Lessons Learned from Implementing School-Based Substance Abuse Prevention Curriculums

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This article reports on the lessons learned from a five-year, evidence-based substance abuse prevention initiative conducted in three school districts. Traditional outcome measures yielded no significant program effects, despite the use of an evidence-based curriculum. The failure to find significant statistical results is discussed in terms of four issues that are crucial for successful program implementation: (1) initial selection of an appropriate program, (2) adequate stakeholder involvement and school readiness, (3) attention to program fidelity, and (4) evaluation planning. Based on the literature and the authors' experience, practice implications are offered to maximize the effectiveness of school-based prevention programs.

KEY WORDS: *curriculums; evidence-based programs; implementation; prevention; school social workers*

School social workers often help implement alcohol, tobacco, and other drug prevention curriculums. With faculty and staff, they coordinate program components, present curriculum content, assist with evaluation of curriculums, and work with outside administrative agencies. School social workers are expected to use critical reviews of curriculums to identify empirically validated programs that are likely to be successful with their student population (Nation et al., 2003; Substance Abuse & Mental Health Services Administration [SAMHSA], 2003). In Michigan, for example, drug-free schools funding is contingent on the use of evidence-based models. Program effectiveness is judged by using scientific criteria associated with the rigor of the research design and strength of the findings. Evidence-based practice has become so widespread that the question is not whether, but which, empirically based program to use.

Unfortunately, using an evidence-based program is not a fail-safe strategy. This article describes the lessons learned from the largely unsuccessful implementation of an evidence-based curriculum in three school districts. These lessons emphasize the importance of the initial selection of an appropriate program, adequate stakeholder involvement and school readiness, attention to program fidelity, and evaluation planning.

PROGRAM SELECTION

Numerous evidence-based substance abuse prevention programs have been successfully used in school settings (SAMHSA, 2003). However, a program that has been effective in one school district will not necessarily be effective in all school districts. To enhance the probability of success, a close match is required between the theoretical change processes that underlie the prevention program and the needs of the target population. Needs assessment surveys that provide data about the target populations' risk and protective factors can inform program selection. Programs that do not focus on the specific needs of the target students are likely to be unsuccessful in delaying or reducing substance use (Fagan & Mihalic, 2003).

In addition to theoretical concerns, practical issues must be considered when a prevention program is selected for implementation. Issues such as the amount of time the curriculum requires, instructors' qualifications, the cost of training and materials, and cultural appropriateness are important to consider (Castro, Barrera, & Martinez, 2004; Dusenbury, Brannigan, Falco, & Hansen, 2003; SAMHSA, 2003). If the district cannot afford to buy all the required materials or provide enough release time for staff training, it is unlikely that the program will be successful as implemented.

STAKEHOLDER INVOLVEMENT AND SCHOOL READINESS

Stakeholder involvement in program implementation is essential. Successful implementation of any curriculum depends on support from district administrators, principals, teachers, social workers,

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parents, and the community (Rohrbach, Graham, & Hansen, 1993). In general, prevention programs are more successful when principals require and facilitate high-quality implementation (Gottfredson & Gottfredson, 2002; Kam, Greenberg, & Walls, 2003). In most school-based programs, teachers are the primary implementers; thus their support of the program is crucial (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Hunter, Elias, & Norris, 2001; Pentz et al., 1990). Parents and other members of the community can undermine a prevention program if they do not accept or understand it (Kumpfer, 1997).

One component of stakeholder involvement is to ensure that school staff are well prepared to meet program requirements before implementation. School readiness encompasses multiple features, including adequate planning and preparation time, resources, and strategies to integrate the program into the schedule without staff feeling burdened (Elliott & Mihalic, 2004). A capacity-building period may be required before implementation can be successful (Elias, Zins, Graczyk, & Weissberg, 2003; MacDonald & Green, 2001). Finding enough time for program implementation has become a serious barrier in many districts (Hahn, Noland, Rayens, & Christie, 2002; McBride, Farrington, & Midford, 2002). Schools are increasingly overwhelmed by federal mandates for improvements in standardized test scores, and the time available for substance abuse prevention has been shrinking (Dane & Schneider, 1998).

PROGRAM FIDELITY

Issues associated with fidelity dominate the literature on program implementation (Castro et al., 2004; Ringwalt et al., 2003). In this context, *fidelity* means using the full curriculum and adhering to the lessons as written. Many researchers have found that programs are more likely to have a significant impact on key outcomes when fidelity is high (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990; Resnicow, Cross, & Wynder, 1993). Many factors increase fidelity, including adequate teacher training, clear program manuals, and organizational support (Dusenbury et al., 2003).

EVALUATION PLANNING

Good evaluation is tailored to the program being evaluated, which includes paying attention to the program goals, program features, and recruitment and selection of the target population (Devaney & Rossi, 1997). Most evaluation researchers agree that school staff and evaluators must work together, simultaneously planning the implementation and evaluation design to assess effectiveness. Good evaluation and implementation do not, however, stop there. When program evaluators work closely with the implementation staff, the quality of both the implementation and the evaluation is higher (Gottfredson, Gottfredson, & Skroban, 1998).

OVERVIEW OF THE STUDY'S GOALS

The initial intent of this article was to describe the statistical results of the evaluation of a school-based prevention program. However, we did not find significant program effects. Instead of burying the lack of findings, we decided to critically examine the factors that impeded and enabled implementation. As Gambrill (2001) noted, evidence-based practice emphasizes transparency: clearly describing services and outcomes. Although it is important to use curriculums with validated results, it is equally as important to implement a program in such a way that local success is likely. The lessons learned in this study can aid other schools in their program selection and implementation.

PROJECT OVERVIEW

A school-based substance abuse prevention project was implemented over a five-year period with funding from a private foundation. Schools were provided with unencumbered resources to address prevention needs neglected by other funding agents, experiment with new strategies, and enhance existing efforts. Three school districts received approximately $3.2 million: (1) a large urban district with more than 250 schools; (2) an intermediate school district that administered resources for more than 30 suburban schools; and (3) a small, five-school urban district. Each grantee was encouraged to implement the Michigan Model for Comprehensive Health Education (Michigan Department of Public Health, 1990), an evidence-based curriculum. Schools were also expected to address the unique needs of their student populations with strategies such as conflict resolution programs, parent programs, student assistance programs, and nursing services.

The Michigan Model for Comprehensive Health Education is a materials-based normative approach designed to teach students about all aspects of health

promotion and disease prevention. Substance use is a major curricular theme, but so are topics such as cardiovascular health, diet, and exercise. In addition to providing information about the consequences of unhealthy behaviors, social skills development is a major theme. The comprehensive curriculum includes 40 to 60 lessons per year with teacher training and an extensive array of supporting components. The lessons in the curriculum build on one another from kindergarten through eighth grade with the expectation that students will receive all lessons each year. The Michigan Model is based on research conducted by Shope and colleagues (Shope, Copeland, Marcoux, & Kamp, 1996; Shope, Dielman, Butchart, Campanelli, & Kloska, 1992). The hypothesis guiding the evaluation was that at follow-up assessments students who received the Michigan Model lessons and supplemental programs at their schools would have improved life skills and reduced substance use compared with students in the comparison group.

METHOD

Participants and Procedures

The small urban district and the intermediate school district agreed to participate in the multiyear evaluation described here. Community populations ranged from 5,000 people (semirural) to 61,000 people (suburban). Median family income was approximately $36,800. Ninety-seven percent of the population in these districts was white. Twenty-five percent of the students were eligible for the free or reduced-cost lunch program.

The study's procedures were approved by the university's Institutional Review Board. Parental consent forms were sent out, and surveying took place over two days in the fall and spring for two years. Unique codes were used to link responses and preserve confidentiality. Yearly response rates ranged from 84 percent to 92 percent.

Research Design

A pretest–posttest quasi-experimental design was used with three program schools and two comparison schools. Comparison schools were in districts that had demographically similar student populations but did not have comprehensive substance abuse prevention programs.

The goal in the program schools was for all sixth- and seventh-grade students to receive the entire curriculum. Participation was highest in the first year; approximately 75 percent of the curriculum was taught to 1,013 students. In year two, students received about 50 percent of the curriculum, or at least 30 hours of instruction. Data analyses were restricted to those students who completed pretest and posttest surveys in both grades. This reduced the sample size to 453.

Measures

Major outcome variables were curriculum knowledge, social skills, and self-reported frequency of alcohol and other drug use. Students' knowledge about information included in the curriculum materials was assessed by means of a multiple-choice test we developed.

Six psychosocial skills were emphasized in the curriculum. *Decision-making skills* were measured with eight questions that evaluated students' use of a comprehensive model for decision making (Wills, 1985). *Assertiveness skills* were assessed with a seven-item scale (Wills, Baker, & Botvin, 1989). The six-item *peer susceptibility* measure was developed by Dielman, Campanelli, Shope, and Butchart (1987). Students were asked eight questions developed by the research team to evaluate how **confident** they were about their ability to use the various skills they had been taught. Three items were developed by the research team to assess perceived *relations with peers*. General *school perceptions* were measured with five questions (O'Donnell, Hawkins, & Abbott, 1995). Responses to all of these questions were made on four- or five-point response scales. Cronbach's coefficient alphas ranged from .63 to .83. (Additional information about the measures is available from the authors.)

Substance use items were from the Monitoring the Future Study, a long-term national study of student substance use (Johnston, O'Malley, & Bachman, 1993). Lifetime and recent use of cigarettes, alcohol, and marijuana were assessed.

RESULTS

Pretest Equivalence between Program and Comparison Students

Students in program and comparison schools were similar at the pretest on most demographic measures. Most participants were white (program schools = 93 percent, comparison schools = 91 percent) and lived with two parents (program schools = 80 percent, comparison schools = 81 percent). Forty-nine percent of the participants in the program schools and 51 percent in the comparison schools

were boys. Program students reported that their fathers ($M = 1.92$, $SD = 1.15$) had higher levels of education than comparison students' fathers ($M = 1.58$, $SD = 1.18$, $t = 2.39$, $p < .05$) (educational level was measured on a four-point scale ranging from 0 = some high school to 3 = college graduate). Also, comparison students ($M = 1.90$, $SD = 1.82$) attended after-school activities more frequently than did program students ($M = 1.39$, $SD = 1.65$, $t = -2.83$, $p < .01$).

Attrition Analysis

A substantial number of students were not available for longitudinal data analysis ($n = 560$) because they were absent during follow-up testing or did not answer the substance use questions. We found no significant differences at pretest for attendance at after-school meetings, mother's education, father's education, assertiveness, confidence in ability to use skills, peer relations, or alcohol consumption between students who were included in longitudinal data analyses and students who were not because of missing data. There were significant differences at pretest in cigarette and marijuana use, peer susceptibility, decision making, and school perceptions. Students who did not complete the follow-up surveys reported greater use of cigarettes (31 percent versus 20 percent) and marijuana (8 percent versus 2 percent, $ps < .001$) and greater peer susceptibility (.59 versus .50), poorer decision making (2.43 versus 2.58), and less positive school perceptions (2.50 versus 2.64, $ps < .05$). (These latter measures were derived from a scale that used multiple questions with multiple responses to capture each concept.) Many researchers have reported similar results, with the students most at risk being absent more often than other students (Allen, Philliber, Herrling, & Kuperminc, 1997; Farrell & Meyer, 1997).

Curriculum Knowledge

As anticipated, most students were not initially familiar with the material in the curriculum; the average pretest score was below 50 percent. Although program students scored somewhat higher than comparison students at posttest, the difference was not significant.

Initial Rates of Substance Use

At the beginning of sixth grade, 25 percent of program and comparison students had tried alcohol, 20 percent had used cigarettes, and less than 3 percent had used marijuana. As expected, substance use rates climbed for both groups over time.

Treatment Outcome Analyses

We conducted a 2 (group: program versus comparison) × 4 (time: fall sixth grade, spring sixth grade, fall seventh grade, spring seventh grade) repeated-measures analysis of variance to examine the effects of program participation over time. Outcome measures included six skills (*assertiveness, decision making, confidence in ability to use skills, positive attitude toward school, peer relations, and susceptibility to peer pressure*) and three substances (*cigarettes, alcohol, and marijuana*). Father's education and student attendance at after-school activities were included as covariates because of pretest differences between groups on these demographic variables.

Favorable results for the program students would be exhibited by a significant School × Time interaction, in which at follow-up the program students had higher scores on the skills measures and lower scores on the substance abuse measures than did comparison students. However, there were no significant differences between the two groups (Wilk's $\lambda = .961$, $F = 1.10$, $p = .33$). Thus, there was no empirical evidence that program participation increased students' skills or decreased their substance use.

ISSUES AND STRATEGIES FOR CURRICULUM-BASED INTERVENTION

Despite a significant investment of staff time and financial resources, students who received the Michigan Model curriculum did not delay or reduce their substance use compared with students who did not receive this comprehensive health curriculum. Four major implementation challenges help explain the lack of findings. Although these issues overlap to some extent, each is described in the following sections, with suggestions for how school social workers can avoid having similar problems when implementing prevention programs in their schools.

Prevention Program Selection

Challenge. Districts were not encouraged to use theory and needs assessment data to select a curriculum most appropriate for their students. Instead, the funding agency required school districts to use the Michigan Model, a program that was developed for implementation in kindergarten

through eighth grade. As noted earlier, this curriculum is based on the theoretical premise that substance abuse prevention is best achieved through a holistic approach to health promotion in which the full range of health issues is integrated and each year's lessons build on those of earlier years. Although this is a viable theoretical model, no efforts were made to determine that it was most appropriate for these vastly different school populations. Furthermore, districts were provided with five years of funding, making it impossible to provide a cohort of students with all nine years of the curriculum as it was designed to be implemented. Thus, from the start, schools were unable to provide the full program and were required to make political and practical decisions regarding whom to serve and for how long. School staff believed that middle-school youths were at highest risk and made them the focus of prevention efforts. One district selected the entire fifth-grade class, to be followed over three years. Another district implemented the program in all sixth-grade classes, continuing through eighth grade. The third district started with new students each year. Given the limited time available for programming, a more targeted substance use program that focused on common risk and protective factors experienced in middle school may have been more effective, for example, Botvin's Life Skills Training program (Botvin, Schink, Epstein, & Diaz, 1994).

Strategy. Selecting the most appropriate curriculum for a school involves a critical review of each model. In the area of substance abuse, there are several recent documents that provide such guidance (for example, SAMHSA, 2003). They offer summaries of program elements, target populations, implementation essentials, and primary domains affected by the program.

Before selecting a program, it is crucial to understand the needs of the target population. Student surveys and focus groups can be used to gather information on substance use and salient risks and assets for intervention planning (Powers, Bowen, & Rose, 2004). Using these data, school social workers can make informed decisions as to whether universal, selective, or indicated prevention programs are needed (Mrazek & Haggerty, 1994). Universal programs are provided to the entire population with the intention of preventing problem behaviors before they start. Selective programs target populations with above-average risk and include peer mediation programs and tutoring for students with poor academic performance. Finally, indicated programs target those already engaging in high-risk behavior. For example, student assistance programs use small-group processes and individual counseling to intervene with students who have more serious problems.

Prevention staff should begin planning a year before implementation to have adequate time to fully consider the program's goals and objectives. For example, is the goal to delay onset of use, to reduce use, or both? If staff are working with a universal application, how will the program be implemented during the year? How will the curriculum be integrated with ongoing services that target high-risk youths? Are district resources adequate to implement the selected program? This planning time can help ensure that the most appropriate program is selected and that it is implemented under optimal conditions.

Stakeholder Involvement and School Readiness

Challenge. Inadequate time was devoted to building stakeholder involvement and ensuring that school staff were ready for implementation. With the best of intentions, school administrators applied for funding and, when successful, turned the project over to a coordinator. As is often the case, the grant proposals provided only the outline of the program. Coordinators were required to recruit schools, identify training needs, secure curriculum resources, monitor implementation, provide technical assistance, and facilitate the evaluation. However, they had no authority to compel school personnel to implement the curriculum. As has been found in other research on school-based prevention (Fagan & Mihalic, 2003), coordinators monitored other grant activities, worked with parent groups, and served as school liaisons to the community; however, they were less closely involved with supervision of school staff. They were reticent about using their fiscal authority to impose sanctions for noncompliance. Efforts were made to identify a lead teacher or social worker in each school, but these individuals were not empowered to make decisions about resource allocation.

In two of the districts, school principals supported the project by making presentations to the targeted faculty. This was useful when the program was introduced; however, without continued efforts each

year to encourage cooperation, resistance mounted. Superintendents' and principals' hands-on involvement and support may be necessary to ensure long-term commitment to prevention programs. Successful implementation depends on genuine buy-in by staff so that they are willing to put their time into the new initiative as well as on strong leadership to ensure follow-through and provide assistance as barriers arise.

The small size of one district made it relatively easy for staff to share a vision, work together, and plan coordinated activities. Drawbacks included having fewer people to draw on for assistance and difficulty in circumventing problems when there was only one individual with appropriate expertise. The larger districts had more resources and experience from which to draw and more opportunity to disseminate the lessons they learned; however, it was harder to coordinate the multiple layers and more difficult to change people's attitudes and assumptions about the program. Time and resources were expended in convincing others of the utility of the program and its potential outcomes.

The school climate may have also affected the programs. Programs were implemented in schools where demands on teachers were high, class sizes were increasing, and teachers had to prepare students for high-stakes standardized testing. Although teachers were encouraged to find time to implement the curriculum, they knew they would be evaluated based on how their students scored on the Michigan Educational Assessment Program. Thus, they received mixed messages about how to prioritize limited classroom time. Prevention lessons were frequently delayed or omitted to accommodate demands of statewide achievement testing.

Strategy. Social workers' approach to school officials and colleagues can affect the likelihood of success. They can help assemble a team of individuals who will serve as internal champions of the introduction, implementation, and improvement of the program. Team members should have sufficient experience and political savvy to bridge gaps, solve problems, and anticipate the contextual issues we identified earlier. The team can decide whether the program requires an on-site coordinator and, if so, identify strategies for monitoring the program for quality and accountability. School superintendents and principals generally hold formal authority, and they should clearly articulate their expectations for effective implementation and strong fidelity as basic attributes of the program. It is important that administrative support be shown on an ongoing basis.

Schools should have a climate to support prevention implementation, for example, sufficient funding to pay substitutes while teachers and other staff are trained and flexibility in the types of classes offered. School climate should also support the program theory. If the program requires small groups for learning, then smaller class sizes may be necessary. Most important, there must be a school climate that supports innovation and creativity. If staff are resistant to change, they are likely to find ways to undermine the program.

Also, social workers should assess their own situations. In some cases, social work staff may be seen as "support," with less clout than teachers. Success may depend on whether there is a positive attitude toward social workers. Armed with best-practice information, social workers can stress the importance of a coordinated strategy and their role in helping to achieve the program objectives and accentuate those assets within the school (for example, its thematic teaching, positive parent–school relations) that will create a foundation for success.

Program Fidelity

Challenge. As noted earlier, complete program fidelity was impossible because the selected curriculum required students' involvement for a longer time period than the funding allowed. However, most teachers did not teach all the lessons they agreed to cover over the course of the school year. The Michigan Model curriculum includes a number of skill-building exercises that involve small-group work, role plays, and open-ended discussions. Teachers' logs revealed that these were the lessons least likely to be used. This finding is similar to other research that has found teachers emphasizing noninteractive methods over interactive methods (Botvin et al., 1990; Hahn et al., 2002). Thus, fidelity to the curriculum was less than ideal. Lessons were skipped, activities deleted, and lessons combined to save time. In addition, the Michigan Model can be viewed as one of the more complex curriculums, with more than 30 lessons per year, comprehensive health coverage, and multiple teaching strategies. Dusenbury and colleagues (2003) found that the more complex the curriculum, the less likely teachers were to implement the program as planned.

Strategy. When using an evidence-based curriculum, staff cannot pick and choose elements to implement; they must follow the curriculum to achieve the intended effects. This is more likely to occur when implementers receive adequate training and support (Dusenbury et al., 2003; Ennett et al., 2003; Rohrbach et al., 1993). The amount of training and support required to ensure fidelity should not be underestimated (Dusenbury et al.; Ringwalt et al., 2003). Although some researchers espouse strict adherence to the curriculum (Elliott & Mihalic, 2004), others are moving toward a more flexible model that acknowledges the need to tailor programs to districts' and students' unique needs (Ringwalt, Ennett, Vincus, & Simons-Rudolph, 2004). If adapting a program, social workers must communicate with the program developers to determine the core issues that cannot be altered. Castro and colleagues (2004) offered a design strategy for ensuring that evidence-based prevention programs are also culturally relevant. Kelly and colleagues (2000) and McBride and colleagues (2002) argued that implementers should be part of the early planning discussions to maximize buy-in and to work through an agreement on the core elements and best methods for quality monitoring and implementation.

The best-prepared individuals should take responsibility for implementation. As noted previously, training in and comfort with using interactive teaching methods is strongly associated with effective prevention programming (Ennett et al., 2003). Teachers should be selected who are comfortable with health content and group activities, just as biology teachers must be comfortable with dissections. If teachers are not prepared for or are uncomfortable with core components like skill-building exercises, then other personnel, such as social workers or nurses, can model the program, transferring more responsibility back to teachers when their comfort level increases.

Evaluation Planning

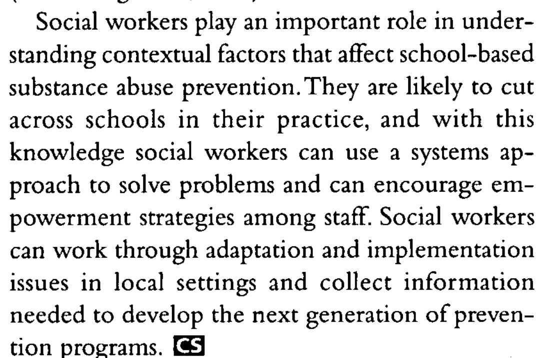
Challenge. Another important planning issue focuses on evaluation. Many models of evaluation differ in both the rigor of the research design and the level of coordination between program and evaluation staff (Devaney & Rossi, 1997). Evaluation requirements were not fully specified in the grant proposal guidelines, thus the evaluators and program coordinators had to negotiate the scope of the evaluation after funding was awarded. For example, the evaluators wanted districts to use a rigorous research design in which schools were randomly assigned to conditions. Program coordinators were not comfortable withholding services from any interested schools, thus a quasi-experimental design was used. The funding agency provided a mixed message by stating that it wanted to demonstrate the effectiveness of the Michigan Model curriculum in reducing substance use but without requiring the type of rigorous evaluation needed to achieve this goal. Without control over resources, the evaluators were faced with "normal" conditions under which to evaluate an evidence-based program rather than "best possible" conditions. Thus, the evaluation never truly tested the model. If the funding agency's implicit goal was to set these districts on a long-term path of developing comprehensive prevention strategies, perhaps the program was a success. This goal was not articulated, and consequently it was not the outcome that was evaluated. Funders, evaluators, and implementers need to mutually agree on what outcomes are to be evaluated before resources are allocated.

Strategy. Even when a well-validated program has been selected, it is important to verify that it achieves the desired outcomes as implemented for targeted students. If schools devote time and other limited resources to a program, they should want to know how effective the program was in reaching its goals. School staff members may be reluctant to consider evaluation when planning. It is important to reassure program implementers that the program is being evaluated, not them as individuals. Social workers and the implementation team should plan evaluation strategies and consider how these will be implemented to minimize disruption yet meet the requirements of various stakeholders. When independent evaluators are required, social workers may act as partners in the evaluation process. Their role may be highly participatory, including selecting program outcomes, reviewing measures, administering surveys, and interpreting results, or their role may be more facilitative, including helping the evaluator obtain access to classes for observations, meeting with staff, and assisting with data collection.

CONCLUSION

The goals of the funding agency, evaluation team, school superintendents, program coordinators, and

implementation staff were not identical, and this led to many compromises that reduced program effectiveness. In retrospect, there were aspects of the program design, implementation, and evaluation that could have been strengthened. It cannot be determined if a stronger research design that included a randomized control group and implementation of the full curriculum would have produced the desired results in program students of increased skills and reduced substance use.



However, many lessons were learned that can be applied to substance abuse prevention development and implementation. Selecting an evidence-based model is a crucial step, but only an initial step, in the planning of school-based prevention programs. It is also essential to consider the range of implementation factors described in this article (Greenberg et al., 2003).

Social workers play an important role in understanding contextual factors that affect school-based substance abuse prevention. They are likely to cut across schools in their practice, and with this knowledge social workers can use a systems approach to solve problems and can encourage empowerment strategies among staff. Social workers can work through adaptation and implementation issues in local settings and collect information needed to develop the next generation of prevention programs. CS

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