Promoting the Community's Ability to Detect and Respond to Suicide Risk Through an Online Bystander Intervention Model-Informed Tool

A Randomized Controlled Trial

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Abstract. *Background:* The public health sector has advocated for more innovative, technology-based, suicide prevention education for the community, to improve their ability to detect and respond to suicide risk. Emerging evidence suggests addressing the bystander effect through the Bystander Intervention Model (BIM) in education material may have potential for suicide prevention. *Aims:* The current study aimed to assess whether BIM-informed tools can lead to improved readiness, confidence and intent in the community to detect and respond to suicide risk in others. *Method:* A sample of 281 adults recruited from the community participated in a randomized controlled trial comprising a factsheet designed according to the BIM (intervention group) and a standard factsheet about suicide and mental health (control group). Participants' self-reported detecting and responding to suicide risk readiness, confidence, and intent when presented with a suicidal peer was tested pre- and postintervention and compared across time and between groups. *Results:* The intervention group had significantly higher levels of detecting and responding to suicide risk readiness, confidence, and intent than the control group at postintervention (all $p < .001$) with moderate-to-large effect sizes. *Limitations:* The study was limited by a homogenous sample, too low numbers at follow-up to report, and self-report data only. *Conclusion:* This study demonstrates BIM-informed suicide prevention training may enhance the community's intervention readiness, confidence, and intent better than current standard material. Further testing in this area is recommended. While results were statistically significant, clinical significance requires further exploration.

Keywords: suicide prevention programs, bystander effect, Bystander Intervention Model, community awareness, online

Suicide is a global public health issue and leading cause of death in many countries (World Health Organization [WHO], 2019). Between approximately 1960 and 2008, suicide rates increased worldwide by over 60% (WHO, 2008). The 2019 WHO report stated that by 2016, the global age-standardized suicide rate decreased by 9.8%, although not all countries observed a reduction (WHO, 2019). The report concluded that if current rates continue, global suicide rate reduction targets will fall short and suicide prevention efforts must be strengthened to make progress. This paper presents a trial aimed at strengthening community suicide prevention programs.

The Black Dog Institute Australia has developed a multistrategy/sectoral approach called *LifeSpan* (Black Dog Institute, 2018). Longitudinal research will assess its effects on suicide rates; however, the strategy has a strong evidence base from global trials (see Hegerl et al., 2010; Mann et al., 2005; Zalsman et al., 2016). The strategy includes nine key interventions: reducing access to lethal suicide methods, responsible media reporting of suicide, community awareness programs, gatekeeper training, school-based programs, training of general practitioners, training of frontline staff, evidence-based psychotherapy, and follow-up for individuals with a recent suicide attempt (Black Dog Institute, 2018). While this system promotes a synergetic effect by implementing all components together, the community sector warrants a more specific focus.

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Previous studies indicate that 70–90% of youth and adults who died by suicide communicated warning signs of their intentions to their family and friends, whereas only 20–30% had any contact with a health professional ("current or former clients" to a counseling service before death, although no specific timeframe from health professional contact to death was reported; Bloch, 1987; Kalafat, Elias, & Gara, 1993; Klimes-Dougan, Klingbeil, & Meller, 2013). Warning signs can be behavioral (e.g., withdrawal, preparing a will), verbal (e.g., saying "I can't do this anymore"), and/or environmental (e.g., recent relationship break-up, shame/embarrassment; King, Vidourek, & Strader, 2008). Thus, the general community is a vital part of the system, acting as gate-keepers to much of the rest of the system.

It appears the general community, however, is ill-prepared to fulfill this role. For example, King et al. (2008) found only 11% of their survey population believed they could recognize a friend at suicide risk, 17% believed they could ask a friend if they were suicidal, and 71% were not aware of mental health support resources.

The majority of people with suicidality reportedly do not seek professional help due to self-reliance, lack of perceived need for treatment, and stigma toward suicide, mental health, and help-seeking (Han, Batterham, Calear, & Randall, 2018). Instead, they are more likely to access informal forms of support by indicating their distress to family and friends, including young people, who are more likely to tell a friend than an adult (Cimini et al., 2014; Schmidt, Iachini, George, Koller, & Weist, 2015). Clearly, the community needs training in appropriate suicide prevention behaviors.

Overall, community-focused research is highly warranted and technology-based formats rather than face-to-face are suggested to increase feasibility and accessibility (Christensen & Petrie, 2013).

Theory

Previous community-focused suicide prevention research found participants lacked satisfactory responses to hypothetical suicide risk, evident in their reported helping intentions (Fischer et al., 2011; Jorm, Blewitt, Griffiths, Kitchener, & Parslow, 2005; Rudd, Goulding, & Carlisle, 2013). One study found 75% of adolescent participants reported keeping intentions of suicidal peers' secrets (Kalafat et al., 1993; Klimes-Dougan et al., 2013). Adult participants were far less likely to report seeking emergency services when someone voiced suicidal thoughts with intent to die compared with when someone showed signs of a heart attack (Rudd et al., 2013). This inaction may reflect the *bystander effect* (Bloch, 1987; Darley & Latane, 1968; Fischer et al., 2011), a social psychological phenomenon where the more people are present in an emergency, the less likely an individual is to help. The most prominent inaction contributors are: fear of negative evaluation by onlookers, lack of confidence in skills to help, and diffusion of responsibility (assuming that others will help; Latané & Darley, 1970).

Detecting and responding to suicide risk in others constitute a helping behavior (Bloch, 1987; Fischer et al., 2011). The bystander effect, a significant barrier to helping behavior, is therefore important to consider in community suicide prevention training. Many theories inform behavior change, for example, the theory of planned behavior, protection motivation theory, and the theory of interpersonal behavior (Ajzen, 1991; Moody & Siponen, 2013; Rogers & Prentice-Dunn, 1997). These theories focus on motivating behavior (e.g., increasing exercise) that often impacts the individual only and can be performed in private. Conversely, community intervention involves action to help others. When another individual is involved, other factors of human behavior need consideration. People are highly prone to conformity and fear of judgment from others (Latané & Darley, 1970). These theories alone are not enough to initiate intervention as they do not focus on overcoming the bystander effect. Community education needs to be informed by theories that account for the additional effect of third parties on behavior.

Although complex and multilayered, progressing through the bystander intervention model (BIM) is suggested to be essential for bystander intervention (Fischer et al., 2011), namely: (1) notice a critical situation, (2) interpret the situation as an emergency or urgent, (3) assume personal responsibility to help, (4) feel competent and confident to help, and (5) reach a conscious decision to help. Previous studies mostly target knowledge, attitudes, skills, and compassion (Robinson, Braybrook, & Robertson, 2014; Strunk, King, Vidourek, & Sorter, 2014). According to bystander research and the BIM, these foci are not sufficient in leading to helping behavior because vital components promoting action are missing. This mainly includes teaching the transfer of knowledge into urgent, immediate, personal action with a sense of confidence.

A review of the literature found no mention of BIM use in community suicide prevention. Thus, the current study aimed to test whether an online BIM-informed intervention enhances community members' aptitude to detect and respond to a person manifesting suicide risk factors. It was hypothesized that BIM-informed material would lead to significantly higher scores in detecting and responding to suicide risk readiness, confidence, and intent than the standard condition.

This study adds to research often targeting adolescents (helpers and those at risk) by targeting adults with training material applicable to youth and adults at risk.

Method

Study Design

The study was a 2×2, between-within group, repeated measures, randomized controlled trial (RCT). The within-group variable was time (immediately preintervention, immediately postintervention) and the between-group variable was intervention content (BIM-informed vs. not BIM-informed). The dependent variables were self-reported detecting and responding to suicide risk (DARTS): (1) readiness and (2) confidence and intent.

Ethics Approval

The University Human Research Ethics Committee (registration number: HEC19007) approved the study, which is registered with the Australian New Zealand Clinical Trials Registry (ANZCTR; registration number: ACTRN 12618001330235).

Participants

Men and women aged 18 years and older were recruited. The exclusion criteria were: anyone previously bereaved by suicide, distressed by the topic, and/or experiencing suicide ideation. Participants had to indicate they did not meet exclusion criteria before commencing. The study was conducted online, and participants could participate from anywhere. At least 64 participants per group were required to detect a large effect size (optimally a Cohen's *d* of .50) at $\alpha = .05$ with sufficient power (.80–1.0; Cohen, 1992).

Intervention

Intervention Condition

This group received a factsheet with evidence-based, best practice guidelines in DARTS, arranged to address each part of the BIM (see Electronic Supplementary Material [ESM] 1 for more detail; Page & Stritzke, 2014). The control group intervention consisted of three A4 pages of bullet points whereas the experimental group had six pages (see Figure S1 in ESM 2 for conceptual framework).

Control Condition

The active control group received publicly available information from websites about what to do when worried that a friend may be at risk of suicide. When subjectively compared with the BIM, this information addressed part one (noticing) and four (competence/confidence) in minimal detail.

Study Protocol

The study was conducted using Qualtrics software (https://www.qualtrics.com) between July and December 2017 (follow-up was conducted during January–July 2018). Participants were recruited via social media and flyers delivered in local (Brisbane, Australia) libraries, gyms, retail shops, and universities. Participants were directed to the survey via a link on the flyer and randomly allocated by Qualtrics. The study advertisement and every survey page provided professional support information for anyone experiencing distress. The survey consisted of: demographics, DARTS Readiness Scale (DARTS-RS) Time 1 (T1), Vignette 1, Confidence and Intent to Intervene Scale (CITIS) T1, factsheet (experimental vs. control), Manipulation Check Scale (MCS), DARTS-RS Time 2 (T2), Vignette 2, CITIS T2 (see Figure S2 in ESM 2 for overall study protocol). A follow-up survey was emailed 6 months after the intervention. Despite reminder e-mails and incentives (draw to win one of three $50 vouchers), only 131 individuals responded and only 68 matched the identifier codes. Due to the low numbers and limited power, follow-up analyses were not included in this study.

Vignettes

Two similar vignettes were used, involving a person noticing a peer displaying warning signs and risk factors of suicide (see ESM 3). These were modified vignettes from Jorm et al. (2005, p. 3), written to satisfy diagnostic criteria for major depression, a significant risk factor for suicide (Blasco-Fontecilla et al., 2012). Both vignettes included a male at risk, as based on the vignette by Jorm et al. (2005). Evidence suggests the gender of the person in need of help does not impact the bystander effect or the helping behavior significantly (Fischer et al., 2011).

Measures

The outcome measures (outlined here) assessed the constructs of readiness, confidence, and intent. As actual behavior is difficult to capture, a vignette measuring these constructs is justified. These constructs correlate with subsequent behavior including helping someone experiencing suicidal thoughts, aligning with the theory of planned behavior, which suggests intention is linked to behavior with correlations up to .94 (Aldrich, 2015; Rossetto, Jorm, & Reavley, 2016; Shemanski Aldrich & Cerel, 2009).

DARTS-RS

Participants' DARTS readiness, measured by their ability to progress through each step of the BIM, was assessed prior to and after introducing the factsheet by the 16-item adapted version of the Bystander Intervention in Bullying and Sexual Harassment questionnaire (Nickerson, Aloe, Livingston, & Feeley, 2014). A confirmatory factor analysis with a sample of 562 high school students confirmed the five-factor structure of the measure in a bullying and sexual harassment scenario (Nickerson et al., 2014). The original measure was adapted to suit a scenario with a suicidal peer to establish baseline DARTS readiness and measure changes postintervention. Items (e.g., "I can recognize most warning signs of suicide risk") were assessed on a 5-point Likert scale from 1 *(strongly disagree)* to 5 *(strongly agree)*, with higher scores indicating higher readiness. The original scale had sound reliability and validity and the current sample had good internal consistency at T1 (α = .85) and T2 (α = .89).

CITIS

This 11-item scale was adapted from Banyard, Moynihan, Cares, and Warner's (2014) Bystander Readiness to Help questionnaire for bullying and sexual harassment. This scale aimed to test the efficacy of the intervention by testing confidence and intent to act. The questions were administered pre- and postintervention. Items (e.g., "I am likely to feel confident to intervene") were assessed on a 5-point Likert scale from 1 *(strongly disagree)* to 5 *(strongly agree)*, with higher scores indicating higher confidence and intent. The CITIS had good internal consistency at T1 (α = .87) and T2 (α = .88).

MCS

The 10-item manipulation check assessed how much the intervention content related to the BIM on a 5-point scale from 0 *(not at all)* to 4 *(an extreme amount)*. An example includes: "To what extent did the information sheet help you notice John may be thinking about suicide?" The MCS had very good internal consistency (α = .96).

Data Analysis

The software SPSS Version 20 was used for statistical analysis of quantitative data. Analyses included repeated measures analysis of variance (mixed model ANOVAs) to assess differences in outcomes, analysis of covariance (ANCOVA) to assess for covariates, Pearson's product–moment correlation coefficient to assess validity, and independent sample *t* tests for a manipulation check.

Assumption Testing

Assumption testing revealed data were reasonably normal with no extreme outliers. Randomization checks were met for all demographic variables between conditions, and baselines scores on dependent variables were similar between groups. The assumption of homogeneity of variances was met for both outcome analyses and the manipulation check. The assumption of equality of covariance was met for DARTS-RS but violated for CITIS; however, group sizes over $n = 30$ are robust against such violations (Allen & Bennett, 2007).

Results

Participants

The study recruited 281 participants with a mean age of 35.67 years ($SD = 14.21$, range = 18–71). The majority of participants were female, Caucasian, working in health and social assistance, with no previous suicide prevention training, no previous personal mental health-related diagnosis, and they had a family member with a mental health-related diagnosis (see Tables S1–S7 in ESM 4 for demographic data between groups). The last three demographic variables were collected to assess impact on dependent variables.

Outcome Analyses

DARTS-RS

An ANOVA assessed the impact of two interventions on participants' DARTS-RS scores, across two time points revealing a significant interaction between condition and time, Wilks's $\lambda = .92$, $F(1, 279) = 23.07$, $p < .001$, $\eta_p^2 = .08$. Experimental condition participants had significantly higher DARTS-RS scores than the standard group depending on the time, observably at T2 with a moderate–large effect size (see Table S8 in ESM 4).

CITIS

An ANOVA with CITIS scores revealed a significant interaction between condition and time, Wilks's $\lambda = .93$, $F(1, 278) = 19.82$, $p < .001$, $\eta_p^2 = .07$. Experimental condition participants had significantly higher CITIS scores than the control group depending on the time, observably at T2 at a moderate–large effect size (see Table S9 in ESM 4).

The same ANOVAs as above were conducted on confidence items alone and intent items alone, yielding similar results as above: significant interactions, where exper-

imental condition participants had significantly higher scores than controls at T2.

Manipulation Check

An independent samples *t* test assessed whether scores between conditions were different in the MCS, revealing a significant difference between the experimental ($M = 38.58$, $SD = 8.87$) and standard group ($M = 31.70$, $SD = 9.66$), $t(279) = 6.23$, $p < .001$ (two-tailed). The magnitude of this difference (mean difference = 6.89, 95% CI [4.71, 9.06]) was moderate–large ($\eta^2 = .12$).

Validity Checks

The relationship between outcome variables was investigated using the Pearson product–moment correlation coefficient to assess convergent criterion validity. Table S10 in ESM 4 shows that all correlations between DARTS-RS and CITIS at T1 and T2 were large and significant, providing evidence of criterion validity of the scales.

Covariates

Multiple 2×2 ANCOVAs were conducted to assess the interaction between time and condition on DARTS-RS and CITIS controlling for demographic variables. When comparing adjusted mean scores with original scores, they were very similar. Overall, no covariates changed the size of the effect of the condition to any meaningful extent.

Discussion

This study consisted of an online, community trial intervention for adults, teaching how to detect and respond to suicide risk (DARTS). The aim was to test whether BIM-guided education material increases DARTS readiness, confidence, and intent. Results indicated the experimental group had significantly higher scores on the DARTS-RS and CITIS postintervention compared with the control group. This indicates BIM-informed education can increase individuals' readiness to: identify suicide risk and warning signs; interpret any sign as important to follow up on; assume personal responsibility to help; know how to help and feel confident to do so; and reach a decision to help. This is a unique finding compared with previous studies. This is because previous studies have mainly focused on Part 4 of the BIM, knowledge/skills/competence in helping. Other studies have not addressed all five parts of the BIM through educating participants to notice risk factors, interpret them as an emergency, take personal responsibility to help, know how to help, and decide to help.

According to bystander research, all of the aforementioned steps are imperative for helping behavior to occur. Knowledge alone may be enough to change behavior not involving others, for example, understanding one's own mental health. When it comes to helping others at risk, however, more complex human behavior needs consideration as it involves fear of negative evaluation, conformity to inaction, and diffusion of responsibility. This study not only taught all five factors to participants but assessed them too. Furthermore, this study demonstrated the intervention increased participants' confidence and intent to act. The MCS indicated participants deemed experimental content to be more aligned with the BIM. This provides evidence for the efficacy of BIM-informed suicide prevention material as leading to increased DARTS readiness, confidence, and intent.

Limitations and Strengths

The homogeneity of the sample, being female health professionals, is a potential limitation. However, this sample is likely to be more literate in suicide prevention with higher baseline knowledge, where a more heterogeneous sample may actually result in higher differences between intervention groups due to lower baseline knowledge. The insufficient numbers at follow-up did not allow for assessment of the intervention effect over 6 months. Additionally, all data were based on self-report, meaning outcomes lack any kind of in-depth exploration of participant perceptions or actual behaviors rather than intent only. Furthermore, participants' interpretation of questions may have varied. One question, for example, "I know what to say to get someone who is thinking about suicide to not go through with the act" assesses level of agreement, but not participants' knowledge of what can be said and whether this is accurate according to best practice. Finally, although results were statistically significant with moderate–large effect sizes, the differences between groups were not large, and further research is required to determine clinical significance, that is, if the effect is transferable in real-world situations.

Despite the limitations, this study also has important strengths, namely, its uniqueness and the first known application of the BIM in suicide prevention material and outcome measures for the community. Our data show that self-reported DARTS readiness, confidence, and intent increased as a result of intervention. Further, this study used an active control condition with almost identical baseline scores preintervention whereas the difference postintervention was significant with a moderate–large effect size, a finding that is worth exploring further.

Implications and Future Directions

This paper suggests that BIM-informed community suicide prevention training results in greater DARTS readiness, confidence, and intent compared with current publicly available material. This has important implications for future community campaigns (e.g., websites, flyers, workshops), which may benefit from being designed according to the five components of the BIM to increase the likelihood of helping behavior.

Compared with research on the prevention of bullying and sexual harassment, where the BIM has been successfully applied to gatekeepers, suicide prevention lags behind in initiatives and research informed by this model. The current study demonstrates that success in other areas may transfer to suicide prevention. However, more research is required to further replicate these findings. Future studies are recommended to include a larger, more diverse sample and assess beyond self-report (e.g., action planning and behavior through role play), allowing for a closer assessment of clinical significance. Intervention information is recommended to be more accessible (e.g., a video rather than factsheet). Furthermore, on the basis of the lack of psychometrically validated measures in this area, it is suggested to adapt and/or develop and validate new measurement tools to assess the efficacy of BIM-informed tools.

Conclusion

The results of this study provide preliminary evidence that online, BIM-informed DARTS education material may increase readiness, confidence, and intent to help. This can help shape future suicide prevention research to address high and increasing suicide incidence. A substantially higher proportion of people at risk of suicide communicate their distress to community members than to health professionals. This warrants a focus on interventions that improve community suicide risk literacy, to enable vulnerable peers to be recognized and referred to professional care. Interventions informed by the BIM may offer potential to enhance this response, and, thereby, prevent suicide.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/0227-5910/a000708

ESM 1. Experimental group factsheet content focus
ESM 2. Figures
ESM 3. Vignettes
ESM 4. Demographic and outcomes tables

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