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Original Research

Suicide Prevention Across the Community: Evaluation of Mental Health Training for Multiple Gatekeeper Groups

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ABSTRACT

Introduction. Suicide rates in the U.S. are higher than the global average, with rural areas experiencing even greater rates. This study investigated whether a single suicide prevention training could improve knowledge, awareness, and intention to act among various gatekeeper populations in Kansas, a rural state with elevated suicide rates.

Methods. Licensed clinical psychologists at a public university in Kansas developed an evidence-based suicide prevention training program, offered online to multiple subgroups: university faculty, staff, and students, health care workers, and community members (voluntarily), as well as high school staff and students (compulsorily). The study employed a reliable, validated instrument to assess participants' knowledge, awareness, and intention to act using a Likert-type scale. Participants also reported whether they had completed prior suicide prevention training. A total of 865 participants provided retrospective pre/post responses, and the data were analyzed using paired samples t-tests and one-way ANOVA/Kruskal-Wallis tests.

Results. Overall, participants in all subgroups, regardless of prior training, showed statistically significant pre/post increases across all measures. While no significant differences were found in learning between recruitment subgroups, variations were identified based on the number of previous trainings completed.

Conclusions. The findings support the effectiveness of a single suicide prevention training across diverse populations, suggesting important implications for targeting training efforts and optimizing resource allocation in high-need environments.

INTRODUCTION

While global suicide rates declined from 2000 to 2019, the suicide rate in the U.S. increased during the same period.[1,2] Starting in 2020, the COVID-19 pandemic exacerbated feelings of isolation and uncertainty, contributing to a rise in suicidal ideation worldwide.[3] In the U.S., the pandemic also led to an increase in mental health disorders[4] and substance-related "deaths of despair."[5]

Certain demographics are at higher risk for suicide due to factors at the individual, relationship, community, and societal levels.[6] In the U.S., individuals working in health care die by suicide at a higher rate than the general population.[7,8] Suicide rates also vary by population density, with less densely populated areas experiencing higher rates.[9] Additionally, a history of mental illness increases an individual's risk of suicide.[10] Young adults aged 18-25 have the highest prevalence of serious mental illness among all adult age groups.[11] In the U.S., suicide is the second leading cause of death for individuals aged 10-24, with rates increasing by more than 50% from 2000 to 2021.[7]

Suicide prevention interventions can be categorized as universal (targeting entire populations), selective (targeting high-risk groups), or indicated (targeting individuals exhibiting high-risk behaviors).[12] A gatekeeper is someone equipped with the knowledge and skills to recognize individuals in crisis or at risk of suicide, and to provide assistance. Gatekeeper training, a form of selective prevention, provides participants with the knowledge to identify and assist people at risk of suicide. These programs typically focus on building knowledge, skills, attitudes, and self-efficacy,[13] and they generally cover warning signs, risk factors, and available support resources.[14]

Despite shared core elements, many gatekeeper training programs are tailored to specific audiences and not widely applied across diverse populations.[14] Specific trainings have been developed for high risk groups such as health care workers, military personnel, school staff and students, helping professionals, college faculty/staff and students, and indigenous populations.[15,16] Although high school and college students face similar risk factors, interventions for these groups often have been treated separately.[17] This siloed approach can lead to duplicated efforts and unnecessary consumption of time and financial resources.

The state of Kansas presents a unique case for the need for broad suicide prevention training, while also facing significant resource limitations. Kansas, a largely rural state, has a suicide rate higher than the national average.[18] More than 90% of those who die by suicide in the state have no reported history of mental health issues.[18] Access to mental healthcare is severely limited, with 96 of the state's 105 counties designated as mental health professional shortage areas.[19] Kansas ranks last nationally on aggregated measures of mental illness prevalence and access to care for both adults and youth.[20] In the absence of adequate mental health professionals, primary care providers often bear the responsibility for both mental health care[21] and suicide response.[22] This demanding environment has led to high rates of burnout and depression among Kansas physicians,[23] particularly since the onset of the COVID-19 pandemic.[24,25]

In response to low engagement with nationally available suicide prevention training programs and the high cost of those programs, a Kansas university's counseling center developed an evidence-based suicide prevention training program in 2018 as part of a broader mental health outreach initiative. Beginning in May 2020, the training was offered online to university faculty, staff, and students, and was later expanded to other high-risk populations and their gatekeepers.

The present study had two primary objectives: first, to determine whether the suicide prevention training increased knowledge, awareness, and intention to act among multiple populations; and second, to

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assess whether these populations benefited equally from the training. The results have important implications for expanding access to suicide prevention training and optimizing the allocation of limited training resources in Kansas during a time of heightened mental health needs.

METHODS

Training Content. A suicide prevention training program for gatekeepers was developed by licensed clinical psychologists and other mental health professionals at a public university in Kansas, incorporating evidence-based strategies for suicide prevention and mental health promotion.[26] Topics covered included suicide risk and protective factors, warning signs, statistics, stigma reduction, creating safer environments, psychological factors such as ambivalence and impulsivity, intervention techniques with direct questioning, strategies for engagement, and crisis resources (Table 1). The program combined didactic content with personal video narratives and reflection questions.

The training was self-paced and designed to take approximately 60 to 90 minutes, guided by prerecorded audio clips to ensure consistency between participants. Progress could be saved, allowing participants to complete the training in installments. This online, self-paced format was adopted to remove geographic barriers and provide participants the flexibility to complete the training on their own schedule.[27] Additionally, the online format ensured continued access during the COVID-19 pandemic.

Table 1. Structure of online suicide prevention course.

1. Mental health is health	Comparison of physical and mental health intervention
	Culture of silence and stigma
	Expectations for training and intervention
2. Understanding suicide	Rates by gender
	Rates by race, ethnicity, and LGBTQ+ status
	Rates by age
	Risk factors
	Protective factors
	Precipitating events
	Ideation and impulsivity
	Safer environments
	Ambivalence
	Deaths of despair
	Safer substance use
3. How to help	Share concern and listen
	Identify signs of distress
	Ask about ideation or intention
	Identify signs of crisis/immediate risk
	Support with resources and communication
	Resources
	How to respond in acute crisis
4. Losing someone to suicide	Stigma around suicide grief
	Support for grieving person

Participant Recruitment. The university counseling center led initial recruitment of faculty, staff, and students through campus internal communications (including signage), newsletters, emails, the counseling center website, meeting announcements, recommended on-boarding from departments, and social media. The participation incentive was a t-shirt with information about the mental health outreach initiative that encompassed this training. This was chosen as a visible sign of mental health destigmatization and support.

Through a community health coalition, the university counseling center then introduced the training to a private school system and a local hospital system. A private high school adopted the training as a universal requirement for students and staff, while hospital employees received training on a voluntary basis. The training also was made publicly available at no cost through the university counseling website. Recruitment from the wider community was conducted voluntarily through community health coalition partners, while local news media provided publicity.

Participants. A total of 865 participants completed the online training between May 2020 and March 2023 and provided assessment responses for the current study. Recruitment subgroups included 161 (19%) university students, 66 (8%) university faculty/staff, 229 (26%) health care workers, 296 (34%) high school students, 42 (5%) high school staff, and 71 (8%) participants from other sources in the community. The archival data available for analysis included participant recruitment group and previously trained status, but no individual demographic information. The university's Institutional Review Board (IRB) determined that the analysis of these aggregated anonymous responses was program evaluation, not human subjects research.

Instrument and Analysis. Participants completed a three-item retrospective pre/post evaluation measuring knowledge, awareness (skills/abilities), and intention to act (attitudes/self-efficacy). These items were adapted from the validated Gatekeeper Behavior Scale, which assesses preparedness, likelihood, and self-efficacy.[28] Licensed clinical psychologists and mental health professionals modified the items to better assess whether the training improved knowledge, awareness, and intention across multiple populations. The retrospective pre/post method, in which participants report their pre-training knowledge alongside their post-training level, was chosen to eliminate response-shift bias and is considered valid for repeated-measures research.[29,30]

Responses were provided on a Likert-type scale from 0 ("not at all") to 10 ("very"). Anonymous responses were aggregated by recruitment subgroup, and participants also were asked whether they had completed previous suicide prevention training (yes/no).

A posteriori reliability analysis of the three-item evaluation resulted in a Cronbach's alpha of $\alpha = 0.82$, indicating good internal consistency. Pearson's correlation between each item and the total score confirmed the validity of the instrument (Q1: $r(863) = 0.887$, $p < 0.01$; Q2: $r(863) = 0.902$, $p < 0.01$; Q3: $r(863) = 0.782$, $p < 0.01$), with all values exceeding the standard critical value (r_{crit} [df =100] = 0.254, $p < 0.01$).

For the pre/post evaluation responses, parametric test assumptions were met, as the dependent variable was continuous, distributions were

normal (confirmed by Q-Q plots, skewness, and kurtosis), and there were independent observations within each group. Homogeneity of variance was verified by Levene's test for equality of variance, which was not significant ($p > 0.05$). Paired samples t-tests were conducted on pre/post responses for the full sample, recruitment subgroups, and prior training status. Cohen's *d* was calculated to measure effect sizes and differences between group means. A one-way analysis of variance (ANOVA) was conducted to identify any differences in pre/post score increases across recruitment subgroups.

To compare the number of previous trainings completed by participants within each recruitment subgroup, an ANOVA was initially considered, but Levene's test for equality of variance was significant ($p < 0.05$), violating the test's assumptions. Consequently, the Kruskal-Wallis non-parametric test was used to compare independent samples from more than two groups. All statistical tests used an alpha level of 0.05, and data analysis was performed using IBM SPSS Statistics Version 29.0.1.0.

RESULTS

As a whole group, the 865 participants demonstrated statistically significant increases in knowledge, awareness, and intention on all three items ($p < 0.001$; Table 2). By recruitment subgroup (university students and faculty/staff, health care workers, high school students and staff, other community members), participants also demonstrated statistically significant increases on all three items (Table 2). Cohen's *d* effect size for knowledge and awareness items exceeded the large-effect benchmark of 0.8[31] for the group as a whole and for all recruitment subgroups. For the intention item, Cohen's *d* ranged from a low of 0.288 for high school staff to a high of 0.595 for community participants, a small to medium effect (Table 2). ANOVA identified no statistically significant differences between any recruitment subgroup scores and the overall group mean for Q1: $F(5, 859) = 0.772$; Q2: $F(5, 859) = 0.145$; Q3: $F(5, 859) = 0.608$. This indicates that the number of pre/post learning did not differ significantly by recruitment subgroup.

Of the 865 participants, 859 (99%) reported whether they had completed any suicide prevention training before this one. Of these 859, 22% (n = 190) had completed a previous training (PT) and 78% (n = 669) had not completed a previous training (NT). Regardless of previous training, the PT and NT subgroups reported significantly increased learning on all three items ($p < 0.001$; Table 3). For knowledge and awareness items, Cohen's *d* exceeded the large-effect benchmark of 0.8 for both PT and NT participants. For intention, Cohen's *d* was 0.311 for PT and 0.395 for NT, a small effect (Table 3).

The six recruitment subgroups also were compared on the number of suicide prevention trainings completed before the current training. Recruitment subgroups in order of fewest to most previously completed trainings were high school students, university students, community members/other, health care workers, university faculty/staff, and high school staff (Table 4). A Kruskal-Wallis test indicated a significant difference in the number of previous trainings across the six subgroups ($\chi^2(5) = 108.66$, $p < 0.001$). The median number of previous trainings was 0.0 for all six recruitment subgroups. Post-hoc comparisons using Dunn's method with a Bonferroni correction for multiple tests indicated that the median number of trainings of high school students was significantly lower than that of all other subgroups ($p < 0.001$). In addition, the median number of trainings of university students was significantly lower than that of university faculty/staff ($p < 0.001$) and health care workers ($p = 0.005$).

DISCUSSION

This study provides evidence that a single, evidence-based suicide prevention training program can significantly enhance knowledge, awareness, and intention to act across multiple populations in a state with high suicide rates and limited access to mental health care. It contributes to the literature by exploring how diverse groups respond to the same training program.

Across all recruitment subgroups and regardless of prior training experience, participants showed significant improvements in knowledge, awareness, and intention after completing the training. No consistent differences were found between the subgroups, and their responses did not significantly deviate from the overall mean, indicating a high level of consistency in pre/post training outcomes. This suggests that the training is generalizable and effective across a range of populations.

The analysis also revealed notable differences in the number of previous suicide prevention trainings completed by different subgroups. High school and university students had completed the fewest trainings, which is not surprising given their younger age and reduced opportunities for such experiences. However, students are a crucial target for suicide prevention efforts, as Kansas ranks 50 out of 51 (including Washington, D.C.) in youth mental illness prevalence and access to care.[20] This highlights the importance of continuing to engage student populations in these trainings.

Recognizing that some groups have had more opportunities for training can inform future recruitment efforts. Still, only 22% of participants had received prior suicide prevention training, underscoring the ongoing need for such programs. Importantly, the consistency of learning gains between participants with and without prior training demonstrates that suicide prevention education is not a *one-and-done* event. Instead, it is an ongoing process of reinforcing knowledge, awareness, and the intention to act, which continues to benefit gatekeepers.

While the training effectively serves multiple populations, its online format allows for easy adaptation to specific audiences.[27] The university-led mental health initiative is expanding efforts to reach high-risk groups, such as older adults, LGBTQ+ individuals, veterans, and indigenous populations.[7] These adaptations include unique statistics, data, risk and protective factors, and a review of literature specific to each group, while maintaining the general training framework. As of July 2024, the training is available in Spanish, with an LGBTQ+ version offered as well. A Vietnamese translation and a veteran-focused adaptation are planned for later in 2024, with future adaptations targeting older adults, indigenous communities, faith-based groups, and law enforcement/first responders.

Table 2. Participants' retrospective pre-post ratings as a whole group (N = 865) and by recruitment subgroup.

Paired Samples t-Test								
Assessment Items	Participant Group	Mean Before	Mean After	Mean Difference	*t*-value	*df* (n-1)	Sig. (1-tailed)	Cohen's *d*
1. KNOWLEDGE: How knowledgeable would you consider yourself about the facts surrounding suicide?	All participants	5.99	8.42	-2.43	-35.218	864	<0.001	1.197
	University students	5.87	8.56	-2.69	-17.374	160	<0.001	1.369
	University faculty/staff	6.46	8.58	-2.12	-8.372	65	<0.001	1.031
	Health care workers	6.41	8.71	-2.29	-17.965	228	<0.001	1.187
	High school students	5.63	8.05	-2.42	-19.653	295	<0.001	1.142
	High school staff	5.73	8.19	-2.46	-6.676	41	<0.001	1.030
	Community/other	6.06	8.70	-2.64	-11.938	70	<0.001	1.416
2. AWARENESS: How aware are you of resources for those struggling with suicidal thoughts or feelings?	All participants	5.90	8.59	-2.69	-34.492	864	<0.001	1.173
	University students	6.14	8.82	-2.68	-14.588	160	<0.001	1.150
	University faculty/staff	6.29	9.03	-2.74	-8.741	65	<0.001	1.076
	Health care workers	6.40	8.97	-2.57	-16.509	228	<0.001	1.091
	High school students	5.21	7.92	-2.72	-21.551	295	<0.001	1.253
	High school staff	5.88	8.68	-2.79	-7.031	41	<0.001	1.085
	Community/other	6.23	9.09	-2.86	-11.301	70	<0.001	1.341
3. INTENTION: How willing would you be to intervene if you came in contact with someone who you knew was considering suicide?	All participants	8.74	9.23	-.49	-11.104	864	<0.001	.378
	University students	8.72	9.27	-.55	-4.953	160	<0.001	.390
	University faculty/staff	8.92	9.35	-.44	-2.505	65	0.007	.308
	Health care workers	9.02	9.44	-.43	-5.605	228	<0.001	.370
	High school students	8.46	8.95	-.50	-6.191	295	<0.001	.360
	High school staff	8.91	9.22	-.31	-1.865	41	0.035	.288
	Community/other	8.80	9.51	-.71	-5.010	70	<0.001	.595

Table 3. Participants' retrospective pre-post ratings by previous training status (N = 859).

Paired Samples t-Test								
Assessment Items	Previous Training Status*	Mean Before	Mean After	Mean Difference	*t*-value	*df* (n-1)	Sig. (1-tailed)	Cohen's *d*
1. KNOWLEDGE: How knowledgeable would you consider yourself about the facts surrounding suicide?	PT	7.39	9.01	-1.62	-14.097	189	<0.001	1.025
	NT	5.59	8.25	-2.66	-32.822	668	<0.001	1.269
2. AWARENESS: How aware are you of resources for those struggling with suicidal thoughts or feelings?	PT	7.50	9.26	-1.76	-13.178	189	<0.001	.959
	NT	5.44	8.39	-2.95	-32.468	668	<0.001	1.255
3. INTENTION: How willing would you be to intervene if you came in contact with someone who you knew was considering suicide?	PT	9.32	9.64	-.32	-4.276	189	<0.001	.311
	NT	8.56	9.11	-.59	-10.204	668	<0.001	.395

*(PT, Previously Trained; NT, Not Previously Trained)

Table 4. Number of suicide prevention trainings previously completed by participants in each recruitment subgroup (N = 859).

Pairwise Comparisons							
Number of Previous Trainings Completed (PT)	High School Students	University Students	Community/ Other	Health Care Workers	University Faculty/ Staff	High School Staff	Total Participants by Number of Trainings
0 PT	284	126	54	146	36	23	669
1 PT	6	16	9	28	13	6	78
2 PT	3	9	3	19	4	3	41
3 PT	2	7	1	10	6	2	28
4 PT	1	0	2	4	1	0	8
5 PT	0	1	0	0	0	0	1
6 PT	0	2	2	18	5	7	34
Total Participants by Recruitment Subgroup	296	161	71	225	65	41	859
Median (Interquartile Range)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-1.0)	0.0 (0.0-1.5)	0.0 (0.0-2.0)	0.0 (0.0-0.0)

Limitations. The demographic data collected for this training were limited to recruitment subgroup and previous training status, leaving it unclear whether characteristics such as sex, gender, race, or ethnicity were representative of the subgroups. This lack of demographic information could have influenced the results. Additionally, no follow-up data were gathered to assess whether the training's impact persisted over time.

Participation from university, health care, and community members was voluntary, which may have introduced self-selection bias, potentially affecting the generalizability of the findings. Those who chose to complete the training voluntarily might have been more motivated, which could lead to greater learning. However, the pre/post improvements observed among high school students, who were universally required to complete the training and therefore not subject to self-selection bias, did not significantly differ from those who completed the training voluntarily. These results mitigate concerns about self-selection bias and support the generalizability of the findings across various populations.

The goal of suicide prevention training is to reduce suicidal behaviors. Future research could examine a pre-training cohort from the high school where the training was universally required to assess whether there are differences in suicidal behaviors between students who received the training and those who did not. However, it is important to note that a causal relationship cannot be inferred from a single data point, given the complexity of suicide risk factors and prevention strategies. Suicide prevention efforts go beyond gatekeeper training alone; this program is just one component of a broader community mental health initiative.

CONCLUSIONS

Suicide prevention trainings may be more adaptable across various gatekeeper populations than previously recognized. This study demonstrates the potential for online training to be effectively delivered to diverse populations, particularly in environments with high need and limited access to care. By consolidating expertise and reducing resource demands on Kansas' already strained primary care and mental health systems, this approach offers a cost-effective solution. The ability to reach a broader audience without increased expense significantly expands the pool of trained gatekeepers, while the flexibility of the online format allows for easy customization to address the unique needs of populations facing disparities in suicide risk.

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