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A Guide for Schools on Student-Directed Suicide Prevention Programs Eligible for Implementation under the STANDUP Act, a Rapid Review and Evidence Synthesis

Landon B. Krantz MD , Danette Stanko-Lopp MA, MPH, Matt Kuntz JD, and Holly C. Wilcox PhD 

ABSTRACT

This review evaluates the strength of evidence for school-based mental health and suicide prevention programs that meet the legal eligibility criteria of the Suicide Training and Awareness Nationally Delivered for Universal Prevention Act of 2021 (STANDUP Act). Included studies were aggregated by program and a program's overall body of evidence was evaluated using the LEGEND system. Requirements for implementation were also documented. We identified 29 studies, which, when aggregated, encompassed 12 unique programs that meet the statute's evidence-based criteria. All four outcomes described in the statute were measured, with help-seeking being the most commonly measured. Two programs were assigned a high level of evidence in decreasing suicidal thoughts and behaviors. The findings serve as a resource for school officials in identifying evidence-based mental health and suicide prevention programs and understanding the resources needed for implementation.

KEYWORDS

Awareness; health policy; primary prevention; school mental health; STANDUP Act; suicide prevention

INTRODUCTION

Adolescent suicide and related mental and behavioral health disorders are growing concerns in the United States (U.S.) and across the world. Suicide is the second leading cause of death for youth aged 10-18 in the U.S. (Centers for Disease Control and Prevention [CDC], 2022) and the second leading cause of death worldwide in 15-29 year olds (World Health Organization, 2018). In 2021, 22% of adolescents in the U.S. reported seriously considering suicide in the last 12 months and 10% reported attempting suicide, a 25% increase from reported attempts in 2011 (CDC, 2021).

The U.S. Surgeon General recently issued a health advisory that American youth were experiencing a national mental health crisis exacerbated by the COVID-19 pandemic (Health & Human Services Press Office, 2021). That same year, adolescent girls aged 12-17 visited an emergency department for a suspected suicide attempt at a rate 1.5 times higher than before the pandemic (Jones et al., 2022; Yard et al., 2021). Between 2019 and 2020, suicide deaths increased by 13% for males aged 10-14 and by 4% for females aged 15-24 (Curtin, Hedegaard, & Ahmad, 2021). Current school-based

mental health and suicide prevention legislation can be leveraged to address the national mental health crisis in youth.

Existing Evidence for School-Based Suicide Prevention

Schools provide an opportune setting for universal suicide prevention efforts targeting adolescents as youth spend most of their day in the school environment, and schools allow for a structured context to deliver such content (Brann, Baker, Mills, Watt, & Diorio, 2021). Brann et al. (2021) performed a meta-analysis on school-based suicide prevention programs, noting an improvement in suicide knowledge and awareness, a decrease in suicidal thoughts and behaviors (STBs), and an increase in help-seeking skills after implementation of such programs, with the strongest effects in increasing suicide awareness and knowledge. Specifically looking at STBs, another review found school-based suicide prevention programs to decrease STBs three months after implementation, with slightly larger effects on reducing suicidal behaviors than reducing suicidal thoughts (Gijzen, Rasing, Creemers, Engels, & Smit, 2022).

School-based mental health and suicide prevention programs vary widely in their scope, content, costs, target audience, duration, and method of delivery. A recent systematic review on suicide prevention strategies from Mann, Michel, and Auerbach (2021) found that universal school-based suicide prevention programs directed at students reduced suicide attempts, whereas programs directed at only training adults in schools showed weaker and inconsistent benefits. Walsh, McMahon, and Herring (2022) found that students who received such programming had 13-15% and 28-34% lower odds of suicidal ideation and suicide attempts, respectively. Number needed to treat analyses estimate that one less adolescent would have a suicide attempt for every 20-25 adolescents engaging in school-based suicide prevention programs.

To our knowledge, no review papers of universal school-based suicide prevention programs have limited their analyses to programs with implementation materials readily available for schools to easily access and use. Furthermore, when evaluating such programs, it is important to grade the entire body of evidence for each program, rather than just focusing on one or two seminal studies, in order to support program selection decisions by on-the-ground school officials and community stakeholders.

Current Policies and Legislation

According to the American Foundation for Suicide Prevention (AFSP) (2022), 25 states in the U.S. require policies and programs on suicide prevention in schools, and 20 states specifically require the programs to include student education on suicide and/or mental health awareness. In response to the growing evidence on the benefits of student-directed training and awareness programs, multiple U.S. states have passed or introduced legislation in the last three years requiring mental health education and/or suicide prevention training in schools (Hopeful Futures Campaign, 2022).

On the federal level, the Suicide Training and Awareness Nationally Delivered for Universal Prevention (STANDUP) Act was unanimously passed by the U.S. Congress in March 2022 (STANDUP Act, 2022). It provides federal funding for such programs and

“encourages states and tribes to implement and expand evidence-based suicide prevention training in schools” directly to students in 6th-12 grade (Sandy Hook Promise, n.d.). The Bipartisan Safer Communities Act (2022) allocated additional funds to Project AWARE for school-based mental health programs. This recent legislation demonstrates that government officials see mental health and suicide prevention in schools as priorities for our youth. The impact of the STANDUP Act rests on high quality implementation, which underscores the value of guidance designed for schools regarding evidence-based programs that meet the eligibility criteria for funding under the STANDUP Act.

Excellent resources have been developed such as the American Academy of Pediatrics (AAP) “Blueprint for Suicide Prevention,” which provides information on suicide prevention efforts in healthcare settings, the community, and schools (AAP, 2022), but does not provide evidence grading of programs. For state, local, and tribal agencies to leverage the funding allocated by state and federal legislation, there is a need for evidence grading along with implementation details for each program.

The Current Study

Our study has three objectives: (1) identify student-directed school-based mental health and suicide prevention programs with available implementation materials that meet the legal criteria of the STANDUP Act, (2) aggregate published studies by program and grade the body of evidence for each program, stratified by outcome, and (3) provide implementation guidance for schools when delivering such programs. Through these objectives, this paper provides a resource for schools in the U.S. to implement effective suicide prevention programming for youth.

METHODS

A rapid evidence synthesis of the existing literature, including of recent systematic reviews and meta-analyses, was conducted to verify what programs meet the legal criteria of the STANDUP Act. In line with rapid review methodology (Garritty et al., 2021; Tricco et al., 2015), the search process included only published literature and articles written in the English language. The references of 11 recent systematic reviews and meta-analyses on this topic were searched in parallel with a broad database search to help verify and update the existing published reviews. Thus, the chance of missing a relevant study is low. Our evidence synthesis aims to leverage and build upon other systematic reviews in a timely and concise manner so that the results are more actionable by state, local, and tribal educational agencies.

Search Strategy

A literature search was conducted in PsycInfo, ERIC, CINAHL, and PubMed on July 28, 2022, that included the following search terms: (Suicid*)[all fields] AND (“School*”[tiab] or “School Health Services”[MeSH] or “School Mental health Services”[MeSH] or “Schools”[MeSH] OR “school-based”[tiab] or “school health

service”[tiab] or “school mental health”[tiab]). The search’s date range was from January 1, 1970 to July 28, 2022. The search was filtered by age of the study participants (Child [6-12 years old] and Adolescent [13-18 years old]). Additional studies were identified through searching references of systematic reviews, meta-analyses, and school-based suicide prevention book chapters (Supplemental Table 1). Brann et al. (2021) had similar inclusion criteria and outcomes as the STANDUP Act. That search strategy was duplicated on August 3, 2022, and updated from the date of its search (excluding the term “college”). Those results were then added to the search results for this review. The searching strategy was in line with Cochrane Rapid Review methods recommendations (Garrity et al., 2021).

Study Selection

Inclusion and exclusion criteria for study selection were mapped to the legal definitions utilized in the STANDUP Act. Accordingly, study participants included students in grades 6 through 12. Studies needed to evaluate program interventions that deliver universal suicide awareness and/or prevention training directly to students in the school setting. The STANDUP Act specifically focuses on universal prevention programs. We followed the Institute of Medicine (IOM) definition for universal interventions as “targeted to the general public or a whole population group” (IOM, 1994, p. 24). In this study, the population group is an entire school or grade. Included studies were available in the English language. To support implementation of our findings, included studies evaluated programs with readily available training and implementation materials in the English language so that they would be useable by U.S. schools. Study authors and program coordinators were directly contacted by the study team regarding the availability of implementation materials.

Studies were excluded if they did not meet the definition of “evidence-based” as written in section 8101 of the Elementary and Secondary Education Act of 1965 (2022), which is referenced within the STANDUP Act as a requirement for program funding (Figure 1). As the third evidence-based option listed in the statute was ambiguous (i.e., an intervention that demonstrated statistically significant effects based on a “well-designed correlational study with controls for selection bias”), studies with a control group—along with bias assessment as part of the evaluation criteria—were used as a surrogate for “correlational (studies) with controls for selection bias.” This limited our search to studies with a control group. However, if a program was found to have at least one study with a control group, additional non-controlled studies evaluating that program were included to provide a more holistic assessment of the full evidence base for the program.

“Evidence-based, when used with respect to a State, local education agency, or school activity, means an activity, strategy, or intervention that demonstrated statistically significant effect on improving student outcomes based on” (one of the following):

- Evidence from at least 1 well-designed experimental study
- Evidence from at least 1 well-designed quasi-experimental study
- Evidence from at least 1 well-designed correlational study with controls for selection bias

FIGURE 1. Definition of Evidence-Based per the Elementary and Secondary Education Act of 1965.

Articles were identified through searching the references of 11 recent systematic reviews, two book chapters on school-based suicide prevention, and the broad database search described above. New articles identified by the database search were screened for inclusion by one reviewer (LK) and uncertainty about inclusion was resolved by two further reviewers (MK, HW).

Outcomes

Outcome measures were derived from the language and goals of the STANDUP Act. These included (1) STBs (i.e., suicidal ideation, plan, and/or attempts), (2) help-seeking behaviors or help-seeking intentions for self or others, (3) suicide knowledge and awareness (including mental health risk factors), and (4) awareness of resources for mental health and suicide prevention. These constructs are typically measured prior to the program and at various time points after program implementation with a variety of surveys and validated measures.

Data Analysis and Grading of Evidence

Following the screening of titles and abstracts and full text reviews, included studies were independently evaluated by two methodologists (LK, DSL) using evidence appraisal forms from the LEGEND (Let Evidence Guide Every New Decision) evidence evaluation system (Clark, Burkett, & Stanko-Lopp, 2009). For each study, based on study design and study domain (i.e., intervention), evidence appraisal forms were completed to assess risk of bias, internal validity, reliability, and applicability. Appraisal forms also included evaluations of clinical significance based on the findings' descriptions, effect sizes, and external validity of each study for each outcome. Based on the study design and overall quality of the study, each article was assigned a quality level per the LEGEND system (Table 1). Some studies received multiple quality levels if they measured more than one of the stated outcomes. Quality levels could vary between outcomes within a single study if one outcome had stronger effect sizes than another or was measured through a different study method.

Following the determination of quality levels for each study by outcome, the individual studies were then aggregated by program. The two methodologists independently assigned an overall evidence grade for each program and outcome using the LEGEND Evidence Grading tool (Table 1). This tool includes guidance on aggregating individual studies into a Grade for the Body of Evidence, informing the overall evidence quality for recommendations that each program achieved the targeted outcomes (Clark et al., 2009). The two reviewers then convened to compare results and any differences in grading were resolved by consensus after reviewing the evidence appraisal forms. In the absence of statistical significance for an outcome, the two reviewers judged an outcome's public health significance based on the study authors' conclusions and the clinical significance factors described above (i.e., effect size, precision, external validity). All included studies had at least one outcome with a reported statistical or clinical benefit. In addition to the evidence grade assigned to each program by outcome, other dimensions for judging the strength of the recommendations were

TABLE 1. Quality levels and body of evidence recommendations based on the LEGEND system.

Quality level for study	Definition
1a ^a or 1b ^b	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain (often Randomized Controlled Trials)
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, case report, expert opinion, consensus report, or guideline
Body of evidence grade for programs achieving a clinical outcome	Description
High	Sufficient number of high quality studies with consistent results
Moderate	A single well-done trial, multiple lesser quality trials, or multiple large, high-quality observational studies
Low	Studies of lesser quality or with some uncertainty
Very low	Studies with insufficient quality including descriptive studies, case series, general reviews, insufficient design or execution, too few studies, or inconsistent results

^aGood quality study.

^bLesser quality study.

explicitly discussed by the two reviewers and the authors (e.g. feasibility, scalability, and cost-effectiveness).

RESULTS

The reference search resulted in 202 articles with an additional 10,400 articles identified through the database search (Figure 2). A total of 24 studies were included after removing duplicates and applying exclusion criteria, which resulted in 12 unique mental health and suicide prevention programs. All 12 programs had at least one study with a control group to meet the inclusion threshold. To evaluate the totality of evidence for these 12 included programs, five additional studies evaluating those programs that did not utilize a control group were added into the sample for a total of 29 studies (Figure 2).

Study Features

As seen in Table 2, studies varied in location and sample population demographics. More studies were conducted in urban or suburban populations (55%) than in rural populations (28%); 24% of studies included both an urban and rural group. 62% were conducted in the U.S., improving their generalizability for the STANDUP Act. Studies primarily focused on high school students; 90% of studies included students in 9th grade or older and only 17% included students younger than 9th grade. Every program except one had at least one study conducted with high school students, while only a third of programs had studies that included middle school students. One study did not specify the age of the participants.

At the program level, 50% of the programs had at least one study with an identified urban or suburban population and 42% had at least one study with a rural population. Not all studies identified their locations as rural, urban, or suburban. Three programs

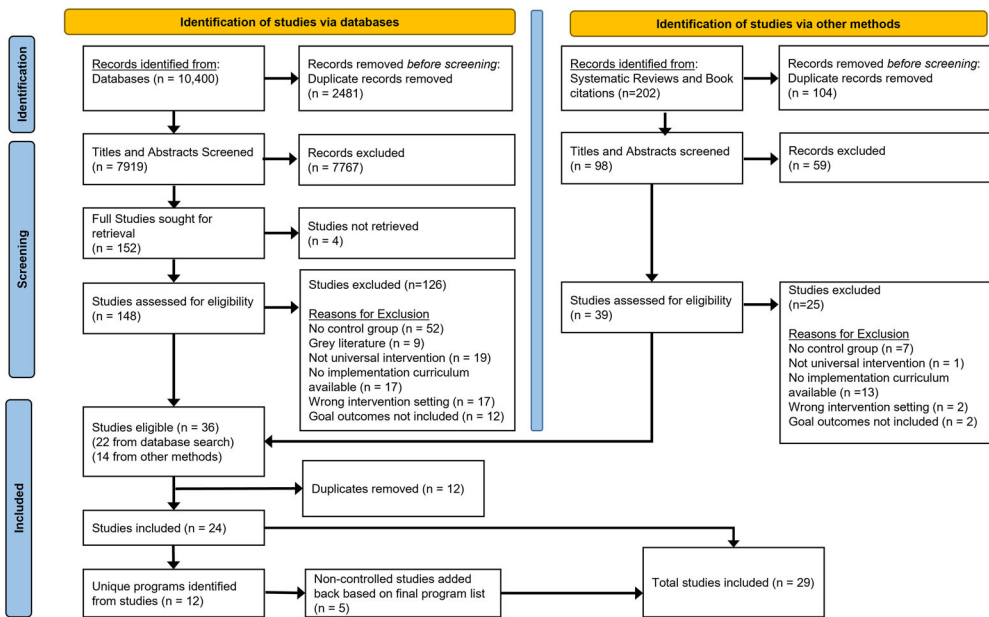


FIGURE 2. Flow diagram for searches of databases, books, and other sources.

had both rural and urban populations studied. 75% of the programs had at least one study conducted in the U.S. Among the other 25% of programs without a published study completed in the U.S., one program (Teen Mental Health First Aid) studied in Australia also has a U.S.-based study under review.

Amongst the studies that collected race and ethnicity demographics, 80% had a study location with mostly non-Hispanic white students and 33% included a study location with mostly minority students. There is overlap in these data because two studies (Aseltine, James, Schilling, & Glanovsky, 2007; Wyman et al., 2010) had multiple locations with varied demographics. Only one program (American Indian Life Skills) was designed for an indigenous population (LaFromboise & Howard-Pitney, 1994), although the Adolescent Depression Awareness Program also included indigenous youth in one of its study locations (Swartz et al., 2017; Townsend et al., 2019).

Program Features

Table 3 provides factors to consider for implementation of these programs. Program delivery is most often carried out by trained facilitators or by health teachers who are certified after specific training. Programs differ in scope and goals. Some programs seek to change the norms of the school environment. Sources of Strength, for example, trains and supervises diverse peer leaders to support students and encourage help-seeking (Wyman et al., 2010), and the South Elgin program uses existing school mental health resources by empowering school social workers to use their training to deliver the program (Ciffone, 1993). This strategy indirectly introduces students to the school social worker and intends to create a welcoming environment if a student needs mental health intervention.



TABLE 2. Study features listed by program.

Program	Study	n	Female	Non-Hispanic White	Location(s)	Age/Grade	Length of follow-up	Suicidal behavior outcomes measured
Adolescent Depression Awareness Program	Swartz et al., 2010	3,538	Not Reported	65.9%	Maryland, U.S. Public School	9 th	6 weeks	Not Reported
	Swartz et al., 2017	6,679	50.8%	77%	Multiple states; Urban, Rural, and Suburban	Mean = 15.8 years	4 months	Not Reported
Adapt for Life (Surviving the Teens)	Townsend et al., 2019	6,679	50.8%	77%	Multiple U.S. states; Urban, Rural, and Suburban	Mean = 15.8 years	4 months	Not Reported
	Beaudry et al., 2019	481	63.7%	77%	Pennsylvania, U.S. Public Schools	Not Reported	4 months	Not Reported
	King, Strunk, & Sorter, 2011	1,030	56.1%	85%	Ohio, U.S. Suburban		3 months	28% Decrease in SI
American Indian Life Skills	Strunk, King, Vidourek, & Sorter, 2014	966	49.5%	83.6%		9 th -12 th	4 days	47% Decrease in SP ^a 67% Decrease in SA ^a Not Reported
	LaFromboise & Howard-Pitney, 1994	128	64%	N/A	New Mexico, U.S.; Zuni Pueblo	Mean = 15.9 years	8 months	11% Decrease in Suicide Probability Score Not Reported
Headstrong Lifelines	Perry et al., 2014	380	Not Reported	Not Reported	Australia	Mean = 14.75 years	6 months	Not Reported
	Kalafat & Elias, 1994	253	43%	Not Reported	Northeastern U.S.	10 th	3 weeks	Not Reported
Signs of Suicide	Asetline & DeMartino, 2004	2,100	48% (Georgia, U.S.) 53% (Connecticut, U.S.)	39% (Georgia, U.S.) 6% (Connecticut, U.S.)	Connecticut and Georgia, U.S.	9 th (Georgia, U.S.) 9 th -12 th (Connecticut, U.S.)	3 months	Decrease in SA (OR = 0.63) ^a
	Asetline et al., 2007	4,133	48.4% (Georgia, U.S.) 48.7% (Connecticut, U.S.)	38.5% (Georgia, U.S.) 5.8% (Connecticut, U.S.)	Connecticut, Georgia, and Massachusetts, U.S.	9 th -12 th	3 months	Decrease in SI (OR = 0.76) ^a Decrease in SA (OR = 0.63) ^a
	Schilling et al., 2014	470	40.8%	52.5% (Massachusetts, U.S.) 52.6% (U.S.)	U.S.; Urban and Suburban schools U.S.; Military impact schools	5 th -8 th	3 months	Decrease in SI (OR = 0.84) Decrease in SI (OR = 0.59) Decrease in SP (OR=0.70)

	Schilling, Aseltine, & James, 2016	1,302	41.7%	60.2%	Connecticut, U.S. Technical high schools	9 th	3 months	Decrease in SA (OR = 0.36) ^a No Change in SP (OR = 1) Decrease in SI (OR = 0.90) Decrease in SP Among At-Risk Students (OR = 0.25) Not Reported Not Reported Not Reported Not Reported 48% Decrease in SI Score ^a Not Reported
South Elgin	Bockhoff et al., 2022 Ogawa et al., 2022 Ciffone, 1993 Ciffone, 2007	200 188 324 421	28%-47% Not Reported 46.9% 40%-75%	Not Reported Not Reported Not Reported Not Reported	Germany Japan Illinois, U.S. Metropolitan Illinois, U.S.	8 th -10 th 14 years 9 th -10 th 9 th -10 th	3 months 3 months 30 days 3 weeks	Not Reported Not Reported Not Reported Not Reported
STAC*	Midgett, Dumas, Peralta, Bond, & Flay, 2020	114	57.4%	59.2%	Metropolitan Northwest public school; Rural	Mean = 12.5 years	6 weeks	48% Decrease in SI Score ^a
Sources of Strength	Wyman et al., 2010	5,308	Not Reported	41%-52% (Georgia, U.S.) 95%-98% (New York, U.S.) 94%-98% (North Dakota, U.S.) 91.6%	Georgia, U.S. (Metropolitan) New York, U.S. (Rural) North Dakota, U.S. (Rural) Rural and Metropolitan Australia	9 th -12 th	5 months	Not Reported
Teen Mental Health First Aid	Petrova et al., 2015 Calear et al., 2022 Hart, Mason, Kelly, Cvetkovski, & Jorm, 2016	706 1,633 520	49.2% 58.2% 49%	Not Reported Not Reported Not Reported	Melbourne, Australia (Public Catholic, and independent schools)	9 th -12 th 7 th -11 th Mean = 13.3 years Mean = 16 years	Immediate 18 months 3 months	Not Reported Not Reported Not Reported
	Hart et al., 2018 Hart, Cropper, Morgan, Kelly, & Jorm, 2020 Hart et al., 2022	1,605 1,605 891	44.7% 44.7% 44.7%	Not Reported Not Reported Not Reported	Melbourne, Australia (Metropolitan)	Mean = 15.9 years	3 months 12 months 12 months	Not Reported Not Reported Not Reported

(continued)



TABLE 2. Continued.

Program	Study	n	Female	Non-Hispanic White	Location(s)	Age/Grade	Length of follow-up	Suicidal behavior outcomes measured
Unnamed Video Program	Braun, Till, Pirkis, & Niederkrotenthaler, 2021b	299	75.3%	Not Reported	Austria	Mean = 18 years	4 weeks	7% Decrease in SI After Program ^a
Youth Aware of Mental Health	Wasserman et al., 2015	11,110	59%	Not Reported	Europe (multi-country)	Mean = 14.8 years	12 months	4% Decrease in SI 4 weeks After Program Decrease in SA (OR = 0.45) ^a
	Lindow et al., 2020	436	61.3%	49%	Montana, U.S. Texas, U.S.	9 th (92%)	3 months	Decrease in Severe SI (OR = 0.50) ^a Not Reported
	McGillivray et al. 2021	556	56.3%	Not Reported	New South Wales, Australia	9 th Mean = 14.4 years	6 months	14% Decrease in SI Severity Score at 3months ^a
								11% Decrease in SI Severity Score at 6months ^a

U.S.= United States of America; STAC = Stealing the Show, Turning it Over, Accompanying Others, and Coaching Compassion; SI = Suicidal Ideation; SP = Suicidal Plan; SA = Suicide Attempt; OR = Odds Ratio.

^aResults reported as statistically significant.

Three of the identified programs are not designed primarily for suicide prevention, but still meet STANDUP Act criteria and achieve relevant outcomes. The Adolescent Depression Awareness Program, for example, targets improving depression literacy while reducing mental health stigma. Headstrong aims to improve mental health literacy while also addressing suicide risk factor awareness. Teen Mental Health First Aid trains students to identify, understand, and respond to signs of mental illness among peers, including mental health crises and substance use.

Some studies expanded on programs by testing new additions and features. For example, Bockhoff et al. (2022) added teacher training components to Signs of Suicide and Petrova, Wyman, Schmeelk-Cone, and Pisani (2015) added specific peer messaging to enhance Sources of Strength. These studies highlight the feasibility and potential effectiveness for schools to adapt programs to better fit the needs of their students.

Evidence Grading of Programs

Table 4 provides each study's individual quality level per the LEGEND system as well as the overall evidence GRADE for each program's strength of evidence stratified by the four STANDUP Act outcomes. Two programs studied and achieved all four outcomes—Adapt for Life and Youth Aware of Mental Health. The Youth Aware of Mental Health program measured all, but its primary objective was to prevent STBs (Wasserman et al., 2015). The high grade for the body of evidence indicates a strong recommendation that the program is effective at preventing STBs. The scope, objectives, and effects of the program differ between outcomes, thus individual evidence grades for each STANDUP Act outcome are provided.

Signs of Suicide also has a high evidence grade in decreasing STBs among teens. It was also one of few programs that evaluated STBs in middle schools, although the European Youth Aware of Mental Health trial did include children under age 14 (Wasserman et al., 2015). In a sample of middle schoolers with suicidal ideation at time of enrollment, Schilling, Lawless, Buchanan, and Aseltine (2014) showed a decrease in STBs through the Signs of Suicide program. For students who did not report suicidal ideation prior to program implementation, the effects were not statistically significant.

Other programs had success in non-STB measures, which may be of interest to schools trying to target a broader range of mental health outcomes. Sources of Strength was the only program with a moderate or high body of evidence grade in increasing resource awareness, though its outcomes varied by population. Improvements in help-seeking intentions and engaging a trusted adult were more pronounced in peer leaders than in the general student population, and the most significant increases were observed in urban schools.

The most common outcome measured by these programs was help-seeking behaviors and help-seeking intentions, with 11 of the 12 programs measuring help-seeking in some way. Help-seeking is a common barrier to adolescents in mental health crisis, and efforts to increase help-seeking behaviors are likely to result in positive outcomes for a population (Pisani et al., 2012). Evidence for help-seeking effectiveness ranged from very low to moderate grades, with no programs having a high grade for the body of evidence. Most programs (9 of 12) evaluated suicide awareness, depression knowledge,



TABLE 3. Program features and contextual factors for implementation.

Program	Duration of program	Facilitator	Duration of facilitator training	Contents	Contact information	Costa
Adolescent Depression Awareness Program	3 hr over two to three sessions	Health Teachers or School Counselors	5 hr (online)	Depression symptoms; Stigma; Treatment	www.adapeducation.org Kswartz1@jhmi.edu	Free
Adapt For Life (Surviving the Teens)	Four 45 min sessions	Trained Facilitators from program	(done by program)	Depression and Suicide Risk Factors; Coping Strategies; Help-seeking Behaviors; Recognizing suicide warning signs	www.adapforlife.org stacey.hoffman@cchmc.org	Varies, financial support available
American Indian Life Skills	Three times per week for 30 weeks, with variations including shorter duration of more focused lessons	Teachers, cultural resource person, or mental health professionals	Self-guided curriculum; optional 3 day workshop highly recommended	Self-esteem, emotions and stress, problem-solving, self-destructive behavior, suicide knowledge and intervention, goal setting	lafrom@stanford.edu	Workshop training cost varies; curriculum book purchase \$29.95
Headstrong	10 hr over 5-8 weeks	Teachers	Booklet; 1 day workshop	Mood disorders; Help-seeking for self and others	www.blackdoginstitute.org aa/education-services/school/school-resources/headstrong/emh@blackdog.org.au	Free
Lifelines	Three 40-45 min classes	Health teachers	Book purchase	Suicide information and attitudes; Warning signs; Helping peers in crisis	Hazelden Publishing	\$295
Signs of Suicide	50 min	Videos and materials	Minimal required	Depression; Warning signs of suicide; Helping peers in crisis	http://learn.mindwise.org/sos-signs-of-suicide	\$300-\$495 per school

South Elgin	Varies based on # of SWs and class sizes. ~15 hr-80 hr across 3 facets	School SW	Self-guided; SW uses online materials and previous training	Mental Health literacy; Screenings and Intervention; Access to Social Workers	www.jerryciffone.com	Free
STAC	90 min w/ two booster sessions	School counselor	Self-guided; materials and video provided	Protecting Peers from Bullying	https://www.boisestate.edu/education-counselored/stac	Sliding Scale
Sources of Strength	4-6 hr of key staff; 1 hr general staff; 4 hr peer leader	Certified trainers w/ "train the trainer" option	(done by program)	Peer support; Identify trusted adults; Social connectedness	https://sourcesofstrength.org	\$750-\$6,000; varies by level of support
Teen Mental Health First Aid	Six 45 min sessions or three 90 min sessions	Certified instructor (video or in-person)	2-3 days in-person	Mental health literacy; Stigma; Helping peers in crisis; Skills to help others; help seeking skills	https://www.mentalhealthfirstaid.org/population-focused-modules/teens/	Varies; apply through website
Unnamed Video Program	10 min video developed by students	Six 50 min learning sessions led by psychologist	N/A	Help-seeking; Positive messaging; Stigma; Media reporting for suicide	See Braun, Till, Pirkis, & Niederkrotenthaler, 2021a	No cost; see materials on associated article to replicate design
Youth Aware of Mental Health	Five 1 hr sessions over 3-5 weeks	Trained instructors	4-5 days training; 31-page instruction manual	Suicide risk and protective Factors; Depression and anxiety knowledge; Coping skills; role play sessions	https://www.y-a-m.org/	Varies

SW = Social Worker; STAC = Stealing the Show, Turning it Over, Accompanying Others, and Coaching Compassion.

^aAt time of manuscript submission date.

TABLE 4. Grading for program body of evidence stratified by outcome.

Outcome	Program	Study	Study quality level ^a	Program evidence grade ^a
Suicidal Thoughts and Behaviors	Adapt for Life (Surviving the Teens)	King et al., 2011	4a	Very Low
	American Indian Life Skills	LaFromboise & Howard-Pitney, 1994	3b	Low
	Signs of Suicide	Azeltine & DeMartino, 2004	2a	High
		Azeltine et al., 2007	2a	
		Schilling et al., 2014	2b	
	STAC ^b	Schilling et al., 2016	2a	
	Unnamed Video Program	Midgett et al., 2020	2b	Moderate
Braun, Till, Pirkis, & Niederkrotenthaler, 2021b	2b	Low		
Help-Seeking, for Self or Others	Youth Aware of Mental Health	Wasserman et al., 2015	2a	High
	Adolescent Depression Awareness Program	McGillivray et al., 2021	4a	
		Beaudry et al., 2019	4b	Very Low
	Adapt for Life (Surviving the Teens)	King et al., 2011	4a	Low
	American Indian Life Skills	Strunk et al., 2014	3b	
		LaFromboise & Howard-Pitney, 1994	3b	Low
	Lifelines South Elgin	Kalafat & Elias, 1994	3a	Low
Ciffone, 1993		3b	Moderate	
Sources of Strength	Ciffone, 2007	2b		
	Wyman et al., 2010	2b	Moderate	
	Petrova et al., 2015	2b		
Teen Mental Health First Aid	Calear et al., 2022	2b		
	Hart et al., 2016	4b	Moderate	
	Hart et al., 2018	2b		
Unnamed Video Program	Hart et al., 2022	2b		
	Braun, Till, Pirkis, & Niederkrotenthaler, 2021b	2b	Low	
Youth Aware of Mental Health	Lindow et al., 2020	4a	Low	
	McGillivray et al., 2021	4b		
Suicide Education and Awareness, Including Suicide Risk Factors	Adolescent Depression Awareness Program	Swartz et al., 2010	4a	Moderate
		Swartz et al., 2017	2b	
		Townsend et al., 2019	2b	
	Adapt for Life (Surviving the Teens)	Beaudry et al., 2019	2b	
		King et al., 2011	4a	Very Low
	American Indian Life Skills	Strunk et al., 2014	3b	
		LaFromboise & Howard-Pitney, 1994	3b	Low
Headstrong Lifelines	Perry et al., 2014	2b	Moderate	
	Kalafat & Elias, 1994	3a	Low	
Signs of Suicide	Azeltine & DeMartino, 2004	2a	High	
	Azeltine et al., 2007	2a		
	Schilling et al., 2014	2b		
South Elgin	Schilling et al., 2016	2a		
	Ciffone, 1993	3b	Moderate	
	Ciffone, 2007	2b		

(continued)

TABLE 4. Continued.

Outcome	Program	Study	Study quality level ^a	Program evidence grade ^a
Resource Awareness	Teen Mental Health First Aid	Hart et al., 2020	2b	Low
	Youth Aware of Mental Health	Lindow et al., 2020 McGillivray et al., 2021	4b 4b	Very Low
	Adapt for Life (Surviving the Teens)	King et al., 2011	4a	Very Low
	Signs of Suicide	Ogawa et al., 2022	3b	Low
	Sources of Strength	Wyman et al., 2010 Petrova et al., 2015	2b 2b	Moderate
	Teen Mental Health First Aid	Hart et al., 2016	4b	Very Low
	Youth Aware of Mental Health	Lindow et al., 2020	4a	Very Low

STAC = Stealing the Show, Turning it Over, Accompanying Others, and Coaching Compassion.

^aSee text for evidence evaluation methods—Evidence Levels and Evidence Grades.

and/or mental health literacy. Resource awareness was the least-studied outcome, with only 50% of programs measuring this outcome.

DISCUSSION AND IMPLEMENTATION GUIDANCE

We conducted a rapid review of existing literature on school-based suicide prevention programs focusing on evaluation of 29 published studies for 12 programs that coincide with the criteria of the STANDUP Act. Based on our results, included studies and programs often target suicide prevention by encouraging adolescents to a) identify signs of distress in themselves or in peers and b) actively seek help from the resources available to them. The universal suicide prevention programs included in this review teach students about mental health, increase awareness of the risk factors for suicide, introduce them to helpful resources, and promote help-seeking behaviors. Many of these programs are feasible to implement and have been implemented and disseminated in the U.S. and other countries (e.g., Headstrong, Signs of Suicide, Sources of Strength, teen Mental Health First Aid, and Youth Aware of Mental Health).

Implementation Guidance

When a school implements such a program, it is expected that there will be an increase in students needing resources and asking for help during a crisis. Prior to implementation of a program, schools should assess their capacity to handle an increase in students needing resources and establish formal policies for suicide prevention and postvention (WHO, 2018; ASFP et al., 2019).

Recent legislative efforts (Hopeful Futures Campaign, 2022) can be leveraged to implement, scale-up, and sustain coordinated and multipronged school-based suicide prevention efforts that include universal (programs directed at all youth in the classroom such as the ones in this review), selective (programs directed at youth at elevated risk for suicide), and indicated approaches (treatment interventions for youth experiencing suicidal ideation and attempts). The Whole School, Whole Community, Whole

Child (WSCC) model, developed in 2015 by the CDC and Association for Supervision and Curriculum Development outlines a multi-tiered approach to enhance the social and emotional climate in schools as well as counseling, psychological, and social services (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015). Lever et al. (2023) highlights a variety of approaches that schools can use to align with the WSCC model and advance mental health support in schools. High quality implementation and fidelity of school-based interventions is associated with better impact on student outcomes (Wilcox, Petras, Brown, & Kellam, 2022; Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Dane & Schneider, 1998), and it can thus influence sustainment after the initial funding for a program ends (Brown et al., 2018). Attention to these issues is ideally done in the planning stages prior to implementation.

Similar guidance is seen at the international level with the WHO Live Life: an Implementation Guide for Suicide Prevention in Countries (2021), which prioritizes fostering socio-emotional life skills in adolescents using school-based interventions. The WHO guide recommends that programs for students not be implemented in isolation, but rather coordinated with training for staff on how to recognize risk factors and warning signs of suicidal behavior, how to provide support to distressed young people, and how to refer students for additional support.

Schools should have clear policies and protocols for when suicide risk is identified, and protocols for supporting students returning to school following a suicide attempt. Schools should facilitate a safe environment, partner with community resources, involve parents to increase awareness of mental health risk factors, and develop initiatives to address additional risk factors for young people such as trauma and substance use.

Gaps in Literature

We identified gaps in the existing literature related to application of student-directed suicide prevention programs. One limitation is the lack of replication studies performed for many of the programs as well as limited data on fidelity, iatrogenic effects, cultural relevance for students of color, and long-term impacts and sustainment of the programs. Few studies target middle school students—only 17% of included studies—even though there is a need for suicide awareness and prevention training for pre-adolescents. Ideally school systems would consider stacking different types of programs by developmental timing.

Historically, suicide rates amongst white adolescents have been higher than other races and ethnicities in the U.S. However, there has been a recent narrowing of rates of suicide between such groups in the U.S. with a reduction in rates in white adolescents and an acceleration in suicide rates in adolescents of color from 2015-2020 (Benghanem, Paik, Aslani-Amoli, Henry, & Howell, 2022). Broad implementation and program impact among youth of color has not been studied in response to the rapidly rising suicide rates in minority youth. The highest rates of suicide are seen in the U.S. indigenous population (Ramchand, Gordon, & Pearson, 2021), but only one program (LaFromboise & Howard-Pitney, 1994) was designed for indigenous schools in the U.S.

Study Limitations

One limitation to our evidence synthesis is having one reviewer screen the search results. However, this strategy was used in parallel with reviewing the references of 11 recent systematic reviews and meta-analyses. The database search helped to verify that eligible studies were not missed and to identify studies that were published after the review materials. Vital components of rigor were maintained, such as having multiple reviewers perform independent evidence grading and bias assessments of studies using a standardized evidence evaluation system, and having an evidence methodologist review the search strategy.

Rapid reviews have potential biases and “may miss relevant information” when compared to a systematic review (Ganann, Ciliska, & Thomas, 2010, p. 7). However, a study by Watt et al. (2008) found that between rapid reviews and full systematic reviews, “the essential conclusions of the rapid and full reviews did not differ extensively” (p. 1037). Similar results were seen by Reynen et al. (2018) who reported that while systematic reviews could provide more detail, conclusions were generally consistent between systematic and rapid reviews. Furthermore, as Khangura, Konnyu, Cushman, Grimshaw, and Moher (2012) noted, rapid review methodology “deliver(s) evidence in both a timely manner and usable format [...] to decision makers” (pp. 6-8), which was the most appropriate approach for our study considering the lack of guidance for school districts in school-based program selection. Thus, this rapid review has much to offer in spite of noted limitations.

We also limited our findings to programs with implementation materials available in English. There are multiple interventions in the literature that are shown to be effective but cannot be readily implemented in the U.S. Those can serve as frameworks for schools in the U.S. that want to adapt existing programs or design their own intervention, but that was out of the scope of this review. As our review was focused on implementation and rollout of the STANDUP Act, a U.S. statute, we limited ourselves to English language programs. Ideally, future program developers will adapt their programs to include implementation materials in other languages.

Several promising programs have been excluded due to a lack of peer-reviewed data or a control group. The absence of this evidence does not equate with lack of effectiveness, but eligibility for inclusion in this review requires at least one controlled study. Two well-known programs (Hope Squad and SafeTALK) are actively conducting research that may add to the evidence base in the future. Evidence grades for programs that are not suicide-specific are limited in that those programs are less likely to measure all outcomes relevant to the STANDUP Act. Thus, their grades may be lower. However, we included three in this review (Adolescent Depression Awareness Program, Headstrong, and Teen Mental Health First Aid). These programs allow schools the opportunity to address suicide prevention by targeting depression directly or by targeting a broad range of youth mental health challenges through increasing mental health literacy, reducing mental health stigma, and enhancing student skills to help a peer in crisis.

CONCLUSIONS

The STANDUP Act provides an avenue for educational and tribal agencies to seek funding for student-directed suicide prevention and awareness training to prevent

suicide, improve help-seeking behaviors, increase suicide knowledge, and increase awareness of available resources. While multiple systematic reviews and meta-analyses have examined school-based suicide prevention, no reviews to date have focused on programs eligible for funding under the STANDUP Act that have existing implementation materials readily available for U.S. schools. Our review is also the first to aggregate studies in order to grade the overall body of evidence for each program. Our review identified 29 applicable studies that met inclusion criteria, which represented 12 unique mental health school-based programs. The data presented here on program evidence and the details presented on program implementation requirements provide direct and useable guidance for local officials to select such programs and apply for associated funding.

Moving forward, this review can serve to enhance implementation guidance in response to suicide prevention legislation for public health workers, school health officials, and mental health professionals in the U.S. and across the globe. Ideally this review could also be the basis for a living resource that is periodically updated as the research and implementation evidence evolves. We encourage other mental health experts and researchers to engage in similar review processes to ensure that such funding for mental health programs is used to its greatest potential with evidence-based interventions.

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