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The Signs of Suicide (SOS) Prevention Program Pilot Study: High School Implementation Recommendations

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Suicide is the second leading cause of death for high school aged youth. There are many suicide prevention programs available, but few are evidence-based. The Signs of Suicide (SOS) Prevention Program is one of the few youth suicide prevention programs that have shown improvement in students' knowledge and adaptive attitudes about suicide risk and depression, including a reduction in self-reported suicide attempts. With this being the high school's first formal attempt at implementing a psychoeducation prevention program, they wanted to use an evidence-based program targeting a primary mental health concern – depression and suicide. One goal of the initial implementation of psychoeducation based on the SOS prevention program was to increase students' basic knowledge and self-awareness of depression and suicide. The other goal was to assess the effectiveness of the implementation process based on recommendations from previous years. A pilot study of the SOS prevention program was implemented over three years with data collection across grades 9-12. Results showed that psychoeducation based on the SOS prevention program was effective in enhancing students' knowledge and awareness of depression and suicide, including learning how to seek help for themselves and their peers. It also appears that the modifications to the psychoeducation program and implementation process based on recommendations from the previous pilot study years (one and two) were effective in maintaining students' gains in the following years (two and three). Practice implications and future research considerations are also provided by integrating key themes relevant to this study within the wider context of implementing future suicide prevention programs like SOS.

Keywords: suicide, prevention, implementation, high school, adolescents

Approximately 49.5% of United States adolescents aged 13-18 had a life time prevalence of any mental health disorder, with 22.2% experiencing severe impairment (Merikangas et al., 2010). One area receiving increasing attention in high schools is depression and suicide. This attention is warranted considering suicide is the second leading

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cause of death for youth aged 13-18 (Centers for Disease Control; CDC, 2020). The most recent Youth Risk Behavior Surveillance System (YRBSS) of high schools reported that 17.2% of high school students seriously contemplated suicide, 7.4% attempted suicide, and 2.4% reported that their attempt required medical attention (CDC, 2017). These statistics are obviously concerning. Fortunately, suicide is preventable and schools provide a unique opportunity to identify and respond to youth suicide risk.

In addition to screening programs and gatekeeper training, psychoeducation programs have received increasing attention as a means to recognize and prevent student mental health disorders. A goal for many of these psychoeducation programs is to reduce student suicidality by increasing knowledge and self-awareness of depressive symptoms and suicidal thoughts in themselves and in others (Katz et al., 2013; Singer et al., 2019). There are multiple psychoeducation programs available to high schools to address the mental health needs of students. However, there is a history of schools using marketed programs that often lack scientific support (Halfors & Godette, 2002). Furthermore, few programs specific to depression and suicide have been empirically validated, and when they are selected, they are often implemented with poor fidelity (Halfors & Godette, 2002; Katz et al., 2013; Klimes-Dougan et al., 2013; Singer et al., 2019). Because of these evidence-based and implementation concerns it has been difficult to identify effective program components and provide meaningful recommendations for future modifications.

The Signs of Suicide (SOS) Prevention Program is one of the few youth suicide prevention programs that have shown improvement in students' knowledge and adaptive attitudes about suicide risk and depression, including a reduction in self-reported suicide attempts (Aseltine & DeMartino, 2004; Aseltine et al., 2007; Schilling et al., 2014; Schilling et al., 2016). A primary focus of the SOS prevention program is to help students understand depression and that suicidal ideation and behavior are not a normal reaction to emotional distress, which warrants attention. Students are provided psychoeducation via video and discussion guide about the suicide risk warning signs and how to seek help for themselves or for a peer, including reaching out to trusted adults. The rationale for this approach is to have students seek support from trusted individuals when experiencing severe emotional distress and having suicidal thoughts. A corresponding theme is that depression is treatable and the reaching out for help (or reaching out to those who need help) can have positive benefits. Essentially, students are put in a place to be a supportive outlet by being responsive to other students who may be at risk for suicide. They are taught the acronym ACT (Acknowledge, Care, and Tell). Students are also given a depression screening to

increase their awareness of their own risk for depression. The SOS prevention program also trains teachers and parents (the trusted adults) to provide an open and supportive environment and increase their approachability for youth experiencing distress. The ultimate goal is to have students recognize depression and suicidality in themselves and their friends while also having school and home environments that are readily available to provide support.

One major broad concern for psychoeducation (or curriculum-based) prevention programs like the SOS prevention program is the implementation process. Lack of fidelity can compromise program effectiveness and fail to produce desired results. Like most psychoeducation programs, the SOS prevention program relies on teachers and school counselors for implementation. Any effective school suicide prevention program requires a culture and climate within the school system (i.e., “buy-in”), which begins with administrators and staff who are appropriately trained to respond to emotionally distressed students (Cooper et al., 2011; Granello & Zyromski, 2018; Kalafat, 2006). Establishing culture and climate also supports long-term approaches. Prevention programs should not be one-shot approaches. Typically, the effects of single implementation programs fade over time (Surgenor et al., 2016). There needs to be a continuous process with modifications based on reevaluating program outcomes.

Although clear implementation of key factors of the psychoeducation program are necessary, the design and delivery needs to be flexible (Stein et al., 2010). No two schools are alike. Thus, programs need to be accommodating to each school’s unique characteristics, including unexpected obstacles and diversity considerations, which require adapting implementation strategies (Singer et al, 2019). Ideally, a suicide prevention program should include the family and communities to enhance effectiveness beyond the school environment (Balaguru et al., 2013; Cusimano & Sameen, 2011; Miller et al., 2009). Finally, the outcome of a psychoeducation program should be measured continuously over time (Cusimano & Sameen, 2011). This allows for formative assessment and the opportunity to re-evaluate strengths and weaknesses of the program and implementation process.

The high school involved in this pilot study sought to increase awareness and proactively address specific concerns about student mental health. Furthermore, due to a renewed focus on mental health, state mandates regarding suicide awareness and training for school staff, and the high school’s recognition that mental health is inextricably linked with academic and social-emotional proficiency, they concluded that it was imperative to break the stigma associated with these topics and provide targeted training to students. With this being the high school’s

first formal attempt at implementing a psychoeducation prevention program, they wanted to use an evidence-based program targeting a primary mental health concern – depression and suicide. The guidance department and school administration decided that the SOS prevention program had strong potential to directly address the symptoms, risk factors, warning signs, and coping strategies connected to suicide and depression.

One goal of the initial implementation of psychoeducation based on the SOS prevention program was to increase students' basic knowledge and self-awareness of depression and suicide. Thus, it was hypothesized that students would demonstrate this increase in knowledge and self-awareness after receiving the SOS prevention program based on pre-test and post-test comparisons. Another goal was to learn from the implementation process to make necessary adjustments for future mental health psychoeducation programs. This study includes three years of data collection across grades 9-12, including recommendations after years one and two to enhance the SOS curriculum and implementation process. Thus, the overall goal of this study was not only assessment of student knowledge and self-awareness of depression and suicide prevention over three years, but also to assess the effectiveness of the implementation process based on recommendations from previous years.

METHOD

Participants

Participants came from a single suburban regional high school in New England. All participants in the SOS prevention program received parental permission and provided their own consent. Students were also permitted to opt out during the days of the program. All students who started the program completed the program. The program and collection of pre-post survey data was approved by school administration, including the principal. The students who did not participate in the program were allowed to spend time in the School Counseling Office. There, they could study, talk with the school social workers, or participate in some soothing activities such as coloring mandalas. Demographics were not individually collected; however, high school records indicate that the student population is 52% female, approximately 90% Caucasian, and has an average age of 15.5 years (grades 9-12). Year 1 had a total of 879 high school students in grades 9-12 (13-19 years). Year 2 had a total of 755 high school students in grades 10-12 (14-19 years). Year 3 had a total of 496 students in grades 10-11 (14-18 years). The reason for the shift in grades each year was due to an overall realignment in the high school's psychoeducation curriculum programs and to minimize redundancy.

Procedure

A portion of the program was provided in the form of a PowerPoint presentation based on the content from the SOS prevention program by the school counseling department (for full description see Jacobs, 2013). The specific content areas focused on prevalence of depression and suicide, myths, risk factors, warning signs, protective factors, and coping skills, including receiving help for themselves and their peers. In addition to the PowerPoint, students watched an SOS video on depression, discussed scenarios on how to help a friend who may be suicidal, and reviewed depression prevention resources and related smartphone applications. (Years two and three also watched a video of a student from their high school sharing her struggle with depression and suicidal thoughts.) There was also a formal discussion of coping skills and a de-stressing coloring activity. Students completed the self-administered *Brief Screen for Adolescent Depression* (Jacobs, 2013) to increase awareness of their own depressive symptoms. Students were encouraged to seek help if their score was in the “possible” or “likely” category for depression. Guidance counselors were available to support students with concerns about their depression and referrals were provided, if necessary. The SOS prevention program was provided to students on two separate days (Tuesday and Thursday) for a total of 75 minutes, through the high school’s formal advisory program, which are small groupings of 15-20 students with an advisory teacher that meets multiple times per year. Counselors assisted some of the advisory teachers during the lessons. Parents/guardians were also offered an evening workshop entitled “Keeping Your Teen Safe: A Presentation for Families” to educate parents/guardians on the program content, including awareness of mental health statistics and receptiveness to child disclosure of personal mental health concerns.

Initially, information was provided to all staff to read and review prior to formal trainings. Then, members of the school counseling staff visited each department’s monthly meeting to review key points, clarify the process/plan, and answer questions. No compensation was provided, as this was part of their advisory duties. The school counseling staff were trained by the Sandy Hook Promise trainer as a part of a school grant. This was a three hour training on a professional development day.

Prior to the SOS prevention program, students completed a nine (year one) or ten (years two and three) question Likert scale pre-survey (i.e., strongly disagree, disagree, undecided, agree, strongly agree). This survey asked students to rate their level of knowledge and awareness based on the aforementioned lesson content. After the program, students were given a post-survey of the same questions and asked to rate their current level of knowledge and awareness. Anonymity was maintained

by having students complete their pre-survey and post-survey responses on a double-sided sheet of paper that was collected by teachers and advisory counselors at the end of the program. A control of “no program” was not an option as the school required all students to receive the SOS prevention program as part of the pilot study.

RESULTS

Depression and Suicide Psychoeducation

The following are paired samples t-tests of the SOS prevention program pre-survey and post-survey questions for each of the three years. The lower *df* compared to sample size is due to incomplete surveys (e.g., pre-survey completed, but post-survey incomplete; multiple survey questions not answered).

Year 1

The results from the pre-survey ($M = 21.40$, $SD = 4.03$) and post-survey ($M = 25.86$, $SD = 2.57$) of all four grades (9-12; $N = 879$) indicate that the SOS prevention program was effective in enhancing students' knowledge and awareness of depression and suicide, including receiving help for themselves and their peers $t(816) = 32.84$, $p < 0.001$; $d = 1.32$.

Year 2

The results from the pre-survey ($M = 33.00$, $SD = 7.68$) and post-survey ($M = 43.80$, $SD = 7.94$) of all three grades (10-12; $N = 755$) indicate that the SOS prevention program was effective in enhancing students' knowledge and awareness of depression and suicide, including receiving help for themselves and their peers $t(673) = 30.903$, $p < .001$; $d = 1.38$.

Year 3

The results from the pre-survey ($M = 28.85$, $SD = 6.60$) and post-survey ($M = 33.25$, $SD = 6.70$) of both grades (10-11; $N = 496$) indicate that the SOS prevention program was effective in enhancing students' knowledge and awareness of depression and suicide, including receiving help for themselves and their peers $t(398) = 11.481$, $p < 0.001$; $d = 0.65$.

Implementation Changes and Feedback

After each year of implementation and review of the survey data, the author consulted with the guidance director and school administration for feedback. The following highlights the major modifications and observations made throughout the three-year process, knowing that suicide prevention and other psychoeducation programs would be implemented in the future.

Standardization in Training Teachers to Educate Students

After the first year, it was noticed that not all teachers received the same, or consistent, training for implementing the psychoeducation program. Also, some classes were supported with a school counselor while other classes only had a teacher. This was reported by both student and teacher feedback. Thus, students may have not received the “same” curriculum. In response, the standardized curriculum was enhanced for all teachers, including additional formal trainings and allowing additional time for teachers to ask follow-up and clarifying questions. School counselors were still used to support larger class sizes. Overall, improved standardization in training teachers enhanced standardization and consistency in educating students.

Adjustments in Survey Content Questions

After the first year, it was determined that some of the questions were not clearly differentiating key components of the psychoeducation program (e.g., double-barreled questions). Adjustments in wording were made during years two and three to more accurately assess what was learned from the program. For example, “I know what depression is and some common myths about depression” was changed to two questions: “I can identify common features of depression” and “I can identify common myths about depression.”

Likert Scale Modification

The year one survey had a three-point Likert scale (i.e., not at all knowledgeable, somewhat knowledgeable, very knowledgeable). This was changed to a five-point Likert scale (i.e., strongly disagree, disagree, undecided, agree, strongly agree), which allowed for a more precise perspective on knowledge comprehension. After each question, blank spaces were provided to support their Likert choice (e.g., “I can identify risk factors for suicide.”).

Grade Scaffolding

The SOS program was the first formal psychoeducation training introduced into the high school. Therefore, initially, all grades received the SOS program. This largely continued into year two, but by year three only grades 10 and 11 received the training. There were concerns about redundancy (e.g., students in grade 10 receiving the same training in grade 11) along with allowing for enough time to introduce other psychoeducation programs. Thus, it was decided that students would still receive the SOS program at least two times while in high school. However, while the second training would still review the key components from the first training, there would be a more enhanced

curriculum focusing on more sophisticated approaches for self-awareness and reaching out to help others. For example, students watched a video of a fellow student sharing her experience with depression. Students also reviewed scenarios on how to help a friend who may be depressed and/or sharing suicidal ideation.

Inclusion of Student Feedback

After year one and throughout years two and three, attempts were made to elicit feedback. The feedback largely focused on student impressions of the training itself and, later, students' voluntary reports of personal positive impacts in response to the training. For example, a few students shared how they had reached out to their peers in distress or sought additional mental health services for themselves by reaching out to guidance counselors or their parents/guardians. Additionally, a select few students volunteered to video record their impact statements (e.g., thoughts of suicide but felt comfortable to reach out to an adult for help), which were used for future SOS prevention program trainings.

Integrating Psychoeducation Content Into the School's Day-To-Day Routine.

Although the SOS program trainings were reportedly effective in enhancing student awareness and knowledge of depression/suicide and learning help-seeking behaviors, based on the survey data and self-reports by teachers and students, there was a concern that it would be a "one-shot" experience. In other words, the effects of the training could fade over time. Thus, the school decided to take steps to enhance the culture and climate of depression and suicide awareness throughout the school year. Examples included explicit visuals of the acronym ACT (Acknowledge, Care, Tell), enhanced teacher and staff efforts of reaching out (e.g., noticing warning signs of student distress and asking an open-ended question) and validating students social and mental health distress (e.g., focusing on providing emotional comfort and assuring safety before problem solving), and a more explicit approach to include teacher and staff in joint ownership of the program (e.g., inclusion in enhancing the SOS prevention program and eliciting feedback). SOS prevention program presentations were also developed for parents/guardians to help understand and translate the implementation process into the home.

DISCUSSION

The three-year pilot study demonstrated that psychoeducation based on the SOS prevention program was effective in enhancing students' knowledge and awareness of depression and suicide, including learning how to seek help for themselves and their peers. These findings are

consistent with previous studies examining the effectiveness of the SOS program (Aseltine & DeMartino, 2004; Aseltine et al., 2007; Shilling et al., 2014; Schilling et al., 2016). Although this study was not longitudinal in nature (i.e., same student responses not connected or followed each year), each individual year of implementation of the prevention program was effective in meeting its psychoeducation goals. The effectiveness of modifying implementation strategies echoes the recommendations of previous studies and reviews on suicide prevention programs in high schools. The following discussion on practice and research implications integrates key themes relevant to this study within the wider context of implementing future suicide prevention programs like SOS.

Practice Implications

A key practice implication from this study is that a psychoeducation program administered by teachers (trained by counselors) could produce positive changes in student knowledge and awareness of depression and suicide. The SOS prevention program appears to have placed relatively little burden on time and resources to cultivate a school climate that is supportive of students with depressive symptoms and suicidal thoughts using an evidence-based approach. Furthermore, these findings were consistent across a large student sample of the school over three years.

It is important to note that although the actual psychoeducation process has put relatively little burden on teachers doing the training (e.g., training during preexisting staff meetings/development days, teachers not taken away from the classroom), there is much time and effort that goes into implementing such a prevention program “behind the scenes” by school counselors and administrators. Modifying the psychoeducation content to best meet the students’ and school’s needs requires much training and consultation with other counselors, teachers, and administrators (Forman et al., 2009). Relatedly, even with the most advanced preparation, there are bound to be areas of improvement for future implementation. Although seemingly obvious, it is important to learn from each implementation and make the necessary modifications by reevaluating program outcomes, strategies, and skills (Surgenor et al., 2016). This includes flexibility in development and delivery (Stein et al., 2010), especially true if the school wants to maintain the desired student outcomes and have it translate into the overall culture and climate of the school. The school in this study continues to implement a modified SOS program to match the students’ presenting needs and the school’s evolving culture and climate. Along with the survey results, simply asking students and school staff for feedback can inform modifications to psychoeducation content and training strategies.

Ultimately, it is important to involve as many school staff as possible, serving as gatekeepers to encourage a culture shift of student help seeking, including directly engaging with students who may be depressed or suicidal (Cooper et al., 2011; Granello & Zyromski, 2018; Kalafat, 2006). Some of the biggest reasons for youth not seeking mental health support are stigma associated with asking for help, not knowing where to go to obtain help, and lack of self-awareness of mental health distress (Gulliver et al., 2010). Having an invested and well-trained school staff allows for reducing mental health stigmas while recognizing distressed students and providing appropriate resources for help. The school in this study went beyond the school setting to include students' parents/guardians. The goal here is to not only reduce stigma at school, but also at home. Even a school with a supportive culture may not be enough for some students to pursue help if they still feel shame and are not supported at home (Balaguru et al., 2013). Furthermore, the support received at home can translate back into the school. A step beyond family is interdisciplinary relationships with communities (Cusimano & Sameem 2011; Miller et al., 2009).

Future Research Directions

Few suicide prevention program studies have had an experimental design to allow for RCTs with the use of a control group (Klimes-Dougan et al., 2013; Singer et al., 2019). The more studies that utilize RCTs the more confidence there can be that the actual mechanisms of the suicide prevention program are producing the desired effects. As was the case in this study, the lack of RCTs may be due to the lack of feasibility and permission from administration to have at least two separate data collection points and to have a control group, considering the obvious negative outcome of suicide attempts. Relatedly, RCTs would allow for true longitudinal studies to assess self-report and behavior outcomes over a longer period of time than the typical few months (Cusimano & Sameem, 2011). This would allow for a more accurate assessment of the program's persisting effects, especially for high risk students (e.g., Brief Screen for Adolescent Depression) who may require longer exposure to prevention efforts. Follow-up "booster" programs could also be implemented (e.g., every 3-6 months).

Another vital area for improvement is the use of measures that go beyond self-reported knowledge and self-awareness. Examples of more comprehensive measures include likelihood rating for seeking help, behavioral indicators of seeking help, suicidal ideation, suicidal attempts. (Klimes-Dougan et al., 2013; Miller et al., 2009; Singer et al., 20189). The limited time allowed for this pilot study did not lend itself for future follow-ups of particular behavior indicators. The concern here is that the

impact of knowledge and self-awareness on actual help-seeking behavior and suicide attempts is largely unknown. In other words, does the information learned from the suicide prevention programs actually translate into the ultimate desired outcome: reduced suicidal behaviors? Some argue that the low base rate of youth suicidal behavior precludes it from being a viable measure (Cusimano & Sameem, 2011; Miller et al., 2009). In other words, even though suicide is the second largest cause of death for teens, a very low percentage of students would indicate suicidal behaviors. In the end, suicidal ideation may be the “best” measure because it is more common than suicidal behaviors and its intensity is a valid predictor of suicide attempts. There should also be consideration for integrating and assessing other known risk factors for suicide, such as substance abuse and bullying, which can be used to evaluate suicide-related outcomes (Balaguru et al., 2013; Cooper et al., 2011; Singer et al., 2019).

A movement toward considering additional protective school-related outcomes associated with lowered suicide risk include school attendance, grade point average, and standardized test scores (Singer et al., 2019). There is also a growing body of research on school climate and school connectedness, which are representative of the relationships and interactions between students, school staff, and overall school environment (Wyman, 2014). A sense of belongingness and perceived social support has been shown to reduce suicide risk (Demaray & Malecki, 2002). There are tools available to assess these relational school constructs (Resnick et al., 1997). Overall, such protective factors would be relatively easy to measure and could be used in mediator or moderator analyses as potential buffers to suicidal ideation and behaviors.

Currently, there are few studies of suicide prevention programs with diverse student populations; the very individuals who may be at an increased risk of suicide (Harlow et al., 2014; Robinson et al., 2018). For example, there may be variations in ways to implement meaningful and sustainable prevention approaches that take into account different racial/cultural environments. Students with a minority sexual identity, orientation, or practice are a high risk population that would require a supportive school environment from students, faculty, and administration (Robinson et al., 2018). Overall, there needs to be a better understanding of contextual factors related to diverse students’ suicidal behavior. Thus far, cultural considerations are lacking in the development, implementation, and evaluation of school-based suicide prevention programs.

Limitations

There are several limitations to the current study. First, although teachers were trained by school counselors, there were no formal means to monitor or assess fidelity of program training and procedures. Thus, there is no concrete evidence that the SOS prevention program was implemented as originally designed. Second, although the questions used for the knowledge and awareness of depression and suicide survey are similar to other suicide prevention measures, they have not been formally validated. Third, the questions themselves were self-report and only focused on personal knowledge and awareness. Actual help-seeking behaviors or suicidal thoughts or attempts were not measured. Fourth, there are limitations related to the design of the study. Ideally, a RCT would allow comparing for differences between groups across time. This was not an option for this school, as a control group was not desired by administration, especially considering this was a pilot study of a new program. Relatedly, this study was not longitudinal. Although three waves of data were collected over three years, the findings were not connected to students year-to-year. Thus, it is hard to tell if the effects are enduring at an individual level. However, the effects do appear to at least be enduring at the school (i.e., group) level. Finally, the student population lacked diversity regarding race/ethnicity (i.e., mostly white) and geographic region (i.e., suburban) relative to other schools across the United States.

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