al., 2016; Daley et al., 2017). If I-ANBL is found to be successful, testing for efficacy among AI in a non-tribal college setting will be conducted. Albeit, there are some inherent differences between tribal and non-tribal colleges, most colleges utilize a form of online learning.

Due to the frequency of Internet use required for coursework and the frequency of Internet use among tribal college students, we believe that a web-based program could be successful in this population and, thus, have developed I-ANBL. The treatment arm was formed based on the curriculum from our previously tested culturally tailored smoking cessation program, "All Nations Breath of Life" (Choi et al., 2016); we modified the program to fit a web-based platform. For the comparison arm we opted to use "Honoring the Gift of Heart Health" program from the CDC (*Honoring the Gift of Heart Health*, 2006).

There are limitations in developing a program such as this, particularly with the Internet platform selected. VLEs, including Moodle™, have limitations despite the customization they allow. One such limitation is the variety of supported options for content delivery. While allowing for interactive content such as questionnaires, images, and embedded media, at the time of program development Moodle™ was limited in its range of modern, rich content types. The ideal web platform would offer a broader range of choices, such as interactive videos, games, dialog cards,

collages, and accordions. Having a variety of content could promote use of the website by having more with which the participants could interact. Additionally, having a wider range of content types would allow for more customization and incorporation of participant/user feedback. This would enable the participants to feel a greater sense of ownership of the program. It is possible that VLEs are not appropriate for programs like this one because of this lack of customization. Other content management systems should be explored, as well as the option of designing a site through programming outside of these systems. Implementation of the program will help us to learn if the ease of use a VLE outweighs the problems with customization.

There is also a digital divide that exists in rural America. As a web-based program, students need Internet access. While this is widely available at their college, once students leave campus, access is challenging and/or nonexistent. This could be problematic because roughly 85% of students at the college with whom we are working live off campus¹. While we have tried to anticipate some of the issues this problem will pose in this study through discussions with focus group participants, this issue needs to be addressed in future research more fully. We are hopeful that process evaluation during implementation of I-ANBL will shed light on this issue.

Despite its limitations, our program design and use of a VLS has notable strengths. The target study population was able to be directly involved in the creation the look of the smoking cessation program. Participants in the program will also receive the option of nicotine replacement therapy (NRT) and/or other pharmacotherapy at no cost from a licensed pharmacist approved by the IRBs of KUMC and the tribal college. We will also provide incentives for participation, including gift cards to local retailers and items to help participants remain tobacco-free, like quit kits (toothpicks, gum, hard candy, stress balls, etc.). We will offer a variety of content in addition to our learning materials, including graphics, audio, video, and interactive questions, based in part on our findings from the focus groups. The added interactivity of the website is intended to engage students and offer them ample opportunity to share their experience of quitting. Our study is based on effective models, including previous ANBL studies, and approved questionnaires to ascertain mental wellness. The program is a multi-step plan, starting with preparing to quit smoking, motivational support and tracking features to log activity once participants have decided to quit. The website is available on a variety of platforms and web browsers and optimized for varying bandwidth connections.

This study developed an intervention that will now be tested for efficacy, including both a web-based intervention and a control group based on healthy living. This may provide useful data that could be used to develop a holistic wellness program which includes addressing addiction as well as making good choices for physical health.

FUNDING

This project was supported by the National Cancer Institute at NIH R01 CA 174481 (PI: Choi).

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

¹ Citation redacted for anonymity

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