Engaging Urban American Indian/Alaska Native Emerging Adults in a Nationwide Substance Use Intervention Randomized Controlled Trial: A Story of Recruitment during the COVID-19 Pandemic

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Abstract: *The majority of American Indian and Alaska Native (AI/AN) peoples reside in urban areas and experience significant health disparities relating to substance use. Nonetheless, very few randomized controlled trials (RCTs) have been conducted analyzing new substance use interventions for these populations, due, in part, to challenges with recruitment. This paper highlights recruitment strategies we employed from 2021-2023 in a study, Traditions, and Connections for Urban Native Americans (TACUNA), which analyzed the benefits of a new substance use intervention for urban AI/AN emerging adults (age 18 to 25). We navigated the COVID-19 pandemic by creating virtual platforms for the interventions used in our RCT and for our recruitment strategy. By utilizing algorithms identifying the interests of our recruitment audience and effective ad combinations on Facebook and Instagram, we were able to recruit 541 participants from 37 states. This study helps to identify recruitment strategies that may help to decrease health inequities as it relates to substance use research conducted among urban AI/AN peoples.*

INTRODUCTION

Alcohol and drug (AOD) use disproportionately affects American Indian and Alaska Native (AI/AN) peoples and has disproportionately affected these populations since alcohol was introduced (Frost, 1996). From between 1999-2019 to between 2019-2021, opioid overdose rates increased among AI/AN peoples from 0.36 per 100,000 to 6.5 per 100,000 (Bauer et al., 2024), and in 2019, the alcohol-involved death rate among AI/AN people was five times higher than that in the general population (Planalp et al., 2021). Also, compared to other races and ethnicities, AI/AN peoples report higher rates of cannabis use (Center for Behavioral Health Statistics and Quality, 2024). However, research analyzing the potential benefits of new interventions to help to decrease the effects of opioid, alcohol, and cannabis use among these populations is very limited (D'Amico et al., 2020; Dickerson et al., 2020).

More than 87% of AI/AN peoples now reside outside of reservations and tribal lands (U.S. Census, 2021). This move to urban areas began with the Relocation Act of 1954 (Burt, 1986.), which resulted in coerced and forced relocation of AI/AN peoples to various urban centers throughout the United States and has continued as others search for new economic opportunities outside of reservations and tribal lands (Weaver, 2012). Some of the consequences of their movement to urban areas include diminished sense of community, fewer opportunities to engage in AI/AN traditional practices, and barriers to accessing culturally relevant health-promoting treatment and prevention programs (Brown et al., 2021; Dickerson et al., 2021a).

Health inequities in substance use experienced by urban AI/AN peoples are perpetuated by the shortage of recruitment strategies to successfully conduct studies analyzing the potential benefits of new and promising interventions that address substance use (Brockie et al., 2022; Soto et al., 2022). There are many barriers, including logistical, ethical, and socioeconomic to conducting research among AI/AN people (Mello & Wolf, 2010; Blue Bird Jernigan et al., 2020: Oberly & Macedo, 2004). Within urban areas, despite better access to public transportation, transportation costs can create challenges to engage in research programs (Dickerson et al., 2021c). Also, AI/AN peoples residing in urban areas may be more dispersed and underrecognized, which may create challenges to engaging these populations in research (Yuan et al., 2014; UIHC, 2007). Furthermore, past unethical research conducted among these populations has created a reluctance to participate in research (James et al., 2018; Wolf, 1989). Examples of past unethical research

include the use of "helicopter research," a phenomenon whereby researchers engage AI/AN communities to conduct research but do not return to implement potentially effective programs (Petereit et al., 2011), and inappropriate reporting of findings leading to further stigmatization of substance use (Skewes et al., 2020).

Past research has often neglected to follow the principles of community-based participatory research (CBPR) which emphasizes engaging community members and Tribal Elders in every aspect of the research process, including gathering their input in recruitment, research design, interpretation, and report of results and issues relating to data sharing (Rink et al., 2020). Furthermore, there is a significant shortage of AI/AN researchers. For example, the lead author of this article is one of the few AI/AN addiction psychiatrists, to our knowledge.

Conducting randomized controlled trials (RCTs) among AI/AN peoples requires a community-engaged and collaborative approach that garners trust and partnership with AI/AN communities (Crump et al., 2020). This is especially true as it relates to substance use intervention research due to the disproportionate impact of substance use in these populations and stigma-related issues that may raise discomfort and reluctance (Hirchak et al., 2023). Strategies that address barriers to recruitment in a culturally sensitive and responsive manner can help increase successful research partnerships, thus mitigating the negative impact of historical trauma and health disparities experienced by these populations (Brave Heart & DeBruyn, 1987). To date, there are few studies and recruitment approaches that attempt to reach urban AI/AN emerging adults (age 18 to 25) nationwide, which limits critical information that can enhance our understanding of these populations and inform the development of culturally grounded substance use prevention and treatment interventions.

The COVID-19 pandemic created unprecedented challenges for researchers due to restrictions on in-person activities, leading to a need for change in the development and analysis of new health-promoting interventions. Among AI/AN people, alternate research designs that could foster engagement and capitalize on the resiliency of these populations were especially needed. In a recent special edition of this journal published in 2022, nine articles focused on a variety of topics and health-promoting interventions, highlighting their unique approaches for making necessary adaptations to their research procedures, including creating virtual-based intervention designs and recruitment procedures (Hunter et al., 2022; Kelley et al., 2022; Maudrie et al., 2022; Patel et al., 2022; Rink et al., 2022; Sinclair et al., 2022; Steinburg et al., 2022; Wells et al., 2022; Sahota et al., 2022). Four of these studies were conducted among youth and young adults (Patel et al., 2022; Steinburg et al., 2022; Wells et al., 2022; Rink et al., 2022), and two were

conducted among the general adult population (Sahota et al.,2022; Sinclair et al., 2022). However, none of the studies were conducted solely among AI/AN peoples residing outside of reservations/villages/rancherias, and none of them focused on substance use.

This paper adds to the literature by describing our recruitment strategy over a three-year period that was used to enroll urban AI/AN emerging adults into an RCT of the TACUNA (Traditions and Connections for Urban Native Americans) substance use intervention in response to challenges caused by the COVID-19 pandemic. During this period, we used innovative approaches that capitalized on the resiliency and inherent strengths of AI/AN people to recruit AI/AN emerging adults residing in urban areas throughout the United States. In in the Overview, we describe our research team and TACUNA. In the Redesign section, we provide information on how we redesigned the workshops from in person to virtual. In the Recruitment section, we present our recruitment strategies for our virtually delivered workshops and address challenges with male recruitment. Finally, we discuss the implications of our findings of this recruitment approach in the Discussion.

OVERVIEW

Research Team

Our research team, led by Multiple Principal Investigators (MPIs) Drs. Elizabeth D'Amico at RAND and Daniel Dickerson (Inupiaq) at UCLA, worked closely with our community partner, Sacred Path Indigenous Wellness Center (SPIWC), led by Chief Executive Officer (CEO) Dr. Carrie Johnson (Wahpeton Dakota). SPIWC's mission is to ensure research is conducted in a culturally appropriate manner with AI/AN peoples. All team members had extensive expertise working with underserved populations and included individuals with expertise in social media and recruitment. Our team has conducted National Institutes of Health (NIH)-funded research utilizing RCT methodology among urban AI/AN adolescents and adults throughout California and the United States for over 10 years. Our research projects utilizing RCTs have included Motivational Interviewing and Culture for Urban Native American Youth (MICUNAY) (D'Amico et al., 2020), Drum-Assisted Recovery Therapy for Native Americans (DARTNA) (Dickerson et al., 2021b), and our present study, TACUNA (D'Amico et al., 2021; Dickerson et al., 2022).

TACUNA Background

TACUNA is a substance use intervention designed for urban AI/AN emerging adults. TACUNA consists of three workshops that integrate motivational interviewing (MI) with AI/AN traditional practices (D'Amico et al., 2021). This research program is funded under the National Institute of Drug Abuse (NIDA) Helping to End Addiction Long-Term (HEAL) initiative (UG3DA050235, UH3DA050235). Eligibility criteria included: 1) age 18 to 25 years; 2) living in an urban area in any state in the United States (not on a rancheria or a reservation); 3) self-identification as AI/AN; 4) no opioid use disorder; and 5) English speaking. Other than excluding those diagnosed with opioid dependence based on the Rapid Opioid Dependence Screener (Wickersham et al., 2015), we did not include any other substance use eligibility criteria to be inclusive of all ranges of substance use and to help better prevent starting or progressing down the path of unhealthy substance use.

The first year of the grant focused on the final development of TACUNA, utilizing focus groups and a pilot test of TACUNA. Years 2-5 consisted of an RCT analyzing the potential benefits of TACUNA. This research was initially designed before the COVID-19 pandemic, and the RCT was designed to provide in-person groups to urban AI/AN emerging adults in southern, central, and northern California.

A total of 541 participants were enrolled in our study. Eighty-three percent were female and 17% were male, and 53% reported a sexual or gender diverse identity. The mean age was 22.1 (SD 2.2). Participants were enrolled from 37 states, with highest participation rates in California, Arizona, Washington, Oklahoma, and Minnesota. Over 200 tribes were represented in this sample, though no tribal affiliations are reported to protect tribal confidentiality. Very few individuals screened reported having a current opioid use disorder, and these individuals were provided with linkages to treatment.

REDESIGN OF WORKSHOPS FOR VIRTUAL DELIVERY

Similar to the approach used in our MICUNAY study, our initial recruitment strategy included physically sending flyers to community organizations, distributing flyers at community events, advertising our study on community organization websites, and offering bus tokens and transportation options for participants throughout urban areas in California (D'Amico et al., 2020).

Before the COVID-19 pandemic, we completed most of our planned research activities for the developmental year of our study. However, in March 2020, just before pilot testing TACUNA,

the COVID-19 pandemic hit and imposed new restrictions on in-person activities throughout the healthcare field. Many AI/AN organizations and events within AI/AN communities throughout California canceled in-person activities and began to offer cultural programming virtually. To provide an accommodating research strategy to help address the need for programming for these populations, we had to develop new approaches for conducting our RCT to maximize recruitment of urban AI/AN emerging adults into the study. We first conducted meetings with our TACUNA Elder Advisory Board (EAB), SPIWC, and our workshop facilitators for ideas and suggestions. Our EAB consisted of cultural leaders and Elders well-recognized in urban areas throughout the state of California. We were advised that conducting our RCT virtually would be a safe and feasible way to reach our population.

Thus, in April and May of 2020, similar to research teams' approaches highlighted in the recent AIANMHR special edition, we retooled our three in-person TACUNA workshops and our one control workshop, the Health and Wellness Program, by creating virtual versions of both. This included creating virtual versions of our traditional activities (storytelling, cooking, and sage ceremony). We piloted the three TACUNA workshops with several different groups of urban AI/AN emerging adults, who found this approach acceptable and accommodating (Dickerson et al., 2022; Kennedy et al., 2022). As part of this restructuring, we sent all workshop materials by mail. We mailed all handouts and materials to participants, which included cooking ingredients and sage for the traditional activities.

We initially rolled out our study randomizing participants to either TACUNA or the Health and Wellness Program. The TACUNA condition consisted of attending three 2-hour workshops in addition to a 1-hour Wellness Circle. The Wellness Circle is a community-wide event that includes invited speakers who present on a variety of topics that focus on AI/AN traditional practices and wellness. Participants randomized to the Health and Wellness Program were asked to attend one 2-hour health and wellness workshop. This program included content recommended by the National American Indian & Alaska Native Addiction Technology Transfer Center (ATTC) at the University of Iowa (NA-ATTC, n.d.). All respondents also completed follow-up surveys online at 3-, 6-, and 12-month periods after their baseline survey. Respondents were paid $40 for their first survey, $60 for their second survey, $80 for their third survey, and $100 for their final survey, for a total of $280. We increased incentives during the trial from $280 to $310 to increase participation.

RECRUITMENT ACTIVITIES

Due to various potential barriers to conducting research as mentioned in the Redesign section, we employed elements from the *Broad-Based Coalition of Grassroots Organizations* CBPR model in our recruitment strategy (Weiner & McDonald, 2013). This model consists of a broad array of relationships between researchers with many community-based organizations. MPI Dr. Dickerson (Inupiaq) and SPIWC CEO Dr. Johnson (Wahpeton Dakota) have many pre-established relationships with various AI/AN organizations nationally, which helped our team to successfully engage with urban AI/AN organizations and communities nationwide. In addition, we had an EAB consisting of well-recognized urban AI/AN Elders to help address challenges that arose with recruitment and engaging urban AI/AN emerging adults.

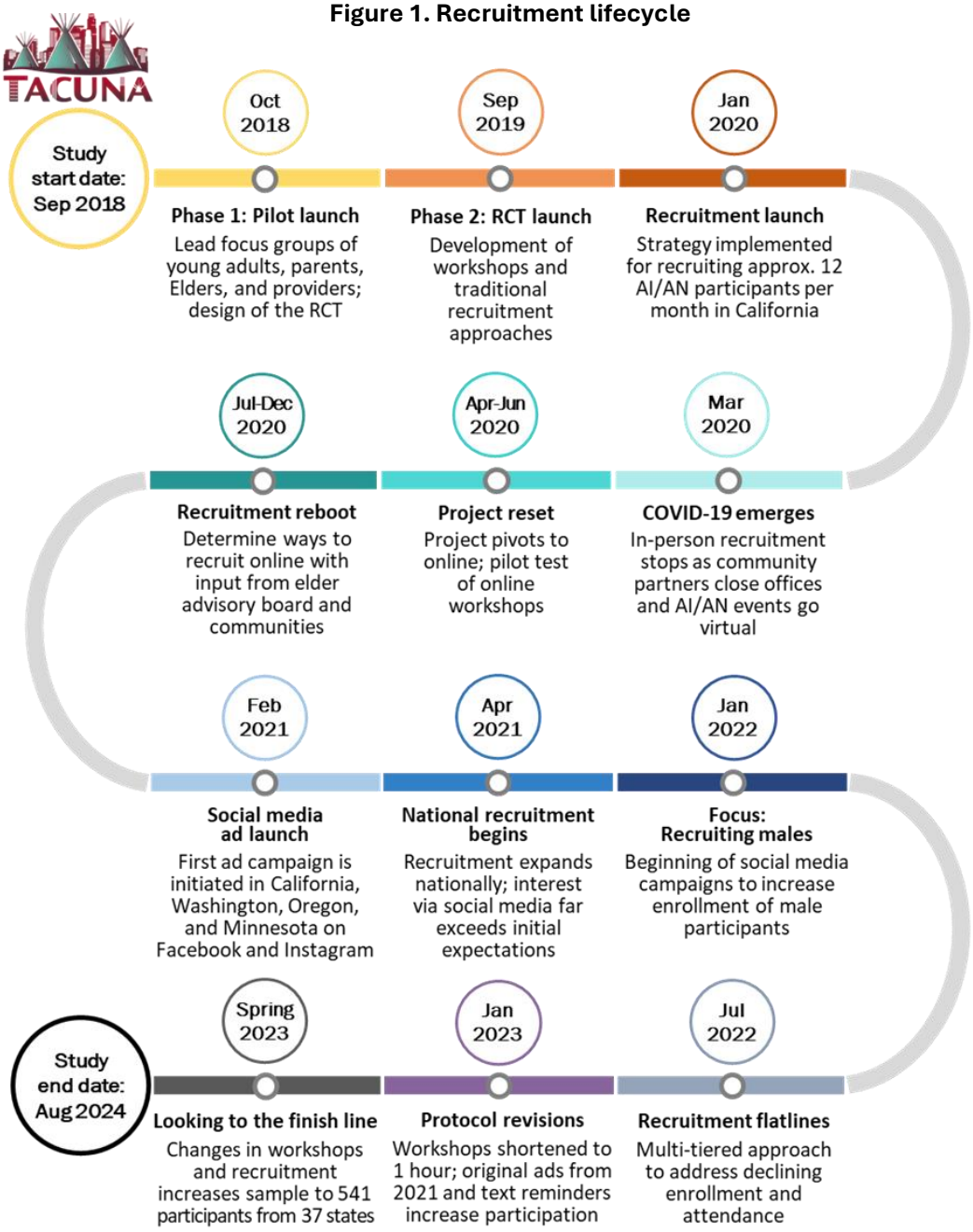
Although substance use prevention was the focus of our study, substance use was introduced gradually during the recruitment process, with the consent form providing full details on the focus of substance use. We chose to use a strengths-based approach emphasizing the resilience of AI/AN people. This approach helped to reduce stigma and to introduce the sensitive nature of substance use in a more culturally appropriate manner.

Substance use was mentioned in all our virtual Facebook and Instagram ads within the visual or descriptive components (e.g., "TACUNA is a research project focused on learning more about urban AI/AN young adults, their social and cultural connectedness, and *substance use.*") The topic of substance use was also mentioned within the description under "What will you be asked to do?". Also, when participants clicked the screener link, they read, "This project focuses on learning more about urban AI/AN young adults, their social and cultural connections, and *substance use*."

As shown in Figure 1, from July to December 2020, we determined ways to recruit online with input from the EAB and AI/AN urban communities. We met with our EAB monthly to discuss various issues and challenges throughout our study. We utilized their input throughout the recruitment process to help enhance ads in terms of AI/AN imagery, content, and description of traditional practices, and to ensure that our ads would resonate with urban AI/AN emerging adults. Due to restrictions imposed by COVID-19 that took place from 2020-2023, we had to pivot and begin an advertising campaign utilizing social media. In January 2021, we designed social media ads. We utilized both Facebook (FB) and Instagram (IG) in our ad campaigns because both utilize algorithms to identify the characteristics and interests of the recruitment population and adjust ads based on reach and response. FB and IG also provide an opportunity to target ads based on content

to one's intended audience and allow for the use of a combination of advertising approaches, including feeds, stories and reels, in-stream ads, and search results. Feeds provide users with an opportunity to see the most recent posts from their friends. Stories are used to share everyday moments with friends, followers, and individuals that users have chatted with via messages. Reels are short videos with music and audio that users can create and share with friends. In-stream ads are photos or videos that play before, during, or after videos. Searches allow users to type in topics that they are interested in and are searching for on FB or IG.

Figure 1. Recruitment lifecycle



Our ad campaigns on FB and IG ran from seven to 21 days, with the average ad running for two weeks, with a median cost of $130 per campaign for years 2021 through 2022 and $60 per campaign in 2023. In Table 1 we report our reach (number of unique users viewing a piece of ad content), impressions (the number of times a piece of content is seen, even if it was not clicked or interacted with), clicks (interactions with our screening website), and costs for each ad campaign. We highlight our recruitment strategies in a timeline format in Figure 1. Figure 2 provides examples of ads used throughout our ad campaigns. Figure 3 provides an example of an ad used to recruit participants who identified as male, as we wanted to boost these numbers. Figure 4 shows a graph with the total number of consents obtained in the study and the number of male participants recruited due to the challenges we experienced recruiting males in this study.

Figure 2. Examples of ads used during the study

Figure 2A.

Figure 2B.

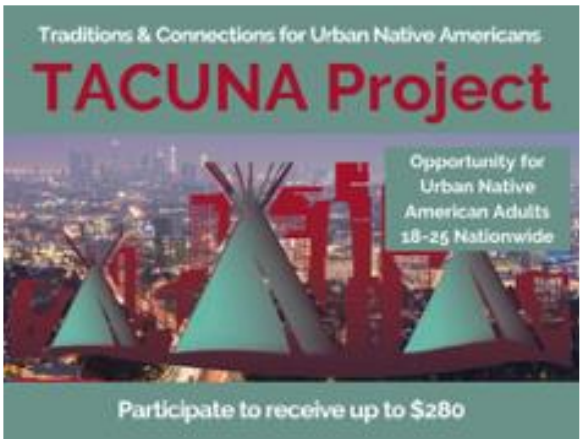


Figure 2C.

Figure 2D.

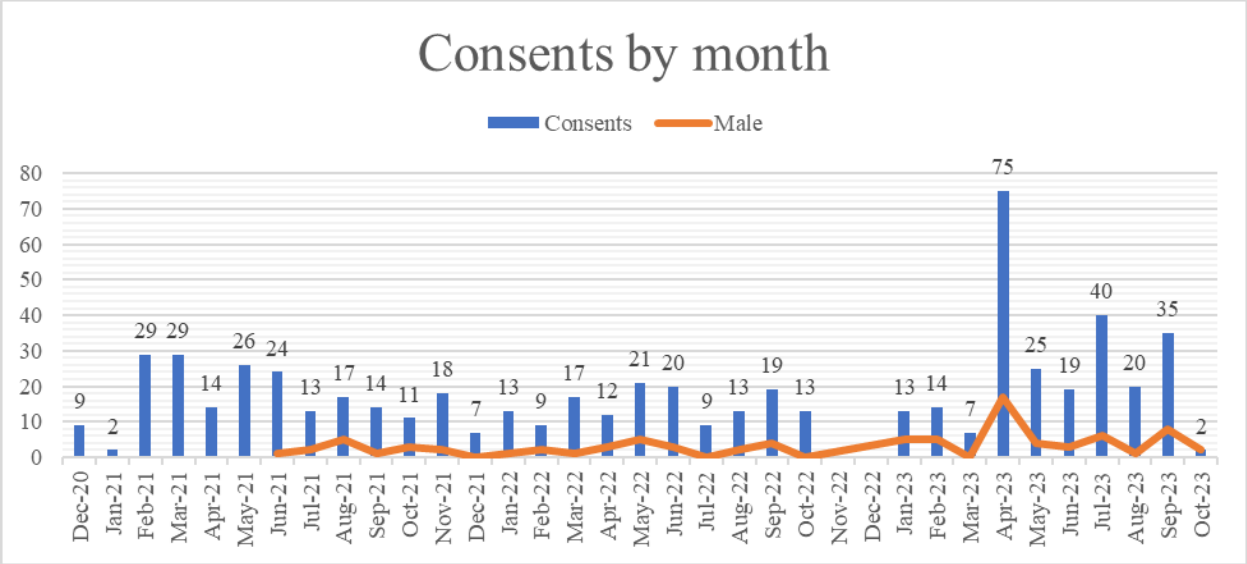
Figure 3. Example of an ad used to recruit males

Our virtual recruitment approach consisted of 12 ad campaigns. Each ad campaign posted ads on FB or IG for a set number of days from which we screened and consented a pool of participants. When that participant pool was sufficiently diminished, we ran another campaign. We began our first ad campaign in February 2021 for 13 days and targeted various urban locations throughout the United States, including 18 locations in California, one location in Arizona, one location in Minnesota, one location in Oregon, and one location in Washington state. We matched peoples based on interests in Native American culture in the United States, Native American hoop dance, Native American music, Native American/Indian wisdom, and National Congress of American Indians. We paid $100 for this ad campaign. We utilized an "ad set bid" approach, which is a category of automated bidding using artificial intelligence that attempts to get the most clicks or conversions. Conversions are a type of advertising that helps to drive a consumer's actions. Conversions, in our case, were eligible screeners. We let the Meta algorithm on FB decide at what times the ads would show for the best performance. As shown in Table 1, for this first campaign, we had a reach of 10,014 unique users, 20,309 impressions, and 223 clicks. During 2021, we also hired a Native American artist, Santiago Romero, to assist in designing our ads. Examples of ads we used during our first ad campaign are shown in Figures 2a and 2b. As shown in Figure 4, our first ad campaign was successful, far exceeding our expectations. We obtained 29 consents/month in both February and March of 2021.

Table 1.
Ad campaign responses and costs

Campaign	Period	Bid Strategy	Clicks	Reach	Impressions	Cost
February 2021	13 days	Ad set bid	223	10,014	20,309	$100.00
April 2021	9 days	Lowest cost per clicks	181	8,335	12,348	$179.22
May 2021	13 days	Ad set bid	316	8,968	16,547	$100.00
July 2021	13 days	Ad set bid	329	10,883	15,362	$100.00
October 2021	9 days	Lowest cost per clicks	343	10,624	18,135	$130.00
March 2022	13 days	Ad set bid	281	15,496	27,882	$150.00
April 2022	9 days	Ad set bid	512	42,975	62,449	$291.92
July 2022	13 days	Ad set bid	997	43,054	65,048	$300.00
March 2023	13 days	Highest volume	665	30,002	40,769	$225.46
April 2023	13 days	Highest volume	98	5,334	6,051	$25.38
July 2023	13 days	Highest volume	768	29,952	43,223	$204.89

Figure 4. Consents per month



In April 2021, we initiated an easier-to-set-up ad campaign for 9 days using a location of the entire United States using FB and IG. We changed our ad type to "lowest cost per clicks" with a set daily limit instead of the "ad set bid" approach used in our first ad campaign. For this ad campaign, we also added animated and video ads. In theory, we believed this approach had the potential to reach a very wide pool of applicants nationwide who would qualify for the study. Our targeted audience was 18-25-year-olds who spoke English and indicated an interest in Native American culture. The size of this audience was 1,100,000. As shown in Table 1, unexpectedly, our number of clicks, impressions, and reach were smaller than our February 2021 ad campaign. Also, as shown in Figure 4, our number of consents was also smaller, with 14 in the month of April.

Due to less success with this easier-to-set-up ad campaign, we decided to repeat our February 2021 approach for our May 2021 ad campaign. We increased our success with 26 consents in May 2021 and 24 consents in June 2021. We also recognized during this time that one ad in particular appeared to receive more responses and was strongly responsible for our successful recruitment (Figure 2a).

In July 2021, we started our fourth ad campaign from July 2021 to September 2021. We continued to use corresponding ads, including our more responsive ad (Figure 2a) and an ad that depicted pictures of urban settings with teepees in the foreground (see Figure 2c). We believed that depicting urban imagery mixed with AI/AN motifs would help to capture the attention of

potential participants. Our approach was moderately successful as we obtained 13, 17, and 14 consents per month, respectively, during this period.

From October 2021 to February 2022, we ran our fifth ad campaign. We only used our most responsive ad (Figure 2a) and a new ad depicting urban imagery with AI/AN motifs (Figure 2c). This approach was moderately successful, and we received a higher number of impressions. However, our consents per month continued to stay low and decreased significantly by the end of the year, as we only received 7 consents in December 2021.

From March 2022 to the end of the study, we streamlined our approach based on what we believed worked best, which included using primarily our most responsive ad (Figure 2a) and new ads to help increase recruitment for participants who identified as male (explained below). In the last year of our recruitment, starting in January 2023, to enhance retention, we also shortened our workshops from 2 hours to 1 hour based on feedback from participants (Palimaru et al., 2024). In conjunction with this change in our workshop length, we also created reels (short videos) on IG instead of static fliers to try to get more views, which we hoped would be more engaging to the viewer (see Figure 2d). As shown in Figure 4, we had substantial success at 75, 40, and 35 consents in the months of April 2023, July 2023, and September 2023, respectively. During these three months, we also added "study ending soon," which may have helped to increase recruitment.

Overall, our original ad (Figure 2a) was the most successful, with a total of 3,860 clicks across recruitment, a percentage of 70% of total clicks across all 12 ad campaigns, a reach of 154,415 unique users, and 229,757 impressions. The ad was designed by co-author Ninna Gudgell and outperformed all other ads used consistently across the recruitment period. A graphics interchange format (gif) version of the ad was used in April 2021 and received about half the reach and a quarter of the clicks as the static image. Updates were made in July 2022 to reflect an increase in the possible incentive. Otherwise, the original ad design was left untouched.

Approaching Low Male Recruitment

In early 2022 we noticed a persistent pattern of low male recruitment. In February 2022 we held discussions with our EAB to help gather insights into potential reasons for their lower representation. One idea the EAB postulated was *toxic masculinity* and lower interest levels from males in participating in AI/AN traditional activities. Toxic masculinity refers to strict rules that prescribe what a man should be, which includes a reluctance to engage in behavioral-oriented interventions (Staiger et al., 2020). Further, traditional masculinity is often characterized by substance use and risk-taking behaviors (Klingermann & Klingermann, 2023). Our TACUNA

EAB provided suggestions to help enhance male engagement. They suggested inviting more male Wellness Circle presenters for our program and to depict more males in our advertising to help connect with this audience. In March 2022, we hired a well-known Native American graphic artist, Paige Smith (Paiute, Modoc-Enrolled Klamath Tribes), to assist with creating ads to help generate more interest among urban AI/AN emerging adult males. In April 2022, we tested a new ad with an image of Paige Smith, to depict an AI/AN male, thereby hopefully helping to increase male recruitment (See Figure 3). This ad generated 252 link clicks with a reach of 18,764. The gender distribution was 34% male and 64% female, with nearly 85% of activity coming from FB. We also added more male Wellness Circle presenters, including an AI/AN comedian and traditional practitioners. These approaches helped sustain male recruitment trends; however, the percentage of males who enrolled in this study stayed consistently below those of females (see Figure 4). In July 2022, we also posted an ad campaign using our most responsive ad in conjunction with new ads designed by Paige Smith depicting males to help enhance male recruitment. Utilizing this combination, we had more clicks and similar reach and impressions. We continued to include more males in our ads for the remainder of our study and increased the number of male Wellness Circle presenters. Similar to females, we observed a mild increase in male recruitment, with more success in the last year of our study. Given the changes we made to recruit and conduct our RCT virtually, we were able to surpass our original recruitment goal of 370 with a final recruitment of 541 AI/AN emerging adults who lived in 37 states.

DISCUSSION

Our study fills a critical gap in developing strategies to recruit urban AI/AN emerging adults for substance use interventions through the use of virtual methodologies. The COVID-19 pandemic created unexpected challenges to recruiting participants into RCTs from underserved communities, requiring new creative and innovative strategies. By "going virtual," we were able to broaden our recruitment nationally and demonstrate the effectiveness of recruiting virtually for an RCT among a population where substance use intervention research has been scarce. Our FB and IG ad campaigns helped us surpass our original recruitment goal and obtain 541 AI/AN emerging adults who lived in urban areas spanning 37 states. Using CBPR strategies were critical to our success as we capitalized on previously established relationships with community partners. Their buy-in and ability to advocate for our study helped increase comfort in participation in a study on substance use prevention. Our strengths-based approach using virtual ads highlighting

the role of participating in AI/AN traditional practices and healthy social connections helped to decrease stigma associated with substance use known to exist within these populations, resulting in highly successful recruitment of urban AI/AN emerging adults into our study. As a result, findings generated from our study are not only more generalizable but also may have greater potential for influencing policy as they can bring attention to the substance use intervention needs of a large segment of the AI/AN population that has been less engaged in research.

We noted many notable advantages to recruitment virtually with very few disadvantages. One notable advantage to virtual recruitment was our ability to broaden our recruitment nationally. Similar to Sinclair et al.,2022, who conducted a study of a diabetes prevention intervention for AI/AN men, by delivering our intervention virtually, we were able to open up our study to participants across the United States. Increasing our recruitment pool nationally within urban areas also offered us an opportunity to obtain data that are more generalizable among the tribally diverse population of AI/AN emerging adults, thereby aiding in the potential for wider-scale implementation of TACUNA. Receiving buy-in nationally validates the broad appeal of TACUNA's acceptability among a very tribally diverse population.

Next, with virtual recruitment, we were able to more creatively reach our selected population. Using algorithms available on FB and IG, we could determine which ads were responsible for a higher number of participant consents, which then helped us adjust our ad campaigns to reach more participants. In addition, another advantage of initiating campaign ads using social media was the ability to target ads based on specific audience characteristics and interests. Creating our ads utilizing algorithms helped capture audiences with interests in AI/AN culture who resided in urban areas, resulting in high numbers of clicks and impressions.

Data from our ad campaigns identified one ad that attracted much more attention and was responsible for participants completing a screening and consent than all other ads (Figure 2a). It is possible that the more traditional AI/AN-themed colors and design used in this ad may have been more appealing to participants. Also, the wording used in the ad, including the clear and brief explanation of the study, may have helped increase participant interest. For future studies using virtual technologies, we recommend identifying ads "that work" via these algorithms as it can help research teams meet recruitment goals more quickly, particularly among more difficult-to-reach populations.

Virtual-based recruitment helped to address logistical barriers to participating in RCTs within urban areas among this population including transportation and childcare. In a previously conducted pilot test of TACUNA, feedback from participants suggested that providing workshops

virtually can help urban AI/AN emerging adults attend sessions who may not be able to due to financial and logistical constraints (Dickerson et al., 2022). Furthermore, the burden on research staff was much less with our virtual recruitment approach. Virtual recruitment is much less cumbersome in comparison to physical-based recruitment, which requires physically placing flyers within organizations and at community events and which may require changing, printing, and mailing new flyers to community-based organizations.

We found very few "cons" with virtual recruitment in our study that are typically experienced with this approach (Hoeflich et al., 2022). For example, we did not experience overt technical and structure issues in our recruitment, nor were confidentiality or privacy concerns expressed to our team. Stigmatization of substance use and of being overheard during the recruitment also did not appear to be a barrier to virtual recruitment. We suggest future studies utilizing virtual recruitment approaches address these potential issues in their virtual recruitment strategy.

Overall, we saw that clicks were much higher than actual enrollment numbers. It is possible that the imagery, colors, and depiction of AI/AN emerging adults were "eye-catching" and caught the interests of these populations. However, a large difference was found between the number of impressions and the actual number of participants who consented into the study. Research is needed to better understand ways to increase actual enrollment. One thing that may have helped increase enrollment from clicks was if we used our ads to better highlight creating social connections within urban communities.

The recruitment of males into our study was challenging. We attempted to address this by initiating a more targeted approach with more male-centered ads and including more male presenters in our Wellness Circles. We did increase male recruitment; however, trends were similar to females, thus, we still had significantly more females in the study. Our experience with the recruitment of males was in contrast to Sinclair et al. (2022), who were more successful. Their approach included creating multiple posts daily, emphasizing the strength, roles, and importance of men in AI/AN communities and for them to be healthy in their role within the community. Creating strength-based recruitment ad strategies for substance use intervention studies highlighting the important role of men within AI/AN communities and involvement in traditional practices may decrease the stigma associated with substance use among these populations, combat the possible effects of toxic masculinity, and result in more successful male recruitment. A recent qualitative study among Indigenous peoples in Canada to combat the effectives of colonialism showed that cultural strengths and engaging in ceremonies and role modeling were critical

components of the healing journey to mental wellness for Indigenous men (Waddell et al., 2021). Colonialism has also been highlighted as having a detrimental effect by redefining the role of AI/AN men by strictly limiting the roles as providers and protectors and impacting them internally (psychologically) and externally (rationally) (Bauman, 2024). Further research is needed to identify methods that can help increase the recruitment of urban AI/AN emerging adult males into RCTs analyzing new substance use interventions.

Limitations

Although this study showcased the utility of social media recruitment strategies to reach urban AI/AN emerging adults nationally across 37 states, this study was conducted following the outbreak of the COVID-19 pandemic and was not originally designed to be a nationwide study. Also, we did not have a gender break-down on the numbers of clicks, reach, and impressions, which may have helped to further explain differences in lower male recruitment observed in this study. Further research is recommended to determine ways to increase reach across different states within urban areas of the United States. More articulated research goals and a research design set to analyze the potential benefit of virtually based recruitment strategies among these populations are, thus, recommended.

CONCLUSION

Overall, pivoting to online implementation delivery and recruitment provided a unique opportunity to demonstrate the benefits of utilizing virtual approaches to recruit urban AI/AN emerging adults into RCT studies analyzing new substance use interventions. Findings highlight the advantages of using FB and IG algorithms to identify the characteristics and interests of our recruitment population and to modify ads based on reach. Through our innovative recruitment strategies, we were able to overcome the logistical barriers of in-person recruitment during the COVID-19 pandemic and obtain a large representative sample of urban AI/AN emerging adults. This critical change may help us to better understand the potential benefits of promising new substance use interventions for these populations, which may help decrease the impact of substance use among this population.

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