Oral Health Education Through Illustration

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Montana IDeA Network of Biomedical Research Excellence (INBRE)

INTRODUCTION

There is an oral healthcare crisis among the American Indian (AI/AN) population in Montana, many of whom live in rural areas. Currently, AI/AN children are about three times more likely to experience dental decay, and one in six one-year-old AI/AN children experience dental caries and cavities. The goal of this research is to educate AI/AN families about an accessible treatment for decay.

Oral health issues lead to poor academic performance, which is detrimental to students' chances of going to college. Currently, only 24% of AI/AN students go to college, while 41% of white students go (Postsecondary National Policy Institute, 2021). Because college-educated AI/AN students are likely to help their communities after college, the long-term goal of this project is to improve children's oral health, so they can access higher education and further improve their tribal nations.

This research project will begin by illustrating how silver diamine fluoride (SDF) acts on the tooth to slow down tooth decay. After the illustrations are done, they will be broadcast using GoodHealthTV, a television network that is used in medical clinics in American Indian Nations. These illustrations will be broadcast for the consumption of 12 Montana tribes in waiting rooms housed on seven reservations and four urban clinics. The effectiveness of the illustrations will be measured through a survey.

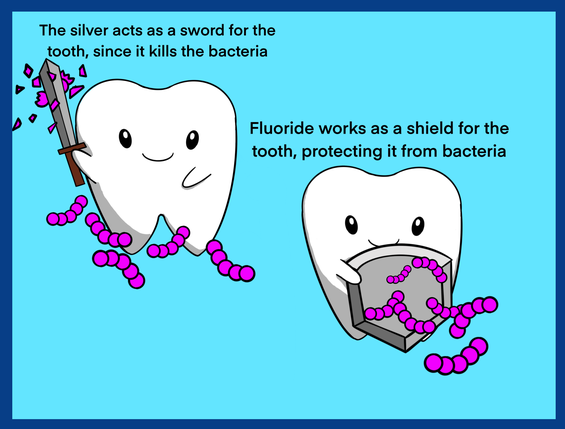


Figure 1. The first option that was presented to viewers in the poll. This illustration was done in a cartoon-style to be more familiar and visually appealing to viewers.

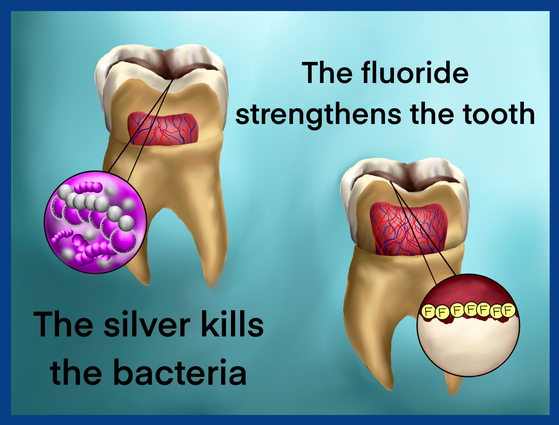


Figure 2. The second option that was presented to viewers in the poll. This illustration was done in the traditional scientific illustration style, to show audiences the mechanisms in a realistic way.

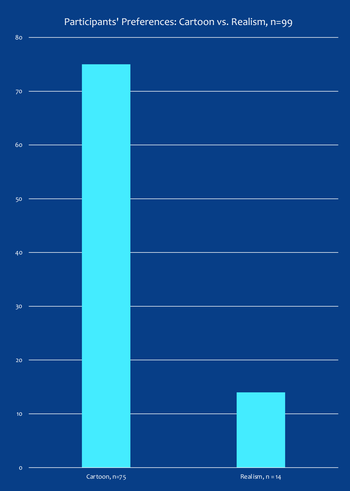
METHODS

A 24-hour Instagram story was created to learn which style of illustration was more effective among polled followers at educating audiences on the actions of SDF. There were two styles of illustration that participants were asked to consider. Their first option was a cartoon depicting the application of SDF as giving the tooth a sword and a shield to fight bacteria (Figure 1). The second option was two illustrations that were drawn in the traditional scientific style (Figure 2). All illustrations were created using Procreate (Savage Interactive 5.2.6). The 24-hour poll was given to 2,180 followers of the artist's social media account. No personal data was collected during the poll; however, age, location and gender demographics were collected by the app.

Figure 3. The QR code for the artist's portfolio, where all illustrations for the project can be seen.

RESULTS

There were 215 views and 89 responses collected in the 24-hour period. Most respondents (n = 75, 84.3%) preferred the cartoon style over the scientific style (n = 14, 15.7%). The 2180 followers were 64.9% female, 35% male, and 0.1% preferred not to say. More than half (55.2%) were 18-24 years of age with 25–34-year-olds comprising the second largest demographic (18.8%). Most followers reside in Gallatin County, Montana (18.2%) with the second highest aggregate coming from Davis, CA (10.3%).



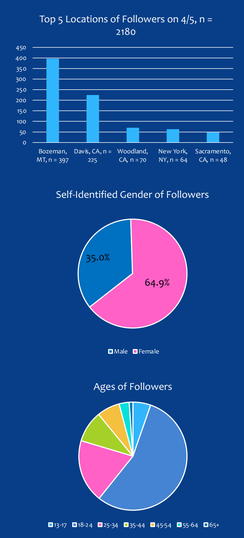


Figure 4a. The graphs depict the percentage of participants who voted for the cartoon-style, and who voted for the typical scientific illustration

Figure 4b. These graphs depict the demographics of the viewers that were invited to take the poll. The top image is the location of the viewers, the middle is the self-identified gender, and the bottom is the self-identified age.

Figure 5. This illustration depicts the process of applying SDF on the tooth. This is one of the drawings that will be displayed in the IHS and Tribal clinics.

DISCUSSION

Overall, people preferred the cartoon-style drawings to the traditional scientific illustrations. A significant limitation of this finding is that the artist's Instagram followers are not predominantly American Indian or Alaska Native as with GHTV. On the other hand, followers did resemble the demographics of GHTV audience members in three important ways. Respondents were young, female and residents of Montana. Most polled followers were between the ages of 18 and 24 years. In American Indian populations, the average age of giving birth is 23.1 years old. Most of the polled population was female, and it will likely be mostly females that see the illustrations in IHS clinics due to the persistence of women's traditional role in child-rearing. Additionally, nearly 1 in 5 of the participants given the poll live in or near Bozeman. Although the patients at IHS clinics do not live in Bozeman, they are also citizens of Montana.

Figure 6. This infographic shows the short-term goals of this project (in white text), and the long-term goals (in black text). The infographic is circular to symbolize the ongoing breaking down of barriers to academic success, as well as the ongoing improvement, in AI/AN communities.

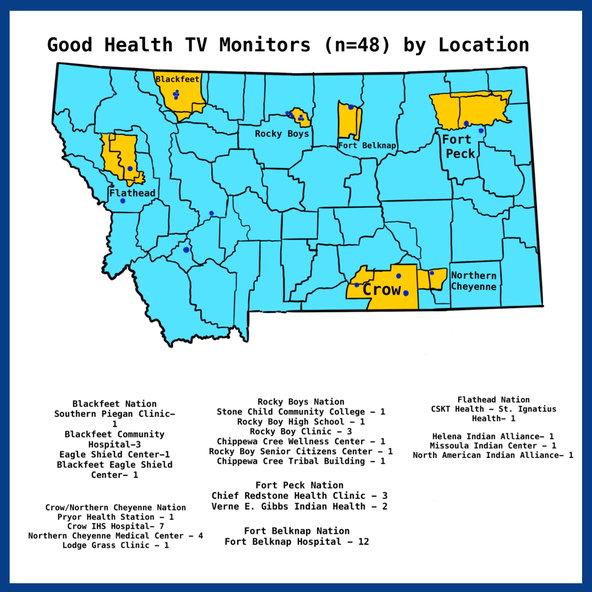


Figure 7. Map of the locations of the 48 IHS clinics where the illustrations will be displayed.

CONCLUSIONS

Participants who answered the poll responded more positively to the cartoon-style drawings than to the traditional scientific illustrations. Thus, the cartoon format will be incorporated into the SDF message to be displayed via GHTV. When the final message is broadcast across the Montana GHTV Network, surveys will be distributed. My hypothesis is that survey results will show that the drawings are an effective way to educate viewers. I am hopeful that viewers will better understand how SDF works and be more willing to allow dental hygienists to use SDF on their children's teeth. I am hoping that this project will assist in reducing the oral health disparities in AI/AN populations in the state of Montana.

FUTURE WORK

GHTV production company will embed the drawings in a video, complete with voiceover, closed captioning, and background music. When the videos are being shown in the clinics, patients will be invited to take a survey that will ask them questions that will determine the overall effectiveness of the illustrations. For the lab, the end result will culminate in a presentation or paper.

For the AI/AN communities, the end result will be an improved quality of life. Improving the oral health of children is expected to improve their academic performance, making it more likely that they will attend college. Past studies have shown that AI/AN college graduates are interested in giving back to their community, and often choose career paths that will help their tribal communities (Page-Reeves 2019). This project is helping the children living in the tribal nations today, so they can become leaders that help their communities in the future.

ACKNOWLEDGMENTS

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