

DigiCanTrain

Digital Skills Training for Health Care Professionals in Oncology

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WP 2 Need assessment

Deliverable 2.3: Systematic review on digital tools in oncology



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Executive Summary

This deliverable describes the protocol, process and outcomes of the second systematic research literature review, conducted in the WP 2 in the DigiCanTrain project. The review aimed to identify and synthesize the interactive digital tools used to support the empowerment of people with cancer and the outcomes of these tools.

The perspective of the people (patients) affected by cancer was selected for the systematic review, combining the care delivery and communication between the different professionals and patients.

This research literature review will respond to the following questions:

- a) what interactive digital tools are used to support empowerment among people with cancer?
- b) what are the outcomes of these interactive digital tools used among people with cancer?

Interactive here means, that the tools are used both by the people affected by the cancer, and professionals taking care of them by using digital technology .

This report is structured as follows. First (Chapter 1), we define the background of the review, including description of the content and methodological solutions used. Secondly, Chapter 2) is the description of the protocol of the review including identification of the databases used, inclusion and exclusion criteria for selecting the studies, literature search process, the quality appraisal of the studies, data analysis of the literature, and reporting. After that (Chapter 3) the progression of the review process according to the protocol and results are presented. Chapter 4 includes the partners collaborated in the review and review management.

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1. Background of the review

The topic of the review is specified in the task of the Work Package 2 Need assessment, Task T2.2. Duties and tasks for the review were agreed between the partner universities, University of Turku (UTU), Turku University of Applied Sciences (Turku UAS) and Open University of Catalonia (OUC).

Before starting the review, it was recognized, that there could be overlapping of the aims of this review with the TRANSITION-project (co-ordinated by Dr Charalambous). For avoiding the overlapping, a meeting was arranged in Turku with Dr Charalambous (other participants in the meeting were the co-ordinator of DigiCanTrain, Dr Virpi Sulosaari, and the researchers in the team of the University of Turku (Dr Heli Virtanen, and Dr, professor Helena Leino-Kilpi). Based on the meeting, no clear view about the overlapping was identified and we stayed in the original aim of WP 2 of DigiCanTrain. We only decided to use the broad perspective of the patients/health care users, ie people affected by cancer, and their empowerment, for reviewing the literature. By this perspective, we were able to make the review as broad as possible, including both the care delivery, and the communication between patients and different professionals.

For starting the review, the UTU research team, in collaboration with Information specialists of the UTU library, defined search terms for research literature (Table 1). After defining search terms, preliminary searches were made, and following this, the Information specialist made final adjustments to the search strings. Methodologically, a systematic research literature review was selected by the UTU research team in WP 2.

Table 1. Search terms in the systematic literature review

Search terms for the systematic review of digital tools in oncology
*patients and *cancer or oncology and *empowerment or self-management or self-care or coping or perceived control or activation or action or self-efficacy and *digital or digitalisation or digitalization or e-health or ehealth or mhealth or m- health or electronic health or telecare or mobile health or digitisation or digitization or telecommunication or telecommunications or mobile-based or

tele-based or web-based or information technology or information technology or digital technology or telemedicine or telehealth
and
*interact or communicate or relationship or participator or collaborative or rapport or responsive or multimodal or remote support or connect.

Exclusion criteria were:

*congress [Publication Type] or review [Publication Type] or systematic review [Publication type] or meta-analysis [Publication type] or letter [Publication Type] or editorial [Publication Type]
and
*children or adolescent

2. Protocol for the review

The research review was made as a systematic review. The protocol included a description of the databases for searching studies, inclusion and exclusion criteria for the studies, the literature search process, data analysis, and reporting the results. The protocol also included the quality appraisal of the studies.

Seven databases were selected to find studies as comprehensively as possible (CINAHL, Cochrane, ERIC, PsycINFO, PubMed, Scopus, Web of Science). Covidence software was used to manage the systematic review process. The search process was planned according to Preferred Reporting Items for Systematic Reviews (PRISMA) and Meta-analyses [1]. Inclusion and exclusion criteria were used in order to conduct the search systematically (Table 2).

Table 2. Inclusion and exclusion criteria of the included studies

Inclusion criteria	Exclusion criteria
Patient empowerment or related aspects such as self-care/self-management, coping, control, activation, action, self-efficacy is an outcome supported with interactive digital tool(s) by different health care professionals	Patient empowerment or related aspects such as self-care/self-management, coping, control, activation, action, self-efficacy supported with interactive digital tool(s) is not an outcome
Interactive digital tool(s) used by patients themselves / their significant others / actors in voluntary sector / health care professionals	Interactive digital tool(s) used by somebody else
Patient empowerment or related aspects (self-care/self-management, coping, control, activation, action, self-efficacy) supported with interactive digital tools expressed/described in the aim, methods or results of the study report (article/publication)	Patient empowerment or related aspects such as self-care/self-management, coping, control, activation, action, self-efficacy supported with interactive digital tools expressed/described in other parts (than aim, methods, results) of the study report (article/publication).

Referee-based research papers with different designs	Protocol articles, reviews, posters, conference abstracts, proceedings, books / book chapters, editorials, letters, notes, data papers
Setting: oncology/adult cancer care, adults	Setting: other than oncology/cancer care, children
Published ≥ 2010	Published prior 2010

In the data analysis of the review, inductive content analysis was planned to be used [3,4]. Data reporting of the review was done in collaboration with all partners of this WP2, but the original manuscript was created and co-ordinated by the team at the University of Turku. The submission date as in the original proposal, was the end of September 2023. Authors of the review were discussed and agreed (Tuominen, Poraharju, Carrion, Lehtiö, Leino-Kilpi, Moreto, Stolt, Sulosaari & Virtanen) and a journal (Supportive Care of Cancer) and they all consented to the submission of the manuscript.

The quality appraisal tools of the studies were evaluated in the research team and the JBI criteria for different research designs [2] were selected. For assuring the quality of the appraisal it was decided to concentrate the duty of the evaluation to one partner, in this case the team of the Open University of Catalonia.

3. The review process and results

The review process was carried out according to the agreed plan. Literature search was carried out from seven international databases in collaboration with the UTU research team, UTU Information Specialists and partners in the Open University of Catalonia and Turku UAS, in May 2023. The articles were selected using the Covidence software, resulting finally in 39 studies (Table 3). The studies included were internationally reported, referee-based research papers, in English language.

Table 3. Selection process of the studies

Identification of Records	Records identified from databases (n=3020)	Duplicate records removed (n=1499)
Screening of the records	Records screened (n=1571)	Records excluded (n=1411)
	Reports sought for retrieval (n=160)	Reports not retrieved (n=0)
	Reports assessed for eligibility (n=160)	Reports excluded (n=65)
Included studies	Studies included in the review (n=36) Studies included from citation searching (n=3)	
	Total studies included in the final review (n=39)	

Out of the 39 studies, published in 2018–2022, there were RCT (17), single-arm trial (15), quasi-experiential (1) and qualitative design (6). Most of the studies were Western European (15).

Relevant data from the studies were extracted and summarized in a large table, including reference, purpose of the study, design, participants/sample, intervention/interactive tool, data collection procedure and instruments, statistically significant outcomes.

The studies were analyzed using statistical and experiential analysis. Statistical analysis was used for quantitative studies including synthesis based on statistically significant differences between or within the groups using descriptive quantification and a narrative summary of the data. The experiential analysis was used for qualitative studies using content analysis and a narrative

synthesis based on patients' experiences related to empowerment when using interactive digital tools.

As an outcome, interactive digital tools in the studies were used for care delivery and communication. Altogether 30 different digital tools were identified. The tools had varying elements and procedures, related to patients/health service users:

Interactive tools for patients included several elements: symptom monitoring, self-assessment, peer support, information, action plans, exercises, journaling, quiz, videos, audio, tailored information and alerts to patients.

The outcomes of these interactive tools were empowerment (4 studies, but only one study showed to be effective), self-efficacy (19 studies, but only 10 were effective), self-management (two studies, one effective), coping (four studies, one effective) or patient activation (nine studies, none effective).

In the review article, short explanations of all these 30 tools have included. The tools were different, also for different purposes, and their prioritization was not possible based on results. They give, however, a comprehensive view of existing digital tools used for care/treatment of people affected with cancer, and their outcomes. In the studies, the professional background of health care professionals participated in the interactive digital tools were not necessary identified, but they were multiprofessional. In some of the studies, the participating professional groups were mentioned, including nurses, physicians, psychologists, or social workers.

There were also some interactive tools for HCPs. These tools included two kind of elements: alerts to HCP and HCP contact to patients. Detailed description of the tools and their elements and outcomes are available in the review article (Tuominen et al. 2024).

Quality appraisal of the studies was made according to JBI-criteria and summarized in four tables, according to the research design (RCTs, qualitative studies, cross-sectional studies, quasi experiential studies). The quality in all categories was rather good, but there were also critical evaluations; not any studies were excluded based on the appraisal. Due to the heterogenous designs of the studies, the meta-analysis was not possible to be made.

As a conclusion, related to the objectives of Work package WP2, in DigiCanTrain, this review produced knowledge about 30 digital tools, in altogether 39 international, referee-based research studies from the years 2018–2022. These tools were described, and their outcomes were evaluated related to care delivery of people affected with cancer. No national differences in the tools and/or their

outcomes were analysed, the aim being to produce a large international research review, with most reliable studies, indicated by the quality appraisal made. The tools are reported in English, thus they are potential for many countries. No separate analyses were made related to different professional groups, indicating most of the tools to be useable for several professional groups, in their care/treatment activities and communication.

The review produced knowledge for the next work packages, including training of health care professionals. However, due to differences in the goals of the tools, the possible use of the tool(s) in training needs to be defined based on the objectives of the training. The team of this review, already has shared the information about the results for the planning of next work package, and a more detailed information about the tools can be made in future. Thus, in the DigiCanTrain project, the training is not focused on any specific tools (products). The aim is to improve digital skills and therefore readiness to take into use new different tools.

The manuscript of this review was submitted to the journal Supportive Care of Cancer at the beginning of October 2023. After the review process, the manuscript was published in May 2024 as an open access publication in the journal Supportive Care in Cancer (Impact factor 2.8)

<https://link.springer.com/article/10.1007/s00520-024-08545-9>

Moreover, the results of this review will be presented in the 2nd International Conference of Clinical Nursing Research 2024 on August 22nd –23rd, 2024 in Helsinki, Finland (Tuominen et al. 2024. Interactive digital tools in cancer care: A systematic literature review, accepted as an oral presentation).

4. Partners for the review and review management

Authors of the review were selected among WP 2 partners (TUAS, OUC), by the leading group from UTU. Research team in University of Turku had eight and all partners together 6 meetings (mainly online, by using Zoom of the University of Turku) during 31.5. – 29.9.2023. Good scientific practice was followed through the whole review process [5], but no ethical approval of the ethical committee was needed. In the reporting of the studies, original studies have been used, and rights of the original authors have been guaranteed. All the data of the review, manuscript versions and analyses made are stored in the security protected Seafile of the University of Turku.

Partners for the review (and authors of the submitted manuscript) are from all partners, UTU, UOC and UAS, with shared responsibilities.

Librarians of the University of Turku supported the data search process. Covidence data management system was new for the research team, but it was extremely useful due to the possibility to make the data processing in collaboration with all partners. The Finnish Nursing Research Foundation Hotus and JBI Center in Finland trained part of the Finnish research team in the use of Covidence, without any charges.

Dissemination of the results has been active in the networks of the team members, social media and conferences, and it is ongoing.

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