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Development and testing of an e-learning tool for gatekeepers on suicide prevention in older people

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Title page

Development and testing of an e-learning tool for gatekeepers on suicide prevention in older people

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Author contributions (CRediT roles):

Anne Wand, funding acquisition, conceptualization, methodology, tool development, data analysis and interpretation, writing and editing; Gary Cheung, funding acquisition, methodology, tool development, data analysis and interpretation, writing, review and editing; Lily Yee, data analysis and interpretation, writing; Tiffany Jessop, funding acquisition, tool development, review and editing; Carmelle Peisah, funding acquisition, conceptualization, methodology, tool development, data interpretation, writing and editing.

Key summary points

- Aim: The aim of the study was to develop and evaluate an e-learning tool for gatekeepers on late life suicide prevention.
- Findings: A culturally and consumer informed e-learning tool on suicide prevention in older adults was developed and tested. There was significant improvement in learner knowledge following completion of the tool and learners considered the tool useful and engaging.
- Message: A bespoke tool for gatekeepers on late life suicide prevention was associated with knowledge translation and acceptability; particularly valued were real-world, culturally appropriate scenarios and the appealing, informative platform.

Abstract

Purpose: With training, non-professionals and carers working with older adults may opportunistically identify people at risk of suicide and refer for assessment and care. The study aims were to develop and test a bespoke e-learning suicide prevention tool utilising vignettes of typical gatekeeper interactions with older adults.

Methods: A previously published Australian e-learning tool regarding suicide prevention in older adults was adapted for New Zealand gatekeepers in consultation with cultural advisors and older people with lived experience of suicide. The tool comprised 14 questions including eight culturally-diverse scenarios of gatekeeper interactions with older adults at risk of suicidal behaviours. Learning was facilitated and assessed through pre/post-test and a middle lesson, with feedback sought. The tool was tested in New Zealand gatekeepers. Individual question and summed pre/post-test scores were assessed for change using Wilcoxon signed-rank test. Qualitative feedback regarding tool use was analysed.

Results: Of 77 participants starting the tool, 66 completed it. Majority of learners were tertiary educated women, in paid employment, with health professional backgrounds.

Significant improvement in knowledge post-test was demonstrated in performance on all scenarios and total scores (pre:20.5/28- post:24.3/28; $p<0.001$). Themes from qualitative analysis included perspectives on benefits, usability and acceptability of the tool, issues with content and reflection on gatekeeper roles.

Conclusion: A bespoke, collaboratively-developed and culturally-specific e-learning tool for New Zealand gatekeepers on identification and action regarding suicide risk in older people was developed. Knowledge translation and acceptability were demonstrated. Learning and culturally adaptative features may be readily applied to other international contexts.

Key words: gatekeeper training, suicide awareness; knowledge; training; self-harm

Background

Older people, especially men aged 85 or more, have the highest rates of suicide across the lifespan, both globally and in New Zealand and Australia (1), rendering late-life suicide a major public health issue (2). Previous studies have explored interactions between a range of risk factors such as disability, depression, and pain (3, 4) and cognitive constructs of hopelessness, invalidation, burden and rejection, and late-life self-harm and suicidal behaviours (5-13). There is an imperative to disseminate these findings which provide fertile ground for education and training, particularly of those working at the interface of older people in crisis, including those in non-professional carer roles, community work and volunteers. Such groups have been identified as potential 'gatekeepers' who, if provided with quality education and training, may opportunistically identify older people at risk of suicide and intervene (14).

The World Health Organization recommends gatekeeper training as a key selective suicide prevention strategy, along with other universal, selective and indicated strategies (15). A recent review of six systematic reviews on gatekeeper training for suicide prevention identified

immediate positive effects of gatekeeping training on knowledge, skills, and self-efficacy, but mixed evidence for changes in attitude (16). However, there remains a lack of studies examining gatekeeper training specifically for individuals working with older adults or addressing late-life suicide (17). Gatekeeper training has been shown to improve knowledge and self-efficacy of frontline non-clinical staff working with US veterans (18), and of French nursing home staff to improve management of residents with suicidality and routine suicide prevention measures (19).

In Australia, our group developed and tested a late-life suicide education intervention for multidisciplinary health professionals in aged care and mental health, showing significant increase in knowledge and confidence (20). The intervention for health professionals was adapted into an e-learning tool for crisis supporters, recognising the importance of crisis services in suicide prevention but identified gaps in training their volunteer workforce (14). The tool was tested with 104 crisis supporters in Australia, demonstrating its acceptability and knowledge translation capabilities (21).

Gatekeeper training with e-learning could provide significant benefits with widespread implementation (18), with a corresponding call for more research into application with suicide prevention (17). Specifically, while targets of suicide training have hitherto been limited to professionals and crisis workers, other relevant gatekeepers have been largely ignored, despite having a role to play in suicide prevention. Those relevant to older adults include residential aged care staff (e.g., healthcare assistants, activities coordinators, nurses), home and community support workers (e.g., carers providing personal or domestic support), staff and volunteers at organisations supporting and advocating for older adults, elder abuse response teams and community-based cultural support workers.

The aim of this study was to evaluate whether a bespoke e-learning tool based on everyday interactions with older adults was feasible, acceptable to, and improved knowledge on late-life suicide prevention among a wide range of professional and non-professional gatekeepers in New Zealand.

Methods

Setting, participants and recruitment

The online educational tool was pilot tested with a national sample of New Zealand gatekeepers from a vast array of both professional and non-professional backgrounds. Potential participants were conveniently recruited through organisations providing services or support for older adults in New Zealand. These included: (i) a community-based charitable organisation supporting older adults, including elder abuse response services; (ii) a not-for-profit aged residential care provider operating multiple care homes in New Zealand; (iii) a national professional organisation representing diversional therapists, recreational therapists, activity coordinators, and related allied health support roles working with older adults; and (iv) a community and home-based support service provider for older adults and people with disabilities.

Recruitment was facilitated through organisational leaders who, on behalf of the research team, emailed their staff/members/volunteers and invited them to participate in this study via email. Participants clicked on a weblink, which opened the participant information sheet and e-consent form. Once consent and eligibility were confirmed, a separate weblink took the participants to the e-learning tool. Upon completion of the tool, participants could click on another weblink to enter a draw for a $50 supermarket voucher. The tool was accessible from March to May 2026.

Intervention – The e-learning tool

(i) Content

We revised the previously published Australian tool's content (14, 21) to align with the broader gatekeeper context, including everyday situations with older adults with appropriate responses to observed symptoms. Modifications of the previous tool included a focus on face-to-face interactions (rather than phone contact) with older adults and greater emphasis on pathways to further assessment and care (i.e. the practical steps gatekeepers can take to escalate concern and enlist targeted support).

The tool was also adapted to the New Zealand cultural context. New Zealand has a diverse ethnic population, including 67.8% European, 17.8% Māori (Indigenous), 17.3% Asian and 8.9% Pacific peoples (individuals may identify with multiple groups) (22). To ensure cultural inclusivity, the New Zealand version of the tool included Māori, Pacific and Asian older adult scenarios, ensuring it appropriately reflected its populations. Accordingly, the research team developed three cultural scenarios (Māori, Pacific, Asian). The Māori scenario was reviewed by a Māori old age psychiatrist and a Māori end-of-life care researcher. The Pacific scenario was reviewed by a Tongan old age psychiatrist and a Tongan mental health nurse. The Asian scenario was developed by GC who is Chinese. Health New Zealand's Assisted Dying Services also reviewed the Māori and Pacific scenarios. An older Australian with lived experience of suicidal behaviour and one of their family members also reviewed the tool, and their feedback was incorporated into the final version.

The e-learning tool comprised 14 questions across eight scenarios, encompassing the following learning themes: ageing myths, risk factors for late life suicide, responding to thoughts of life not being worth living and disclosure of a suicide plan, identifying and responding to depressive symptoms, responding to requests for assisted dying, suicidal ideation in the context

of intimate partner violence, and understanding possible reasons for and responding to behavioural change in an older person.

(ii) Design features

The tool structure comprised a welcome page, request for limited demographic details, pre-test, middle lesson, and a post-test. A tab listing resources and key contact numbers was accessible throughout engagement with the tool. Correct responses were assigned two points, a partially correct response one point, and an incorrect response no points, giving a maximum score of 28 points. In the pre-test, correct answers were consolidated with a brief explanation and fact confirmation in case the participant guessed the correct answer, while incorrect answers triggered the message "not quite right, but please proceed." The middle learning module provided a summary of the key learning themes to reinforce learning. The post-test repeated the initial questions, with incorrect answers receiving an explanation of the correct options. On completion of the tool, participants could click to download a copy of the middle lesson as a takeaway resource. A list of references was provided.

At the end of the pre- and post-test, a speedometer style image displayed the participant's overall score categorised on a scale of emerging knowledge (0-25%), building knowledge (26-65%) and sound knowledge (66-100%) (Figure 1a). Below this, a graph of individual question scores was displayed using visual cues (green for correct, orange if partially correct and red for incorrect) (Figure 1b).

Data Collection

All data collection was completed online. In addition to collecting responses as part of the e-learning tool, we also collected participants' demographics (age, sex, care setting, health professional background, years in practice, education) and previous training in suicide prevention.

Parameters of tool use were examined to evaluate acceptability (e.g., percentage of completions, time taken to complete the tool) and after the post-test, there was a free text question inviting feedback on the tool.

Data analysis

Statistical analyses were conducted using SPSS version 31. Descriptive statistics were used to summarise participant characteristics, completion rates and time taken to complete the tool. Categorical variables were presented as numbers and percentages, while continuous variables were presented as means and standard deviations. Characteristics of the total sample who started the e-learning tool, as well as participants who completed and did not complete the tool, were described.

Normality of the total and scenario-level pre- and post-test scores was assessed using Q–Q plots and the Shapiro–Wilk test. As the pre- and post-test scores were not normally distributed, the Wilcoxon signed-rank test, a non-parametric statistical test, was used to examine differences between pre- and post-test scores. In addition, we explored whether there was any association between participants' background and change in pre- and post-test scores using the Mann-Whitney tests: age (<50 years, 50+ years), years in role (≤5 years, 6+ years), health professional background and previous training in late-life self-harm or suicide. Statistical significance was set at $p < 0.05$.

Content analysis was used to summarise participant feedback on the tool. Free-text responses were reviewed, coded, and grouped into key themes through an iterative process involving multiple discussions among members of the research team. Themes were used to identify both perceived strengths of the tool and areas for potential refinement, later incorporated into the final version of the tool.

Ethics

Ethics approval was sought from the University of Auckland Human Participants Ethics Committee (Reference: 29801).

Results

A total of 149 potential participants clicked on the weblink and read the participant information sheet, and 110 (73.8%) participants provided online consent. Of 77 participants starting the tool, 66 completed both pre- and post-tests. Mean age of the 66 participants was 51.4 years (SD=12.6) (Table 1). Nearly all (n=65, 98.5%) participants were female and in paid employment. Most (n=59, 89.4%) had tertiary education and two-thirds (n=44, 66.7%) were health professionals. Participants worked in a variety of settings (Table 1). Over half (n=40, 60.6%) of participants had been in their role for six or more years and 42.2% (n=28) had previous training in late-life self-harm or suicide.

It took an average time of 50 minutes to complete the tool (range 18 minutes to 3 hours and 46 minutes), excluding eight outliers who took over fifteen hours to complete the tool (noting the tool can be stopped at any time and resumed later).

Performance on the e-learning tool

Overall, there was statistically significant improvement in participants' knowledge after completing the tool (total pre-test score: mean=20.5 (SD=3.1); total post-test score: mean=24.3 (SD=3.7); $p<0.001$). Most participants improved their score following completion of the tool (n=57, 86.4%), while six participants showed no change and three had lower post-test scores. Table 2 shows the scenario-level pre- and post-test scores, which were all statistically significant.

Associations between participant background and change in pre- and post-scores

There was no association between participant background (age, years in role, health professional background and previous training in late-life self-harm or suicide) and change in pre- and post-test scores (Table 3).

Content analysis of qualitative feedback

Fifty-five participants (83% of tool completers) provided feedback. Emergent themes and illustrative quotes are presented in Table 4.

Discussion

As aimed, we developed and tested a culturally, and target audience-bespoke suicide prevention e-learning training tool among a diverse range of professional and non-professional gatekeepers working with older people across settings in New Zealand. We demonstrated that the tool was well-accepted and user-friendly, able to be completed in at-best 20 minutes. Testifying to its pedagogic value, feedback from users showed appreciation for its targeted nature addressing real world scenarios of interactions with older people and acceptability as a training tool that was enjoyable to complete, relevant to the users' work and informative. Most importantly, we demonstrated highly significant knowledge translation, with significant group-level improvement in every scenario score post-test.

It is incumbent upon all those working with older persons, in any capacity, not to turn a blind eye to symptoms or indications that an older person might be contemplating self-harm/suicide. When this happens, it is usually because we do not know how to respond. Gatekeeper training is intended to address this issue, using an opportunistic interaction for suicide prevention (Isaac et al 2009). Our study adds further evidence that gatekeeper training for suicide prevention may improve attitudes, skills and knowledge across different populations (17, 23).

The collective responsibility for suicide prevention has been widely acknowledged (24), including for older people (25). NICE guidelines advocate multiagency partnerships between

health, social and support sectors (26), who may identify suicidal behaviours and refer on, coordinate or manage underlying issues (27). Support services include the 'third sector' comprising voluntary and community organisations outside of the public and private sectors (28). The latter were the target audience for our novel tool, representing a significant cohort of potential gatekeepers well-placed to identify older people at risk and potentially address unmet needs (e.g. loneliness, struggles with activities of daily living) underlying suicidal behaviours (29). This study explored current knowledge regarding suicide prevention in older adults across workers from all three sectors (Table 1), demonstrating high baseline scores but also improvement with tailored online training.

The scenarios used to structure the learning content of the tool encompassed myths about ageing, different settings of interacting with older people (retirement village, aged care homes, community centres, phone support lines and home care) and various presentations of factors which may underly suicidal behaviours (e.g., chronic medical illness and disability, cognitive impairment, depression, loneliness and psychosis). The scenarios were deliberately chosen to reflect the literature on risk factors for suicidal behaviours in older adults (4) and how they may interact to encourage gatekeepers to consider broad evidence-based formulations of the potential psychological drivers for suicidal thoughts in older persons (5-8, 12, 30, 31). Significant improvement was noted in performance on all questions, with the smallest change noted in the opening question on misconceptions about ageing, where baseline scores were already high. The latter is interesting, as it may reflect genuine positive attitudes towards older people in contrast to reports of ageism and stigma (25, 32), self-selection bias as the gatekeepers had chosen to work with older adults (32), or perhaps social desirability bias in responding (33).

This study had several strengths. The content of the tool was informed by consultation with an older adult and carer with lived experience of suicide and incorporated qualitative evidence

derived from the voices of older adults with suicidal behaviours and their carers (5, 6, 8). We included culturally informed vignettes shaped by cultural advisors working in mental health to ground the tool in the New Zealand gatekeeper context, which was endorsed by users. This inclusivity also responded to previous calls for cultural diversity from volunteer crisis supporters undertaking a similar adaptive learning tool focusing on older adult suicide prevention (21). The online tool was described by users as brief, accessible, relevant to their roles, easy to use, informative and confidence building. The teaching strategies of personalised learning providing immediate feedback and pre/post assessment to reinforce appropriate gatekeeper actions in the various scenarios were valued, strategies we have successfully used previously in training volunteers in suicide prevention (14, 21). Participants also highlighted the practical aspects of the tool, particularly the use of scenarios which they identified as reflective of their practice, rather than a theoretical or abstract focus, echoing positive feedback on the use of this teaching strategy from our previous work with mental health clinicians (34) and volunteer crisis supporters (21). Although not specifically raised by participants, other benefits of online learning may include flexible use when convenient to gatekeepers, relatively low-cost technology compared to face-to-face training (35, 36), and scalability (17). Finally, participants in this study had a high level of engagement with the tool, as demonstrated by >80% choosing to provide optional feedback upon completion of the tool. We responded to this by addressing and incorporating all user feedback into the final version of the tool, for example, embedding a downloadable take-home summary at the end of the tool and improving the clarity of questions.

Limitations

Firstly, although there was no association between participants' background and score change (possibly precluded by the small sample size), most participants were healthcare professionals, tertiary educated and had been in their role six years or more, with just under half having

previous training on the topic. This suggests participants may not have been truly representative of third-sector workers, with volunteers, cultural and community workers under-represented. We note the high baseline scores of 20.5/28 (or 73.2%), which may have reflected this previous training and experience or a response bias of interested informed participants. This highlights the potential for even greater knowledge translation in less trained groups using the tool. We reported similar findings of high baseline knowledge in an educational intervention on self-harm and suicide in older people for multidisciplinary mental health and aged care clinicians (20); but lower baseline knowledge in crisis supporters (also third sector) completing an online adaptive learning tool on this topic (21); although notably both cohorts' knowledge and attitudes towards suicide prevention in older people similarly improved post-intervention.

Secondly, regarding response or completer bias, as well as limitations to the user-friendliness of the tool, we noted attrition across the participant pathway. Notably, from those who accessed the link (149), to those who consented (110), then started the tool (77), and finally completing the tool (66). This indicates possible barriers to its use, perhaps competing time demands, technical difficulties (21) or reduced engagement/motivation, conferring completer bias to our results. Notably, metrics on duration of engagement with the tool include breaks taken during completion. We were unable to capture time taken for uninterrupted completion of the tool, but we suspect that the lower range completion times approximate this.

Thirdly, cross-sectional knowledge acquisition neither implies retention or translation of knowledge. We only assessed knowledge translation but not outcomes such as skills, behaviours, sustained knowledge and referral patterns of gatekeepers, previously acknowledged as under-studied (23). A recent meta-analysis of 16 studies of gatekeeper training for suicide prevention (not old age specific), found increased suicide knowledge in gatekeepers sustained in the short-term but waned over time (17). Various strategies have been proposed to sustain behavioural change after educational interventions, including focusing

gatekeeper training on changing attitudes (37), periodic refreshers (20, 37, 38) and practice-based interventions (skills training) (34, 39).

Conclusions

An online learning tool on suicide prevention with older adults was designed and tested with a variety of gatekeepers working with older people. The tool utilised real-world scenarios (endorsed by gatekeepers themselves), with culturally relevant vignettes, personalised feedback, a summary middle lesson and pre/post assessment to reinforce learning. There was significant improvement in performance on all scenarios, reflecting improved knowledge of how to detect, sensitively enquire about and respond to an older person with risk factors for or expressing suicidal thoughts and behaviours. High user engagement with the tool provided important feedback which we addressed and incorporated in the final version of the tool post-pilot. We do not yet know the effect of these changes on the effectiveness of the tool.

The next steps are to evaluate the tool with other gatekeepers, particularly volunteers working with older adults. Key educational features of the tool may be adapted to other cultural contexts to ensure relevance for other cultural contexts. Education is an important step towards empowering gatekeepers to intervene and to support older people at risk of suicide.

Declarations

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Competing Interests

The authors have no competing interests to declare that are relevant to the content of this article.

Ethics approval

All procedures were performed in accordance with the ethical approval obtained from the University of Auckland Human Participants Ethics Committee (Reference: 29801) as of November 2025.

Consent to participate

All participants provided informed consent to take part in the study.

Data availability statement

Data may be available from the corresponding author on request subject to appropriate institutional ethical approval.

Author contributions

Anne Wand, funding acquisition, conceptualization, methodology, tool development, data analysis and interpretation, writing and editing; Gary Cheung, funding acquisition, methodology, tool development, data analysis and interpretation, writing, review and editing; Lily Yee, data analysis and interpretation, writing; Tiffany Jessop, funding acquisition, tool development, review and editing; Carmelle Peisah, funding acquisition, conceptualization, methodology, tool development, data interpretation, writing and editing.

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Supplementary Files

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- table1.docx
- Table2.docx
- Table3.docx
- Table4.docx