



Usability and Psychosocial Impact of Decision Support to Increase Sexual Health Education in American Indian and Alaska Native Communities

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Abstract

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Keywords

child/adolescent health; American Indian; Alaska Native; health education; sexual health; technology; program planning and evaluation

Cover Page Footnote

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ABSTRACT

Despite sexual and reproductive health disparities, few evidence-based sexual health education programs exist for American Indian/Alaska Native (AI/AN) youth, with even fewer tools available to assist AI/AN communities in adopting, implementing, and maintaining such programs. iCHAMPSS (Choosing And Maintaining effective Programs for Sex education in Schools) is a theory- and web-based decision-support-system designed to address dissemination barriers and increase the reach and fidelity of evidence-based programs (EBPs), specifically sexual health education programs. To investigate the potential of iCHAMPSS in AI/AN communities, we pilot-tested iCHAMPSS with adult stakeholders (N = 36) from agencies across the country that serve AI/AN communities. Stakeholders were recruited to review selected iCHAMPSS tools over two weeks in spring 2016. Pre- and post-surveys were administered to assess usability constructs, short-term psychosocial outcomes, and perceived feasibility. Data were analyzed using descriptive and non-parametric statistics. iCHAMPSS was perceived as acceptable, easy to use, credible, appealing, more helpful than current resources, and impactful of EBP adoption, implementation, and maintenance. Conversely, using iCHAMPSS significantly increased participants' perceived barriers to adopting an EBP ($p = 0.01$). Overall, AI/AN stakeholders responded positively to iCHAMPSS, indicating the

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Keywords: Child/adolescent health; American Indian; Alaska Native; health education; sexual health; technology; program planning and evaluation

INTRODUCTION

Despite recent declines in teen births in the United States (U.S.), racial/ethnic disparities remain (Hamilton & Mathews, 2016). American Indian and Alaska Native (AI/AN) females ages 15 to 19 years have the third highest teen birth rate among racial/ethnic groups (Hamilton & Mathews, 2016) and the highest repeat teen birth rate (Gavin et al., 2013). AI/AN youth are also disproportionately affected by sexually transmitted infections (STI), including HIV (Centers for Disease Control and Prevention [CDC], 2016; CDC & Indian Health Service, 2014). These disparities may be ameliorated by the implementation of evidence-based sexual health education programs (Markham et al., 2016). However, few evidence-based programs (EBPs) exist for AI/AN youth, and many AI/AN communities lack the expertise and resources to adopt, implement, and maintain EBPs (Kaufman, Schwinn, Black, Keane, & Big Crow, 2016). Recently, technology has proven a feasible mechanism to disseminate culturally adapted sexual health education EBPs to geographically dispersed AI/AN communities (Craig Rushing et al., 2016; Markham et al., 2016). Technology may also provide a viable mechanism to enhance community expertise and resources to adopt, implement, and maintain EBPs in AI/AN communities and maximize their impact on sexual and reproductive health. An online decision-support system (DSS) designed to address barriers to the dissemination of sexual health EBPs may provide such an opportunity.

A DSS is a computer-based system designed to facilitate a wide variety of decision tasks, including information gathering and analysis, alternative evaluation, and decision implementation (Bhargave, Power & Sun, 2007). DSS have been used in diverse settings including healthcare to enhance appropriate treatment ordering based on evidence-based guidelines (Bright et al., 2012), and higher education to support school leadership's decision-making, including curriculum quality improvement (Sergis & Sampson, 2016). In health promotion, DSS have been advocated to facilitate the translation of research findings into practice (Green, 2001), for example, the National Cancer Institute's Cancer Control P.L.A.N.E.T., which provides data and resources to help planners, practitioners, and researchers design, implement and evaluate evidence-based cancer control programs (Division of Cancer Control and Population Sciences at the National Cancer Institute, 2017). In this study, we examined the usability and feasibility of an existing web-based DSS, "iCHAMPSS": CHoosing And Maintaining effective Programs for Sex education in Schools, to address dissemination barriers related to sexual health education EBPs in tribal communities.

BACKGROUND

Despite sexual and reproductive health disparities, few evidence-based sexual health education programs exist for AI/AN youth, with even fewer tools available to assist AI/AN communities in adopting, implementing, and maintaining such programs. Circle of Life, an HIV-prevention intervention for Northern Plains middle school youth, is one of the few sexual health education programs specifically developed for and rigorously evaluated among AI/AN youth. The program was demonstrated to delay sexual debut and positively impact related psychosocial

variables related to sexual behavior (Kaufman et al., 2014). Additional EBPs, originally developed for other racial/ethnic groups, have been adapted to incorporate traditional AI/AN values and teaching methods. Examples include *Respecting the Circle of Life* (Tingey, et al., 2015), an adaptation of *Focus on Youth*, an HIV prevention program originally developed for African-American adolescents (Stanton, Li, Ricardo, Galbraith, Feigelman, & Kaljee, 1996); *Native STAND*, an adaptation of an intervention originally developed for rural youth in the southern US (Smith, Craig Rushing, & Native STAND Curriculum Development Group, 2011); *Native VOICES*, an adaptation of the video-based HIV-prevention intervention, *Video Opportunities for Innovative Condom Education and Safer Sex (VOICES)*, originally developed for urban African-American and Hispanic youth (O'Donnell, O'Donnell, San Doval, Duran & Labes, 1998; Craig Rushing & Gardner, 2016); and *Safe in the Village*, an adaptation for rural AN youth modeled after *Safe in the City*, an HIV/STI prevention video designed for urban STI clinics (Myint-U, et al., 2010; Warner et al., 2008; Craig Rushing et al., 2016). Most recently, a community-academic partnership between the Alaska Native Tribal Health Consortium (ANTHC), the Inter Tribal Council of Arizona, Inc. (ITCA), the Northwest Portland Area Indian Health Board (NPAIHB), and the University of Texas Health Science Center at Houston (UTHealth) School of Public Health, has collaborated to adapt and rigorously evaluate *Native It's Your Game*, an adaptation of *It's Your Game-Tech*, a web-based sexual health education program for urban, racial-ethnic minority middle school youth (Shegog et al., 2016). Each of these adaptations involved extensive community-based participatory research methods to ensure input from AI/AN youth and adult stakeholders, and procedures to identify and retain core components that made the original EBP effective (Craig Rushing et al., 2016; Firpo-Triplett & Fuller, 2012).

With the exception of *Respecting the Circle of Life*, these adapted EBPs are available to AI/AN communities across the U.S. via the Healthy Native Youth website (Northwest Portland Area Indian Health Board, 2017). However, simply facilitating access to culturally relevant sexual health education programs may be insufficient to overcome barriers to disseminating EBPs in tribal communities for several reasons. First, adolescent sexual health can be a sensitive topic, and AI/AN communities may lack the community readiness and resources to broach the issue (Markham et al., 2016). Second, varying tribal review and school board approval processes may create delays in program adoption and implementation (Jernigan & Jacob, 2015). Third, pervasive community poverty may result in personnel turnover or temporary closures for AI/AN youth-serving agencies, which may compromise implementation fidelity and program maintenance (Kaufman et al., 2016). Fourth, geographic challenges, including remote villages and reservations, may impact program implementation and access to resources (Kaufman et al., 2016). Finally, similar to other school districts and communities across the U.S., AI/AN communities may face competing priorities, perceived lack of support from key administrators and parents, and lack of specialized training in sexual health, including limited knowledge of EBPs and self-efficacy to implement them (Hernandez et al., 2011; Peskin et al., 2011).

“iCHAMPSS”: CHOosing And Maintaining effective Programs for Sex education in Schools, is an innovative, theory-based, DSS designed by the UTHealth team to facilitate the dissemination of sexual health EBPs in schools (www.ichampss.org; Hernandez et al., 2011). “Dissemination” refers to the purposive distribution of information and intervention materials to a specific public health audience (National Information Center on Health Services Research and Health Care Technology, 2017). iCHAMPSS is the *interactive* version of the CHAMPSS model, which operationalizes concepts from diffusion of innovations (Rogers, 2003) and social cognitive

theory (Bandura, 1986) to help users adopt, implement, and maintain sexual health education EBPs. Developed using Intervention Mapping (Bartholomew et al., 2016), a systematic theory- and evidence-based framework for developing health promotion interventions, the iCHAMPSS DSS encompasses seven steps: (1) prioritize, (2) assess, (3) select, (4) approve, (5) prepare, (6) implement, and (7) maintain. A ‘staging tool’ helps users identify the most relevant step at which to start based on their school’s or community’s level of readiness to adopt, implement, and maintain a sexual health EBP. A ‘tools library’ comprising 60+ decision tools helps users accomplish specific tasks within each step. DSS tools include: step overviews, success stories (video testimonials from individuals who have successfully adopted, implemented, or maintained a sexual health education EBP), facts and tips (PDF documents that summarize factual information; e.g., a selection guide to identify EBPs), helpful links (online resources outside of iCHAMPSS), and templates that can be tailored to fit a school’s or community’s needs (e.g., conducting a parent opinion poll about sexual health education). iCHAMPSS also includes a linkage system for users to post questions and share effective strategies. Further details regarding iCHAMPSS development are provided elsewhere (Peskin et al., 2016; Hernandez et al., 2017). In a usability study with school district stakeholders in Texas, iCHAMPSS was reported to be easy to use, credible, helpful, and of sufficient motivational appeal. iCHAMPSS significantly increased participants’ self-efficacy to obtain school board approval to implement a sexual health EBP (Hernandez et al., 2017).

A DSS like iCHAMPSS may address many of the challenges in disseminating EBPs to AI/AN youth. The goals of this study were to: 1) pilot-test iCHAMPSS for usability, psychosocial impact, and perceived feasibility with adult stakeholders working with AI/AN communities; and 2) determine potential adaptations to make iCHAMPSS more culturally relevant for AI/AN communities. If promising, an adapted version of iCHAMPSS could be integrated into the Healthy Native Youth website to help actively disseminate sexual health EBPs to AI/AN youth.

METHODS

Study Design for Pilot Testing iCHAMPSS

A single group, pre- and post-test pilot study was conducted to assess usability, short-term psychosocial outcomes, and perceived feasibility of iCHAMPSS.

Participants

Adult stakeholders working in rural and urban AI/AN communities across the country were recruited (N=36) to review and provide feedback on the iCHAMPSS website. Regional partners from ANTHC, ITCA, and NPAIHB recruited individuals by promoting the study in existing e-newsletters or sending an announcement to standard listservs comprised of youth-serving professionals. Eligible individuals included health department and clinic personnel, school district staff, and community organizations who are involved in the planning and implementation of sexual health curricula in school, clinic, or community-based settings within AI/AN communities.

Study Protocol

Participants were given access to the iCHAMPSS website for approximately two weeks and asked to review selected tools at days and times that were most convenient to them. The pre- and post-tests were confidential and lasted approximately 20 minutes each. Eleven tools (Table 1) were selected for review based on the most frequently used tools in previous usability testing (Hernandez et al., 2017). Participants received a \$25 gift card upon completion of the pre- and post-test, with a potential total of \$50. The study received Institutional Review Board approval

from UTHHealth. Participants were informed at the beginning of each survey that taking the survey indicated consent to participate in the study.

Table 1. Selected iCHAMPSS tools for review

Tool type	Reviewed tools
Step overviews	Get your EBP approved Maintain momentum for your EBP
Success stories	Success in Select
Facts and tips	Introduction to EBPs EBP selection guide Communicating effectively
Helpful links	Data sources
Templates	Parent poll Needs assessment SHAC recommendation letter Implementation plan

Measures

Demographic measures in the pre-test survey assessed gender, race/ethnicity, geographic location, primary role, years involved in sexual education, and membership on a committee/council that reviews health education curricula. Additional pre-test survey items addressed perceived support of an EBP by various constituent groups (e.g., parents, and tribal leaders); response options included a three-point Likert scale ranging from “not at all supportive” to “very supportive” plus “don’t know” (Brink et al., 1995), and whether participants were currently implementing a sexual health education program.

Usability constructs were adapted from preexisting usability assessment instruments (Markham et al., 2009; Shegog et al., 2007) and included acceptability; ease of use; utility; credibility; motivational appeal; perceived helpfulness; and perceived impact on their organization’s ability to adopt, implement, and maintain a sexual health education EBP. *Acceptability* was based on how much participants liked each of the iCHAMPSS tools using a Likert-type 5-point scale (“dislike a lot” to “like a lot”). *Ease of use* was based on how easy it was to use the iCHAMPSS tools using a Likert-type 3-point scale (“very easy” to “kind of hard”). *Utility* was based on how useful each iCHAMPSS tool would be using a Likert-type 4-point scale (“not useful at all” to “very useful”). *Credibility* of the overall iCHAMPSS DSS was based on participants’ perceptions of content correctness using a Likert-type 3-point scale (“accurate”, “inaccurate”, and “no opinion”) and trustworthiness (“can be trusted”, “can’t be trusted”, and “no opinion”). *Motivational appeal* was based on whether participants would be likely to use iCHAMPSS again or recommend iCHAMPSS to someone else (“yes”, “no”, and “no opinion”). *Perceived helpfulness* was based on a comparison of iCHAMPSS with their school, community, or organization’s current resources for adopting, implementing, and maintaining EBPs (“more helpful”, “as helpful”, and “less helpful”). *Perceived impact* was based on participants’ perception that the information in iCHAMPSS would be helpful in adopting, implementing, and maintaining a sexual health EBP (“yes”, “no”, and “no opinion”).

Short-term psychosocial measures were adapted from previous measures and included attitudes towards EBPs (response options included a four-point Likert scale ranging from “strongly disagree” to “strongly agree”) (Brink et al., 1995); perceived barriers (response options included a four-point Likert scale ranging from “strongly disagree” to “strongly agree”) (Steckler, Goodman, McLeroy, Davis, & Koch, 1992); knowledge of where to find an EBP (response options included a four-point Likert scale ranging from “strongly disagree” to “strongly agree”) (Steckler et al., 1992), and a newly developed item to assess knowledge of EBP characteristics (response options included 3 correct selections; e.g., “EBPs have been rigorously evaluated”, and one incorrect selection, “EBPs will produce the same results in any population”). The post-survey contained six newly developed items to assess participants’ perceived impact of using iCHAMPSS on their future self-efficacy to adopt, implement, and maintain an EBP (3 items); ability to advocate for EBPs (1 item); credibility as a sexual health education resource for their colleagues and community (1 item); and their organization’s ability to adopt, implement, and maintain an EBP (1 item) (response options included “increase,” “decrease,” and “stay the same”).

Perceived feasibility of using iCHAMPSS to choose, implement, and maintain an EBP compared to current practice without iCHAMPSS was assessed using an adapted 15-item feasibility scale (Shegog et al., 2006; Shegog et al., 2013). For each domain of choosing, implementing, and maintaining an EBP, a 5-point semantic differential scale was used to assess: ease (easier/harder), time (less time/more time), thoroughness (more thorough/less thorough), efficiency (more efficient/less efficient), and communication (improves communication/interferes with communication). The post-survey included open-ended items to assess what participants liked best and least about iCHAMPSS, and ways to make the program more appealing.

Analysis

Usability ratings were analyzed using descriptive statistics. Ratings for acceptability, ease of use, and utility were calculated individually for each of the eleven iCHAMPSS tools under study, providing a range of scores across tools from lowest to highest. Credibility, motivational appeal, helpfulness, and perceived impact were assessed for the overall iCHAMPSS DSS. Short-term impact on psychosocial outcomes was analyzed using descriptive statistics, the Wilcoxon signed-rank test, and McNemar’s test. Perceived feasibility was analyzed using the sign test to compare sample responses with neutral responses (represented by item averages). Analyses were conducted using SAS analytic software. P -values ≤ 0.05 were considered statistically significant. Content analysis was used to identify themes from the open-ended items.

RESULTS

Participant Characteristics

A total of 36 participants reviewed iCHAMPSS. The majority was female (89%) and almost two-thirds self-identified as AI/AN (64%). Participants were located throughout the U.S., and mostly worked in a health department (14%), community health (19%), or school setting (17%). Almost two-thirds had been involved in decision-making around or implementing sexual health education for ≤ 5 years; the remainder (36%) had 6-20+ years’ experience in sexual health education. Roughly one-third (36%) had ever served on a committee/council that reviews health education curricula; of those, over half (58%) had served for ≤ 5 years; the remainder (41%) had served for 6-20+ years. The majority perceived support for using EBPs from different constituent

groups in their community (78-94%). Over half (53%) was currently implementing a sexual health education program (Table 2).

Table 2. Sample Characteristics (N=36)

	n (%)
Sex	
Male	4 (11)
Female	32 (89)
Race/ethnicity ^a	
American Indian/Alaska Native	23 (64)
White	11 (31)
Black	2 (6)
Hispanic	3 (8)
Asian or Pacific Islander	1 (3)
Other	1 (3)
Geographic location ^b	
Alaska	6 (17)
Northwest (ID, MT, OR, WA)	16 (46)
Southwest (AZ, NM)	5 (14)
Midwest (MI, MN, SD)	5 (14)
South (NC, OK)	3 (9)
Primary role	
Health department personnel	5 (14)
Community health representative	7 (19)
Health educator	6 (17)
School personnel	4 (11)
School administrator	2 (6)
Clinic personnel	2 (6)
Tribal education administrator	1 (3)
Tribal health organization representative	1 (3)
Grant program coordinator or evaluator	3 (8)
Parent	1 (3)
Other ^c	4 (12)
Years involved in decision making around or implementing sex education	
0-5 years	23 (64)
6-10 years	9 (25)
11-20 years	1 (3)
More than 20 years	3 (8)

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Ever served on a committee/council to review health education curricula	
Yes	13 (36)
No	23 (64)
Role on the committee or council ^d	
Chair	4 (31)
Officer	2 (15)
Voting member	3 (20)
Advisor	4 (31)
Other	2 (15)
Length of service on committee or council ^e	
0-5 years	7 (58)
6-10 years	4 (33)
11-20 years	1 (8)
More than 20 years	0
Perceived support from constituent groups for using evidence-based programs (<i>rated as supportive or very supportive</i>)	
Parents	28 (78)
Community members ^f	28 (82)
School administrators	31 (86)
Tribal leaders	29 (81)
Community organizations	33 (92)
Health teachers	34 (94)
Other teachers	28 (78)
Currently implementing a sexual health education program	
Yes	19 (53)
No	17 (47)

^a Reflects over 100% as participants were allowed to choose more than one race/ethnicity; ^b n= 35 due to missing data; ^cOther: Biostatistician, administrator, member, student; ^dn=13; one respondent selected 3 roles; ^en=12 due to missing data; ^fn=34 due to missing data.

Usability

Reviewed iCHAMPSS tools were reported to be acceptable (78-94%), easy to use (81-94%), and useful (64-100%). Regarding acceptability, the EPB selection guide was the lowest rated tool; the Introduction to EBPs was the highest rated tool. Regarding ease of use, the EPB selection guide and needs assessment template were jointly rated the lowest; the Introduction to EBPs, Communicating Effectively, and the Parent Poll template were jointly rated the highest. Regarding utility, the SHAC recommendation letter template was the lowest rated tool, and Maintain Momentum for Your EBP was the highest rated tool. The overall iCHAMPSS DSS was perceived as credible (86-94%), motivationally appealing (81-86%), more helpful than current resources (75%), and impactful of EBP adoption, implementation, and maintenance (89-94%) (Table 3).

Table 3. Participant Usability Ratings for iCHAMPSS (N=36)

Usability construct	Gradient	Range of agreement across tools (%)^a
iCHAMPSS tools		
Acceptability	‘Like a little’ or ‘like a lot’	78-94
Ease of use	‘Very easy’ or ‘kind of easy’	81-94
Utility	‘Very useful’ or ‘somewhat useful’	64-100
Usability construct	Gradient	Participant agreement (%)
Overall iCHAMPSS DSS		
Credibility	‘Information was accurate’	86
	‘Information was trustworthy’	94
Motivational appeal	‘Likely to use iCHAMPSS again’	81
	‘Would recommend iCHAMPSS to someone else’	86
Helpfulness	‘More helpful than school/community/organization’s current resources for adopting, implementing, and maintaining EBPs’	75
Perceived impact	‘Information of iCHAMPSS would help my school/community organization <u>adopt</u> a sexual health EBP’	89
	‘Information of iCHAMPSS would help my school/community organization <u>implement</u> a sexual health EBP’	94
	‘Information of iCHAMPSS would help my school/community organization <u>maintain</u> a sexual health EBP’	89

^a A range of agreement across tools is presented. For example, for Acceptability, participants’ agreement that they liked a tool (‘a little’ or ‘a lot’) ranged from 78% for the lowest rating tool to 94% for the highest rating tool.

Short-Term Psychosocial Outcomes

Using iCHAMPSS did not significantly impact participants' attitudes or knowledge regarding EBPs. However, using iCHAMPSS significantly increased participants' perceived barriers to adopting an EBP ($p < 0.05$) (Table 4). As a result of using iCHAMPSS, the majority of participants reported that their self-efficacy to adopt (81%), implement (78%), and maintain (72%) a sexual health education EBP had increased; their ability to advocate for EBPs (83%) and to serve as a credible resource (78%) had increased; and their organization's ability to adopt, implement, and maintain an EBP (64%) had increased (data not shown).

Perceived Feasibility

Compared to current practice working without iCHAMPSS, participants rated iCHAMPSS as significantly easier to use, less time consuming, more thorough, efficient, and facilitative of improved communication with schools and communities for choosing and maintaining a sexual health education EBP (all $p < 0.01$). For implementing an EBP, iCHAMPSS was rated as significantly more thorough, efficient, and facilitative of improved communication with schools and communities (all $p < 0.05$) compared to current practice. Yet, participants did not perceive that using iCHAMPSS would make implementing an EBP easier or less time-consuming (Table 5).

Qualitative feedback indicated that the majority of participants appreciated iCHAMPSS' organization and content; however, some users found the amount of information overwhelming. Suggestions to make iCHAMPSS more appealing for AI/AN communities were: include EBPs specifically adapted for AI/AN youth in the EBP selection guide; include culturally appropriate assessment tools; incorporate tribal review and approval processes into the 'approve' step; provide resources to adapt EBPs for your population; simplify overall content and make it more visual; and provide resources on additional topics, e.g., healthy relationships, communication, violence and rape prevention.

DISCUSSION

Limited tools exist to help AI/AN communities adopt, implement, and maintain evidence-based, adolescent sexual health education programs. We assessed the usability, short-term psychosocial impact, and perceived feasibility of an online sexual health education DSS, iCHAMPSS, from the perspective of adult stakeholders working with AI/AN communities across the U.S. Overall, participants responded positively to iCHAMPSS, rating it as acceptable, easy to use, credible, appealing, and impactful of EBP adoption, implementation, and maintenance. Participants also rated iCHAMPSS as "more helpful" than current resources, a finding which was corroborated by high perceived feasibility ratings indicating that iCHAMPSS represented a relative advantage over current practice (e.g., working without iCHAMPSS) to adopt, implement, and maintain a sexual health education EBP. These findings align with the positive usability ratings of iCHAMPSS reported among school district stakeholders in Texas (Hernandez et al., 2017).

Most participants anticipated that their self-efficacy to advocate for, adopt, implement, and maintain an EBP would increase as a result of using iCHAMPSS, as well as their ability to serve as a credible resource on sexual health education. This mirrors the statistically significant positive impact on participants' self-efficacy to get approval for an EBP from their school board, which was noted in the Texas iCHAMPSS usability study (Hernandez et al., 2017). However, no statistically significant differences were noted in the current study in participants' attitudes or knowledge related to EBPs after using iCHAMPSS. Conversely, using iCHAMPSS significantly increased participants' perceived barriers to adopting an EBP, and perceived feasibility ratings

Table 4. Change in Psychosocial Determinants of Adopting and Implementing EBPs (N=36)

	Mean (SD)		Mean Difference (SD)	Signed rank of mean difference (S)	Signed- Rank Test (p-value)
	Pre-test	Post-test			
Attitudes					
I am in favor of including an evidence-based program that prevents/reduces teen pregnancy and HIV/STIs in my school/community/organization.	3.67 (0.53)	3.53 (0.77)	-0.14 (0.90)	-9.5	0.48
Perceived Barriers					
My school/community/organization has too many other priorities that would act as barriers to adopting an evidence-based program that prevents/reduces teen pregnancy and HIV/STIs ^a	2.25 (0.65)	2.66 (0.76)	0.43 (0.88)	48.5	0.01
An evidence-based program that prevents/reduces teen pregnancy and HIV/STIs would be difficult to implement in my school/community/organization.	2.25 (0.69)	2.42 (0.81)	0.17 (0.97)	23.5	0.39
Knowledge					
I know where to find evidence-based programs that prevent/reduce teen pregnancy and HIV/STIs for my school/community/organization.	3.00 (1.01)	3.08 (0.94)	0.08 (1.13)	12.5	0.62
	n (%)	n (%)		S (DF)	p-value
Correctly identified characteristics of evidence-based programs ^a	13 (37.1)	16 (45.7)		0.82 (1)	0.37

^an =35 due to missing data

Table 5. Relative Advantage of the iCHAMPSS Website (Compared to Working in Sexual Health Education without iCHAMPSS) (N=36)

	n	Mean ^a	SD	p-value
<i>Choosing</i> an evidence-based program to prevent/reduce teen pregnancy and HIV/STIs				
Ease	28	-0.85	1.30	0.002
Time	32	-0.59	1.04	0.007
Thoroughness	28	-1.21	0.92	0.001
Efficiency	27	-1.26	0.71	0.001
Communication with school/community	29	-1.28	0.75	<0.001
<i>Implementing</i> an evidence-based program to prevent/reduce teen pregnancy and HIV/STIs				
Ease	30	-0.63	1.25	0.078
Time	31	-0.45	1.18	0.064
Thoroughness	27	-0.85	1.03	0.003
Efficiency	27	-0.85	1.10	0.002
Communication with school/community	25	-0.80	1.19	0.012
<i>Maintaining</i> an evidence-based program to prevent/reduce teen pregnancy and HIV/STIs				
Ease	27	-0.81	1.08	0.007
Time	29	-0.69	1.00	0.002
Thoroughness	27	-1.00	0.96	0.000
Efficiency	25	-0.92	1.84	0.002
Communication with school/community	28	-1.14	0.80	<0.001

^aMean scores compare sample responses with neutral or zero responses: ease (easier/harder), time (less time/more time), thoroughness (more thorough/less thorough), efficiency (more efficient/less efficient), and communication (improves communication/interferes with communication).

failed to indicate that participants thought using iCHAMPSS would make implementing an EBP easier or time-saving. It is possible that participants with limited experience implementing a sexual health education EBP may underestimate the complexity of the tasks involved and the potential challenges that may arise (Farb & Margolis, 2016). In addition, the steps involved in the

dissemination of EBPs in Texas may not be reflective of the steps involved in tribal communities. For example, Texas school districts are required to have a School Health Education Council (SHAC) to advise the board of trustees on the adoption of health curricula (Hernandez et al., 2017). In the Texas usability study, the SHAC Recommendation Letter template was the most highly viewed tool, whereas in the current study, only 64% of participants rated the tool as “very” or “somewhat” useful. Similarly, the fact that some tools were not applicable to tribal communities may have had a negative impact. For example, the EBP selection guide received lower acceptability, ease of use, and utility ratings than other tools in the current usability study, a finding corroborated by qualitative feedback noting the lack of culturally adapted EBPs for AI/AN youth in the EBP selection guide. Thus, although iCHAMPSS appeared to increase perceived barriers to the use of EBPs, it also has the potential to address such perceptions pre-emptively. Collectively, these findings speak to the need to tailor iCHAMPSS to better meet the needs of AI/AN communities.

It is possible that asking participants to review tools from across all seven steps of the adoption-implementation-maintenance process, rather than asking them to focus on tools most appropriate to the dissemination step at which they or their organization were at, may have been overwhelming for participants currently in adoption or implementation steps. Asking participants to use the Staging Tool first, and then allowing them to focus on relevant tools given their stage, or simply asking participants to explore tools of interest to them (as was done in the Texas usability study, Hernandez et al., 2017) may have resulted in an increased impact on short-term psychosocial outcomes.

Despite limited impact on short-term psychosocial outcomes, the participants’ overall positive reaction to iCHAMPSS indicates promise for adapting the DSS for use in AI/AN communities. Current dissemination resources may not fully address participants’ needs, and iCHAMPSS provides an opportunity to deliver tailored resources to this population. Qualitative feedback provided a number of tangible adaptation recommendations such as inclusion of culturally relevant EBPs, provision of culturally appropriate assessment tools, integration of tribal review and approval processes, and resources to adapt EBPs for your population. Findings from a statewide implementation study of behavioral health interventions for youth in AI/AN communities also indicate that embedding implementation within a consortium or learning community may be a promising strategy for sustainability (Walker, Whitener, Trupin, & Migliarini, 2015). This could be accomplished via the iCHAMPSS linkage system, which was not active during the usability study. Finally, one in five participants rated iCHAMPSS as “kind of hard” to use, corroborated by some qualitative comments that the website was ‘overwhelming’, indicating the need to simplify iCHAMPSS for future use in AI/AN communities. Next steps would involve more in-depth review of the approval-implementation-maintenance process for sexual health education programs in AI/AN communities, and implementation of a stepped adaptation process (Shegog et al., 2016) involving stakeholder feedback to tailor iCHAMPSS to better serve the needs of AI/AN communities.

Several limitations in interpreting these findings should be noted. Although the study was not powered to examine statistical differences, the sample size was consistent with previous usability testing protocols that do not require statistical significance to determine major usability problems (Nielsen, 1993; Faulkner, 2003; Shegog et al., 2011; Shegog et al., 2013). Although participants were recruited from diverse AI/AN communities across the U.S., and served in a variety of roles related to sexual health education decision-making, findings may not be

generalizable to all AI/AN youth-serving organizations or communities. Finally, participants were given two weeks to review selected iCHAMPSS tools – they were not given sufficient time to use the tools in the actual context of adopting, implementing, or maintaining a sexual health education EBP. Additional testing over an extended period of time would be needed to assess iCHAMPSS' actual impact on the adoption-implementation-maintenance process in AI/AN communities.

CONCLUSION

Findings from this usability study indicate that iCHAMPSS is an acceptable innovative DSS that could be adapted for AI/AN communities to expand the dissemination and implementation of sexual health education EBPs. Further research is needed to evaluate the effectiveness of an adapted “Native iCHAMPSS” to increase the adoption, implementation, and maintenance of sexual health education EBPs in tribal communities, and to assess their impact on behavioral and health outcomes among AI/AN youth.

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