
RESEARCH REPORT

Training Youth Services Workers to Identify, Assess, and Intervene when Working with Youth at High Risk for Suicide

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Abstract

Research suggests that youth in the child welfare system are at an elevated risk of suicide ideation and behavior due to the numerous physical and psychological challenges they face, including victimization, unstable housing, mental health challenges including depression and substance abuse, and reduced access to needed services. This study was a longitudinal assessment of the impact of suicide intervention training on providers' abilities to identify, assess, and intervene when working with youth in the child welfare system who were at high risk for suicide ideation and behaviors. It was hypothesized that participation in a 4-hour "Youth Depression and Suicide: Let's Talk" (YDS) gatekeeper training suicide intervention curriculum would yield improvements in participants' attitudes toward suicide intervention, knowledge about suicide intervention, self-efficacy for engaging in intervention behaviors, and increased use of assessment and intervention behaviors over time. Primary analyses utilized repeated measures ANOVA techniques for testing for mean differences in target study outcomes over time. Overall the results support the use of the YDS gatekeeper training as an effective tool for increasing knowledge and self-efficacy for suicide intervention. Small changes were observed in attitudes, but attitudes were very positive even before training. Results for changes in the use of assessment and intervention skills were more modest but demonstrated some improvements from pre-training to post-training. Further refinement of the curriculum may yield larger and consistent improvements in intervention behaviors.

Project Description

Purpose

This study was a longitudinal assessment of the impact of suicide intervention training on providers' abilities to identify, assess, and intervene when working with youth in the child welfare system who are at high risk for suicide ideation and behaviors. Research suggests that youth in the child welfare system are at an elevated risk of suicide ideation and behavior due to the numerous physical and psychological challenges they face, including victimization, unstable housing, mental health challenges including depression and substance abuse, and reduced access to needed services. Although there is a broad body of research addressing the prevention of youth suicide, very little directly relates to youth involved in child welfare.

The objectives of this project are to train gatekeepers within the child welfare system about the signs and symptoms of someone who is at high risk of suicide. Increasing the knowledge, attitudes, self-efficacy, and skill set of child welfare gatekeepers may lead to improved abilities to identify, assess, and intervene in a high suicide risk situation.

Mental Health Services for Children and Adolescents

Population Statistics

In 2014, there were over 400,000 children in the child welfare system across the United States (US).¹ These children constitute a unique subsidiary of youth who are at an increased risk of perilous behaviors — such as substance abuse, unsafe sexual behaviors, delinquency, and truancy. These behaviors are commonly comorbid in nature and are responsible for much of the morbidity and mortality, affecting children from early childhood all the way into late adolescence. Leslie et al. suggest that children in the child welfare system engage in these behaviors at a younger age and at a much higher frequency and intensity than that of children in the general population, which leads to negative health outcomes as an adult.²

In the general population, one in five children and one in three adolescents are estimated to have a mental health condition.³ These estimates are lower compared to the mental illness prevalence rates for children in the US child welfare system. Mental health concerns present in as many as 50 percent to 75 percent of the child welfare population.⁴ Analyses conducted on national data samples of foster care and child welfare youth, have shown that this population has a very high prevalence of mental health problems.⁵ Researchers estimate that as many as 42 percent of youth in their sample of child welfare youth met criteria for a psychiatric diagnosis.⁶ Diagnoses of major depressive disorder⁷ and posttraumatic stress disorder⁸ are the most common disorders in child welfare youth. Risk factors associated with the development of psychiatric illness include: type of maltreatment, type of placement, mental health status of the caregiver, overall feelings of connectedness to a new environment following a placement, mental and behavioral problems associated with the child, and traumatic life experiences.⁹ These risk factors coupled with the higher prevalence of psychiatric illness put child welfare youth at an increased risk for suicide. Mental health problems are found to predict suicide attempts and completions in youth.¹⁰

Globally, suicide is one of the leading causes of death for young people.¹¹ Within the United States, it is estimated that 27 percent of youth involved in the child welfare system are suicidal as compared to 16 percent of youth in the general population.¹² In the US, significantly higher rates of suicidal ideation were reported in youth with a history of foster care placement as compared with their counterparts in kinship, residential, or home care (26.5% versus 11.4%).¹³ Evidenced-based programs, such as cognitive behavioral therapy, dialectical behavioral therapy, and pharmacotherapy have improved the symptoms of youth who have mental health issues that put them at higher risk for suicide.¹⁴

Federal requirements prompted an analysis of services in 2002, which indicated 97 percent of 32 states did not meet the standard in providing adequate services to meet the “physical and mental well-being” of the children within the child welfare system. The most common challenges associated with mental health treatments are a lack of service capacity and standardization in the use of services, poor quality of services, the inability of developmental assessments to appropriately match children with needed services, poor family involvement, and the absence of appropriate placement options for children.¹⁵ In Florida, these challenges gave rise to the enactment of s. 1004.615, Florida Statutes, with the purpose of developing mechanisms to monitor and measure the use of child welfare resources, resource quality, amount of services delivered, and child and family outcomes within the child welfare system.

Population level data at the national level and from other states can be used to estimate potential values for non-fatal attempts and deaths within the child welfare system, but *extreme caution* should be used in attributing validity of these calculated estimates; *they do not represent actual child welfare data from Florida*. Pilowsky and Wu¹⁶ estimated that approximately 27 percent of youth in foster care experienced some type of suicide risk in the form of ideation, attempts, or deaths. Applying this estimate to children in foster care in Florida during FY 2014-2015 ($n = 9,867$)¹⁷ yielded an approximate population of 2,664 youth at risk. National data suggests that there were approximately 17 documented and treatable non-fatal attempts (e.g., hospital emergency rooms) and 30 undocumented non-fatal attempts. Applying this algorithm to the 2014 vital statistics data for Florida suggests that for the 106 documented deaths by suicide there were potentially 1,800 non-fatal attempts requiring medical treatment, and an additional 3,000 undocumented non-fatal attempts among youth aged 10-19.

Florida's Response to Youth Suicide

Although there is a documented need for individuals working with at-risk youth to have effective training which results in increased capacity to provide services, there is no consistent training plan among agencies serving youth in the child welfare system in Florida. In 2007, the Florida Legislature codified the creation of the Statewide Office of Suicide Prevention (SOSP) (s. 14.2019, Florida Statutes) and the Suicide Prevention Coordinating Council (SPCC) (s. 14.20195, Florida Statutes). The Office was moved to the Florida Department of Children and Families in 2011. The role of the SPCC is to prepare an annual report to the governor and legislature identifying the status of existing and planned initiatives and any recommendation arising from initiatives. As

identified in the 2014 report,¹⁸ the statewide suicide prevention plan consists of five objectives, each utilizing a different strategy in the prevention of suicide. With regards to training, Objective 3.1 states that the SPCC will identify and utilize strategies to promote the implementation of suicide prevention programs in organizations and institutions that serve individuals and families, to include training that addresses the recognition of at-risk behaviors and interventions skills. The role of the SOSP is to develop a network of community-based programs to improve suicide prevention initiatives and to prepare and implement the statewide plan for reducing suicide in Florida.

Suicide Intervention Training

The general label *gatekeeper* refers to a heterogeneous group of professionals and non-professionals who are likely to come into contact with at-risk individuals. Professional gatekeepers include individuals with some type of formal training in health or behavioral health care (e.g., nurses and mental health clinicians), whereas non-professional gatekeepers have no formal training in health or behavioral health care (e.g., teachers, administrators, and unlicensed direct care staff). Basic gatekeeper training prepares people to identify at-risk individuals, assess risk level, and make referrals to mental health services, or in the case of professional gatekeepers to develop skills-based competencies for effective risk assessment, risk management, and documentation. Knowledge, attitudes, self-efficacy, and skills/practice behaviors are the core components of suicide training, and although provider groups provide varied services, the foundation level of preparation to manage suicide risk is consistent.¹⁹

Suicide Intervention Curriculum Overview

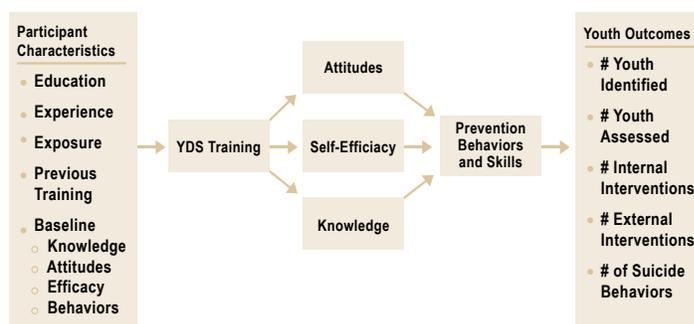
The intervention used is an adapted version of the “Youth Depression and Suicide: Let’s Talk” (YDS) gatekeeper training. The YDS training was developed by the Massachusetts Society for the Prevention of Cruelty to Children²⁰ in collaboration with the Massachusetts Department of Children and Families. The goal of the program is to decrease suicide and suicidal behavior with youth through the use of evidence-based and sustainable suicide prevention practices. The objectives of this program are to train gatekeepers within the child welfare system about the signs and symptoms of someone who is at high risk of suicide. Increasing the knowledge, attitudes, self-efficacy, and skill set of child welfare gatekeepers may lead to improved abilities to identify, assess, and intervene in a high suicide risk situation. See Figure 1 for the conceptual model for the YDS suicide prevention training.

The training was created using a federal grant from the Garret Lee Smith Foundation and is listed on the Suicide Prevention Resource Center’s Best Practices Registry.²¹ Additional outcome studies are necessary before it can be considered an evidence-based program.

The core curriculum of the YDS training focuses on three areas:

- Part 1: **Acknowledging the Problem** addresses myths, risk factors, protective factors, and warning signs.
- Part 2: **Caring for the Person** is skills oriented and focuses on active listening skills, assessing degree of risk, and skill practice using scenarios and role plays.
- Part 3: **Telling a Professional** finishes with additional skills for crisis management and risk assessment.

Figure 1. Youth Depression and Suicide: Let’s Talk Training Conceptual Model



Training Innovation and Adaptation

In addition to the standard YDS curriculum, the intervention was adapted for Florida and two components were added. A new curriculum on adverse effects of medication known to be related to suicidal behavior, such as akathisia and activation, a state of agitation and restlessness that can lead to suicidal thoughts and behavior,^{22,23} is integrated. The majority of suicide prevention training curricula focus on identifying and assessing psychosocial risk and protective factors. Issues associated with the relationship between certain medications and suicide among youth are not addressed in the gatekeeper training. Antidepressant medications are known to increase the risk of suicidal behavior among young people, and such medications now carry a black-box warning from the Food and Drug Administration (FDA).²⁴ Children are more likely than adults to be “activated” by antidepressants, which has been associated with suicidal behavior.²⁵ Ideally, psychosocial helping professionals in interdisciplinary treatment settings would be familiar with such issues, but it is likely that these phenomena are under-recognized in community settings. Thus, a primer on adverse effects of medication related to suicidal behavior was added. This should encourage non-medical helping professionals to refer children and adolescents to prescribers for further evaluation when appropriate, resulting in enhanced interdisciplinary collaboration and improved monitoring of uncommon, but consequential adverse effects of psychotropic medication.

Research Design

Sample

The target population of focus for this study was adults working with youth in the child welfare system who were at high risk for suicide ideation and behaviors. The sample chosen for this study consisted of all employees at the Capital City Youth Services (CCYS). Originally 55 employees were identified to participate in the YDS training evaluation; however, 5 employees in administrative/executive positions did not attend the training. Of the remaining employees, 43 attended the training, and of those attending, 42 participants (98%) consented to be in the study.

Fewer than 25 percent of employees had advanced practice/clinical training. The majority of participants were female ($n = 30, 71\%$) and predominantly African-American ($n = 18, 43\%$) or Caucasian ($n = 19, 45\%$). The average age

was 28.9 years ($SD = 10.6$, $range: 21-71$). Participants worked in a variety of positions with most participants being either residential staff ($n = 13$, 31%) or clinical staff ($n = 11$, 26%). Approximately half of the sample ($n = 20$) worked in positions that required a graduate degree, and the remainder worked in positions that required an undergraduate degree or less. Experience in current position ranged from 0-30 years ($Mean = 3.52$, $Med = 1.40$, $SD = 6.12$). Additional demographic characteristics of project participants are provided in Table 1.

Table 1. Sample Characteristics

Measure	n (%)	
JOB		
Youth Care Specialist	13	(31.0)
Youth and Family Advocate	9	(21.4)
Intern	7	(16.7)
Other	13	(31.0)
GENDER		
Female	30	(71.4)
Male	12	(28.6)
OTHER DESCRIPTIVES		
	Range	Mean (SD)
Age	21-71	28.90 (10.56)
Years of experience	0-30	3.52 (6.12)
Likelihood of encountering a suicidal person on the job	1-7**	6.00 (1.67)
Ever encountered a suicidal person	1-2*	1.14 (.35)
Total suicidal persons ever encountered	1-200	32.25 (53.78)
Suicidal persons encountered in the past 3 months	0-45	6.06 (10.90)
Aware of a specific protocol	1-2*	1.21 (.42)
Have read the protocol	1-2*	1.15 (.36)
Found the protocol helpful	1-2*	1.13 (.34)
Previous on the job suicide training	1-2*	1.24 (.43)
Amount of on the job suicide training (hours)	1-55	10.97 (15.89)
Previous suicide training outside of work	1-2*	1.67 (.48)
Amount of out of work training (hours)	0-15	5.92 (4.68)
Would a suicide training be helpful	1-5	1.10 (.62)

* 1 = yes 2=no

** 1 = very likely 7=very unlikely

Procedures for Intervention Implementation

Due to the large number of employees, three trainings were scheduled, and employees were able to choose the training session they wanted to attend. The first training was conducted on March 24, 2016; this was the largest training with 27 study participants (64%). The second training was held on April 16, 2016. This training was held on a Saturday in order to accommodate weekend employees, and was the smallest of the trainings with 5 study participants (12%). The third and final training was conducted on May 11, 2016 with 10 study participants (24%).

The intervention training lasted 3-4 four hours and was delivered in a half-day format; the more people that attended the training, the longer it lasted. The training was divided into four sections:

1. Myths and Facts
2. Assessment of Warning Signs and Risk Factors
3. Intervention Protocol and Behaviors
4. Akathisia

A different trainer taught each section, and the same four trainers conducted all three training sessions. Multiple learning techniques were utilized in the training including didactic information sharing, interactive role-plays, group activities, case-based scenarios, and printed materials and resources.

Measures

With the exception of demographic variables, all measures were directly related to the CFPSR outcome of “*Well-Being: Children receive adequate services to meet their physical and mental health needs*”. As addressed throughout this report, individuals working with youth must be adequately trained to identify, assess, and intervene with youth at high risk for suicide. Osteen et al.,²⁶ outlines the core training components for developing skills-based competencies as knowledge, attitudes, self-efficacy, and intervention/prevention behaviors. As delineated below, each of the measures used in the proposed study addressed one of these core components.

Encounters with Youth at Risk for Suicide Behaviors

Participants were asked at pretest, 3-months, and 6-months about their exposure to youth experiencing suicidal thoughts or engaging in suicidal behavior. Items included the likelihood of encountering suicidal youth as part of the job and the frequency of encountering suicidal youth.

Previous Training

Participants were asked about previous suicide training, including on the job and off the job training and using the agency protocols specifically related to suicide intervention.

Knowledge about Suicide and Suicide Intervention

Two types of knowledge regarding suicide and suicide prevention were measured: *Knowledge of Suicide Myths and Facts* (measured at pretest and posttest) and *Self-Evaluation of Suicide Prevention Knowledge* (measured at all four time points— pretest, posttest, 3-month and 6-month follow-up).

Knowledge about the suicide myths and facts were measured using a sub-scale of the *Suicide Prevention, Exposure, and Awareness Knowledge Survey (SPEAKS)*. Scores represent the percentage of correct responses. The SPEAKS was originally developed for use in evaluating the Garrett Lee Smith Suicide Prevention Program. Participants' self-evaluation of their knowledge was measured using Wyman et al.'s scale²⁴ that evaluated their level of knowledge regarding clinical work with clients at risk for suicide. Subscales demonstrate sound psychometric properties across diverse samples.

Attitudes toward Suicide Intervention

The researchers used the *Attitudes to Suicide Prevention Scale (ASP)*; Herron et al.²⁷ to assess stigma regarding suicide and suicide intervention. This scale has been used with other professionals and para-professionals.^{28,29} Individual responses were summed for the ASP's total score with *higher* scores indicating more *negative* attitudes (Cronbach's alpha = .77). The *Reluctance to Engage with Suicidal Clients* addressed a participant's reluctance to engage in suicide intervention activities.³⁰ *Higher* scores indicated *greater* reluctance (Cronbach's alpha = .68).

Self-Efficacy

The researchers used scales developed by Wyman et al.³¹ to assess self-efficacy and perceived ability to utilize suicide prevention within one's agency. The *Perceived Preparedness for Gatekeeper Role* measures participants' self-assessment of preparedness to perform suicide prevention activities (Cronbach's alpha = .97). Higher scores suggest greater perceived preparedness. The second scale used, *Efficacy to Perform Gatekeeper Role*, is comprised of seven items designed to assess perceived efficacy to perform suicide intervention activities. Higher scores indicate greater perceived self-efficacy.

Suicide Intervention Behaviors

Two separate measures of suicide intervention behaviors were used. Wyman et al.'s *Asking Clients about Suicide in Response to Warning Signs* (focused on assessment behaviors) and *Use of Gatekeeper Behaviors with Suicidal Clients* (focused on intervention behaviors) captured different aspects of intervention behaviors. A total of 21 intervention behaviors were measured. Even though many of these items were included in Wyman et al.'s scales, it was decided to report each individual behavior to obtain a more nuanced look at how participants were engaging in suicide assessment and intervention. Behaviors were classified as assessment behaviors or intervention behaviors. Results indicated the proportion of times an individual engaged in a behavior and/or the frequency of use of those behaviors (Cronbach's alpha = .94).

Knowledge and Assessment of Akathisia

In addition to outcomes related to suicide and suicide intervention, we developed questions to measure participants' knowledge about akathisia and ability to assess akathisia.

Youth Outcomes

Several youth-oriented outcomes were identified.

- The number of youth identified as being at risk for suicide behavior
- The number of youth expressing suicide ideation
- The number of youth engaging in suicide behaviors (including preparatory acts and attempts)
- Any interventions used to reduce imminent risk of suicide behaviors
- Follow-up reports on any youth expressing suicide ideation or engaging in suicide behaviors

Data Collection

Data were collected at four time points. Pretest (Time 0 – "T0") and posttest (Time 1 – "T1") data collection occurred in person immediately before and after the training. Follow-up data were collected via Qualtrics, an online survey tool, 3-months (Time 2 – "T2") and 6-months (Time 3 – "T3") after training. Each participant received an email with a link to the follow-up surveys. Follow-up data collection was timed to each training so that Group One completed follow-up surveys in June and September, Group Two completed follow-up surveys in July and October, and Group Three completed follow-up surveys in August and November. Data were kept confidential by assigning each participant's unique identifier; the master list linking participants' names to their identifiers was only accessible by the study Principal Investigator. Participants received a \$25 Amazon gift card for completing each of the follow-up surveys (\$50 total).

Data Analysis Plan

Descriptive Statistics

Demographic information about the sample is provided in Table 2. Additional descriptive statistics such as proportions and means and standard deviations for other variables are also provided in Table 1. For detailed information about Repeated Measures ANOVA (RMANOVA) test and Parametric and Non-Parametric Statistics, see Appendix 1.

Results

Previous Training and Agency Protocols

Approximately 79 percent ($n = 33$) of participants reported that they were aware of a specific agency protocol for dealing with suicidal youth. Of those who were aware of a protocol, 88 percent ($n = 29$) had actually read the protocol. All participants ($n = 42$) stated that a protocol would be helpful. Among participants who completed the 3-month follow up ($n = 31$), 94 percent were aware of a protocol, and 63 percent had reviewed it in the previous three months. All participants who read the protocol found it to be helpful.

At pretest, nearly a quarter of participants (24%, $n = 10$) reported having no prior suicide intervention training, and 67 percent ($n = 28$) reported that they had never had any off-the-job suicide intervention training. Among those who had received on the job suicide intervention training prior to the intervention, training ranged from 1-55 hours ($Mean = 11$ hours, $SD = 16$ hours). The range for off the job training was 1-15 hours ($Mean = 5.9$ hours, $SD = 4.7$ hours). Thirty-one participants completed the three-month surveys. Slightly more than 45 percent of them ($n = 14$) had received additional on the job training in the three months following the training; on the job training ranged from 1-8 hours ($Mean = 4.8$ hours, $SD = 2.4$ hours). Three-quarters of participants ($n = 23$) agreed that additional training would be helpful.

Encounters with Youth at Risk for Suicide Behaviors

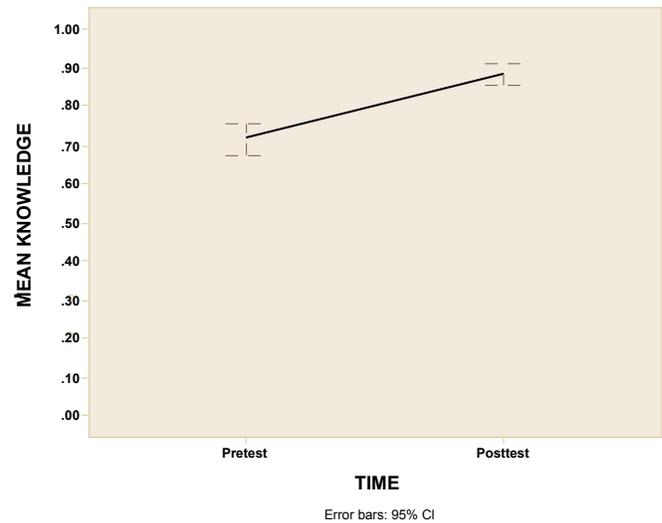
Nearly 86 percent ($n = 36$) of participants reported having encountered a suicidal person in the three months prior to the training, and 67 percent ($n = 28$) reported that in the last 90 days they thought a youth at the agency was thinking about suicide. At the 3-month follow-up, 74 percent of staff reported identifying one or more youth as having suicidal thoughts; no instances of suicidal behavior were reported. At the 6-month follow-up participants 77 percent of staff reported identifying one or more youth as having suicidal thoughts; no instances of suicidal behavior were reported. On average, employees rated the likelihood of encountering a suicidal youth as part of their job as "likely" ($Mean = 6$ on a 7-point scale).

Knowledge about Suicide and Suicide Intervention

SPEAKS

Knowledge of suicide myths and facts was measured using a subscale of the Suicide Prevention, Exposure, and Awareness Knowledge Survey (SPEAKS).³² SPEAKS was measured at pretest and posttest, and scores were the percentage of correct answers on the survey (See Figure 2). Pretest scores ranged from 29% - 92% ($Mean = 71\%$, $SD = 13\%$). Posttest scores ranged from 67% - 100% ($Mean = 88\%$, $SD = 8\%$). A paired samples test indicated a statistically significant improvement in average knowledge scores of 16 percent (95% CI: 14%-19%). Cohen's d , a common measure of effect sizes when comparing two samples, was 2.62, indicating as an extremely large effect.³³ The value was interpreted as the mean score for posttest knowledge and was roughly 2.6 *standard deviations* above the mean pretest knowledge score. Results are summarized in Table 2.

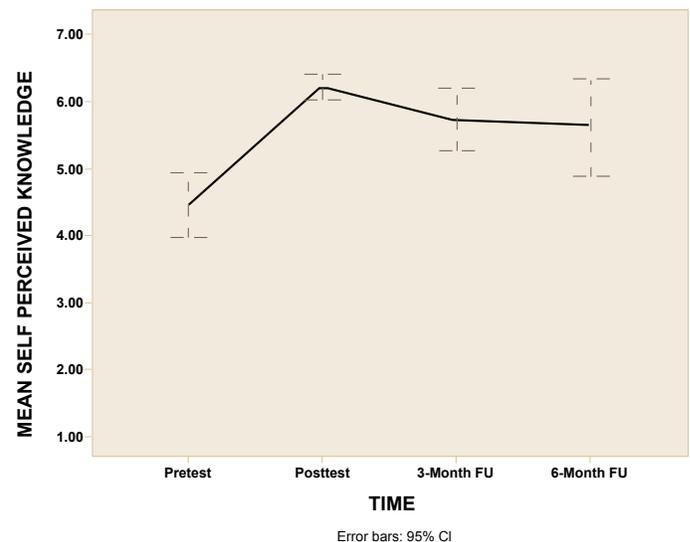
Figure 2. Knowledge about Suicide and Suicide Intervention



Self-Perceived Knowledge

Self-Perceived Knowledge (SPK; Wyman et al)³⁴ was measured at all four time points; scores could range from 1-7 with higher scores indicating greater perceived knowledge. A RMANOVA indicated a significant effect for time ($F_{(3,90)} = 15.16$, $p < .001$). A statistically significant quadratic trend was found, indicating that scores improved from pretest to posttest and then maintained the improvement over time (See Figure 3). Statistically significant differences were found between pretest and the other three observations. Specifically, on average pretest scores ($Mean = 4.45$, $SE = 1.57$) were 1.78 points lower (95% CI: 1.25-2.31) than posttest scores ($Mean = 6.20$, $SE = .13$), 1.31 points lower (95% CI: .50-2.12) than 3-month follow-up scores ($Mean = 5.73$, $SE = .23$), and 1.47 points lower (95% CI: 1.0-2.0) than 6-month follow-up scores ($Mean = 5.61$, $SE = .21$). A large effect size³⁵ was detected ($\eta^2 = .32$) indicating that approximately 32 percent of the variance in scores was attributable to changes over time. Results are summarized in Table 2.

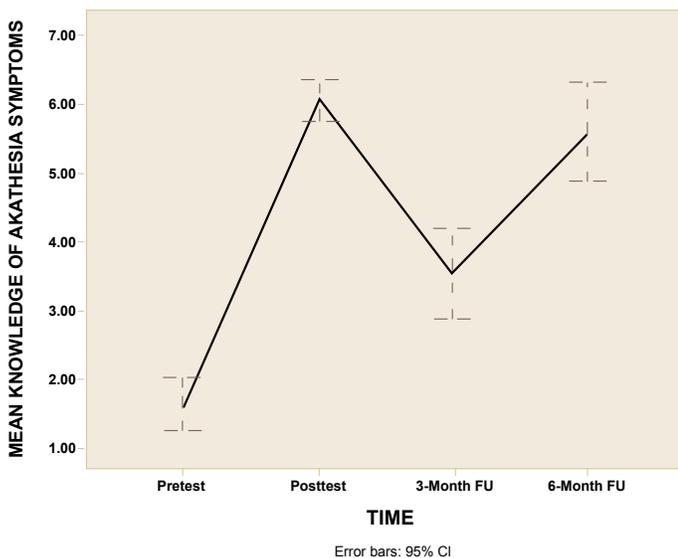
Figure 3. Self-Perceived Knowledge about Suicide and Suicide Intervention



Knowledge of Akathisia Symptoms

Self-perceived knowledge of akathisia symptoms was measured at all four time points; scores could range from 1-7 with higher scores indicating greater perceived knowledge. A RMANOVA indicated a significant effect for time ($F_{(3,51)} = 27.49, p < .001$). A statistically significant cubic trend was found, indicating that scores improved from pretest to posttest but then decreased at the 3- and 6-month observations (see Figure 4). Statistically significant differences were found between pretest and the other three observations. Specifically, on average pretest scores ($Mean = 1.67, SE = .28$) were 4.33 points lower (95% CI: 3.53-5.13) than posttest scores ($Mean = 6.00, SE = .27$), 1.94 points lower (95% CI: .82-3.07) than 3-month follow-up scores ($Mean = 3.61, SE = .45$), and 1.56 points lower (95% CI: .81-2.30) than 6-month follow-up scores ($Mean = 5.59, SE = .44$). Although there were statistically significant decreases from posttest to both 3- and 6-month follow-ups, all three scores were improved over pretest scores. A large effect size²⁷ was detected ($\eta^2 = .62$) indicating that approximately 62 percent of the variance in scores was attributable to changes over time. Results are summarized in Table 2.

Figure 4. Knowledge of Akathisia Symptoms

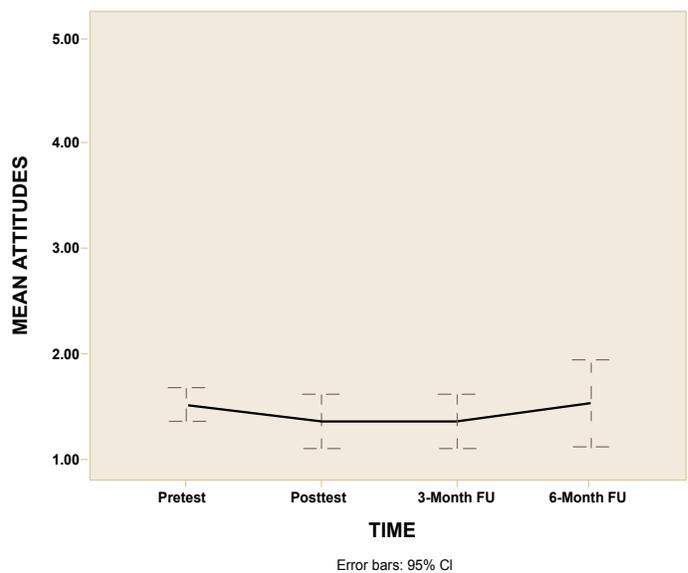


Attitudes Regarding Suicide and Suicide Intervention

Attitudes toward Suicide Prevention

Attitudes toward Suicide and Suicide Prevention (ASP; Herron, et al.)³⁶ were measured at all times points; scores could range from 1-5. Higher scores on the ASP indicate *more negative* attitudes, meaning that lower scores are preferable. A RMANOVA revealed no difference in mean scores over time ($F_{(3,90)} = .87, p = .46$) (see Figure 5). Mean scores were 1.50 ($SE = .09$) at pretest, 1.35 ($SE = .19$) at posttest, 1.35 ($SE = .14$) at 3-month follow-up, and 1.57 ($SE = .11$) at 6-month follow-up. The follow-up Friedman test did detect a statistically significant difference ($\chi^2 = 7.95, p < .05$) in mean ranking scores for attitudes desirably; attitudes were very positive to start with leaving little opportunity for improvement. Results are summarized in Table 2.

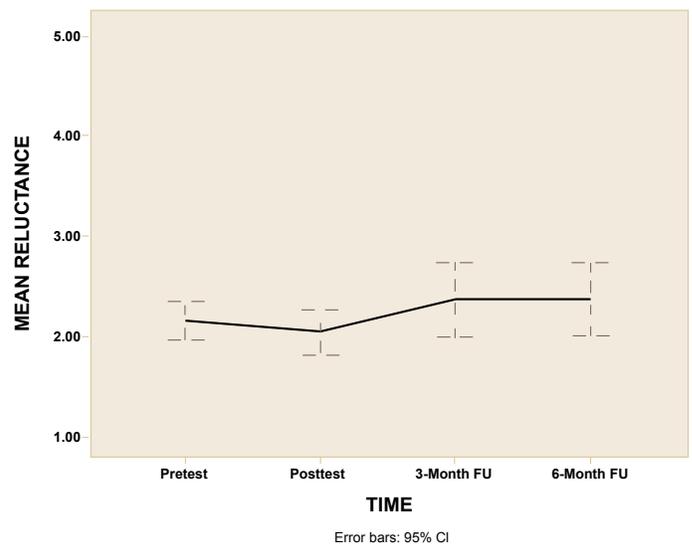
Figure 5. Attitudes Regarding Suicide and Suicide Intervention



Reluctance to Engage in Suicide Intervention

Reluctance to Engage in Gatekeeper Behaviors (Wyman, et al)³⁷ was measured at all times points; scores could range from 1-7. Higher scores on the scale indicate *greater reluctance*, meaning that lower scores are preferable. A RMANOVA revealed no difference in mean scores over time ($F_{(3,90)} = 1.96, p = .13$) (see Figure 6). Mean scores were 2.19 ($SE = .11$) at pretest, 1.91 ($SE = .13$) at posttest, 2.36 ($SE = .18$) at 3-month follow-up, and 2.36 ($SE = .17$) at 6-month follow-up. Reluctance to engage in gatekeeper behaviors was very low even before the intervention. Results are summarized in Table 2.

Figure 6. Reluctance to Engage in Suicide Intervention

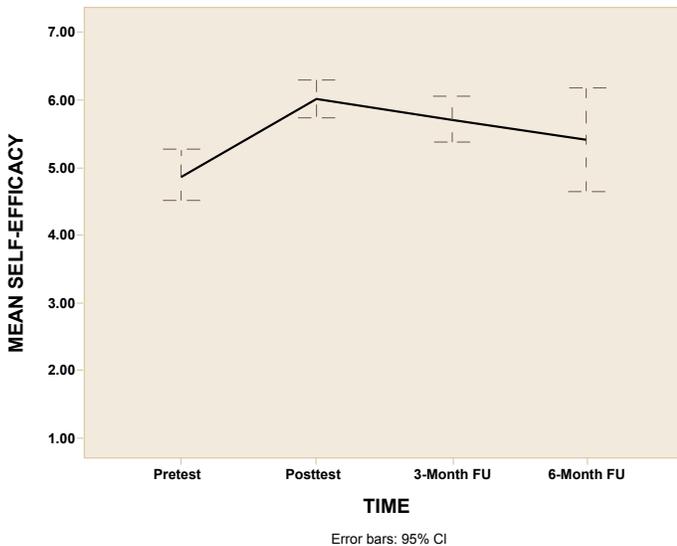


Self-Efficacy for Engaging in Suicide Intervention

Efficacy to Perform Gatekeeper Role

Efficacy (Wyman et al)³⁸ was measured at all four time points; scores could range from 1-7 with higher scores indicating greater self-efficacy. A RMANOVA indicated a significant effect for time ($F_{(3,90)} = 6.75, p < .001$). A statistically significant quadratic trend was found, indicating that scores improved from pretest to posttest and then maintained the improvement over time (see Figure 7). Statistically significant differences were found between pretest and the other three observations. Specifically, on average pretest scores ($Mean = 4.85, SE = .21$) were 1.10 points lower (95% CI: .73-1.47) than posttest scores ($Mean = 5.95, SE = .18$), .88 points lower (95% CI: .26-1.49) than 3-month follow-up scores ($Mean = 5.73, SE = .23$), and .70 points lower (95% CI: .17-1.23) than 6-month follow-up scores ($Mean = 5.55, SE = .22$). A moderate effect size was detected ($\eta^2 = .18$) indicating that approximately 18 percent of the variance in scores was attributable to changes over time. Results are summarized in Table 2.

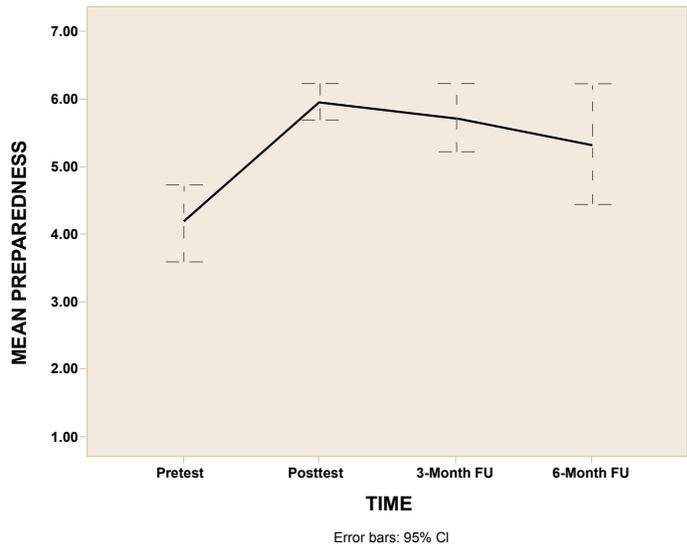
Figure 7. Self-Efficacy to Perform Gatekeeper Role



Efficacy to Perform Gatekeeper Role

Perceived Preparedness (Wyman et al)³⁹ was measured at all four time points; scores could range from 1-7 with higher scores indicating greater preparedness. A RMANOVA analyses indicated a significant effect for time ($F_{(3,90)} = 13.82, p < .001$). A statistically significant quadratic trend was found, indicating that scores improved from pretest to posttest and then maintained the improvement over time (see Figure 8). Statistically significant differences were found between pretest and the other three observations. Specifically, on average pretest scores ($Mean = 4.13, SE = .34$) were 1.84 points lower (95% CI: 1.29-2.39) than posttest scores ($Mean = 5.82, SE = .15$), 1.72 points lower (95% CI: .86-2.59) than 3-month follow-up scores ($Mean = 5.71, SE = .24$), and 1.47 points lower (95% CI: .95-1.99) than 6-month follow-up scores ($Mean = 5.45, SE = .26$). A moderate effect size⁴⁰ was detected ($\eta^2 = .31$) indicating that approximately 31% of the variance in scores was attributable to changes over time. Results are summarized in Table 2.

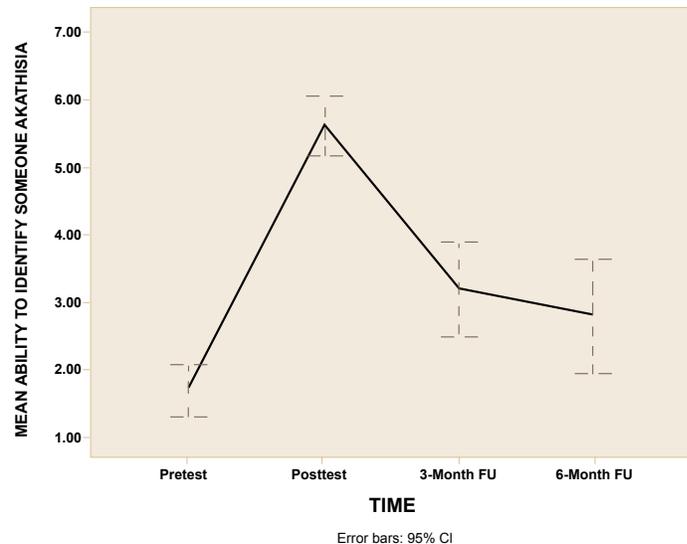
Figure 8. Perceived Preparedness for Gatekeeper Role



Ability to Identify Someone Experiencing Akathisia

Self-perceived preparedness to identify someone experiencing akathisia symptoms was measured at all four time points; scores could range from 1-7 with higher scores indicating greater perceived preparedness. A RMANOVA indicated a significant effect for time ($F_{(3,48)} = 17.42, p < .001$). A statistically significant cubic trend was found, indicating that scores improved from pretest to posttest but then decreased at the 3- and 6-month observations (see Figure 9). Statistically significant differences were found between pretest and the other three observations. Specifically, on average, pretest scores ($Mean = 1.71, SE = .33$) were 3.52 points lower (95% CI: 2.90-4.12) than posttest scores ($Mean = 5.26, SE = .46$), 1.59 points lower (95% CI: .30-2.87) than 3-month follow-up scores ($Mean = 3.29, SE = .46$), and 1.00 point lower (95% CI: .07-1.93) than 6-month follow-up scores ($Mean = 2.71, SE = .44$). Although there were statistically significant decreases from posttest to both 3- and 6-month follow-ups, all three scores were improved over pretest scores. A large effect size⁴¹ was detected ($\eta^2 = .51$) indicating that approximately 51 percent of the variance in scores was attributable to changes over time. Results are summarized in Table 2.

Figure 9. Identifying Someone with Akathisia

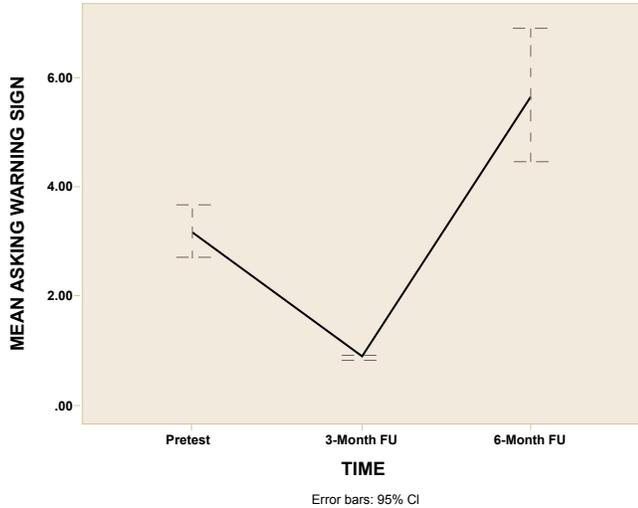


Behavioral Outcomes

Responding to Warning Signs

Participants' engagement in assessment skills was measured using *Asking Clients About Suicide in Response to Warning Signs*.⁴² Scores were calculated for pretest, 3-month follow-up, and 6-month follow-up. Scores could range from 1-5 with higher scores indicating more frequent assessment. A RMANOVA revealed no difference in mean scores over time ($F_{(2,82)} = 1.22, p = .30$). Mean scores were 3.21 ($SE = .23$) at pretest, .88 ($SE = .23$) at 3-month follow-up, and 5.69 ($SE = .25$) at 6-month follow-up. (See Figure 10.) Results indicated that participants asked about suicide in response to warning signs *sometimes*. Results are summarized in Table 2.

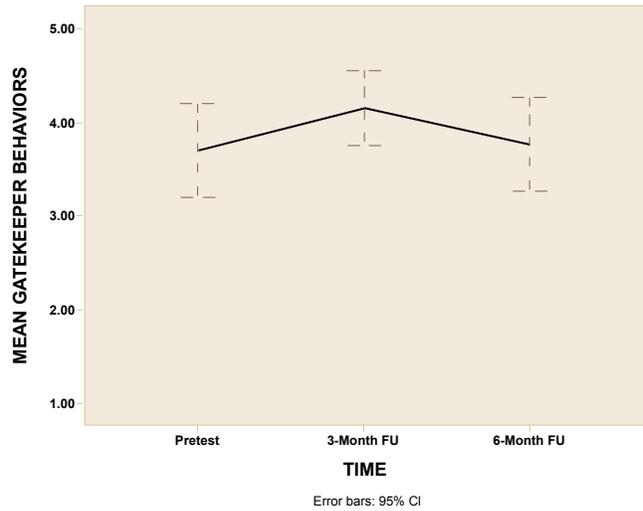
Figure 10. Responding to Warning Signs



Using Gatekeeper Intervention Skills

Suicide intervention skills were measured using Wyman et al.'s *Use of Gatekeeper Behaviors with Suicidal Clients*²⁴ at pretest, 3-month follow-up, and 6-month follow-up. Scores could range from 1-5 with higher scores indicating more frequent use of intervention behaviors. The results for changes over time were inconsistent. Although overall change was not statistically significant ($F_{(2,82)} = 2.29, p = .10$), a statistically significant difference was observed between pretest and posttest ($p < .05$). (See Figure 11.) The follow-up Friedman test did detect evidence for difference between pre-training scores and 3-month follow-up scores ($z = 1.80, p = .07$). There is evidence to suggest a modest increase (.57 points, 95% CI: .07-1.06) in the use of gatekeeper behaviors with suicidal clients following training, but those improvements were not maintained over time. Results are summarized in Table 2.

Figure 11. Gatekeeper Behaviors



Assessment and Intervention Behaviors

The results for each individual item for assessment and intervention are provided in Table 3. Even though only a few items showed statistically significant improvements, most assessment and intervention behaviors were being used *sometimes* to *nearly always*. However, these assessment and intervention behaviors are the most important outcomes of the training and therefore indicate specific behaviors that should be targeted in future trainings. It should be further noted that these items were only assessed for participants who reported identifying a suicidal youth, and for many variables, this only involved a few participants. It is likely that these small sample numbers reduced the ability to detect small or modest changes over time.

Use of Emergency Services

Participants were asked about the frequency of their use of emergency services when they had identified a youth at risk of suicide. Emergency services were defined as:

1. Placing a youth on *sight and sound* which is constant supervision allowing the staff person to see and hear the youth at all times
2. Calling 911
3. Sending youth to emergency room for treatment
4. Implementing the *Baker Act* which results in involuntary observation/treatment for up to 72 hours

The use of emergency services was not targeted as a behavioral outcome of the training, but instead reflected actual steps taken when a youth was identified as being at risk for suicidal behavior. This study did not collect data indicating the severity of risk for any given youth at any given time, and it should be noted that severity of risk should be the driving decision maker in the use of emergency services. The emergency services outlined above can be considered as progressive actions associated with increasing severity of risk. Low utilization of services should not be considered negative, as the majority of suicide-related encounters did not reach the critical level requiring out of placement treatment.

On average, participants reported that youth identified as being at risk for suicide were placed on "sight and sound" *nearly always* ($Mean = 3.59, SD = 1.70$); although this number is high, it should be noted that based on agency protocol, this should be always. The average use of the Baker Act was *never-seldom* ($Mean = 1.24, SD = 1.70$). The use of 911 and emergency room visits were also low ($Mean = 1.30, SD = .65$) and ($Mean = 1.34, SD = .74$).

Table 2. Descriptive Statistics for Study Outcomes

Measure	Scale Range	Mean (SE)			
		Pretraining	Posttraining	3-Months	6-Months
KNOWLEDGE					
SPEAKS	0-100%	71.4 (13.3)	88.1 (8.6)	N/A	N/A
Self-Perceived Knowledge	1-7	4.45 (1.57)	6.21 (.13)	5.73 (.23)	5.89 (.21)
Knowledge of Akathisia	1-7	1.67 (.28)	6.00 (.27)	3.61 (.45)	5.59 (.44)
ATTITUDES					
Attitudes to Suicide Prevention	1-5	1.50 (.09)	1.35 (.19)	1.35 (.14)	1.57 (.11)
Reluctance to Engage with Suicidal Clients	1-5	2.19 (.11)	1.91 (.13)	2.36 (.18)	2.36 (.17)
SELF-EFFICACY					
Efficacy to Perform Gatekeeper Role	1-7	4.85 (.21)	5.95 (.18)	5.73 (.23)	5.55 (.22)
Perceived Preparedness for Gatekeeper Role	1-7	4.13 (.34)	5.82 (.15)	5.71 (.24)	5.45 (.26)
Prepared to Identify Akathisia	1-7	1.71 (.33)	5.26 (.46)	3.29 (.46)	2.71 (.44)
INTERVENTION BEHAVIORS					
Asking in Response to Warning Signs	1-5	3.21 (.23)	N/A	.88 (.23)	5.69(.25)
Gatekeeper Behaviors	1-5	3.67 (1.44)	N/A	4.24 (1.17)	3.77 (1.40)
Assess for Akathisia	1-5	1.09 (.43)	N/A	1.85 (1.52)	2.17 (1.58)

Table 3. Assessment and Intervention Behaviors

Behavioral Measures		Pretraining	Posttraining	3-Months	6-Months
Risk Assessment “During the past 3 months did you...”					
Believe a client’s behavior indicated suicidal ideation (n = 22)	0-100	Yes (67%)	N/A	Yes (76%)	Yes (86%)
Think a client’s behavior indicated they were very distressed or depressed (n = 22)	0-100	Yes (85%)	N/A	Yes (90%)	Yes (82%)
Ask if a client was considering suicide ^{††} (n = 21)	0-100	Yes (67%)	N/A	Yes (86%)	Yes (71%)
Ask a client about distress or depression (n = 22)	0-100	Yes (80%)	N/A	Yes (97%)	Yes (73%)
Think a client might be experiencing akathisia (n = 17)	0-100	Yes (2%)	N/A	Yes (27%)	Yes (23%)
Ask a client about suicidal ideation when the client mentioned ending their life [†] (n = 22)	1-5	3.53(1.88)	N/A	3.75 (1.20)	3.00 (1.37)
Ask a client about suicidal ideation when they seemed depressed [†] (n = 18)	1-5	3.18 (1.61)	N/A	3.08 (1.25)	2.89 (1.18)
Ask a client about suicidal ideation when they experienced a trauma [†] (n = 16)	1-5	3.03 (1.52)	N/A	3.16 (1.34)	2.56 (1.26)
Ask a client about suicidal ideation when they felt something was wrong [*] (n = 16)	1-5	2.95 (1.51)	N/A	3.30 (1.29)	2.81 (1.17)
Ask a client about suicidal ideation when they exhibit symptoms of akathisia [*] (n = 9)	1-5	1.55 (1.35)	N/A	3.96 (1.61)	1.67 (1.32)
Intervention Behaviors “For every client you identified as being at risk for suicide behaviors, how often (in the past 3 months) did you...”					
Have you asked about suicidal ideation (n = 21)	1-5	3.54 (1.72)	N/A	3.91 (1.41)	3.82 (1.47)
How often have you spent time listening to these clients [*] (n = 13)	1-5	4.17 (1.50)	N/A	4.74 (.92)	4.18 (1.38)
Provide appropriate information [*] (n = 22)	1-5	3.83 (1.61)	N/A	4.70 (.93)	4.35 (1.11)
Convince the youth to seek help (n = 22)	1-5	3.71 (1.58)	N/A	4.55 (1.06)	4.20 (1.21)
Take the youth to your supervisor or other resource (n = 20)	1-5	3.42 (1.82)	N/A	3.86 (1.55)	3.25 (1.57)
Notify appropriate resources [*] (n = 18)	1-5	3.25 (1.81)	N/A	4.33 (1.23)	3.87 (1.51)
Assess for akathisia (n = 6)	1-5	1.09 (.43)	N/A	1.85 (1.52)	2.17 (1.59)

*parametric test $p < .05$,[†] non-parametric test ($p < .05$),^{††} non-parametric test ($p < .10$)

Youth Outcomes

Youth outcome data were tracked over the 9-month course of the study (March 2016 - November 2016). During that time, there were 795 intakes at the agency, and of those youth, 175 (22%) were identified as being at risk for suicidal behavior. Of those identified as being at risk, 50 youth were documented as experiencing suicidal ideation (29%). None of these 175 at-risk youth engaged in suicide attempts during the time they received services from the agency.

The primary interventions used were focused on assessment and reduction of risk for suicide behavior. All of the 175 youth at-risk were placed on “sight and sound” according to agency protocol and participated in a comprehensive suicide assessment completed by a Master’s level clinician. It should be noted that although agency policy dictates the use of “sight and sound” procedures for all at-risk youth, this doesn’t match what staff reported. Master’s level clinicians evaluate youth in residential services daily and evaluate youth receiving outpatient services weekly.

Discussion

This project explored the feasibility and effectiveness of implementing the “Youth, Depression, and Suicide: Let’s Talk” (YDS) gatekeeper suicide intervention training in a community-based agency providing services to at-risk youth and families in Florida’s child welfare system.

Utilization of the Components of Successful Suicide Intervention

Globally, the project produced many positive outcomes that could be linked to improving and providing services to meet children and youths’ mental health needs, specifically as related to suicide thoughts and behaviors. Although there were different levels of success by outcome, it is clear that the training did not have any negative impact on participants, and alternatively yielded some very strong positive results. Osteen et al.⁴³ documented the four components of successful suicide intervention: knowledge, attitudes, efficacy, and skills.

Strong positive results were observed for the impact of the training on different aspects of participants’ *knowledge* about suicide and suicide intervention, including declarative knowledge and self-perceived level of knowledge.

The impact of the training on *attitudes* towards suicide and suicide intervention was small. However, it is promising to note that attitudes towards this work were already very positive prior to the training. Similarly, reluctance to engage with suicidal clients was very low in the beginning. Both of these findings are important in that they indicate the willingness of staff to engage in these stressful situations. Attitudes are consistently found to be the most difficult outcome to impact through training, so it is beneficial to see such support even before the training occurred.

Multiple studies, across various disciplines and content, have shown that *self-efficacy* is one of the most important components in behavior change and use of new behaviors. It is as simple as that if someone believes they can engage in a task and be

successful, then they are much more likely to attempt that task. Results from the project are consistent with previous work in suicide training showing integrating experiential learning and providing opportunities to practice new skills predicts later use of those skills. The strong improvement in this area observed over time is a significant outcome of the training.

The ultimate goal of any training is to increase the use of target behaviors, and in the current project, the focus was on assessment and intervention *skills* to reduce deaths due to suicide. Increased use of both assessment and intervention behaviors was observed. Modest increases in assessment behaviors show promise for the impact of the training. Notably, staff was more likely to ask about suicide thoughts when a youth was exhibiting warning signs or experienced a risk factor. Modest increases were observed in intervention behaviors such as spending time listening to youth and providing access to information and resources.

Practical Applications and Sustainability

There were several considerations in choosing the YDS curriculum. It was developed specifically for use in child welfare systems, but could be further developed to be more specific to this population of youth and professionals, including case managers, child protective investigators, and the array of clinical and non-clinical staff providing mental health services.

Additionally, all materials from the basic training are available for free (see <http://www.sprc.org/resources-programs/lets-talk-gatekeeper-training> for contact information). In theory, anyone would be able to use these materials to present the YDS curriculum. However, the training literature has shown that presenters and trainers perform better when properly trained by experts, both in the curriculum itself, and the method of presentation. From a service perspective, dissemination of the intervention training would require minimal costs.

Policy Recommendations

Consistency in Suicide Intervention Training

Curriculum

Developing consistent content to be included in all suicide intervention trainings would ensure a baseline for all agencies. Arguably, there will be agency-specific content such as protocols, but training material should allow for local adaptation. Standardizing curricula would also reduce burden on agencies to develop or update training content regularly. There is a broad spectrum of curricula being used across the state, thus gathering and analyzing existing ones may be the first step in developing a standardized curriculum. Florida could make good use of its rich body of suicide intervention researchers and practitioners and/or partner with state suicide intervention agencies to adapt existing training content or design a new standardized baseline curriculum.

Trainers

Developing a consistent method of training that results in all trainers receiving the same training would likely improve training outcomes. There would be considerable costs associated with gathering all trainers across the state to regular training sessions.

A “train-the-trainer” approach would be an ideal solution. The original set of trainers can be small, and these trainers can travel out to different regions/circuits to train a next layer of trainers who in turn could train trainers at the agency level.

Timing

Research suggests that most training effects from suicide intervention tend to taper off around the six-month mark. One of current approaches to maintain training effects over time is to build in booster sessions at the 6- or 12-month time period. Booster sessions can be short and easily implemented (e.g., videos), or take on a more traditional face-to-face modality. Research has not determined if the modality or length or booster sessions impact outcomes, but research does show they reinforce learning and utilization of skills.

Training Modalities

There is a body of research that indicates that well developed curriculum can be successfully delivered using a variety of modalities. Although it is generally accepted that face-to-face trainings are the most effective, particularly for providing experiential learning and practicing intervention behaviors, there are models for other training modalities. Most notable would be the use of technology for training. Such curriculum already exists, but it is expensive. An alternative would be to utilize state resources to produce collaborations to develop multi-media training materials. Despite requiring an initial cost, this approach would most likely become cost effective within a short period of use.

Target Population

As noted, all agencies providing services to youth in the child welfare system are required to have 40 hours of training annually with some part of that devoted to suicide intervention. Preservice training for case managers and child protective investigators also includes some component of suicide intervention. Evaluation of the Suicide Intervention curriculum being used in preservice training and its impact on future assessment and intervention behavior should be completed.

Foster parents have continual interaction with foster youth and would likely be the first people to notice warning signs of suicidal thoughts and behaviors. Therefore, foster parents should have suicide intervention training, which widens the safety net for our youth.

Data Monitoring

One of the major challenges in addressing the issue of youth suicide, especially in the child welfare system, is the inability to access essential data on the incidence and prevalence of suicide behaviors, either because it is hard to get or because the data is not being collected.

Fatal Suicide Behavior

We will be unable to answer the question about the prevalence and incidence of youth death by suicide until we begin tracking this data. Currently the Florida Safe Families Network (FSFN) documents death by three categories: Drowning, Suffocation, and Crib-side death (or sudden infant death syndrome; SIDS). There is no data for death due to injury (accidental or purposeful, self-inflicted or not). Presumably these data are collected elsewhere such as death certificates. Unless these systems coordinate together, there is no way to estimate deaths by suicide among youth receiving child welfare services. As noted earlier, Florida collects data on deaths by suicide among youth in the general population, but these data are not broken out.

Non-Fatal Suicide Behavior Requiring Medical Treatment

As noted elsewhere, there is a significant number of non-fatal suicide behaviors that are not reported, or if so, not tracked in a consistent way. The most easily accessed data for this purpose is to use emergency room service data to track youth seen for self-injurious behavior.

Service Utilization and Follow-Up Care

Follow-up mental health treatment after a non-fatal suicide attempt is paramount to reducing the risk of another attempt. Tracking follow-up utilization of mental health services is an important but difficult task. One approach to doing so is to utilize Medicaid service utilization data to track follow-up from emergency mental health services (e.g., emergency room discharge data, Baker Act data) to outpatient mental health services.

Appendix 1

Repeated Measures ANOVA

The primary data analysis in the project was repeated measures analysis of variance (RMANOVA). RMANOVA is an appropriate strategy for testing for differences in mean scores for an outcome over time. Statistical tests of a RMANOVA analysis provide three key pieces of information. *Statistical significance* indicates the probability that any observed differences in the project sample are not reflective of what we would find if we measured every possible individual in a population (i.e., all child welfare service providers). Statistical significance is a crude, but common, indicator of relationships among variables. Additional information provided includes *effect sizes* that give an estimate of the *practical significance* of any observed differences. Effect sizes are critical pieces of information that tell us whether or not any observed differences are actually meaningful. Finally, the results provide *confidence intervals*. Because we cannot include every possible person in the population in our study, we are unable to say what the true effect is in that population. Confidence intervals are based on the sample data and give a range of plausible values of the results one might see if this study was conducted with the entire population.

Three specific types of tests are presented. *Trend* is the shape of the distribution of scores at each time point. Trend can be linear indicating that scores consistently increase over time or consistently decrease over time or do not change over time (i.e., all scores are the same). Trend can also take on quadratic or cubic distributions meaning that the pattern of change is not consistent across time points. Examples of quadratic and cubic trend are seen in the current project where scores for an outcome improved from pretest to posttest and then was either maintained over time or decreased over time. Results include statistical tests of trend (e.g., comparing linear to quadratic trend to determine which one fits the data better) and visual graphs of trend. RMANOVA results also indicate if there are differences in mean scores between each pair of time points (e.g., T0 and T1, T1 and T2, etc.). Effect sizes are provided for the results of each statistical test.

Parametric and Non-Parametric Statistics

Parametric and non-parametric statistics are two different families of statistical analyses that differ primarily in the types of statistical assumptions that need to be met to decrease bias and error in the results. One of the main differences between these families of analyses is the necessity for normal distributions of data. Parametric statistics, such as regression and analysis of variance (ANOVA), require that the data be normally distributed. Most parametric tests have non-parametric counterparts that do not rely on this assumption of normal distribution of data. Although violating the assumption normal distribution doesn't typically have significant impacts on statistical tests, that impact becomes maximized in small tables, such as those seen in some of the analyses for the current project. The Friedman test is the non-parametric counterpart of the repeated measures ANOVA. When the RMANOVA was not statistically significant it was followed up with a Friedman test. If the Friedman test was statistically significant it is reported along with the RMANOVA.

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