

# Can Digital Tools Save Lives? A Systematic Review of Apps and Web-Based Interventions for Suicide Prevention in Post-Discharge

Marianna Poli<sup>1</sup>, Arian Foorogh Mand Arabi<sup>1</sup>, Sophia Russotto<sup>2</sup>, Federica Turolla<sup>2</sup>, Filippo Nembrini<sup>3</sup>, Daniela Micucci<sup>3</sup>, Carla Gramaglia<sup>2</sup>, Patrizia Zeppegno<sup>2</sup>, Fabio Madeddu<sup>1</sup>, Raffaella Calati<sup>1,4</sup>

<sup>1</sup>Department of Psychology, University of Milano-Bicocca, Milan, Italy

<sup>2</sup>Psychiatry Unit, Department of Translational Medicine, University of Eastern Piedmont, Novara, Italy

<sup>3</sup>Department of Informatics, Systems and Communication - DISCo, University of Milano-Bicocca, Milan, Italy

<sup>4</sup>Department of Psychiatry, Nimes University Hospital, Nimes, France

m.poli4@campus.unimib.it  
raffaella.calati@unimib.it

## Introduction

The risk of suicide appears to be higher after discharge from psychiatric facilities [1]. Digital psychological interventions have the potential to provide benefits and support to individuals at risk of suicide [2, 3], bridging the gap between inpatient and outpatient care.

## Objective

This review aims to provide an overview of the current literature on apps and web-based interventions for suicide prevention, with a specific focus on the post-discharge period.

## Methods

A systematic review was performed according to the PRISMA statement.

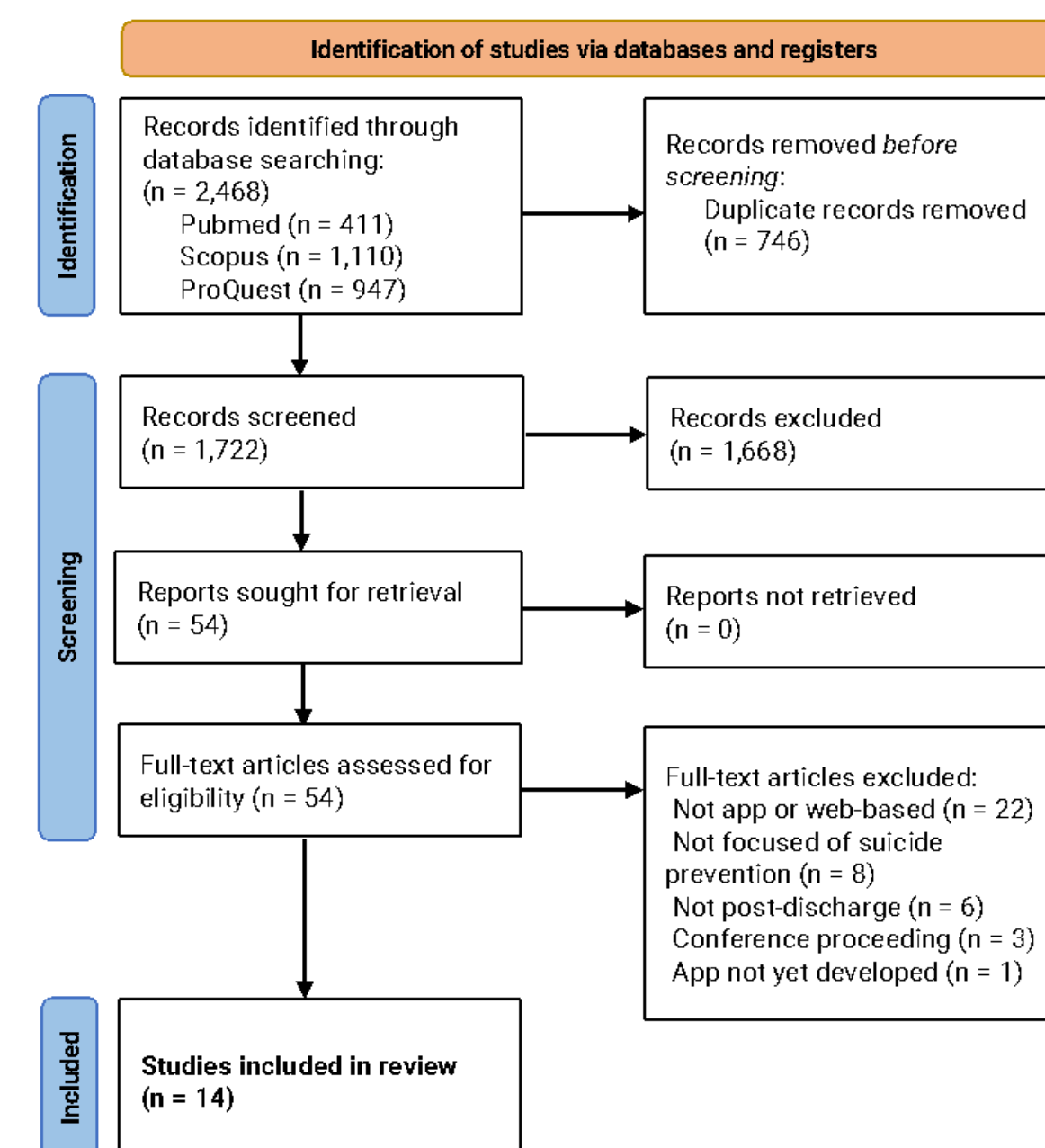
### Inclusion Criteria:

- Studies focused on app-based or web-based interventions aimed at suicide prevention for post-hospitalized patients or during the post-discharge period from a psychiatric ward.

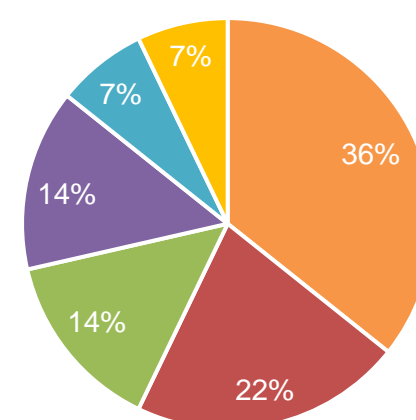
### Exclusion Criteria:

- Protocols, reviews, meta-analyses, letters, commentaries, editorials, and conference proceedings.
- Articles not published in English.
- Studies limited to text messaging, phone calls, remote interventions, assessment or screening.

## Results

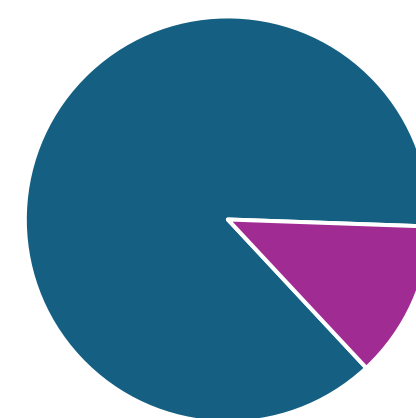


## Study design



- Feasibility, Acceptability, and Usability
- Design and Development + Feasibility, Acceptability, and Usability
- Design and Development
- Randomized Controlled Trials (RCT)
- Survey
- Ecological Momentary Interventions (EMI)

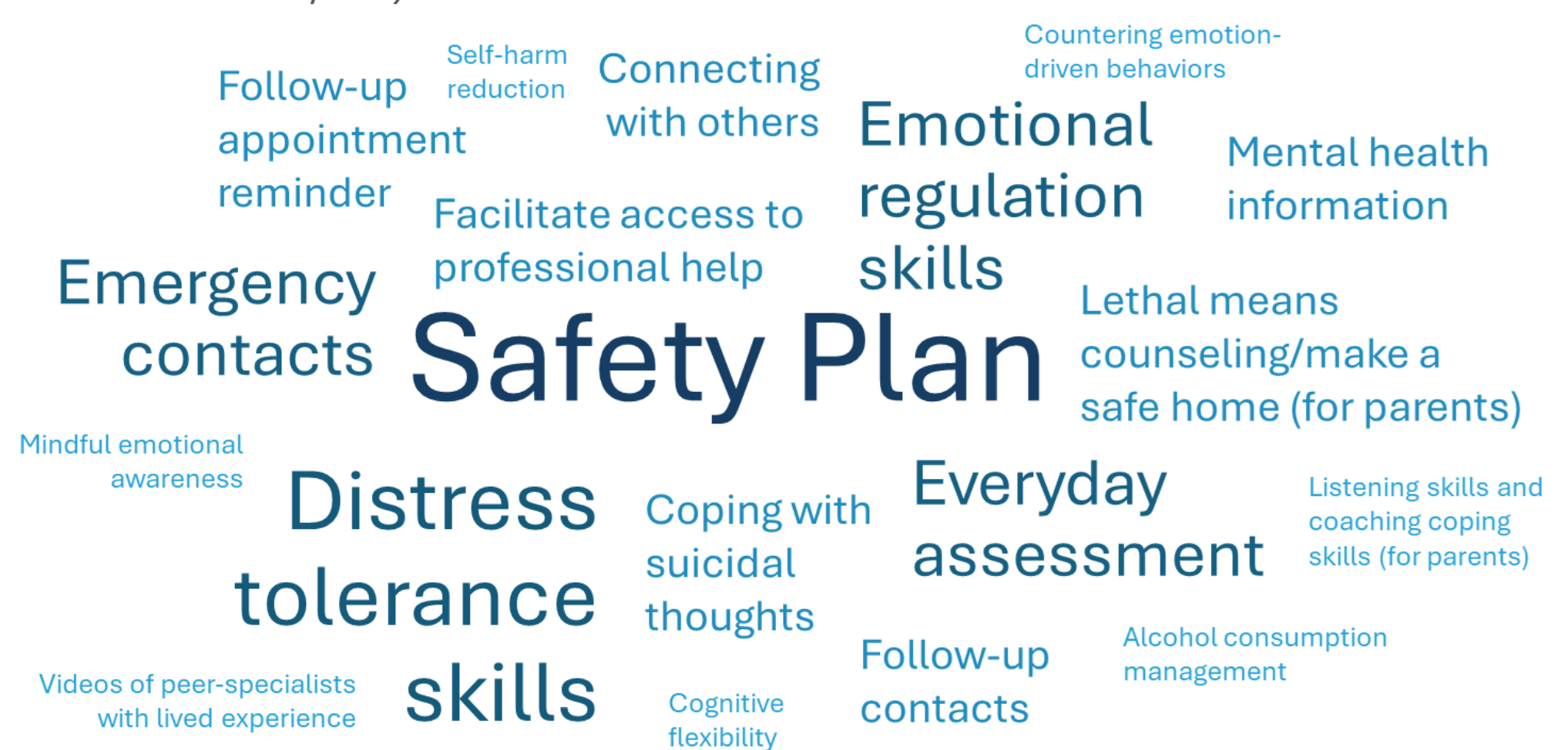
## Intervention type



- **Direct interventions: targeting suicidal thoughts and behaviours (12/14, 86%)**
- **Indirect interventions: addressing factors related to suicide risk (e.g., cognitive bias modification, depression, anxiety, chronic pain) (2/14, 14%)**

## Main components of direct interventions

Word size reflects their frequency.



## Main findings

All studies implemented digital interventions based on evidence-based or best-practice guidelines. Overall, findings regarding feasibility and acceptability were favorable. Qualitative feedback was generally positive, and participants expressed satisfaction and interest. Preliminary data of RCTs are promising, although larger samples are warranted to assess clinical efficacy more rigorously.

## Conclusions

Digital interventions serve as a valuable complement to standard treatment, enhancing the continuity of care and promoting adherence to treatment plans. They also offer an accessible, acceptable, and cost-effective alternative for individuals who are reluctant or unable to engage in face-to-face interventions. These interventions can supplement traditional prevention strategies by offering personalized tools for managing suicidal crises, real-time monitoring of individuals at risk, and immediate access to targeted support. However, it is crucial that apps and web-based interventions for suicide prevention undergo thorough development and clinical evaluation prior to implementation and use.

## References

- 1 Chung DT, Ryan CJ, Hadzi-Pavlovic D, Singh SP, Stanton C, Large MM. Suicide rates after discharge from psychiatric facilities: A systematic review and meta-analysis. *JAMA Psychiatry*. 2017;74(7):694-702.
- 2 Malakouti SK, Rasouli N, Rezaeian M, Nojomi M, Ghanbari B, Shahraki Mohammadi A. Effectiveness of self-help mobile telephone applications (apps) for suicide prevention: A systematic review. *Med J Islam Repub Iran*. 2020;34:85.
- 3 Sarubbi S, Rogante E, Erbutto D, Cifrodelli M, Sarli G, Polidori L, Lester D, Berardelli I, Pompili M. The effectiveness of mobile apps for monitoring and management of suicide crisis: A systematic review of the literature. *J Clin Med*. 2022;11(19):5616.