

**APHA Roundtable - Ensuring the Health of AI/AN/NH Peoples:
Examples of Effective Public Health Strategies, Methods, and Tools**

Title: Feasibility of Implementing Internet-Based Health Promotion Programs for American Indian and Alaska Native Youth (3108.0)

Authors: Christine M. Markham, PhD¹, Stephanie Craig Rushing², PhD, MPH, Cornelia Jessen³, MA, Gwenda Gorman⁴, BS, Jennifer Torres¹, MPH, William Lambert, PhD, Alexander V Prokhorov, M.D., Ph.D., Kelly Allums-Featherstone, PhD, Leslie Miller, PhD, Robert C. Addy¹, PhD, Melissa F. Peskin¹, PhD, Ross Shegog¹, PhD.

Affiliations: ¹The University of Texas School of Public Health, Houston, TX; ² Northwest Portland Area Indian Health Board, Portland, OR; ³ Alaska Native Tribal Health Consortium, Anchorage, AK; ⁴ Inter Tribal Council of Arizona, Inc., Phoenix, AZ; ⁵ Oregon Health & Science University, Portland, OR; ⁶ The University of Texas MD Anderson Cancer Center, Houston, TX; ⁷ Rice University, Houston, TX; ⁸ The Cooper Institute, Dallas, TX.

ABSTRACT

Background and Objectives: American Indian and Alaska Native (AI/AN) youth face health disparities compared to other racial/ethnic groups. Internet-based health promotion programs may provide a viable strategy to reduce disparities. We assessed the feasibility of implementing six varied web-based health promotion programs for AI/AN youth in diverse tribal communities.







Methods: Data were collected from predominantly AI/AN youth, ages 12-14, participating in a randomized controlled trial at 25 sites in Alaska, Arizona, and the Pacific Northwest. Intervention group youth received an Internet-based sexual health program; comparison group youth received a suite of Internet-based programs on hearing loss, tobacco use, alcohol use, drug use, nutrition and physical activity. Feasibility parameters of computer access, connectivity, and bandwidth, and youth usability ratings on ease, credibility, impact, understandability, and motivational appeal were collected using previously validated measures.

Results: Overall, program connectivity was satisfactory despite variable bandwidth ranging from 0.24-93.5 Mbps (mean=25.6 +/- 31.1). The number of youth providing usability data varied by program (n=40-191; 48%-60% female, 85%-90% self-identified AI/AN, mean age 13.1-13.3 years). However, across programs, youth rated the programs as likeable (59%-87%), easy to use (68%-91%), trustworthy (61%-89%), and impactful (63-91%). Most youth understood the words in the programs (60%-83%) although some needed adult assistance (16-49%). Overall, 37%-66% would recommend the programs to a classmate, and 62%-87% found the programs enjoyable when compared to other school lessons.

Conclusions: Findings demonstrate the feasibility of web-based health promotion programs among AI/AN youth. Dissemination of web-based health promotion programs may be a promising strategy for this population.

Registration: <https://clinicaltrials.gov/ct2/show/NCT01303575>

INTERNET-BASED PROGRAMS

	<p>Native It's Your Game, developed in partnership between University of Texas School of Public Health, Northwest Portland Area Indian Health Board, Alaska Native Tribal Health Consortium, and Inter Tribal Council of Arizona, Inc., is a 13 lesson, multimedia sexual health education curriculum for AI/AN youth (12-14 years). [1] http://www.healthynativeyouth.org/</p>
	<p>Dangerous Decibels Virtual Exhibit, developed by the Oregon Museum of Science and Industry, is an online component of a public health campaign to reduce the incidence and prevalence of Noise Induced Hearing Loss and tinnitus by improving knowledge, attitudes, and protective behaviors of school-aged children. [2] http://dangerousdecibels.org/</p>
	<p>N-Squad, developed by the Rice University Center for Technology in Teaching and Learning, is an Internet-based adventure for middle school students to learn about alcohol's interaction in the digestive, circulatory, and nervous systems. [3] http://nsquad.rice.edu/</p>
	<p>Reconstructors, developed by the Rice University Center for Technology in Teaching and Learning, is an Internet-based adventure for middle school students to explore the science behind drugs of abuse. [4] http://reconstructors.rice.edu/</p>
	<p>ASPIRE, developed jointly by researchers at The University of Texas MD Anderson Cancer Center and UTHealth, is an online tobacco prevention and cessation curriculum with demonstrated efficacy in preventing smoking onset in high school youth. [5] https://www.mdanderson.org/about-md-anderson/community-services/aspire.html</p>
	<p>The Quest To Lava Mountain, developed as part of the Texas Department of Agriculture NutriGram program by The Cooper Institute®, is an educational game designed to raise awareness about healthy eating and physical activity. [6] http://www.healthgamesresearch.org/games/the-quest-to-lava-mountain</p>

[1] Shegog R et al. Native It's Your Game: Adapting a technology-based sexual health curriculum for American Indian and Alaska Native youth. *J Primary Prev.* 2016; 37(4): Aug online first. [2] Martin WH et al. Randomized trial of four noise-induced hearing loss and tinnitus prevention interventions for children. *Int J Audiology.* 2013; 53:S41-S49. [3] Klisch Y et al. Teaching the biological consequences of alcohol abuse through an online game: Impacts among secondary students. *CBE Life Sci Educ.* 2012;11(1):94-102. [4] Klisch Y et al. The impact of science education games on prescription drug abuse attitudes among teens: A case study. *J Drug Educ.* 2013;43(3):255-275. [5] Prokhorov AV et al. Impact of A Smoking Prevention Interactive Experience (ASPIRE), an interactive, multimedia smoking prevention and cessation curriculum for culturally diverse high-school students. *Nic & Tobacco Res.* 2008;10(9):1477-1485. [6] Sharma SV et al. Effects of the Quest to Lava Mountain computer game on dietary and physical activity behaviors of elementary school children: A pilot group-randomized controlled trial. *J Acad Nutrition & Dietetics.* 2015;115(8):1260-71.

RESULTS

Table 1. Demographic characteristics for American Indian/Alaska Native youth who played each program (n = 40 - 191): Alaska, Arizona, and Pacific Northwest, 2012-2014.

	Native IYG (n=191)	Dangerous Decibels (n=62)	N-Squad (n=62)	Aspire (n=52)	Reconstructors (n=45)	Lava Mountain (n=40)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Gender						
Female	114 (60)	30 (48)	34 (55)	25 (48)	24 (53)	21 (53)
Male	77 (40)	32 (52)	28 (45)	27 (52)	21 (47)	19 (48)
Self-identify as AI/AN	164 (86)	54 (87)	56 (90)	46 (88)	40 (89)	34 (85)
Mean age (SD)	13.1 (.98)	13.2 (.83)	13.3 (.84)	13.3 (.77)	13.2 (.78)	13.3 (.88)

Table 2. Usability Ratings for Internet-Based Health Promotion Programs among American Indian/Alaska Native Youth (n = 40 - 191): Alaska, Arizona, and Pacific Northwest, 2012-2014.

Parameters	Native IYG (n=191)	Dangerous Decibels (n=62)	N-Squad (n=62)	Aspire (n=52)	Reconstructors (n=45)	Lava Mountain (n=40)	Range of agreement across programs (%)
	Agreed (%)	Agreed (%)	Agreed (%)	Agreed (%)	Agreed (%)	Agreed (%)	
Ease of use							
Very easy or kind of easy	91	75	72	90	68	71	68-91
Understandability							
Words were understandable	83	60	70	82	77	73	60-83
Needed hints to play the game	33	28	28	16	40	49	16-49
Timing							
Timing just right	79	77	78	80	55	79	55-80
Likeability							
Liked a lot or a little	87	59	66	70	64	84	59-87
Credibility							
Information was correct	90	65	64	80	58	66	58-90
Information was trustworthy	89	69	73	78	61	68	61-89
Perceived impact							
Information will help me make better choices	91	77	68	86	71	63	63-91

Parameters	Native IYG (n=191)	Dangerous Decibels (n=62)	N-Squad (n=62)	Aspire (n=52)	Reconstructors (n=45)	Lava Mountain (n=40)	Range of agreement across programs (%)
Motivational appeal							
Would play more lessons in the program if available	63	40	38	35	42	51	35-63
Would recommend to a classmate	66	41	41	37	43	61	37-66
As much or more fun than other lessons at school	82	66	62	67	74	87	62-87
As much or more fun than other health lessons at school	79	71	64	61	74	75	61-79
As much or more fun than other computer-based lessons at school	85	66	66	57	71	79	57-85
As much or more fun than favorite video game	48	35	33	25	42	61	25-61

DISCUSSION

- Despite variability in connectivity and bandwidth, most sites were able to access the programs via the Internet
- Technical and connectivity issues led some sites to access the programs via back-up modalities (e.g., uploading programs from USB drive)
- A broad range of non-specialized health education personnel were able to implement Internet-based programs with fidelity
- Overall, AI/AN youth rated the programs favorably in terms of youth engagement
- Youth rated Native IYG most favorably across 10 of the 14 usability parameters, possibly because it was specifically adapted for AI/AN youth

CONCLUSIONS

- Findings indicate that Internet-based health promotion programs are engaging to AI/AN youth in the diverse settings of both rural (reservation and village) and urban locations.
- Cultural adaptation of evidence-based programs may strengthen or reinforce a sense of cultural identity and belonging among AI/AN youth, better align with health epistemologies and learning styles, and help protect against engaging in early risk behaviors
- Practitioners interested in implementing Internet-based programs in tribal communities are advised to provide contingency plans (e.g., USB) as back-up to technical failures, and to conduct bandwidth assessments especially with multiple simultaneous users prior to use.
- These findings may have broader implications for understanding the degree to which Internet-based programs may enhance the reach of evidence-based health promotion programs in tribal communities, and provide an educational format that is engaging for AI/AN youth