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## ORIGINAL ARTICLE

# Understanding the utility of “Talk-to-Me” an online suicide prevention program for Australian university students

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## Abstract

**Background:** Australian university students are at risk of experiencing poor mental health, being vulnerable to self-harm and suicidal ideation.

**Aim:** “Talk-to-Me” is a suicide ideation prevention Massive open online course (MOOC) previously showing it can support Western Australian university students' knowledge of identifying and responding to suicide ideation in themselves and others.

**Methods:** A multi-site one-group pre-test/post-test design with a 12-week follow-up explored the efficacy of “Talk-to-Me” for university students Australia-wide, evaluating the influence of COVID-19 and location. Overall, 217 students

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(55% female;  $m_{\text{age}} = 24.93$  years [18, 60]) enrolled in this study from 2020 to 2021. Participants' responses to suicidal statements, mental health literacy, generalized self-efficacy, help-seeking behavior, and overall utility of the program were collected at baseline, post-MOOC (10 weeks from baseline) and 12-week follow-up. The effect of time and location interaction was explored using a random-effects regression model.

**Results:** Findings indicated significant improvement in participants' knowledge of positive mental health support strategies ( $ES = 0.42$ ,  $p < 0.001$ ) and recognizing appropriate responses to suicidal statements ( $ES = 0.37$ ,  $p < 0.001$ ) at 10-weeks, with further improvement at 12 weeks follow-up ( $ES = 0.47$  and  $0.46$ ,  $p < 0.001$ ). Students reported higher generalized self-efficacy at the 12-week follow-up compared to baseline ( $ES = 0.19$ ,  $p = 0.03$ ) and an increased tendency to seek professional help for mental health issues ( $ES = 0.22$ ,  $p = 0.02$ ).

**Conclusion:** These findings provide preliminary evidence of the efficacy of the “Talk-to-Me” program in supporting university students across Australia to increase their suicide-related knowledge and skills, general self-efficacy, and overall mental fitness.

#### KEYWORDS

Mass Open Online Course (MOOC), mental health education, suicide prevention program, university students

## INTRODUCTION

University students are vulnerable to poor mental health manifest in higher levels of reported self-harm and suicide ideation (Job et al., 2020). Suicide has been identified as the highest cause of death among Australian individuals aged 15–44 years (Australian Institute of Health and Welfare [AIHW], 2004), with more than 60% of suicides associated with psychosocial risk factors (Australian Bureau of Statistics, 2020). In 2019 the onset of the COVID-19 pandemic significantly impacted the learning experience of university students internationally, with many universities ceasing traditional face-to-face teaching and transitioning to online learning, immediately transforming the social context of university life (Hamza et al., 2021). High levels of social isolation and the widespread loss of casual employment resulting from the pandemic likely added to the high rates (65%) of poor mental health experienced by university students (Rickwood et al., 2017), especially post-COVID-19 (Bork-Hüffer et al., 2021).

Despite the frequent reports of suicidal ideation among university students, evidence for the efficacy of mental health interventions targeting students themselves is sparse, with most programs focusing on training university staff (Gatekeeper) in a face-to-face format (Black et al., 2021). In contrast, youth prefer to discuss their daily challenges with their peers, relying on them for emotional

support (Myers & Johnson, 2004). Notably, the majority of Gatekeeper studies either did not assess how the program had affected suicidal ideation among students or found no significance when assessing the program's effect on student behavior (Black et al., 2021). These findings suggest that direct interaction with students may be required in addition to Gatekeeper training. Programs equipping university students with mental health education, promotional messaging, and screening have been successful in directly improving student-related outcomes such as greater knowledge and help-seeking attitudes and behaviors (Black et al., 2021). These new capabilities, combined with the ability to recognize suicidal ideation and suicidal risk factors in themselves and their peers, could help students cope (King et al., 2008). Further, novel learning formats, such as online self-paced suicide prevention programs, remove many of the barriers associated with traditional learning approaches (Staples et al., 2019).

University students report higher rates of depression, anxiety, and substance abuse (Mofatteh, 2020). The World Mental Health Survey of university students across 21 countries reported that approximately a fifth of students completing the survey experienced psychiatric disorders in the preceding 12 months (Alonso et al., 2018). Multiple factors, including social, financial, academic and individual circumstances, appear to contribute to university students' poor mental health (Jones et al., 2020; McCloud

& Bann, 2019; McIntyre et al., 2018). The majority of universities provide limited counseling and mental health services to their students (Alonso et al., 2018; Royal College of Psychiatrists, 2011). This is despite consistent evidence that their students are increasingly experiencing psychological distress and seeking support from counseling services (Broglia et al., 2017; Lipson et al., 2022; Thorley, 2017).

In recent years, the potential of the Internet as a platform to deliver mental health support and create virtual communities has become of increasing interest (Zangani et al., 2022). As far back as 2011, the United Kingdom's Royal College of Psychiatrists recommended increasing the availability of evidence-based Internet interventions tailored to the needs of university students (Royal College of Psychiatrists, 2011). These programs can especially streamline access for those with poor mental health or suicide ideation who are experiencing significant delays in accessing support (Black et al., 2021). A recent scoping review of suicide prevention programs for post-secondary students reported a need for rigorous research exploring the efficacy of online suicide prevention programs that incorporate student interaction, focusing on student outcomes (Black et al., 2021).

The "Talk-to-Me" program is an online suicide prevention program aiming to enhance university students' capabilities in recognizing, responding, and preventing suicidal thoughts and behaviors in themselves and others (Milbourn et al., 2022), delivered by the popularized Mass Open Online Course (MOOC) platform EdX (Buhr et al., 2019). MOOCs are open-access and freely available online courses, commonly combining course material with resources, videos, readings, and quizzes, enabling individuals to complete course content in their own time (McAulay et al., 2010). "Talk-to-Me" was developed in Germany for the National Suicide Prevention Program to facilitate the early detection of suicidal behavior and strategies for suicide crisis intervention (Kadic & Zimmermann, 2017). "Talk-to-Me" is underpinned by a six-phase model for managing a suicidal crisis (Reisch, 2012). In an international collaboration between researchers in Germany and Australia, the original "Talk-to-Me" program was translated from German and adapted to the needs of Australian university students (Bell et al., 2023) and a MOOC format.

The "Talk-to-Me" MOOC aims to build mental health resilience in Australian university students, consisting of six modules including case studies, videos, quizzes, information and grounding techniques to increase participants' suicide literacy, and mental-health-promoting behaviors. "Talk-to-Me" aims to build participants' awareness of the importance of mental health and self-management strategies, teaching skills benefiting themselves and others'

mental health, including how to appropriately intervene in a suicidal crisis. To achieve this, each module includes general mental health education (e.g., basic definitions, theories, and prevalence statistics) in addition to specific strategies that can be used in a variety of mental health contexts. For example, the Act-Belong-Commit model is used to demonstrate strategies to increase positive mental health (Donovan & Anwar-McHenry, 2016). Psychoeducation has been effectively utilized for suicidal prevention (Ebrahimi et al., 2014; Goodman et al., 2020; Simons et al., 2019). Psychoeducation is a means of providing information to individuals with the intention of changing behavior (Donker et al., 2009). The theoretical basis of psychoeducation incorporates health-specific information, including causes, symptoms, and potential ways of addressing and managing behaviors of concern (Lukens & McFarlane, 2004; Ridolfi & Gunderson, 2018). The "Talk-to-Me" MOOC employs a combination of both passive (filmed videos, internet material) and active (participants have to complete a quiz at the end of each module before moving on to the next module) psychoeducation components.

A recent study evaluated the efficacy of the "Talk-to-Me" MOOC using a randomized controlled trial compared to a waitlist control for 129 students from two Western Australian universities (Afsharnejad et al., 2021). Findings indicated that participants who completed the program reported significant improvements in generalized self-efficacy ( $ES=0.36$ ,  $p=0.04$ ) compared to those who were waitlisted. Additionally, after completing the program, participants in both groups reported that "Talk-to-Me" improved their knowledge of supporting themselves and others when distressed by changes sustained to 14-week follow-up (Afsharnejad et al., 2021). Despite this preliminary evidence, it remains unknown whether university students across Australia would perceive the program as efficacious and the impact that a mental health event (such as the COVID-19 pandemic) might have on participants' responses to the program. Uniquely, during 2020 Western Australia had few COVID-19 cases and minimal community transmission, experiencing lower impact (restrictions and lockdowns) from the pandemic compared to states such as Victoria, Queensland, and New South Wales (Department of Health-Australian Government, 2021). The repeated restrictions and lockdowns on the eastern seaboard of Australia increased the experience of psychological distress among those living in these three states (AIHW, 2021). Uniquely the current study recruited students from eight universities across Australia to understand how COVID-19 and location may have influenced students' outcomes, such as identifying and responding to those in mental distress, after completing the "Talk-to-Me" MOOC.

## METHOD

### Design

This study employed a one-group pre-test/post-test design with a 12-week follow-up assessing the acceptability and utility of the “Talk-to-Me” MOOC for Australian university students, exploring its impact on suicide-related knowledge and skills, general self-efficacy, overall mental fitness, and participants' ability to support their peers experiencing suicidal thoughts.

### Participants

Participants were recruited via flyers sent through the university learning management systems of Curtin University, the University of Western Australia, the University of Queensland, Southern Cross University, University of Sydney, University of Western Australia, Western Sydney University, Australian Catholic University, and Bond University from February to August 2021. Full-time or part-time 2nd or 3rd year undergraduate or graduate entry master's students enrolled in health or education programs from these universities were eligible to participate in this study. Under ethical procedures approved for this study, students scoring above 21 on the suicidal ideation attributes scale (SIDAS; Van Spijker et al., 2014) or marking scores above 7 for items assessing suicide attempts were excluded from the study and referred to appropriate local supports.

### Intervention

“Talk-to-Me” MOOC is a strengths-based psychoeducational suicide prevention program consisting of six modules, covering the topics of mental fitness and strategies for increasing it, self-harm and suicidal behavior in young adults and evidence-based interventions (Reisch, 2012). Employing mental health education principles (e.g., the Act-Belong-Commit model; Donovan & Anwar-McHenry, 2016), the program aims to boost university students' knowledge of activities that can improve their mental health, resilience, distress management skills, and ability to identify early signs of suicidal ideation or behavior in themselves and others (See Figure 1).

### Procedure

A survey link to Qualtrics (2020) containing the participant consent form, screening tool (SIDAS), sociodemographic

(age, gender, ethnicity, university, year level, highest education level, mode of study (full-time/part-time), course, previous mental health training experience, and post-code), and baseline questionnaires was sent to students expressing an interest in the study. Data for primary and secondary outcomes (Appendix S1) were collected from students at baseline (T1), 10 weeks from enrolling in the MOOC (T2) and at a 12-week follow-up (T3). Researchers from Curtin University (Perth, Western Australia) undertook all data collection, management, and coordination. This study has been approved by the Curtin University Human Research Ethics Committee Perth in Western Australia (HRE2019-791).

### Outcome measures

#### Primary outcome

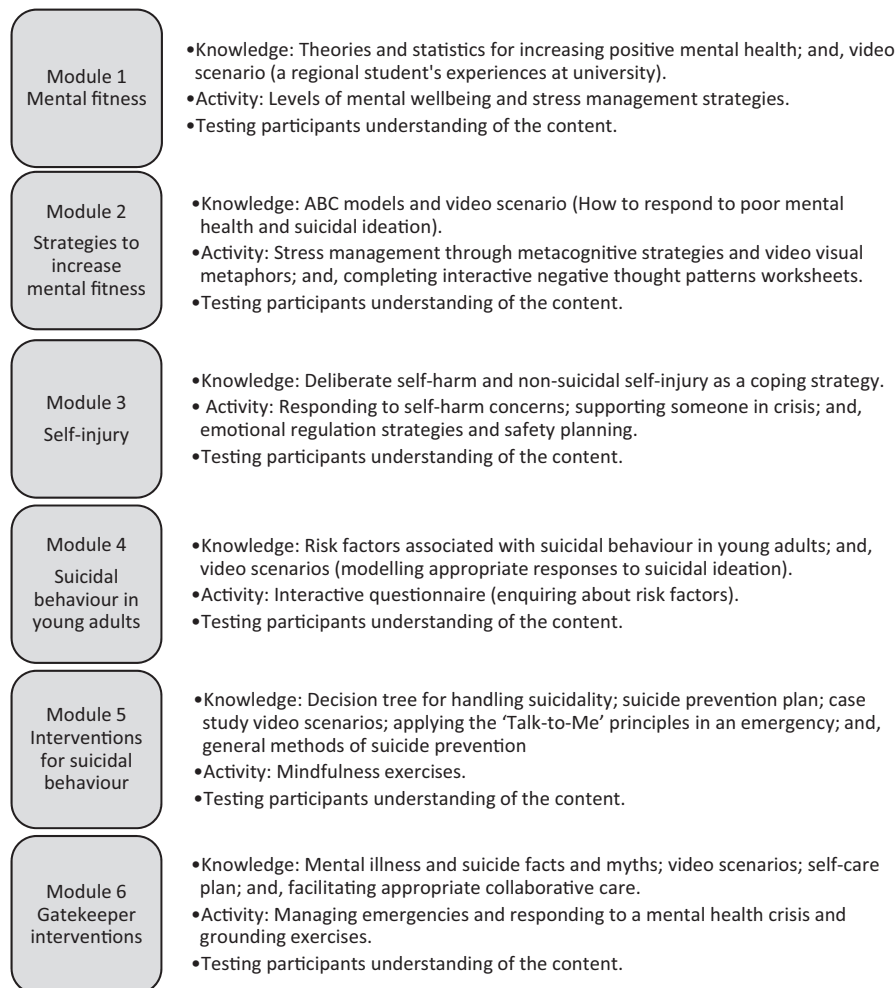
*Identification of appropriate responses to suicidal statements* was assessed via the 24-item self-reported suicide intervention response inventory (SIRI-2) (Neimeyer & Bonnelle, 1997). SIRI-2 items first present a short scenario, for example, “And now my health is going downhill too, on top of all the rest. Without my husband around to care for me anymore, it just seems like the end of the world”. Then presents two hypothetical helper responses, for example, “Helper A: Try not to worry so much about it. Everything will be all right.” and “Helper B: You must feel pretty lonely and afraid of what might happen.” The participants are then asked to rate the appropriateness of these responses on a 7-point Likert scale, ranging from +3 (*highly appropriate*) to −3 (*highly inappropriate*). Total scores are calculated by summing the absolute difference between each item and its corresponding clinician score. These clinician scores were established by Neimeyer and Bonnelle (1997) based on a panel of clinicians and experts in the field of suicidology. Final SIRI-2 scores range between 0 and 124, with lower scores indicating higher suicide intervention skills. Literature indicates SIRI-2 has a good internal consistency of over 0.9 (Neimeyer & Bonnelle, 1997). The responses of the current sample at baseline, also showed a good internal consistency for SIRI-2 (Cronbach's  $\alpha = 0.80$ ).

#### Secondary outcomes

“Talk-to-Me” related knowledge was assessed via an *objective structured video examinations (OSVE)* self-report survey designed for this study based on the work of Abeer and Eman (2015). The survey consists of five 2–5-min videos (matched to the MOOC modules) following the



**FIGURE 1** “Talk-to-Me” Mass Open Online Course (MOOC) modules (Milbourn et al., 2022).



story of a student struggling with mental health, with the risk of suicide increasing throughout the plot. For example, the questions start with “Which of the following are suicide risk factors for Mike?” and conclude with “Which are three key components to create a safety plan for Mike?” After each video, the students answer five 5-response multiple choice questions assessing their ability to identify self-harm-related risk factors and negative thinking patterns, recommending coping strategies, and safety planning capabilities when perceiving a suicide risk in peers. The OSVE scores range from 0 to 25, with higher scores indicating greater knowledge gained from the “Talk-to-Me” MOOC. Previous evaluation of OSVE demonstrated acceptable reliability (Cronbach's  $\alpha = 0.714$ ) and validity ( $r = 0.6$ ) when assessing students' increased knowledge (Abeer & Eman, 2015). The responses of the current sample at baseline, showed a poor internal consistency for the measure (Cronbach's  $\alpha = 0.54$ ).

The ability to recover from stress was assessed using the brief resilience scale (BRS) (Tansey et al., 2015), a 6-item self-report measure rated on a 5-point Likert scale (1 [strongly disagree] to 5 [strongly agree]) with total scores ranging from 6 to 30, with higher scores indicating

greater resilience (Smith et al., 2008). According to Tansey et al. (2015), BRS has a good internal consistency ranging from 0.80 to 0.91. The responses of the current sample at baseline, showed a good internal consistency for the BRS (Cronbach's  $\alpha = 0.82$ ).

Perceived academic stress and its causes were assessed via the *perception of academic stress scale (PASS)* (Bedewy & Gabriel, 2015), an 18-item self-report measure rated on a 5-point Likert scale (1 [strongly disagree] to 5 [strongly agree]), with total scores ranging from 18 to 90, with higher scores indicative of greater academic stress. Literature suggests the measure has good reliability (Cronbach's  $\alpha = 0.90$ ) and face, content and convergent validity when used with university students (Bedewy & Gabriel, 2015). The responses of the current sample at baseline, showed an acceptable internal consistency for the measure (Cronbach's  $\alpha = 0.63$ ).

Positive self-belief in coping with everyday challenges was assessed via the *general self-efficacy scale (GSE)*, a 10-item self-report measure rated on a 4-point Likert scale (from 1 [not true at all] to 4 [exactly true]) with total scores ranging from 10 to 40 and higher scores demonstrating greater optimistic self-belief. A study evaluating the

efficacy of the measure has demonstrated good internal consistency (Cronbach's  $\alpha = [0.75-0.91]$ ) for GSE across contexts (Scholz et al., 2002). This was echoed by the responses of the current sample at baseline (Cronbach's  $\alpha = 0.82$ ).

*Openness toward receiving help for mental health issues* was assessed via the *attitudes toward seeking professional psychological help scale (ATSPPHS-SF)* (Fischer & Farina, 1995), a 10-item self-report measure rated on a 4-point Likert scale (0 [*disagree*] to 3 [*agree*]) with total scores ranging from 0 to 30 and higher scores indicating more positive attitudes toward seeking help from mental health professionals (Fischer & Farina, 1995). Elhai et al. (2008) reported the measure showed good internal consistency (Cronbach's  $\alpha = 0.77$ ). Additionally, the responses of the current sample at baseline, showed an adequate internal consistency for the measure (Cronbach's  $\alpha = 0.71$ ).

*Experience with the "Talk-to-Me" MOOC* was assessed post-completion of the program via a three-part survey seeking students' perceptions and experience when completing the MOOC (Afsharnejad et al., 2021). Part one consisted of multiple-choice and text entry items asking how easy and engaging the program modules were. Part two sought the student's satisfaction with the content of the program via 13 items rated on a 5-point Likert scale (0 [*not at all*] to 4 [*very*]), with higher scores suggesting higher satisfaction with the MOOC. Part three explored how helpful the students perceived the program through 14 questions rated on a 4-point Likert scale (0 [*not helpful at all*] to 4 [*very helpful*]), with higher scores indicating higher satisfaction with the level of helpfulness. Based on the responses of the current sample at baseline, this measure had a good internal consistency (Cronbach's  $\alpha = 0.86$ ).

*The impact of COVID-19 on everyday life and mental health* was assessed via a 31-item survey developed for this study (e.g., "Since COVID-19, I feel more burdened") (Afsharnejad et al., 2021) comprised of three dichotomous items (Yes = 1; No = 0) and 28 items scored on a 4-point Likert scale (0 [*never*] to 3 [*always*]), with some reverse-scored items. Total scores ranged from 0 to 87, with higher scores indicating a more negative impact of COVID-19. Based on the responses of the current sample at baseline, this measure had a good internal consistency (Cronbach's  $\alpha = 0.87$ ).

## Statistical analysis

Data were managed and analyzed using the SPSS version 24 statistical software (IBM Corp., 2020). Missing data at each time point were imputed according to the guidelines specified for each measure. In the absence of guidance, missing data were replaced with the mean substitution strategy (Kang, 2013). A random-effects regression model

explored the impact of the independent variables such as assessment time (T1/T2/T3), state and sociodemographic data (gender, age, education, course, etc.), and assessment time-by-state interaction on the outcome measures, using the participants' identification codes as a random effect. Additionally, possible moderation effects were investigated, conducting two-way interaction of assessment time by location and three-way interactions, including the other independent variables. Effect sizes (Cohen's  $d$ ) were calculated for all outcome measures, with values of 0.2, 0.5, and 0.8 indicating small, medium, and large effect sizes, respectively (Rice & Harris, 2005). Bonferroni correction was used to adjust for the familywise error rates resulting from multiple comparisons.

## RESULTS

Overall, 217 students (80% female;  $M_{\text{age}} = 24.7$  years, ranging from 18 to 60 years) were enrolled in the study from 2020 to 2021 (Table 1) and participated in the "Talk-to-Me" MOOC via EdX online learning platform (Open EdX, 2021). The students were from eight universities across Western Australia ( $n = 88$ ), New South Wales ( $n = 68$ ), Victoria ( $n = 27$ ), and Queensland ( $n = 34$ ).

As demonstrated in Figure 2, of the 740 participants expressing interest in the study, 407 took part in the screening and completed the baseline assessment. Of those, 63 students with SIDAS scores  $>21$  were excluded. Another 22 withdrew their interest, and 105 failed to enroll in the MOOC program. After 10 weeks, of the 217 students enrolled in the MOOC, 64 (29%) discontinued the study, with a further 61 (40%) not completing the follow-up assessment. There were no significant differences in the sociodemographic factors or the SIDAS scores between those dropping out of the study and those completing all the assessments ( $p > 0.5$ ).

Compared to baseline (T1), at 10-week assessment (T2), participants demonstrated a significant improvement in their "Talk-to-Me" related knowledge as assessed via OSVE ( $M_{\text{Difference}} = -1.32$ ,  $p < 0.001$ , 95% CI =  $[-1.97, -0.67]$ ; ES = 0.42) and recognizing suitable responses to suicidal statements as assessed via SIRI-2 ( $M_{\text{Difference}} = 8.28$ ,  $p < 0.001$ , 95% CI =  $[5.53, 11.02]$ ; ES = 0.37). Findings showed further improvement for the students at 12 weeks follow-up (SIRI:  $M_{\text{Difference}} = 9.07$ ,  $p < 0.001$ , 95% CI =  $[5.76, 12.38]$ , ES = 0.47; OSVE:  $M_{\text{Difference}} = -1.56$ ,  $p < 0.001$ , 95% CI =  $[-2.37, -0.75]$ ; ES = 0.46). There were no further significant changes at this time for any other measures ( $p > 0.05$ ).

At the 12-week follow-up (T3), participants reported higher generalized self-efficacy as assessed via GSE ( $M_{\text{Difference}} = -1.53$ ,  $p = 0.03$ , 95% CI =  $[-2.95, -0.11]$ , ES = 0.19) and increased in positive attitudes toward seeking professional help if experiencing mental health

TABLE 1 Sociodemographic information of participants at baseline.

	NSW <i>n</i> = 68	QLD <i>n</i> = 34	VIC <i>n</i> = 27	WA <i>n</i> = 88	Total <i>n</i> = 217
	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
<b>Gender</b>					
Female	52 (24.9%)	26 (12.4%)	22 (10.5%)	67 (32.1%)	167 (79.9%)
Male	12 (5.7%)	3 (1.4%)	5 (2.4%)	18 (8.6%)	38 (18.2%)
Nonbinary/prefer not to say	1 (0.5%)	2 (1%)		1 (0.5%)	4 (1.9%)
<b>Ethnicity</b>					
Asian	22 (10.5%)	13 (6.2%)	3 (1.4%)	29 (13.9%)	67 (32.1%)
Caucasian	29 (13.9%)	13 (6.2%)	22 (10.5%)	43 (20.6%)	107 (51.2%)
Middle Eastern	5 (2.4%)			4 (1.9%)	9 (4.3%)
Other	9 (4.3%)	5 (2.4%)	2 (1%)	10 (4.8%)	26 (12.4%)
<b>Highest level of education completed</b>					
Bachelor's degree	9 (4.3%)	12 (5.7%)	3 (1.4%)	19 (9.1%)	43 (20.6%)
Graduate Diploma	4 (1.9%)	3 (1.4%)		4 (1.9%)	11 (5.3%)
Master's degree and above	1 (0.5%)	2 (1%)	2 (1%)	7 (3.3%)	12 (5.7%)
Vocational qualification	5 (2.4%)	2 (1%)	4 (1.9%)	11 (5.3%)	22 (10.5%)
Year 12 or equivalent	44 (21.1%)	11 (5.3%)	17 (8.1%)	40 (19.1%)	112 (53.6%)
Other	2 (1%)	1 (0.5%)	1 (0.5%)	5 (2.4%)	9 (4.3%)
<b>Enrolling faculty</b>					
Business and Law	6 (2.9%)		1 (0.5%)	5 (2.4%)	12 (5.7%)
Health Sciences	55 (26.3%)	30 (14.4%)	24 (11.5%)	67 (32.1%)	176 (84.2%)
Humanities	3 (1.4%)		2 (1%)	8 (3.8%)	13 (6.2%)
Science and Engineering	1 (0.5%)			7 (3.3%)	8 (3.8%)
<b>Current level of study</b>					
Graduate Entry Masters	6 (2.9%)	13 (6.2%)	1 (0.5%)	19 (9.1%)	39 (18.7%)
Undergraduate	58 (27.8%)	18 (8.6%)	25 (12%)	64 (30.6%)	165 (78.9%)
Other			1 (0.5%)	4 (1.9%)	5 (2.4%)
<b>Year of University study</b>					
1st Year	6 (2.9%)	5 (2.4%)	2 (1%)	24 (11.5%)	37 (17.7%)
2nd Year	25 (12%)	17 (8.1%)	7 (3.3%)	32 (15.3%)	81 (38.8%)
3rd Year	27 (12.9%)	8 (3.8%)	14 (6.7%)	13 (6.2%)	62 (29.7%)
4th Year	7 (3.3%)	1 (0.5%)	4 (1.9%)	16 (7.7%)	28 (13.4%)
4+ Years				1 (0.5%)	1 (0.5%)
<b>Mode</b>					
Full-time	57 (27.3%)	26 (12.4%)	24 (11.5%)	73 (34.9%)	180 (86.1%)
Part-time	8 (3.8%)	5 (2.4%)	3 (1.4%)	13 (6.2%)	29 (13.9%)
<b>University</b>					
ACU	14 (6.7%)	10 (4.8%)	27 (12.9%)		51 (24.4%)
BU		7 (3.3%)			7 (3.3%)
CU				76 (36.4%)	76 (36.4%)
SCU	2 (1%)				2 (1%)
UQ		14 (6.7%)			14 (6.7%)
US	15 (7.2%)				15 (7.2%)
UWA				10 (4.8%)	10 (4.8%)
WSU	34 (16.3%)				34 (16.3%)

(Continues)



TABLE 1 (Continued)

	NSW <i>n</i> = 68	QLD <i>n</i> = 34	VIC <i>n</i> = 27	WA <i>n</i> = 88	Total <i>n</i> = 217
	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
Previous exposure to MHT					
Through education	41 (19.6%)	22 (10.5%)	18 (8.6%)	37 (17.7%)	118 (56.5%)
Work experience	7 (3.3%)	5 (2.4%)	4 (1.9%)	16 (7.7%)	32 (15.3%)
Living situation					
At home with parents	38 (18.2%)	12 (5.7%)	20 (9.6%)	44 (21.1%)	114 (54.5%)
Alone	5 (2.4%)	3 (1.4%)		11 (5.3%)	19 (9.1%)
Student dormitory	2 (1%)	2 (1%)		3 (1.4%)	7 (3.3%)
With partner	14 (6.7%)	10 (4.8%)	6 (2.9%)	12 (5.7%)	42 (20.1%)
Other	6 (2.9%)	4 (1.9%)	1 (0.5%)	16 (7.7%)	27 (12.9%)
	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
Age	23.4 (5.1)	24.9 (6.5)	22.5 (4.8)	26.3 (8.0)	24.7 (6.8)

Note: Out of the total 2017 participants, 8 did not provide demographic information.

Abbreviations: ACU, Australian Catholic University; BU, Bond University; CU, Curtin University; MHT, mental health training; NSW, New South Wales; QLD, Queensland; SCU, Southern Cross University; UQ, University of Queensland; US, University of Sydney; UWA, University of Western Australia; VIC, Victoria; WA, Western Australia; WSU, Western Sydney University.

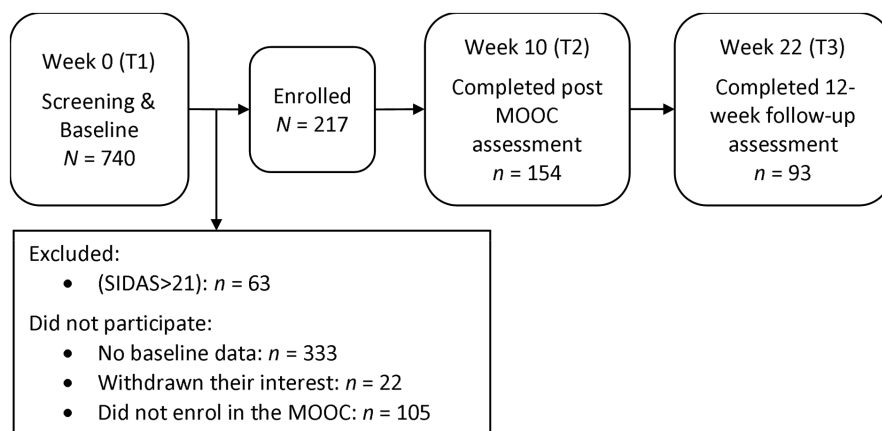


FIGURE 2 The study's flow.

issues ( $M_{\text{Difference}} = -1.78$ ,  $p = 0.02$ , 95% CI =  $[-3.36, -0.21]$ ,  $ES = 0.22$ ) compared to T1. There was a significant reduction in distress related to COVID-19 from T2 to T3. No significant changes were observed for any other measures ( $p > 0.05$ ).

There was no significant time-by-State (location) interaction across any outcome measures. Additionally, moderator analysis demonstrated no significant two-way interactions for time and sociodemographic factors or COVID-19 ( $p > 0.05$ ) (Table 2).

### Experience with “Talk-to-Me” MOOC

Overall, 142 participants completed the post “Talk-to-Me” MOOC survey sharing their views of the program. Most participants (87%) reported being satisfied with the program, finding it easy (97%) and convenient

to use (95%), understandable (94%), interesting (82%), trustworthy (95%), and useful (93%). While modules 1 (mental fitness, 43%) and 2 (strategies to improve mental fitness, 36%) were highlighted as the most interesting, modules 5 (Interventions for suicidal behavior) and 6 (Gatekeeper interventions) were rated the least interesting. Overall, 84% of participants reported liking the program, reporting it “looked good” (87%) and was “a good fit” for them (83%). While more than 86% of participants found online delivery good, more than half (66%) worried about their privacy. More than half of the participants (61%) found the MOOC engaging. On average, each module took 80.81 min (SD = 50.66 min) to complete. Based on the findings from the survey, most participants felt the modules provided sufficient information (range =  $[70, 92\%]$ ), finding them either very (range =  $[67, 78\%]$ ) or slightly (range =  $[22, 33\%]$ )

**TABLE 2** Outcomes measures at Times 1, 2, and 3: Means, standard deviations (*SD*), comparisons, mean difference, probability values (*p* values) for comparisons, effect size, and confidence intervals.

	Time	Mean	SD	Comparison	Mean difference	<i>p</i>	ES	95% CI
SIRI-2 <sup>a</sup>	T1	57.93	23.76	T1-T2***	8.28	<0.001	0.37	5.53, 11.02
	T2	49.65	20.02	T1-T3***	9.07	<0.001	0.47	5.76, 12.38
	T3	48.86	18.47	T2-T3	0.79	1.00	0.04	-2.58, 4.16
OSVE <sup>b</sup>	T1	15.34	2.9	T1-T2***	-1.32	<0.001	0.42	-1.97, -0.67
	T2	16.66	3.48	T1-T3***	-1.56	<0.001	0.46	-2.37, -0.75
	T3	16.90	3.2	T2-T3	-0.24	1.00	0.08	-1.08, 0.61
COVID <sup>b</sup>	T1	28.60	10.21	T1-T2	0.75	0.80	0.07	-0.87, 2.38
	T2	27.84	10.71	T1-T3	-1.30	0.33	0.12	-3.23, 0.64
	T3	29.89	10.54	T2-T3*	-2.05	0.04	0.20	-4.04, -0.06
GSE <sup>b</sup>	T1	28.70	5.52	T1-T2	-0.48	0.99	0.09	-1.65, 0.7
	T2	29.18	5.16	T1-T3*	-1.53	0.03	0.19	-2.95, -0.11
	T3	30.23	11.52	T2-T3	-1.05	0.25	0.14	-2.52, 0.41
ATSPPH <sup>b</sup>	T1	14.43	5.52	T1-T2	0.13	1.00	0.02	-1.19, 1.44
	T2	14.30	5.16	T1-T3*	-1.78	0.02	0.22	-3.36, -0.21
	T3	16.21	11.52	T2-T3*	-1.91	0.02	0.25	-3.54, -0.28
PASS <sup>b</sup>	T1	53.52	11	T1-T2	0.56	1.00	0.05	-1.17, 2.29
	T2	52.96	11.56	T1-T3	0.05	1.00	0.004	-2.04, 2.14
	T3	53.48	12.34	T2-T3	-0.51	1.00	0.04	-2.65, 1.63
BRS <sup>b</sup>	T1	18.73	5.1	T1-T2	-0.16	1.00	0.03	-1.19, 1.44
	T2	18.89	4.91	T1-T3	-1.23	0.22	0.16	-3.36, -0.21
	T3	19.96	10.77	T2-T3	-1.07	0.40	0.15	-3.54, -0.28

Note: T1 = week 0; T2 = week 10; T3 = week 22.

Abbreviations: ATSPPH, attitudes toward seeking professional psychological help scale; BRS, brief resilience scale; CI, confidence interval; ES, effect size; GSE, general self-efficacy scale; K10, Kessler 10; OSVE, objective structured video examinations; PASS, perception of academic stress scale; SIDAS, suicidal ideation attributes scale; SIRI-2, suicide intervention response inventory 2nd edition.

<sup>a</sup>Lower scores indicate better outcomes.

<sup>b</sup>Higher scores indicate better outcomes.

\**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001.

helpful. More than half (65%) of the participants reported that “Talk-to-Me” improved their mood.

## DISCUSSION

Previous studies evaluating the “Talk-to-Me” MOOC provided preliminary evidence of the program’s efficacy in improving the knowledge of university students from Western Australia in recognizing and reacting appropriately to a mental health crisis. This multisite pre and post-test design study demonstrated that participating in the online suicide prevention program, the “Talk-to-Me” MOOC, can successfully improve students’ outcomes, including identifying and responding to scenarios of other students in mental distress, as a proxy for real-life situations (Arnett, 2016; Duffy et al., 2019; Holmes et al., 2020; Son et al., 2020). Further research would benefit from

assessing whether free, far-reaching suicide prevention programs such as “Talk-to-Me” can also support students’ recognition and response to those at risk in real-life.

It is widely recognized that university students are reluctant to seek mental health support from health professionals (Gaddis et al., 2018) due to the stigma stemming from personal (fear of disclosure, mental health literacy, and knowledge of supports) and external factors (knowledge, beliefs and attitudes of the university community, and support services). Interestingly, participants in the present study demonstrated an increase in help-seeking attitudes during the follow-up period. It is possible that receiving psychoeducational training deepened participants’ knowledge of mental health, reducing their feelings of the stigma associated with seeking mental health support (Hartrey et al., 2017). Further, engaging in the MOOC via a university platform may have fostered a culture of openness across the university, encouraging students

to disclose their mental health challenges (Hartrey et al., 2017). Increasing knowledge and awareness about mental health and ready access to confidential services can promote help-seeking attitudes among university students (Lattie et al., 2019).

Notably, four out of five students in this study were female. This gender distribution reflects the evidence that females are more likely to engage in help-seeking behaviors (Miranda-Mendizabal et al., 2019). While previous research suggests that females are at greater risk of attempting suicide than males (Miranda-Mendizabal et al., 2019), findings from the present study suggest that engaging in programs such as “Talk-to-Me” has the potential to improve their help-seeking behaviors, potentially protecting them against future suicide attempts. As males are more at risk for suicide deaths than females (Miranda-Mendizabal et al., 2019), the lower participation rate of male university students in the present study is cause for concern. Males are reportedly less likely to seek support from mental health professionals due to prejudicial beliefs and culturally accepted masculine gender norms (Latalova et al., 2014). As 30% of Australian university students are from overseas (Australian Government Department of Education, 2022), future suicide prevention programs would immensely benefit from considering cultural gender norms and ways to encourage male participation.

Findings from this study indicated the possibility of incorporating the “Talk-to-Me” program as an extracurricular activity on top of the students’ regular university load without increasing their academic stress. Notably, it is also important to be mindful of the barriers to implementing mental health or suicide prevention programs within universities, which include underdeveloped policies, concerns about the cost of delivery, entrenched beliefs, and attitudes toward the positioning and location of mental health programs (e.g., in health clinics as opposed to within teaching curriculum), and minimal opportunities for professional development and training (DiPlacito-DeRango, 2016; Marsh & Wilcoxon, 2015).

This study was conducted in 2021, when restrictions imposed in response to the COVID-19 pandemic varied significantly across Australia. While the geographical isolation of Western Australia largely halted community transmission during 2021 without significant community restrictions, the responses of other states varied, with residents in Victoria experiencing 262 days of restrictions in 2021. In this context, this multisite pre and post-test design study found that at 12 weeks follow-up, participants reported that COVID-19 had less of an impact on their everyday mental health than at post-test. Surprisingly, this time point approximately coincided with community transmission and lockdown measures in Queensland, New South

Wales, and Victoria (Australian Government, 2021). It is plausible that completing the “Talk-to-Me” MOOC during a time of crisis empowered youth with mental health fitness practices and strategies, to some extent buffering the negative impact of the pandemic (De Man et al., 2021).

Although the findings of this study further supported the acceptability of the “Talk-to-Me” MOOC for Australian university students, they should be interpreted in the context of several limitations. First, the failure to randomly allocate participants to either the “Talk-to-Me” MOOC or a comparison group (a waitlist or an active control mental health program) is a major limitation of the present study design. There may have been many factors other than the “Talk-to-Me” MOOC influencing the outcomes, including characteristics and motivations of participants and experience of different stressors during the study period (Ebert et al., 2018). This study initially recruited a large sample of students; however, a considerable number discontinued their participation, particularly at the follow-up assessment point. Only 93 of the 217 participants enrolling in the study completed the study as intended, resulting in a participation rate of only 42%. While sociodemographic factors for those completing the study did not differ consistently from those who withdrew, self-selection bias was likely occurring (Heckman, 1990). Factors including a lack of perceived benefit from engaging with the program, fatigue from the length of the course or the time taken to complete assessments, academic or personal reasons, or the novelty of the learning environment could have contributed to participants’ withdrawal (Dang et al., 2022; Gütl et al., 2014; Jordan, 2015). Notably, while this poses a potential threat to the reliability of the findings, previous experience suggests that low adherence and significant attrition are common among participants receiving an internet-based intervention (Linardon & Fuller-Tyszkiewicz, 2020). Considering this large attrition, future research would benefit from conducting sensitivity analyses to assess the robustness of outcomes under different assumptions. The stigma of mental illness may also have been a factor that influenced students participating in the study (Wada et al., 2019). Future studies should attempt to contact participants discontinuing the program enabling insight into the barriers to engaging in online mental health programs.

Similarly, other limitations included the difficulty in recruiting male and non-binary students resulting in a sample that did not fully reflect the sociodemographic profile of Australian university students. Likewise, it is important to be mindful of the opportunities and challenges of implementing suicide prevention programs in Australian universities. For example, high study and workloads could limit the available time students have to engage in comprehensive mental health programs such as “Talk-to-Me” (Bruffaerts et al., 2018).

## CONCLUSIONS

The present study provides preliminary evidence of the efficacy of the “Talk-to-Me” program in supporting university students across Australia to increase their suicide-related knowledge and skills, general self-efficacy, and overall mental fitness. The “Talk-to-Me” program has the potential to build on participants existing strengths and mental literacy, supporting them to respond to others in distress. Future suicide prevention interventions for university students may consider combining online learning with group meetings and peer mentoring. In conclusion, the onset of the COVID-19 pandemic highlighted the importance of mental health. Online freely available programs such as the “Talk-to-Me”, tailored specifically to the needs of specific target groups such as university students, provide a resource supporting mental health and our road to recovery.

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## CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

## DATA AVAILABILITY STATEMENT

There is no public access to the datasets generated and/or analyzed during the current study, and they are only available from the corresponding author upon reasonable request.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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