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RESEARCH ARTICLE

Implementation in Practice: Adaptations to Sexuality Education Curricula in California

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ABSTRACT

BACKGROUND: Local implementation of evidence-based curricula, including sex education, has received increasing attention. Although there are expectations that practitioners will implement evidence-based programs with fidelity, little is known regarding the experiences of instructors in meeting such standards. During 2005 to 2009, the California Department of Public Health funded local agencies through its Teen Pregnancy Prevention Programs (TPP) to provide comprehensive sex education.

METHODS: To improve understanding of how agencies implemented curricula, in-depth telephone interviews with 128 coordinators were conducted in 2008 to 2009. Qualitative data were analyzed for content and themes. Selected data were quantified and analyzed to examine differences in curriculum adaptations across settings and curricula type.

RESULTS: Whereas over half of the TPP agencies (59%) implemented evidence-based curricula, most agencies (95%) reported adapting the curriculum, with the majority (83%) adding content. Reasons for adaptations included ensuring that the material was accurate and appropriate; responding to logistical or time constraints; and other factors, such as parental and institutional support.

CONCLUSION: These adaptations reflected agencies' efforts to balance state and local requirements, maintain curriculum fidelity, and provide more up-to-date and accessible information. These experiences highlight the need for guidelines that enable appropriate adaptations, while maintaining fidelity to the core components of the original curriculum.

Keywords: teen pregnancy prevention; sexuality education; curricula implementation; curricula fidelity.

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Whereas substantial progress has been made to address teen pregnancy and childbearing in the United States, work remains to ensure that all adolescents have access to comprehensive sexuality education and quality, confidential reproductive health counseling and services.[1] One approach to reduce unintended pregnancy and sexually transmitted infections (STIs) among teenagers is through evidence-based interventions—programs that have been shown to be effective in improving health behaviors and/or health outcomes.[2,3] National and state efforts to improve adolescent sexual health have increasingly emphasized evidence-based intervention models and attempted to increase the implementation fidelity of these models. According to the Office of Adolescent Health (OAH), fidelity can be defined as ''maintaining the core components of the original program model,'' including

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the program's core content, pedagogy, and other logistical aspects of implementation.[4-6]

However, the current emphasis on fidelity to evidence-based interventions highlights a debate over whether participants' outcomes are improved more through adherence to an intervention developed for a specific population or setting, or through innovations and adaptations to meet local participant needs, particularly if the curricula were developed for youth from different cultural, racial/ethnic, or socioeconomic backgrounds. In addition, implementers often face challenges in determining which program components are essential and which can be adapted, while still retaining program goals. In recent years, federal agencies and researchers have offered some guidance on making adaptations, while retaining fidelity, such as approving of updating statistics, but minimizing significant reductions in content.[7,8] The ''green light,'' ''yellow light,'' and ''red light'' adaptation guidelines developed by ETR provide examples of adaptations that are encouraged, those that should be used cautiously, and those that should be avoided to retain program fidelity.[9]

Research from the fields of violence and substance abuse prevention acknowledges the likelihood of program adaptation during implementation, the need for both better understanding of why adaptations are made and deliberate guidelines for instructors regarding adaptations.[10-13] Relatively few studies have examined fidelity in the area of sexuality education. Recent findings from OAH suggest that successful programs require clear instructions, systems, and technical assistance for measuring and maintaining program fidelity.[14] In some cases, agencies struggled to retain fidelity, while simultaneously creating program ''fit'' with the community, organization, or participants.[15] As in other fields, a more nuanced understanding of the reasons for adaptations is essential for achieving the balance between program fidelity and adaptation in sexuality education.

For several decades, the California Department of Public Health has funded local agencies throughout the state to provide education and outreach to prevent adolescent pregnancy and improve adolescent sexual health through its Teenage Pregnancy Prevention Programs (TPP). During 2004 to 2009, agencies receiving TPP funding were required to provide at least 8 hours of face-to-face, curriculum-based, sexuality education.[16,17] TPP curricula were also required to adhere to the state Education Code, including the California Comprehensive Sexual Health and HIV/AIDS Prevention Act (SB71), which stipulates that prevention education must be medically accurate, age-appropriate, and culturally inclusive. In addition, it requires that any school that offers sexuality education must provide comprehensive information that includes information on abstinence, contraception, STIs, and respect for marriage and other committed relationships.[18]

At the time this study was conducted, agencies receiving TPP funding were provided with a list of recommended curricula, but were not confined to using the listed curricula and could develop their own or select materials or activities from one or more existing curricula. Apart from abiding to the aforementioned state educational requirements, agencies were not required to implement sexuality education programs with fidelity to a selected curriculum. More recently, California received new federal funding and revised some program requirements. Currently, under California's federally funded Personal Responsibility Education Program (PREP), local agencies must select from a subset of approved evidence-based curricula and participate in fidelity monitoring to ensure adherence to the original curricula.[19] Therefore, the findings presented here provide a historical context regarding sexuality education in California, before the current PREP fidelity requirements.

In 2008 to 2009, evaluators at the University of California, San Francisco conducted telephone interviews with TPP program staff to improve understanding of how agencies implemented sexuality education curricula. This article provides in-depth qualitative and quantitative findings about local program implementation, including the type of adaptations made and the myriad reasons for making adaptations.

METHODS

Participants

All the 132 local agencies receiving California TPP funding were eligible to participate in semistructured interviews. Of the 132 agencies, coordinators at 128 agencies completed a telephone interview for a response rate of 97%. Three agencies were not interviewed because there was no available spokesperson, due to staff changes. One agency did not participate because they no longer provided sexuality education at the time of the interview, due to budget cuts. At 5 agencies, the program coordinator was unable to answer particular questions related to curriculum details, so brief follow-up interviews were conducted with an appropriate staff member, such as the health educator, to complete missing information.

Instrumentation

Semistructured telephone interviews were used in this qualitative study. The interview guide consisted of primarily open-ended questions, with some multiple-choice questions to describe program characteristics, such as program setting, participant demographics, and length. Topics included curricula design, content, and

implementation. Other questions pertaining to program elements included implementation challenges and successes.

Procedure

Interviews lasted an average of 50 minutes. Interviewers typed responses during the phone call and the interviews were audio-recorded for later review to ensure the accuracy of notes and improve the quality of the transcriptions.

Data Analysis

Qualitative analysis. Interviews were analyzed for content, including identifying themes, common responses, and representative quotations. Four researchers developed a coding worksheet in Word to analyze qualitative data, and final codes were determined through team discussion. Intercoder agreement was measured during each round of pair-wise coding through a 10% stratified sample of data that were double-coded. Discrepancies were resolved until the level of agreement reached 90% or above.[20,21]

Quantitative analysis. Select data were quantified for additional analysis. Adaptations were quantified and categorized by type of modification (material added, dropped, or modified). Agencies were categorized by settings and by curricula used; respondents could report multiple settings and curricula. Curricula were defined as ''evidence based'' if they met the inclusion criteria for either OAH's list of evidence-based TPPs or the sexuality curricula bibliography created by the Sexuality Information and Educational Council of the United States (SIECUS).[22,23]

Chi-square tests were used to examine differences in curriculum adaptations by setting and curricula type. All quantitative analyses were conducted using STATA version 13.1. All associations discussed were significant at $p < .05$ or less.

RESULTS

Sexuality Education Settings

Agencies offered sexuality education in a variety of settings (Table 1). Nearly all agencies offered sexuality education in mainstream public schools (84%) or in alternative or continuation schools (72%). Other common implementation settings included recreation facilities or youth centers (48%), and community centers (43%). Some agencies implemented programs in settings that served high-risk youth, such as family or social service agencies (35%), juvenile justice facilities (34%), and shelters (6%). Finally, some agencies offered sexuality education in health services settings, including health clinics (27%) and public health agencies (20%). Most agencies (82%) offered sexuality education in more than one setting. Agencies ranged from 1 to 10 different types of settings, and the median number of types of settings was 3.

Table 1. **Settings, Curricula, and Curricula Adaptations by California. Teenage Pregnancy Prevention (TPP) Agencies, 2008 to 2009 (N = 128)**

Measure	N	%
Setting		
Type of setting*		
Mainstream public schools	108	84.4
Alternative/continuation schools	92	71.9
Recreation or youth centers	62	48.4
Community centers	55	43.0
Family or social services agencies	45	35.2
Juvenile justice facilities	43	33.6
Health clinics	35	27.3
Public health agencies	25	19.5
Faith-based organizations	13	10.2
Shelters	8	6.3
Number of settings		
One setting	23	18.0
More than one setting	105	82.0
Curricula		
Using *only* evidence-based curricula†		
Yes	75	58.6
No	53	41.4
Names of evidence-based curricula used*		
Reducing the risk[22]	31	24.2
Safer choices[22]	18	14.1
Streetwise to sexwise[23]	18	14.1
Draw the line, respect the line[22]	5	3.9
Making a difference[22]	4	3.1
Teen outreach program[22]	4	3.1
Making proud choices![22]	4	3.1
PSI[23]	3	2.3
SMART moves/SMART girls[23]	3	2.3
Be proud! Be responsible![22]	2	1.6
Number of curricula used		
One curriculum	111	86.7
More than one curriculum	17	13.3
Curricula adaptations*		
Added material	106	82.8
Dropped material	44	34.4
Modified material	88	68.8

Note: PSI, postponing sexual involvement.
*For educational settings, curricula used, and changes made to curricula, agencies could choose more than one response. Thus, percentages do not add up to 100 for these groups of variables.
†Curricula are described as evidence-based or recommended by one of the sources.[22,23]

Curricula

According to program coordinators, the majority of agencies (59%) used only curricula defined as evidence-based by either the OAH or SIECUS as the basis for their sexuality education (Table 1).[22,23] The most common curricula implemented by agencies included *Reducing the Risk* (24%), *Safer Choices* (14%), and *Streetwise to Sexwise* (14%).

About two-fifths of agencies (41%) used ''other'' curricula—curricula not recognized by national organizations as being evidence-based. These could be

proprietary programs developed in-house for a particular agency or school district, published curricula that have not been designated as evidence-based, or curricula adapted from other programs and uniquely named by the agency. For example, several agencies used curricula developed for their use by a local clinic or organization, such as Planned Parenthood, YMCA, Boys & Girls Club, or Girls Inc.

Thirteen percent of agencies used a combination of more than one curriculum. A frequent reason for using or combining multiple curricula was to create a more comprehensive program for participants. As one coordinator explained: ''We haven't found a curriculum that is really comprehensive sex education. Everything that I've looked at is mostly STDs and HIV/AIDS. We do add anatomy, physiology, and pregnancy to our curriculum'' to make it more complete.

Common Curriculum Adaptations

To improve understanding of how agencies implemented their curricula, program coordinators were asked to describe any adaptations they made, including additions, deletions, or other modifications of material, which may have impacted fidelity to the original curriculum. Ninety-five percent of agencies reported adapting the curriculum in some way. Most agencies reported adding material (83%) or modifying the original material (69%). In comparison, about one third (34%) of agencies removed material from the original curriculum.

Reasons for adapting the curriculum were varied (Table 2). The most common adaptations mentioned by coordinators included modifications to better fit their participants, such as tailoring material and modifying teaching styles and activities to better fit participants' age, maturity, and risk factors, as well as making materials and information more youth-friendly. In addition, agencies commonly updated lessons to reflect current scientific data. Agencies also made changes in response to institutional restrictions on course content and time constraints. The types of adaptations listed are not mutually exclusive. For example, tailoring materials according to youth risk levels may also result in making materials more accessible and youth-friendly.

Participant age, maturity, or risk factors. In general, agencies modified materials to provide slightly different information and activities in middle and junior high schools than in high schools. Younger participants received more information about anatomy, puberty, abstinence, and refusal skills. For older participants and participants in high-risk settings, such as juvenile hall and continuation schools, agencies provided more detailed information about preventing pregnancy and STIs, healthy relationships, and violence prevention. As one coordinator explained:

> *[The curriculum has] one class devoted all to abstinence. We dropped that because according to local data, 90% of students are already sexually active. We still stress abstinence in every lesson as the 100% effective method to prevent STDs, pregnancy, but don't do a whole lesson on that. We felt that because of the high-risk behaviors of the youth, [focusing on abstinence is] not the best usage of time.*

In some settings, instructors focused on particular topics if that need was reflected by the participants. Another coordinator stated:

> *We really use just about everything in the curriculum [but] we might modify it to fit the target population that we're working with. For instance, we go into . . . the continuation high school, where you might have kids who've been in trouble, experimented with drugs, teen pregnancy, etc. So we might focus more on pregnancy prevention or safe sex than we would in the regular high school, where we focus on postponing parenthood, the importance of education, and sexual responsibility.*

Making materials and information more youth-friendly. Some agencies tailored their teaching methods and styles to capture and retain the attention of participants. Many coordinators mentioned updating and adding more visual aids, such as videos and slides, and creating more opportunities for hands-on activities. As one coordinator stated: ''Kids are visual, they need to see what it looks like to know what it means.'' Another coordinator explained: ''Sometimes we need to make [the curriculum] more visual. The kids say, 'Let me see what you're talking about,' so we give them a more hands-on feeling.'' This ''hands-on feeling'' could come from a variety of activities and interactive strategies, such as videos, music, multimedia components, games, contests, or art projects, so that youth could develop a closer connection to the course material.

Another common reason for altering content or activities was to make the material more applicable to participants' lives. Instructors often allowed students or teachers to provide feedback on education sessions, and in some cases, youth assisted in developing or modifying activities, such as role plays and games. According to several coordinators, many existing curricula appeared outdated to youth and did not speak to their own experiences or environment. One coordinator mentioned selecting videos of ''kids that look like them'' so the materials better reflected their community.

Another coordinator explained efforts to make the curriculum more relevant and accessible:

Table 2. **Reasons for and Examples of Common Curriculum Adaptations**

Reasons for Adaptations	Examples of Adaptations Made
Participant age, maturity, or risk factors	• Providing more general, introductory information, such as anatomy, puberty, abstinence, and refusal skills for participants who are younger, sexually inexperienced, or at lower risk • Providing more detailed, comprehensive information, such as specific birth control methods, prevention of STIs, and violence prevention skills for participants who are older, sexually experienced, or at higher risk
Making materials and information more youth-friendly	• Adding visual aids to lessons, such as handouts, videos, slides, and other media • Implementing more interactive activities, such as games, contests, or art projects • Incorporating youth feedback and representation in materials, to reflect social norms, vernacular, and common social situations
Updating course content	• Updating statistics, such as pregnancy and STI rates • Adding new forms of contraceptives
Incorporating local context	• Incorporating material related to local norms and risk behaviors, such as drug or alcohol use
Adding new subject matter	• Adding material related to specific topics, such as communication skills, dating violence, and media literacy
Institutional restrictions	• Reducing or removing content or activities that are objectionable to school administrators or parents • Removing activities that require materials or supplies that are restricted in juvenile justice settings
Time constraints	• Changing, combining, or removing material in order to fit class schedule

STI, sexually transmitted infections.

[Our original curriculum] wasn't connecting to the vernacular and lifestyles of the girls we serve. [We] tweak it so it speaks to the lives of the girls we are serving—the language, the attitude, the environment, the economic situation.

Updating course content. Many coordinators mentioned updating the curricula content to reflect current scientific knowledge about STIs, pregnancy prevention, and other sexual health and risk behavior topics. As contraceptive methods became available, agencies attempted to include new methods and provide detailed information about success rates, side effects, and clinical availability. As one coordinator stated: ''We always try to get the latest information, because that [curriculum] is from 2004, [so it's] a little old now.''

Incorporating local context. Some instructors tailored lessons according to local trends in teen birth rates, STIs, or other risk behaviors, such as substance use. Updating curricula in this way allowed agencies to provide participants with the most current and relevant information for them. One coordinator explained: ''We stick to [teaching about] STIs that are common among this community, prevention for those.'' Another coordinator described how other teachers assisted in identifying pressing issues among local youth, which helped program staff tailor their sexuality education accordingly:

Teachers request we talk about body image because a lot of the youth were posting pictures of themselves on their websites. So we would go over celebrities and what is going on in the media and how it pertains to them.

Adding new subject matter. Agencies also added more information about specific topics that did not already exist in the curricula, such as communication and decision-making skills, negotiation and refusal skills, healthy relationships and dating violence, anger management, and media literacy. One coordinator explained:

I supplement with the expansion of drug and alcohol issues, expansion of teen violence. The reason that I have done it is because those two are really important topics, because of the nature of the kids I work with. Several of the kids I've worked with are in anger management classes, a lot have [demonstrated] violent behavior [or] have gone to court for domestic violence. . . . We felt we needed to focus on that because of the kids' histories.

Institutional restrictions. Agencies often made adaptations because of limitations or restrictions they faced in implementing sexuality education in their communities. Throughout the interviews, several coordinators mentioned altering existing curricula because of community obstacles, such as lack of support for particular program content, or funding constraints. Most commonly, agencies were requested by the school district or parent groups to drop components of their curricula that contained information about homosexuality, condom demonstrations, or emergency contraception. As one coordinator stated: ''We don't practice putting on condoms . . . because the schools would not want that.'' Another coordinator explained:

We were asked to remove some pieces of the curriculum that our district thought were too explicit in nature. They are very conservative. If it were up to us, we would be talking about sex more than we are currently able to, but it would jeopardize our ability to be doing this work in schools at all.

Time constraints. Several coordinators also mentioned time constraints as a reason for changing, combining, or cutting activities or content from a curriculum. While agencies were required to provide at

least 8 hours of sexuality education as part of the state grant, coordinators described several challenges they faced in meeting this requirement. In some schools, agencies were not given enough time with students to complete an entire curriculum without adaptations. As one coordinator responded: ''I think every lesson was a little modified, just for time. [The] whole curriculum is 12 lessons, 12 hours, which we do not have.'' Often, class time must be devoted to administrative tasks, such as taking attendance and administering evaluation surveys to participants. In addition, some sessions were interrupted when schools were closed for holidays, for administrative closures, and during statewide student testing.

When facing time limitations, instructors prioritized which lessons to keep and which to cut. The most common strategy was to remove any lessons or activities perceived as repetitive, and to combine lessons that had similar themes or content. As one coordinator explained: ''[We] haven't left out any information, just left out activities and homework, so that it's minimized to fit within that 1 hour of curriculum that they're teaching in the classroom.'' Another coordinator described combining multiple topics to take up less time. ''The delay tactics and saying no are modified to be collapsed [rather] than in multiple sessions,'' she explained. ''Some role making is collapsed. Anything overly repetitive, which in this curriculum can happen, gets dropped.''

Coordinators made an effort to retain what they considered to be the central components of a curriculum, to ensure that participants still received the key messages and information, and the skills needed to prevent pregnancy and STIs. As one coordinator explained:

> *The entire curriculum is fantastic, [but we] had to pick most critical components for preventing teen pregnancy—that really address key issues, messages, when it comes to preventing pregnancy, spread of STDs. . . . Get those essentials in there.*

Adaptations by Setting and Curricula Type

This study also examined differences in curriculum adaptations by setting and curricula type. In general, curriculum adaptations were common regardless of the setting. Programs implemented in public schools were more likely to modify content than those not in public schools (73% vs 45%, $p < .05$). However, there were no other significant differences by setting.

Our analyses compared curriculum adaptations by curriculum, focusing on whether agencies used each of the 3 most commonly used curricula alone or in combination with another curriculum. All agencies using *Reducing the Risk* added material to their curriculum, compared to 77% of agencies not using that curriculum ($p < .01$). Agencies using *Safer Choices* were more likely to cut material than those not using it (67% vs 29%, $p < .01$). Agencies using *Streetwise to Sexwise* also were more likely to cut material than those not using that curriculum (56% vs 31%, $p < .05$). In addition, agencies that were using only evidence-based curricula were more likely to eliminate material than those using non-evidence-based curricula (44% vs 21%, $p < .01$). There were no other significant differences in adaptations by curriculum type.

DISCUSSION

Among the 128 agencies surveyed throughout California, nearly all reported adapting their TPP curricula during implementation. Coordinators reported making adaptations based on observed or documented needs, perceived risk levels among youth, and to improve youth-friendliness. Other common reasons for adaptations included social factors, such as parental, political, and institutional support for comprehensive sexuality education, and community context. Across all settings, fewer agencies reported removing materials from curricula than adding or modifying materials. Some curricula were more likely to be adapted than others, perhaps reflecting a difference in the comprehensiveness or relevance of the original content.

Two out of 5 agencies used self-developed or other curricula, which raises questions regarding the content and quality of those programs. This study did not include a curriculum review, so we cannot compare the self-developed curricula to evidence-based programs. Yet, the majority of agencies made adaptations, regardless of curricula type, which points to the need for exploring flexibility during implementation, as well as further evaluation of the ''hybrid'' or adapted curricula. Such studies would also help ascertain whether all of the original curriculum elements continue to be as effective in other settings, or whether further refinements and adaptations are more effective. Rather than a strict focus on fidelity to evidence-based interventions, another perspective is implementing evidence-informed programming.[24] Evidence-informed programming leaves room for the judgment and experience of the facilitator, and recognizes the importance of responding to the specific needs and backgrounds of the youth being served.

Ideally, adaptation guidelines, such as the green/yellow/red light recommendations developed by ETR, and the fidelity monitoring plans developed by OAH, should support agencies in determining how to incorporate adaptations into evidence-based programs, while retaining fidelity to the core components of the original curriculum. But it is unclear whether these instructions adequately address the need for program flexibility in varied settings and with various participants. Although some modifications discussed above clearly fall within the guidelines of ''green light''

adaptations—such as adding local statistics or updating contraceptive information—others are more central to the fidelity/adaptation debate, such as removing role plays or other skill-building activities, or reducing the repetition of critical messages. Although some lessons may be perceived as repetitive or time-consuming to instructors, these elements could directly contribute to the effectiveness of the program, especially among adolescents, who benefit from practicing skills and the reinforcement of central messages.[25]

These findings underscore the complexity of the program implementation process and raise several important questions related to program fidelity and adaptation. If evidence-based curricula are developed for one demographic group or setting, will these programs have similar outcomes in other settings? In part, this question is being answered through OAH's focus on replication and testing of evidence-based curricula in other settings and with other populations. If school schedules do not allow agencies to implement their complete curriculum, how should programs decide which components to eliminate and which to keep? If principals and parents refuse to allow certain topics or activities to be implemented in a school setting, can the program still be called ''comprehensive''? Are modified curricula more or less effective than programs implemented with perfect fidelity? Each of these questions points to the pragmatic realities faced by program instructors and the challenges of implementing a high quality program with reality, rather than pure fidelity.

Limitations

The data presented here were self-reported by program coordinators. Because the interviews were conducted as part of a program evaluation, respondents may have felt inclined to present their programs as being in greater compliance to state guidelines or following existing curricula more closely. Conversely, respondents may have chosen to present their adaptations as evidence of the success of their programs. Indeed, the modification patterns indicate that agencies were more likely to report adding or modifying materials, rather than removing them, perhaps reflecting a reporting bias. However, these findings regarding the practical and logistical realities faced by instructors provide useful insights and highlight the need for fidelity guidelines that enable an appropriate degree of program adaptation.

Recommendations for Future Research

Additional research is needed to improve our understanding of curriculum implementation, adaptation, and the benefits of fidelity. In particular, more research in this area would provide greater understanding of the impacts of program modifications on participant outcomes. For example, while evidence-based models have been tested with all of their components, are the same effects achieved if these quality programs are modified in terms of length and some content? In addition, examining the utility of existing adaptation guidelines and explanations of core components, with feedback from program staff, would further support the process of meaningful program replication and adaptation. These data would help to improve program selection, implementation, and cross-program comparisons, as well as inform provider training and future curriculum development.

Conclusion

Common adaptations to sexuality education curricula in California's TPP program, such as modifications based on participants' backgrounds or updating materials, reflected agencies' efforts to balance state requirements and fidelity to a curriculum, while providing up-to-date, accessible, and quality sexual health information to youth within a variety of settings. This study shares qualitative and quantitative data on the types of modifications to sexuality education curricula, some of the reasons for curriculum modifications, and the context in which agencies were more likely to modify curricula.

IMPLICATIONS FOR SCHOOL HEALTH

Implementing sexuality education curricula in school settings can be challenging, especially given institutional restrictions, such as time constraints and level of administrative support for covering sensitive topics. Instructors should ensure that the selected curriculum is appropriate for the intended audience with regard to age, cultural setting, and risk level. In addition, many evidence-based programs were designed for smaller group settings, which may be challenging to implement in most classrooms. Adapting evidence-based curricula to include new subject matter, respond to local context, and improve youth-friendliness may reduce program fidelity, yet increase program fit for youth participants.

Human Subjects Approval Statement

This study was part of an evaluation of the California Teen Pregnancy Prevention program; as such, the state of California Committee for the Protection of Human Subjects (IRB) determined that it was exempt from review.

REFERENCES

1. Ralph LJ, Brindis CD. Access to reproductive healthcare for adolescents: establishing healthy behaviors at a critical juncture in the lifecourse. *Curr Opin Obstet Gynecol*. 2010;22(5):369-374.

2. Kirby D, Laris BA. Effective curriculum-based sex and STD/HIV education programs for adolescents. *Child Dev Perspect*. 2009;3(1):21-29.
3. Lindberg LD, Maddow-Zimet I. Consequences of sex education on teen and young adult sexual behaviors and outcomes. *J Adolesc Health*. 2012;51(4):332-338.
4. Office of Adolescent Health. Fidelity monitoring guidance for TPP grantees; 2011. Available at: http://www.hhs.gov/ash/oah/news/assets/fidelity_monitoring_guidance.pdf. Accessed November 4, 2014.
5. US Centers for Disease Control and Prevention. Replicating effective programs plus; 2012. Available at: http://www.cdc.gov/hiv/topics/prev_prog/rep/index.htm. Accessed November 4, 2014.
6. Office of Adolescent Health. Teen pregnancy prevention: evidence-based programs; 2012. Available at: http://www.hhs.gov/ash/oah/oah-initiatives/tpp/programs.html. Accessed November 4, 2014.
7. Maternal Child and Adolescent Health Division. *Request for Applications (RFA) 11-10407: California Personal Responsibility Education Program (CA PREP)*. Sacramento, CA: California Department of Health Services; 2012.
8. Family and Youth Services Bureau. Making adaptations tip sheet; 2012. Available at: http://www.acf.hhs.gov/programs/fysb/resource/prep-adaptations-tips. Accessed November 4, 2014.
9. ETR Associates. Promoting science-based approaches: adaptation guidelines; 2010. Available at: http://www.etr.org/recapp. Accessed November 4, 2014.
10. Dane AV, Schneider BH. Program integrity in primary and early secondary prevention: are implementation effects out of control? *Clin Psychol Rev*. 1998;18(1):23-45.
11. Ennett ST, Haws S, Ringwalt CL, et al. Evidence-based practice in school substance use prevention: fidelity of implementation under real-world conditions. *Health Educ Res*. 2011;26(2):361-371.
12. Ringwalt CL, Vincus A, Ennett S, Johnson R, Rohrbach LA. Reasons for teachers' adaptation of substance use prevention curricula in schools with non-white student populations. *Prev Sci*. 2004;5(1):61-67.
13. Ringwalt CL, Ennett S, Johnson R, et al. Factors associated with fidelity to substance use prevention curriculum guides in the nation's middle schools. *Health Educ Behav*. 2003;30(3):375-391.
14. Margolis AL, Roper AY. Practical experience from the Office of Adolescent Health's large scale implementation of an evidence-based teen pregnancy prevention program. *J Adolesc Health*. 2014;54(3):S10-S14.
15. Kelsey M, Layzer J. Implementing three evidence-based program models: early lessons from the teen pregnancy prevention replication study. *J Adolesc Health*. 2014;54(3):S45-S52.
16. Office of Family Planning. *Request for applications (RFA) 11-10018: Teen Pregnancy Prevention Program Community Challenge Grant (CCG)*. Sacramento, CA: California Department of Health Services; 2004.
17. Office of Family Planning. *Request for applications (RFA) 11-10017: Information and Education Grant*. Sacramento, CA: California Department of Health Services; 2004.
18. California State Board of Education. Health education content standards; 2008. Available at: http://www.cde.ca.gov/be/st/ss/. Accessed November 4, 2014.
19. Family and Youth Services Bureau. Personal Responsibility Education Program Fact Sheet; 2013. Available at: http://www.acf.hhs.gov/programs/fysb/resource/prep-fact-sheet. Accessed November 6, 2014.
20. Kurasaki KS. Intercoder reliability for validating conclusions drawn from open-ended interview data. *Field Methods*. 2000;12(3):179-194.
21. La Pelle N. Simplifying qualitative data analysis using general purpose software tools. *Field Methods*. 2004;16(1):85-108.
22. Office of Adolescent Health. Teen Pregnancy Prevention Resource Center: evidence-based programs; 2012. Available at: http://www.hhs.gov/ash/oah/oah-initiatives/teen_pregnancy/db/tpp-searchable.html. Accessed November 11, 2014.
23. Sexuality Education Council of the United States. Sex Ed Library: curricula bibliography; 2012. Available at: http://www.sexedlibrary.net/index.cfm?pageId=778. Accessed November 11, 2014.
24. Nevo I, Slonim-Nevo V. The myth of evidence-based practice: towards evidence-informed practice. *Br J Soc Work*. 2011;1-22.
25. Kirby D, Coyle K, Alton F, Rolleri L, Robin L. *Reducing Adolescent Sexual Risk: A Theoretical Guide for Developing and Adapting Curriculum-based Programs*. Scotts Valley, CA: ETR Associates; 2011.