

# BMJ Open Scoping review protocol to map the use of text-based two-way communication between patients and healthcare professionals after hospital discharge and identify facilitators and barriers to implementation

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## ABSTRACT

**Introduction** After discharge, patients face multiple risks where timely communication with healthcare professionals is required. eHealth has proposed new possibilities for asynchronous text-based two-way communication between patients and healthcare professionals during this time, and studies show positive effects on clinical outcomes, care coordination and patient satisfaction. However, there are challenges to the adoption of text-based two-way communication, potentially undermining the positive effects in clinical practice. Knowledge of these factors may inform future research and implementations. No reviews have provided an overview of the use of text-based two-way communication after discharge and the identified facilitators and barriers. Therefore, the objective of this scoping review is to systematically identify and map available research that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation.

**Methods and analysis** We will include all studies describing the use of text-based two-way communication between patients and healthcare professionals after discharge from hospital. A preliminary search of PubMed (PubMed.gov), EMBASE (Elsevier), CINAHL (EBSCO), PsycINFO (Ovid), Cochrane Library (Wiley), Web of Science (Clarivate) and Scopus (Elsevier) was undertaken on 9 November 2021. The search will be updated for the full scoping review, and reference lists of relevant papers reviewed. Two reviewers will independently screen the literature for inclusion. Data will be extracted and charted in accordance with a data extraction form developed from the research questions and inspired by Consolidated Framework Implementation Research. Findings will be presented in tabular format and a descriptive summary, and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews checklist.

**Ethics and dissemination** This scoping review will not require ethics approval. The dissemination strategy involves peer review publication and presentation at conferences.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This scoping review will be the first to map the use of text-based two-way communication in the period after hospital discharge.
- ⇒ Key facilitators and barriers to the use of text-based two-way communication after discharge will be identified and summarised inspired by a comprehensive conceptual framework.
- ⇒ The rigorous methodology manual by the Joanna Briggs Institute will be followed.
- ⇒ Text-based two-way communication between patients and healthcare professionals is far more used than has been reported. To ensure the quality of this scoping review, only peer reviewed and published literature will be included.

## INTRODUCTION

Discharge from hospital is often experienced as a confusing and fragmented time for patients and relatives, and incomplete or inaccurate transfer of information is known to compromise patient safety and quality of care.<sup>1–6</sup> Patients may have difficulty remembering information given by healthcare professionals and assess the severity of complications after discharge.<sup>3 5</sup> Concerns arise, prompting them to call the hospital or other healthcare facilities to get answers. Healthcare professionals, on the other hand, have to handle inquiries from patients they may not know, while disrupting their workflows.<sup>6 7</sup> As healthcare rapidly evolves towards shorter hospital stays and more outpatient and community care, these changes require a focus on communication support in the period after discharge.

eHealth, defined as the use of internet communication technologies (ICTs) for health, has been proposed as a solution to enhance communication between patients and healthcare providers.<sup>8</sup> Thus, ICT increases accessibility and patient participation in healthcare and supports secure data and information sharing between users.<sup>8</sup> Text-based communication, a form of eHealth, is widely yet very differently applied in healthcare. A steadily increasing number of studies investigate unidirectional automated text-based communication from healthcare facility to patients, for example, sending reminders for medication adherence<sup>9</sup> or promoting mental and physical health behaviour,<sup>10</sup> such as physical activity,<sup>11</sup> symptom monitoring and self-management.<sup>12</sup> For this review, we focus on the application of text-based communication in healthcare to support two-way digital dialogue between patients and healthcare professionals after hospital discharge. This includes formats such as electronic mail (email), phone-based texting and secure messaging. Particularly secure messaging, embedded in patient portals offered by Electronic Health Records vendors, such as MyHealtheVet (Department of Veterans Affairs), MyChart (Epic), the secure email system of Kaiser Permanente and more, has significantly accelerated the use of text-based communication in the healthcare system, especially in the USA and other developed countries.<sup>13–17</sup> Where email was previously considered to be the most secure way of text-based communication with patients, secure messaging is now just as safe in terms of data protection and compliance with existing legislation.<sup>16</sup> In most developed countries, patient portals and secure messaging are even accessible through smartphone applications, making it an easy and ubiquitous solution for most patients to access healthcare services.

Benefits of text-based communication include new possibilities for care coordination, prevention of adverse events, empowering and engaging patients, which may positively affect clinical outcomes<sup>16, 18</sup> and patient satisfaction.<sup>7, 13–15</sup> Thus, the use of text-based communication between patients and physicians has been found to be an independent predictor of improved performance on quality outcomes for some patient groups<sup>18</sup> and to be of particular value to specific groups of patients, such as those struggling with chronic diseases.<sup>19</sup> Furthermore, the fact that text-based communication can be managed asynchronously, meaning patients and healthcare professionals do not have to use the technology concurrently, may promote easier adaptation into existing workflows and more efficient use of patients time.<sup>16, 19</sup>

However, text-based communication has not yet been fully adopted across the healthcare system, even though it may provide an easy and much needed support in the period following hospital discharge. This suggests that there may be barriers to use, as known from other eHealth services.<sup>20, 21</sup> In a preliminary search of PubMed, we have found studies investigating the use of text-based communication to increase access to healthcare and facilitate two-way dialogue in the period post hospital

discharge.<sup>14, 16, 22–24</sup> The identified studies cover diverse patient populations with different focus, study designs and evaluation methods. However, looking at these studies, most of them describe barriers to use. There may be shared learnings, that can be useful in future implementations of text-based communication following discharge. Some studies focus on patients' and healthcare professionals' perceptions and preferences<sup>24–28</sup> and others on organisational factors that affect acceptance and diffusion of text-based communication.<sup>22, 23</sup> Husain *et al.*<sup>22</sup> implemented and evaluated a web-based clinical communication system for team-based care with patients with a focus on facilitators and barriers, but found that even though the system could fill a gap of communication, existing modes of communication, workflows, incentives and lack of integration with electronic medical records were barriers to adoption. Even factors such as individual tension for change among healthcare professionals to use text-based communication with patients made implementation difficult.<sup>22</sup> Another recent study investigated parents' usage and experiences of communicating with professionals in hospital-to-home transitions after their child's preterm birth or surgery related to this, using an eHealth device with embedded online chat, where they could communicate with nurses at the hospital. Even though the parents felt that the eHealth device supported their self-treatment by providing communication with healthcare professionals, the authors described barriers related to the technical infrastructure and to the adoption by healthcare professionals.<sup>28, 29</sup> All of these aspects are important to uncover in advance of implementation, since implementing new ways of patient communication in healthcare is a complex task. Facilitators and barriers in relation to the implementation of text-based communication after hospital discharge can thus include many diverse aspects. To systematically identify and map studies that assess the use of text-based communication after discharge, including facilitators and barriers, we are inspired by the Conceptual Framework for Implementation Research (CFIR).<sup>30</sup> CFIR can be used to explore barriers and facilitators of uptake, using five defined constructs that encompass all conceivable aspects of implementation: the intervention, the inner and outer settings, the individuals involved, and the process by which implementation is accomplished.<sup>30</sup>

Providing an overview of the use of text-based communication after hospital discharge, and facilitators and barriers to implementation across this heterogeneous field of research, can guide future strategies for implementing text-based communication and thereby promote acceptance and dissemination in healthcare. A scoping review is suitable, as it allows the inclusion of multiple study designs within research areas characterised by a high degree of heterogeneity,<sup>31</sup> such as text-based communication in healthcare. In an initial search of the literature, including PubMed, Cochrane Database of Systematic Reviews, Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports, we have

**Table 1** PCC grid with search terms used in initial search in PubMed, including truncated keywords (\*) and MeSH terms

| Population      | Concept  | Context   |
|-----------------|--|---|
| Patient*        | Text-based; Text messa*; Texting; Short message service; Web-based; Web portal*; Patient portal*; Internet portal*; e-mail*; email*; Digital communicat*; Digital dialog*; Electronic communicat*; Internet communicat*; Online communicat*, Online messag*; Secure messag*; Chat; E-visit*, Communicat*; Patient-provider messag*; Provider-patient messag*; Patient-physician messag*; Physician-patient messag*; Patient-nurse messag*; Nurse-patient messag*; Patient-clinician messag*; Clinician-patient messag*; Patient-doctor messag*; Doctor-patient messag* | Patient discharg*; Hospital discharg*; After discharg*; Continuity of care; Continuous care; Health care team*; Outpatient*; Postoperative period*; Postoperative car*; Post-surger*; Home-based; At home |
| Patients (MeSH) | Patient Portals (MeSH); Text Messaging (MeSH); Electronic Mail (MeSH); Communication (MeSH)  | Postoperative Period (MeSH); Postoperative Care (MeSH); Continuity of Patient Care (MeSH); Outpatients (MeSH)   |

PCC, population, concept, context.

not found any reviews that have identified and mapped the use of text-based communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation. As text-based communication has shown to be beneficial for several patient groups and healthcare professionals, but have still not achieved full adoption, there is a need to map available research on this topic.

### Study objective

In this scoping review, we aim to systematically identify and map available research that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation.

## METHOD

### Protocol design

This proposed scoping review will be developed using the methodological guidance for the conduct of Joanna Briggs Institute (JBI) scoping reviews<sup>31</sup> and the JBI Reviewers Manual.<sup>32</sup>

Reporting the scoping review will be conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses Extension for Scoping Review (PRISMA-ScR) checklist.<sup>33</sup>

### Research questions

The objective of this scoping review is to identify and map studies that assess the use of text-based two-way communication between patients and healthcare professionals after hospital discharge, including facilitators and barriers to implementation. The initial search of the literature showed diverse use and organisation of text-based communication after discharge, and a wide range of facilitators and barriers associated with the implementation. However, it became clear that there may be shared learning across these studies. Based on this, the following research questions were identified:

1. In which patient populations have the use of text-based two-way communication between patients and healthcare professionals after hospital discharge been studied?
2. For what purposes has it been used in the studies?
3. What text-based formats have been used?
4. What characterised the organisation of the use of text-based communication?
5. What facilitators and barriers are identified to the implementation?

### Eligibility criteria

The eligibility criteria for this scoping review were conceptualised using participants (P), concept (C) and context (C) as follows:

#### Participants

This scoping review will consider all studies involving patients discharged from hospital, both somatic and mental illness, and patients at all ages. A broad study population has been chosen because text-based communication is applied in many different patient populations, but facilitators and barriers to the use after hospital discharge may be relatable from one context to another.

#### Concept

The concept of this scoping review is text-based communication between patients and healthcare professionals. Text-based communication is defined as a medium for two-way communication between patients and healthcare professionals, where patients can ask questions, refine understanding and provide personalised updates with their individual healthcare providers or healthcare team at the hospital after discharge. At the same time, healthcare professionals can keep tabs on recovery for their patients after hospital discharge. Text-based communication may have format as email, phone-based texting and secure messaging, but basically, they represent the same thing: easy and accessible asynchronous communication between patients and healthcare professionals. The

**Box 1 Data extraction form (proposed)****Bibliographic details**

Author  
 Country  
 Year of publication  
 Article title  
 Journal, volume, issue, pages  
 Aim/purpose  
 Study design, methods (eg, data collection techniques)  
 Sample size (participants)  
 Outcome measures  
 Main findings/results  
 Authors conclusions  
 Suggestions for future research (related to the text-based communication)

**Use of text-based communication after hospital discharge (review questions 1–4)**

Patient population (illness/disease of patients)  
 Age of patient population  
 Details of the text-based communication, for example;  
 ⇒ Purpose of text-based communication (eg, improve clinical outcomes, patient satisfaction, give sense of security to patients and so on).  
 ⇒ Format (eg, email, phone texting, secure text messaging through patient platform).  
 ⇒ Characteristics of the organisation of the use of text-based communication (duration of access, which efforts was done to implement it, which healthcare professionals were involved, was it a part of a larger eHealth intervention and so on).

**Facilitators and barriers to implementation (review question 5)**

In relation to the intervention, for example,  
 ⇒ Adaption to clinical context (why/why not).  
 ⇒ Technical aspects, for example, reminders to answer.  
 In relation to the inner setting, for example,  
 ⇒ Structural context (eg, interrelationships within and between other organisations).  
 ⇒ Political context.  
 ⇒ Cultural context.  
 In relation to the outer setting, for example,  
 ⇒ Economic context.  
 ⇒ Political context.  
 ⇒ Social context.  
 In relation to the individuals involved (both targeted user such as patients and healthcare professionals involved and other potentially affected individuals), for example,  
 ⇒ Culture/organisational/professional mindsets.  
 ⇒ Norms, interests and affiliations of individuals.  
 ⇒ Usability of the text-based communication.  
 ⇒ Training in use/support access.  
 ⇒ Individual tension for change.  
 ⇒ Satisfaction with intervention.  
 In relation to the process of implementation, for example,  
 ⇒ Planning the process.  
 ⇒ Evaluation.  
 Other facilitators and barriers that fall aside of the five constructs of CFIR.

exclusion criteria will be studies that deal with text-based communication between healthcare professionals, where the patient is not directly involved in the communication, and studies where text messaging is scheduled, for

example, automated text messaging, reminders sent from healthcare professionals to patients.

**Context**

All studies that examine the defined population and concept after hospital discharge will be included for this scoping review. The context referred to as 'after hospital discharge' is used to describe the varying time period, where patients continue to have attendance, virtual consultations, online contact or other affiliation, with healthcare professionals from the hospital, after they have returned home for further rehabilitation.

**Information sources and search strategy**

This scoping review will consider all types of study designs. However, study protocols will be excluded, as we are only interested in studies that assess the use of text-based communication and knowledge of the facilitators and barriers identified in relation to this. Also, text and opinion papers will not be considered for inclusion in this scoping review, since text-based communication seems to be more widely used than it is reported in peer-reviewed literature. It is considered very difficult to obtain the full overview of the actual use of text-based communication in healthcare if unpublished literature would be included, and the results and findings will not be well argued to include in this scoping review.

The JBI guidelines recommend a preliminary search, thus, an initial limited search of PubMed (PubMed.gov) was undertaken to identify articles on the topic as shown in [table 1](#) (see search query in online supplemental material 1). Second, the text words in titles and abstracts and the index terms of the relevant articles will be screened and used to develop a full search strategy for the following databases: PubMed (PubMed.gov), EMBASE (Elsevier), CINAHL (EBSCO), PsycINFO (Ovid), Cochrane Library (Wiley), Web of Science (Clarivate) and Scopus (Elsevier). The literature search will be performed by the first author in collaboration with an experienced librarian. The search strategy will be adapted for each included database, and additionally the reference list of all included articles will be screened for supplementary studies. The search strategy is aimed to locate all published and peer-reviewed literature within the phenomena of interest, including systematic reviews that meet the eligibility criteria. Web of Science and Scopus will be used to find the newest literature on the topic. No search limits will be applied to the search, thus studies published in any language at any time will be included. If publications in other languages than English, Danish, Swedish or Norwegian should be included, we will use automated translational services, such as Google Translate, to overcome these barriers.

**Study selection**

All identified citations from the literature search will be exported to EndNote V.X9 (Clarivate Analytics, Pennsylvania, USA), where duplicates will be removed. Following

the JBI guidelines, we will pilot test the source selection process based on a random sample of 25 titles/abstracts. These will be screened by all authors using the eligibility criteria, and discrepancies will be discussed. Relevant modifications to the eligibility criteria will be made and reported in the final scoping review. When the authors achieve a 75% agreement, the screening will continue. Screening process will be done by two independent reviewers using Rayyan—a web and mobile app for systematic reviews. All potentially relevant sources will be retrieved in full text, and their citation details will be imported. Then, the full-text articles will be assessed in detail against the eligibility criteria, and reasons for exclusion of articles at full text, will be recorded and reported in the scoping review. At any stage of the selection process, when disagreements arise between the two independent reviewers, it will be resolved through discussion, or with a third reviewer involved. Results of the search and the study selection process will be reported in the scoping review and presented in a PRISMA-ScR flow diagram.<sup>33</sup>

### Charting the data

Data will be extracted from the included articles by two independent reviewers using the data extraction form as presented in [box 1](#). The data extracted will include article characteristics and specific details about the use of text-based communication after discharge including reference, country of origin, aim of the study, patient population, what text-based format was used, for how long after discharge was it available to patients, which healthcare professionals was involved in the text-based communication, outcomes and so on. Key findings related to facilitators and barriers will be extracted and synthesised inspired by the five constructs of CFIR: the intervention, the inner setting, the outer setting, the individuals and the process of implementation. The data extraction form will be pilot tested before performing the final scoping review, and it will be modified if necessary, during the process of extracting data from each article. The two reviewers will continuously discuss the results throughout the process, and any revisions on the data extraction form will be reported in the scoping review. Disagreements that may arise between the two reviewers will be resolved through discussion, or if necessary, with a third reviewer involved.

### Collating, summarising and reporting results

Extracted data from the included articles will be mapped in relation to the specified review questions for this scoping review. Mapping will be illustrated graphically, in a tabular form and/or charted, where appropriate, for example, to summarise and disseminate knowledge of the use of text-based communication after hospital discharge including key findings related to facilitators and barriers to the implementation. This will be accompanied by a descriptive summary to designate how the results relate to the objective of this scoping review and the specific research questions. Data from the included studies will

be mapped and presented as true to the original studies as possible, thus without interpretation, and according to guidelines for scoping reviews.<sup>31</sup>

### Patient and public involvement

This scoping review will not include patient and public involvement. However, the idea for this scoping review arises from a previous process, where we identified communication needs after hospital discharge in collaboration with patients and healthcare professionals.

### ETHICS AND DISSEMINATION

This scoping review will not require ethics approval, as the methodology of scoping reviews concerns reviewing and summarising available data. However, it will provide an overview of the use of text-based communication between patients and healthcare professionals after hospital discharge, and the facilitators and barriers to implementation. These will be systematically identified and mapped, which may be of interest for different stakeholders in healthcare, for example, researchers, software providers, healthcare professionals, managers and decision-makers across healthcare sectors, who work to improve transitions of care after hospital discharge. Since all healthcare research bears ethical responsibility, as results can affect care by influencing the development within the specific area of interest, we will also consider ethical issues for this scoping review. The strategy of dissemination includes submission for publication in scientific journal and subsequent presentation at relevant conferences.

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