Evaluating an Agricultural Community Suicide Prevention Program: Instrumentation and Impact

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HIGHLIGHTS

- This paper details an evaluation of a piloted community-based farmer suicide prevention training program using a revised Willingness to Intervene Against Suicide Questionnaire.
- Indicating program utility and impact, willingness to intervene with a person in crisis increased by 0.21 logits ($p<0.01$) in program participants who completed pre- and post-training surveys.
- A comparison of growth in the willingness to intervene variable across participant demographics and characteristics revealed a change of 0.43 logits among males, compared to 0.096 for females ($p=0.059$).
- Researchers recommend that the program be tailored to consider gender differences.

ABSTRACT. *In this study, researchers detail an evaluation of a pilot community-based farmer suicide prevention program that used QPR-based training customized for the agricultural community. Community-based mental health programs have been cited as key to addressing the worldwide suicide rate, but evidence of their execution and utility is not well documented, particularly within the agricultural community context. Researchers used Kirkpatrick's (1998) training evaluation model and a pre-post one-group design (Eseryel, 2002) of consenting training participants to conduct a preliminary assessment of programmatic impact. Using a revised Willingness to Intervene Against Suicide Questionnaire (Aldrich et al., 2014), which treated the questionnaire as an interval level scale suitable for parametric analysis, researchers found statistically significant differences in pre-training willingness to intervene between male and female respondents as well as those who work in agriculture and those who do not. An analysis of those respondents who completed both pre- and post-training surveys indicated statistically significant growth of 0.21 logits in the willingness to intervene variable, as well as remarkable growth for male participants in comparison to female participants.*

Keywords. *Evaluation of suicide prevention program, Farmer suicide prevention, Rasch analysis, Willingness to intervene.*

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The Problem: Farmer Mental Health

Those working in the agricultural industry experience poorer mental health and suicide at consistently higher rates than those in other industries (Bjornestad et al., 2021; Cuthbertson et al., 2021; Peterson et al., 2020; Ringgenberg et al., 2018). The Centers for Disease Control reports that the Agriculture, Forestry, Fishing, and Hunting industry has one of the five highest rates of suicide (Peterson et al., 2020). In 2016, male farmers and ranchers committed suicide at a rate of 43.2 per 100,000, compared to 27.4 per 100,000 among male working-aged adults across all occupations (Peterson et al., 2020).

Mental health is defined by the World Health Organization as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organization, 2001). Sharply contrasting with these constructs of productivity and community connection are those psychological states that have been theoretically and empirically proven to lead to a desire to suicide: perceived burdensomeness and a sense of low belongingness or social alienation (Joiner, 2005). Among farmers, perceived burdensomeness and a sense of social alienation are often experienced due to work-life imbalance, farm-family tensions surrounding issues such as succession and roles, farm finances and the volatility of the markets, the physical nature of the work and its impact on the aging farmer, as well as geographic, occupational, and social isolation (Fraser et al., 2005; Glasscock et al., 2006; Grzywacz et al., 2014). The risk imposed by these occupational psychosocial variables is compounded by mental health professional shortages and cultural barriers to mental health-seeking behaviors such as stigma, conceptions of self-sufficiency and masculinity (Bureau of Health Workforce Health Resources and Services Administration, 2021; Hammer et al., 2013; Roy et al., 2014).

Data suggest the far-reaching effects of suicide, particularly among the nation's small, low-population-density agricultural communities. For every suicide, 135 individuals are affected along a spectrum of exposure to long-term bereavement (Cerel et al., 2018). Exposure to, or bereavement from, suicide loss increases an individual's risk for depression, admission to psychiatric care, and suicide death (Cerel et al., 2015; Cerel et al., 2018; Pitman, 2014).

Responding to the Need for Farmer Mental Health Support

To address occupational psychosocial variables and barriers to help-seeking among the nation's farmers, Congress included funds for programming in the 2018 "Farm Bill" (Agricultural Improvement Act, 2018). In addition to directing the USDA and Department of Health and Human Services to examine the occupational stress of farmers and those who work within agriculture, this landmark legislation also calls for *community-based programs* to develop local initiatives to assist agricultural community members at risk for suicide.

Review of Literature: Community-based Mental Health Programs

Community-based mental health programs have been cited as key to addressing the increasing worldwide suicide rate and essential to community health (Coppens et al., 2014; Harris et al., 2016; Kral et al., 2009; United Nations, 1996; U.S. Department of Health and Human Services Office of the Surgeon General and National Action Alliance for Suicide Prevention [HHS], 2012). They are informed by a local understanding of community

members' mental health concerns and the strategies that may be most appropriate and effective for advancing individual and population mental well-being (Suicide Prevention Resource Center, 2022). Communities can implement specific suicide prevention strategies relevant to their context and cultures (United Nations, 2018). Moreover, when programs involve the creation of community networks, there is then the potential to provide social support to those in crisis, fight stigma, give individuals a sense of belonging, and promote a feeling of connectedness by being part of a community (United Nations, 2018).

In some cases, these community networks are composed of gatekeepers (individuals in a community who intersect with large numbers of community members and are trained to train others in how to identify individuals at risk for suicide and refer them to care) (HHS, 2012). Gatekeeper programs are predicated on the assumption that the greater the percentage of community members who are trained, the greater the community's ability is to recognize and refer suicidal community members to care; and, consequently, fewer suicide events will occur (Burnette et al., 2015). While community-based programming has been cited as essential to community health, critics argue that community engagement techniques often lack clear evidence and guidelines for their successful design and facilitation (Isaac et al., 2009).

One gatekeeper program, QPR (Question-Persuade-Refer), has been recognized by the federal Substance Abuse and Mental Health Services Administration (SAMHSA) as a best practice for suicide prevention (SAMHSA, 2012). The program trains lay individuals to recognize and respond to suicide warning signs, act to mitigate the risk of a suicide attempt, and refer the person with thoughts of suicide to a healthcare professional. Research indicates that QPR advances participant knowledge of suicide, self-efficacy to intervene with someone suicidal, and likelihood to intervene with someone suicidal (Herron et al., 2015; Litteken and Sale, 2017; Samuolis et al., 2020). QPR's outcomes address a reported lack of confidence among farmers and farm workers in spotting the warning signs of someone in distress and providing comfort when talking to somebody about mental health (American Farm Bureau Federation, 2019; 2020; 2021). The training program evaluated here is anchored in a QPR approach but with modifications customized for agricultural communities.

Developing a QPR Suicide Prevention Program for the Agricultural Community

During the 2020-2021 fiscal year, the Southeast Center for Agricultural Health and Injury Prevention partnered with the AgriSafe organization on a South Region Farmer and Rancher Stress Assistance Network (S-FRSAN) grant funded by the USDA/NIFA to develop an agricultural community-based suicide prevention program. Researchers selected the QPR program because of its intended lay audience and its train-the-trainer model, which facilitates the delivery of suicide prevention information and builds participant confidence in assisting an individual in distress using pre-existing trusted agricultural community networks. Its ability to be delivered in less than two hours, unlike the lengthier LivingWorks and Mental Health First Aid programs, also ensures that farmers and farm families can readily engage in the program and that both organizations and businesses (e.g., commodity groups, lenders, etc.) can conveniently host the training during their hours of operation. With a cross-section of educators and practitioners, researchers created a one-and-a-half-hour suicide prevention program that paired the licensed QPR training with an introduction to agricultural community stressors, discussion of barriers and cues to prompt

mental healthcare-seeking behavior among farmers and farm families, video testimonials, and mental health resources for farmers.

Partners then recruited an initial group of 17 gatekeeper trainers, individuals who live in and work with the agricultural community (suicide prevention experience was not necessary), to bring the one-and-a-half-hour agricultural community QPR training to their local communities and workplaces. Researchers invited individuals to participate in the program as gatekeepers with the understanding that they would complete the pre-paid correspondence QPR training to become certified as a QPR trainer and then engage in several activities in exchange for the training: (1) participate in a one-and-a-half-hour online Trainer Onboarding Session for the purposes of program standardization, and (2) facilitate at least two agricultural community QPR training sessions between Fall 2020 and March 2021, with no restrictions on the number of trainees per session or the venues for training. The training occurred in various settings: farm bureau meetings, extension offices, agricultural education classes, and professional conferences.

Materials and Methods

Evaluation Study Design

As previously noted, one criticism of community-based suicide prevention programs is the absence of evidence-based research on their execution, design, and evaluation (Isaac et al., 2009). Researchers employed the Kirkpatrick model (1998) to address these issues for their program evaluation. Kirkpatrick's four-level model of evaluation, one of the earliest and most widely used approaches to training evaluation, focuses on participant reaction, learning, behavior, and results. While the researchers' overall evaluative approach addressed participant reaction, behavior, and the impact of the training upon the community, the research questions for the preliminary study reported here focused on participant learning, or the acquisition of intended knowledge, skills, attitude, confidence, and commitment integral to a willingness to intervene with someone with thoughts of suicide. Researchers employed a one-group, pre-post study design (Eseryel, 2002), in which the willingness to intervene outcome was measured once before the training and once after using the Willingness to Intervene Against Suicide Questionnaire.

Instrumentation

The Willingness to Intervene Against Suicide Questionnaire (Aldrich et al., 2014) is a 65-item measure that is theoretically anchored in the Theory of Planned Behavior framework (TPB), shown in figure 1 (Ajzen, 1985). TPB (used to explain and predict behavior in a multitude of behavioral domains) suggests that behaviors are influenced by intentions, which are determined by the interaction of three factors: attitudes toward the behavior, subjective norms concerning the behavior, and perceived behavioral control.

Intention is an immediate antecedent of behavior, while willingness, defined as an individual's openness to an opportunity or willingness to perform a certain behavior, is a specific measure of intention (Ajzen, 1985; Pomery et al., 2009). While the researchers are exploring the piloted community-based farmer suicide prevention training program's impact on behavior both six months and one-year post-training, this study details the program's impact specifically on participant willingness to intervene.

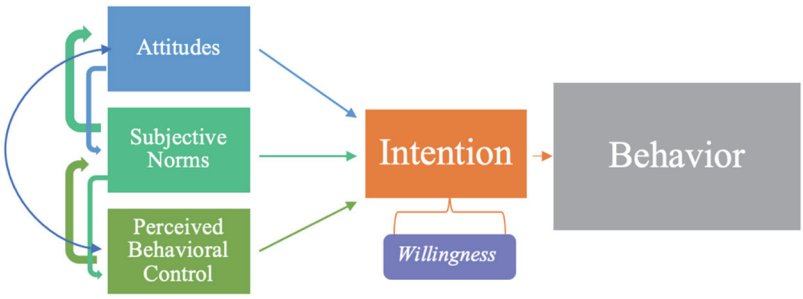

Figure 1. Ajzen's Theory of Planned Behavior.

While the Willingness to Intervene Against Suicide Questionnaire is conceptualized in alignment with Ajzen's determinants of intention, for the purposes of this study, the researchers theorized the willingness to intervene as *one* variable. Ajzen (1991) notes that the "relative importance of attitude, subjective norm, and perceived behavioral control in the prediction of intention is expected to vary across behaviors and situations" (p. 188). By testing the willingness to intervene as a unidimensional measure composed of items related to each determinant, researchers addressed the measurement limitations of determining each's magnitude of impact by narrowing their focus to the variable of interest (willingness) in their evaluation of their community-based suicide prevention program.

To assess whether the assumption of the instrument's unidimensionality held empirically, researchers utilized the Rasch model (Rasch, 1960). Rasch holds that for an instrument, such as a yardstick, to be useful for measurement, it must maintain its calibrations regardless of what is being measured. Similarly, a person's ability or competence should remain the same regardless of the test items used, so long as both sets of items measure the same latent variable (Wright and Linacre, 1989). In this way, Rasch modeling allows researchers to assess the probability of endorsing an item as a function of the item's endorsability and the respondent's ability and to produce an ordered set of items (easiest to most difficult to endorse), which is independent of the sample used. This can provide social scientists with insight into how to sequence learning or developmental outcomes related to a latent variable. An additional benefit of this method is that item parameters are independent of the sample used when data are fit to the Rasch model. This allows for generalizability across samples and items.

By using piloted Willingness to Intervene Against Suicide Questionnaire data and examining its fit to the Rasch model, researchers hoped to extend Aldrich et al.'s research by disentangling item endorsability from the respondent's ability to intervene against suicide to determine what items are most difficult to endorse—regardless of the determinant with which it is associated (Fox and Jones, 1998). It also offered the researchers (who identify as educators) the opportunity to point out those items that are most difficult to endorse while also gaining greater insight into what scaffolding is needed to endorse those items (a topic to be discussed in a future paper). Furthermore, treating WIS as one scale also enabled researchers to calculate the willingness to intervene as an interval level variable with defined values measured along one scale (with each point placed at an equal distance from one another) and expressed as logit scores, which are suitable for statistical calculations.

The Willingness to Intervene Against Suicide Questionnaire

The Willingness to Intervene Against Suicide Questionnaire has been used primarily with college-level QPR-trained participants. The Attitudes scale addresses the question "Intervening when someone is suicidal would be…" and elicits responses to 15 5-point semantic differential scales (e.g., worthless to valuable). The Subjective Norms scale prompts respondents to consider how those in their community would respond to talking to a person with thoughts of suicide, persuading the individual to see a mental health specialist, and seeking help for them. Composed of 9 questions, such as "Most individuals in my community would intervene," subjective norms are made up of nine questions, such as "Most people in my community would intervene," and are graded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The PBC scale's 19 items ask respondents to consider whether they have the self-efficacy, knowledge, and resources necessary to perform a suicide intervention (e.g., "I have the interpersonal skills necessary to discuss the presence of suicidal thoughts and feelings with a suicidal individual") and employs a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Lastly, the Intention scale's nine items prompt respondents to consider their likelihood to engage in intervention activities with a person with thoughts of suicide (e.g., ask the individual if he or she is suicidal) on a 5-point Likert scale from 1 (not likely at all) to 5 (extremely likely). Reversed items are used in the Attitudes, PBC, and Intention scales.

The creators of the Willingness to Intervene Against Suicide Questionnaire, Aldrich et al., report that previous research on the instrument's subscales ranges in reliability from .72 to.90 (Aldrich et al., 2014; Aldrich, 2015). Acceptable to good internal consistency has been indicated across the pretest and posttest across survey subscales: attitudes (14 items, pretest, $\alpha = .83$; posttest, $\alpha = .75$), subjective norms (9 items, pretest, $\alpha = .77$; posttest, $\alpha = .75$), PBC regarding intervention (17 items, pretest, $\alpha = .87$; posttest, $\alpha = .91$), and intention to intervene with a suicidal individual (20 items, pretest, $\alpha = .89$; posttest, $\alpha = .88$).

The Questionnaire's Fit to the Rasch Model

Since the Willingness to Intervene Against Suicide Questionnaire was constructed for college respondents, researchers edited two and deleted one Intention item for the survey's pilot. "Call the campus counselor and/or wellness center" was edited to "Call a mental health practitioner or therapist"; "Encourage the person to talk to the campus counselor" was edited to "Encourage the person to talk to a mental health practitioner or therapist"; and "Tell a campus authority about the person who is suicidal" was deleted.

Researchers conducted a Rasch analysis of pre-training data ($n = 143$) using Winsteps software version 5.0.1. The partial credit model was used in lieu of the rating scale model as the questionnaire's rating scales differed across its four subscales (Linacre, 2000).

Researchers first analyzed item fit to examine both the content (e.g., do the instrument's items measure the intended latent variable?) and the construct validity (e.g., does the instrument measure one latent willingness to intervene variable) of the instrument. Unidimensionality is a key to determining an instrument's quality as it indicates that there is a single latent trait (e.g., in this case, "willingness to intervene") underlying the responses (Hattie, 1985) rather than several such traits that are conceptually incompatible or potentially irrelevant to the key trait (Whittington, 2021). Item-fit statistics indicate the variation between the Rasch model's expectations and observed scores. To scale development, the acceptable mean square range for both statistics is from 0.6 to 1.4 (King et al., 2002).

Next, to examine whether the instrument's categories within Likert scale measures performed as expected, researchers studied the shape of the item's distributions (irregular distributions and categories with low frequencies are considered problematic). The average of the ability estimates of all participants endorsing a response category is expected to increase with the value of the underlying variable, and each consecutively higher number on the rating scale is assumed to correspond to a higher level of ability (Leung and Tsang, 2010). Researchers also examined threshold calibrations where the probability of a category being observed is expected to increase monotonically by at least 1.4 logits to ensure respondents' ability to discriminate between categories (Linacre, 2002).

To evaluate the instrument's functionality, researchers examined separation and reliability statistics. Person separation statistics indicate whether the instrument is composed of enough items to differentiate between low- and high-performing respondents, or, in the researcher's case, comfortable and uncomfortable gatekeepers. Item separation statistics, on the other hand, imply whether the person or respondent sample is large enough to confirm the item difficulty hierarchy or construct validity of the instrument. Linacre (2018) suggests that item separation indices of 3 as well as reliability statistics of 0.9 or greater are desirable for productive measurement.

Researchers examined person and item reliability to see if scores on the revised Willingness to Intervene Against Suicide were reproducible or if the instrument confirmed the principles of invariant measurement. Bond and Fox (2007) recommend reliability statistics be greater than 0.80.

The resulting revised unidimensional "willingness to intervene" instrument is composed of 51 items with mean square statistics ranging from 0.6 to 1.4. Unexplained variance and disattenuated correlation statistics indicated that there may be a secondary dimension to the contrast between (1) attitudes and behavioral norms and (2) PBC and intention items. However, since researchers conceptualized the concept of WIS broadly, they determined that multi-dimensionality in the data is not consequential, as all items are theoretically part of a willingness to intervene. Item reliability and separation statistics are 0.97 and 5.80. Person reliability and separation statistics are 0.90 and 2.90.

Procedures

One week prior to any of the scheduled training, gatekeepers provided their training registration logs to the researchers. This log documented participants' names, zip codes, email addresses, phone numbers, industry/profession, and whether they lived on or worked on a farm. Zip codes were used to determine the breadth of program reach, while occupational data was used to aggregate the roles of those trained within the agricultural community.

Researchers referred to Samut et al.'s (2020) review of strategies to improve response rates. First, trainers were asked to inform their participants that the researchers would be inviting them to participate in this study. Then, researchers invited those consenting to anonymously participate to complete the Willingness to Intervene Against Suicide Questionnaire one week prior to and one month after training. Researchers administered the questionnaire, which included participant demographic and characteristic items, online via Qualtrics, as most trainings occurred virtually due to the COVID-19 pandemic. Qualtrics diagnostics and questionnaire administration pilots indicated that the questionnaire would take no longer than eight minutes to complete. Researchers optimized the display of questionnaire items for mobile phone administration. Researchers sent out two reminder emails for each administration. For each survey, participants were asked to enter a unique

identifier composed of the first three letters of their mother's maiden name plus their four-digit birth year for the purpose of matching pre- and post-training responses. These matched pre- and post-training responses were used to determine growth in the willingness to intervene variable.

Study Participants

Researchers used training registration logs to invite those 415 training participants trained by the initial 17 gatekeepers to participate in this study. The study was approved by the university's IRB. Of the 415 participants trained, 143 consented to participate anonymously in the study. Respondent demographics and characteristics are reported in table 1.

Study participant response rates were calculated for the pre-training survey, the post-training survey, and participation in both the pre-training and post-training surveys. One hundred and forty-three individuals completed the pre-training "Willingness to Intervene Against Suicide" for a response rate of 34.5%. A total of 62 individuals completed the one-month post-training survey for a response rate of 14.9%. Thirty-eight (38) individuals completed both pre- and post-training surveys (a response rate of 9.2%). Pre-training return rates were calculated by dividing the number of survey responses by the overall number of participants. Not all participants registered prior to the training that occurred, such as those in conference formats who chose to attend via the conference program description, for example; these situations undoubtedly affected the return rate calculations (likely higher than our numbers show). Respondent demographics and characteristics by survey administration are detailed in table 1.

Table 1. Respondent demographics and characteristics by survey administration.

	Pre-Training	Post-Training	Both Pre and Post
Gender			
Male	39 (27.3%)	7 (11.3%)	9 (23.7%)
Female	102 (71.3%)	31 (50.0%)	29 (76.3%)
Not indicated	2 (1.4%)	24 (38.7%)	0 (0.0%)
Race			
White	133 (93.0%)	36 (58.0%)	36 (94.7%)
Asian	1 (0.7%)	0 (0.0%)	0 (0.0%)
American Indian or Alaskan Native	2 (1.4%)	1 (1.6%)	1 (2.6%)
Black or African American	1 (0.7%)	0 (0.0%)	0 (0.0%)
Native Hawaiian or Pacific Islander	1 (0.7%)	0 (0.0%)	0 (0.0%)
Not indicated	5 (3.5%)	25 (40.3%)	1 (2.6%)
Age			
18-24	37 (26.0%)	8 (12.9%)	4 (10.5%)
25-34	18 (12.6%)	4 (6.5%)	6 (15.8%)
35-44	24 (16.7%)	4 (6.4%)	5 (13/2%)
45-54	31 (21.6%)	6 (9.7%)	12 (31.6%)
55-64	24 (16.7%)	4 (6.4%)	8 (21.1%)
≥65	9 (6.3%)	1 (1.6%)	3 (7.9%)
Industry			
Agriculture	61 (42.7%)	15 (24.2%)	11 (28.9%)
Education	29 (20.3%)	11 (17.7%)	11 (28.9%)
Health Care or Social Assistance	32 (22.4%)	8 (12.9%)	8 (21.1%)
Farm Experience			
Live(d) on a farm	Current: 54 (35%) Past: 40 (28%)	Current: 7 (11.3%) Past: 13 (21.0%)	Current: 7 (18.4%) Past: 13 (34.2%)
Work(ed) on a farm	Current: 52 (36.4%) Past: 34 (23.8%)	Current: 8 (12.9%) Past: 11 (17.7%)	Current: 8 (21.1%) Past: 11 (28.9%)

Analysis

To determine differences across demographic groups in their baseline, or pre-training willingness to intervene with individuals with thoughts of suicide, researchers employed Rasch analysis of the revised measure to calculate sample and participant characteristic group means of pre-training logit scores (n = 143) using Winsteps software version 5.0.1. To determine if participation in the training resulted in an increase in the participants' willingness to intervene, researchers calculated pre- and post-logit scores of those 38 individuals who completed both pre- and post-training surveys and conducted (1) a paired t-test analyses of pre- and post-training logit data to determine the statistical significance of growth and (2) independent samples t-tests of logit growth data to determine statistically significant differences across demographic groups.

Findings

The mean willingness to intervene of all study participants who completed the pre-training survey was 0.75 logits *(*SE = 0.047). Researchers found statistically significant differences when comparing male to female respondents and those respondents who work in agriculture to those who do not. Female respondents were significantly more willing to intervene (M = 0.805 logits, SE = 0.057) than male respondents (M = 0.581 logits, SE = 0.076), p = 0.021. Those who don't work in agriculture were also significantly more willing to intervene prior to training (M = 0.839 logits, SE = 0.578) than those who work in agriculture (M = 0.619 logits, SE = 0.539), p = 0.018.

Those participants who completed both pre- and post-training questionnaires had an average pre-training willingness to intervene score of 0.70 (SE = 0.074) logits and a post-training score of 0.91 (SE = 0.082). Paired sample statistics indicated a statistically significant growth of 0.21 logits ($p < 0.01$; d = 0.42). A comparison of growth in the willingness to intervene variable across participant demographics and characteristics revealed a greater change (p = 0.059) in males from pre- to post-training (M = 0.430 logits, SE = 0.106) than in females (M = 0.096 logits, SE = 0.126).

Conclusion

This preliminary research suggests that suicide prevention programming targeting the willingness to intervene is particularly needed within agricultural communities, particularly among males. Paralleling our pre-training findings, research has found that men in general have lower rates of mental health literacy than women (Cuthbertson et al., 2021; Hadjimina and Furnham, 2017; Lee et al., 2020) and that farm men specifically are more reluctant to engage in mental health help-seeking behaviors (Dudensing et al., 2017; National Institute of Mental Health, 2018). Brumby and Smith's (2009) study found that women were more likely to access mental health support services than men. This is concerning given Klingleschmidt et al.'s (2018) study, which found that American male farmers are at an increased risk of suicide in comparison to the general population.

The researchers' QPR program had a statistically significant impact on its participants. These initial findings suggest positive outcomes for the intervention's content, utility, and efficacy. The pre-training and growth statistics of male respondents are of particular note. Male participants who completed the pre-training survey were significantly less willing to intervene than female participants, and the comparison of male and female pre- and

post-training survey respondents indicated remarkable growth in willingness to intervene among men.

Research of the agricultural community QPR program's impact on male willingness to intervene suggests that the program is particularly effective for a demographic group that may be at the greatest risk for suicide. At the same time, this research underscores the need to engage and tailor suicide prevention training to meet the needs of these male farmer participants, a recommendation also made by Hagen et al. (2019) in their international review of mental health outcomes and interventions within farming populations. Researchers also recommend recruiting gatekeepers from first responder groups in which males are well represented, such as firefighters and Agriculture and Natural Resource Extension agents, to engage more male participants in the intervention.

Future directions for research include the continued piloting of the Willingness to Intervene Against Suicide Questionnaire for the purpose of refinement of the revised measure and greater generalizability of findings. With additional data, researchers can determine with greater confidence the ordering of item difficulty and use this to provide the occupational health and safety community with insight into how to scaffold community-based suicide prevention programming learning objectives.

Limitations

One limitation of this study, according to the researchers, is the lack of pre- and post-training matched participation. This may be attributed to COVID-related computer and online survey fatigue or the nature of agricultural work, which leaves farmers and farm families with little time to dispense to non-farm work. A second limitation is that the study population was overwhelmingly white, non-Hispanic/Latino, which translates into researchers knowing little about the cultural appropriateness of either the training or the how survey functions across racial and ethnic groups.

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