


# BMJ Open Codesign of a digital health tool for suicide prevention: protocol for a scoping review

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## ABSTRACT

**Introduction** The role of digital health in providing psychological treatment and support for the prevention of suicide is well documented. Particular emphasis has been placed on digital health technologies during the COVID-19 pandemic. Providing psychological support reduces the burden of mental health conditions. The challenge is to provide support in the context of patient isolation, which highlights the role of digital technology (video conferencing, smartphone apps and social media). There is, however, a dearth of literature where experts by experience have been involved in the end-to-end process of developing digital health tools for suicide prevention.

**Methods and analysis** This study aims to codesign a digital health tool for suicide prevention focusing on the enablers and barriers. The scoping review protocol is phase I within a three-phase study. The protocol will inform the second phase of the study which is the scoping review. The results of the review will inform a funding application to National Institute for Health and Care Research to codesign a digital health tool for suicide prevention (the third phase). The search strategy will follow the Joanna Briggs Institute Reviewer's Manual for Scoping Reviews and incorporates the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews checklist to ensure reporting standards are maintained. The methodology will be supplemented by frameworks by Arksey and O'Malley and Levac *et al.* The search strategy dates for screening are from November 2022 to March 2023. Five databases will be searched: Medline, Scopus, CINAHL, PsycInfo and Cochrane Database of Systematic Reviews. Grey literature searches include government and non-government health websites, Google and Google Scholar. The data will be extracted and organised into relevant categories. The results will be synthesised into themes and inform phase II of the study.

**Ethics and dissemination** Ethics granted by the University of Bradford on 15 August 2022, reference E995. The project team will design a digital health tool, results will be published in a peer-review journal and disseminated through conferences.

**Study registration number** Safety (Mental Health) Innovation Challenge Fund 2022–2023 Protocol RM0223/42079 Ver 0.1.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ A strength of this study is that it enabled members of the experts by experience group to be co-collaborators and discuss their experiences as carers or people with lived experience online and face-to-face. The group meets once a month to review the literature and provide feedback. Once the group has determined the parameters of the proposed digital technology tool then a fuller proposal will be submitted to National Institute for Health and Care Research.
- ⇒ As this project was a scoping study, the sample size was relatively small due to the limited recruitment site and the findings may not be transferable to other communities.
- ⇒ The review excluded non-English articles due to time and resource constraints. Non-English-speaking countries such as the European Union could be considered for a larger study involving a systematic review.

## INTRODUCTION

The acceptability of interventions by experts by experience for suicide prevention is an area that is still developing.<sup>1,2</sup> The proliferation of digital technology platforms such as mental health applications and websites exceed 10 000 particularly during the COVID-19 pandemic.<sup>3–7</sup> The data are limited, however, on whether service users engage with the platforms or were involved as co-collaborators.<sup>8–12</sup> To explore the disconnect between online suicide prevention tools and engagement by experts by experience this study offers a codesign process.<sup>13</sup> The first phase of the process involves all members of the research team (academics, experts by experience, public and patient involvement lead, research assistant and mental health nurse) reviewing and discussing literature at monthly meetings at the University of Bradford (face-to-face and online). This protocol is the first phase of the project and outlines the review process which

will inform a scoping review (second phase) and subsequent codesign of a digital health tool for suicide prevention (third phase).

## MATERIALS AND METHODS

### Scoping review

A six-stage framework for scoping reviews was first proposed by Arksey and O'Malley.<sup>14</sup> Based on the framework, Levac *et al*<sup>15</sup> provided explicit details on each stage to increase the clarity and rigour of the review process. In 2012, the Joanna Briggs Institute (JBI) refined the methodology and published a reviewer's manual of scoping reviews. In 2018, a Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) was published and contains 20 essential reporting items and 2 additional items.<sup>16</sup> JBI updated the Reviewers Manual of Scoping Reviews in 2020 and suggested the JBI approach which is congruent with the PRISMA-ScR checklist.<sup>17</sup> The JBI framework for Scoping review provides clear guidelines of how to develop a rigorous research protocol.<sup>18</sup> This review will not appraise the quality of evidence found as it seeks to explore the topic which has not been systematically reviewed before. The research team has used the Population-Concept-Context (PCC) framework to strengthen the importance of this methodology.<sup>19</sup>

### Patient and public involvement

The experts by experience are part of the university patient public involvement (PPI) group and regularly provide input into the university programmes within their roles. Members of the group were approached by the PPI coordinator and payment has been set as per the National Institute for Health and Care Research guidelines. The members are paid to attend meetings and review articles. The chairperson is paid for meetings with the primary investigator.

### Search strategy

The search strategy will be developed in consultation with the experts by experience group and academic research librarian. Five databases will be searched: Medline, Scopus, CINAHL, PsycInfo and Cochrane Database of Systematic Reviews. Grey literature refers to literature produced at all levels of government, academia, business, industry in print and electronic formats but is not controlled by commercial publishers.<sup>20</sup> Grey literature searches include government and non-government health websites such as Samaritans, Lifeline, Mental Health Commission, Beyond Blue, Google and Google Scholar. Search results will be uploaded to the review software, Covidence, for title and abstract screening before full-text screening begins.<sup>21</sup> The first reviewer will undertake full screening of the literature, the second reviewer will provide input where further clarification is required. The third reviewer will resolve any conflicts. On completion, a data extraction table will be organised into the following categories: authors, year,

country, type of study and outcome. The results will be synthesised into themes and a narrative summary for the second (scoping review) and third phase (codesign of a digital health tool) of the study. The project will follow COVID-19 safe guidelines and provide online opportunities if face-to-face options are not available.

### Data management

Data will be password protected and stored as per the University of Bradford data protection and management policy. All digital files and data will be coded, archived and sorted in a password-protected file on the university server for a minimum of 5 years. After such time, secure data destruction will take place.

### Identifying the research question

The inclusion criteria are aligned with PCC framework.<sup>19</sup> *Population* included patients, students, adults, internet users, experts by experience, service users and soldiers. *Concept* refers to suicide intervention, reduction and prevention. *Context* are identified as UK, USA, New Zealand and Australia. Given the dynamic and evolving nature of digital technology, the search timeframe is from 2012 to 2023. Literature is limited to English language as primary and secondary literature. Exclusion criteria are study protocols, opinion/editorial data and publications before 2012. The search strings for published and grey literature are provided (see online supplemental appendix 1).

### Identifying and selecting relevant studies and documents

#### Published literature: search strategy

The following licensed electronic databases (from 2012 to present) will be used to systematically obtain published literature: Medline, Scopus, CINAHL, PsycInfo and Cochrane Database of Systematic Reviews. The sources selected will be limited to English. The search strategy based on the PCC framework focuses on mental health services users using digital tools in the UK, Canada, USA, Australia and New Zealand.

#### Grey literature: search strategy

A grey literature search (from 2012 to present) will be conducted using the following institutional and government electronic databases. Google and Google Scholar will be searched with the first 20 relevant results reviewed. The sources selected will be limited to English. The search strategy has been confirmed and we are reviewing the published and grey literature. As of 18 December 2022, 3090 titles and abstracts were identified from Medline, Scopus, PsycInfo, CINAHL and Cochrane Database of Systematic Reviews; 132 of these have moved to the stage of full-text screening. We are completing the grey literature searches and have identified 50 grey literature documents (see online supplemental appendix 2). Previous reviews have identified health technologies for experts by experience during periods of mental distress leading to suicidal thoughts. Codesigned health technologies that are accepted by experts by experience are

emerging within the literature. Systematically mapping and synthesising this literature within the scoping review (from phase II of the study) will inform the direction for the third phase of the study which focuses on the development of a digital health tool for suicide prevention.

### Ethics and dissemination

Ethics granted by the University of Bradford on 15 August 2022, reference E995. All members of the group will coproduce publications related to the project and all the names of the members will be included as authors. Any presentations will involve all members where possible.

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**Contributors** DW: conceptualisation, methodology, investigation, funding acquisition, project administration, Covidence software analysis, writing, reviewing and editing. MN: Covidence software analysis, writing, reviewing and editing. WA-G: Covidence software analysis, writing, reviewing and editing. SC, JH, MM, JV, SG, MK and LP: reviewing. All authors have read and agreed to the published version of the manuscript.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

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### REFERENCES

- 1 Bruen AJ, Wall A, Haines-Delmont A, *et al*. Exploring suicidal ideation using an innovative mobile app—strength within me: the usability and acceptability of setting up a trial involving mobile technology and mental health service users. *JMIR Ment Health* 2020;7:e18407.
- 2 Tighe J, Shand F, McKay K, *et al*. Usage and acceptability of the ibobbly APP: pilot trial for suicide prevention in aboriginal and torres strait islander youth. *JMIR Ment Health* 2020;7:e14296.
- 3 Franco-Martín MA, Muñoz-Sánchez JL, Sainz-de-Abajo B, *et al*. A systematic literature review of technologies for suicidal behavior prevention. *J Med Syst* 2018;42:1–7.
- 4 Witt K, Spittal MJ, Carter G, *et al*. Effectiveness of online and mobile telephone applications ('apps') for the self-management of suicidal ideation and self-harm: a systematic review and meta-analysis. *BMC Psychiatry* 2017;17:297.
- 5 Arshad U, Gauntlett J, *et al*. A systematic review of the evidence supporting mobile- and internet-based psychological interventions for self-harm. *Suicide Life Threat Behav* 2020;50:151–79.
- 6 Robinson J, Cox G, Bailey E, *et al*. Social media and suicide prevention: a systematic review. *Early Interv Psychiatry* 2016;10:103–21.
- 7 Torok M, Han J, Baker S, *et al*. Suicide prevention using self-guided digital interventions: a systematic review and meta-analysis of randomised controlled trials. *Lancet Digit Health* 2020;2:e25–36.
- 8 Zhou J, Liu L, Xue P, *et al*. Mental health response to the COVID-19 outbreak in china. *Am J Psychiatry* 2020;177:574–5.
- 9 Liu S, Yang L, Zhang C, *et al*. Online mental health services in china during the COVID-19 outbreak. *The Lancet Psychiatry* 2020;7:e17–8.
- 10 Torous J, Nicholas J, Larsen ME, *et al*. Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements. *Evid Based Ment Health* 2018;21:116–9.
- 11 Biddle L, Derges J, Goldsmith C, *et al*. Online help for people with suicidal thoughts provided by charities and healthcare organisations: a qualitative study of users' perceptions. *Soc Psychiatry Psychiatr Epidemiol* 2020;55:1157–66.
- 12 Povey J, Raphiphathana B, Torok M, *et al*. Involvement of indigenous young people in the design and evaluation of digital mental health interventions: a scoping review protocol. *Syst Rev* 2021;10:1–8.
- 13 Care quality commission. experts by experience. 2022. Available: <https://www.cqc.org.uk/about-us/jobs/experts-experience>
- 14 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* 2005;8:19–32.
- 15 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implementation Sci* 2010;5.
- 16 Peters M, Godfrey C, McInerney P, *et al*. *Scoping reviews*. Joanna Briggs Institute Reviewer's Manual Joanna Briggs Institute 2020:406–51.
- 17 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA extension for scoping reviews (PRISMA-scr): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
- 18 Peters MDJ, Marnie C, Tricco AC, *et al*. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth* 2020;18:2119–26.
- 19 Peters M, Godfrey C, McInerney P, *et al*. Methodology for JBI scoping reviews. the joanna briggs institute reviewers manual. In: Aromataris E, ed. *Joanna Briggs Institute*. 2015: 3–24. Available: <https://research.monash.edu/en/publications/methodology-for-jbi-scoping-reviews>
- 20 Schopf J. Twelfth international conference on grey literature: transparency in grey literature.; pra- 858 gue. Czech Republic, 2010.
- 21 Covidence systematic review software [Veritas Health Innovation]. 2022. Available: [www.covidence.org](http://www.covidence.org)