DigiCanTrain

Digital Skills Training for Health Care Professionals in Oncology

Project Number: 101101253

WP 2: Need assessment

Deliverable 2.2. Systematic review on digital skills

Executive Summary

This deliverable describes the protocol, process and results of the first systematic research literature review conducted in the WP 2 in DigiCanTrain project, about the previous research on digital skills of health care professionals in oncology (T2.1).

Systematic literature review No 1, focused on previous research on digital skills of health care professionals in oncology, was conducted. The review responded to the following questions: a) what existing evidence there is about digital skills among health care professionals in oncology, and b) what are the development needs of the digital skills.

Chapter 1 includes the background of the review by describing the specification of the content and methodological solutions made. Chapter 2 sets out the protocol of the review including a description of the databases for searching studies, inclusion and exclusion criteria for the studies, literature search process, the quality appraisal of the studies, data analysis and reporting. Chapter 3 presents the progression of the review process according to the protocol and outcomes of the review. Chapter 4 presents the partners involved in the review and review management.

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1. Background of the review

The topic of the review was specified based on the task of the Work Package 2 Need assessment, Task T2.1. Before starting the review, a meeting was arranged with the leader of the Transition-project also funded by HADEA, focusing on cancer treatment and care to ensure not to overlap of the reviews (participants: the leader of Transition, Dr Charalambous, 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 the work group followed the original task planned in the grant agreement to conduct a research literature review on previous research on digital skills of health care professionals in oncology, for achieving the original objective T2.1. Furthermore, duties and tasks for the review were agreed between the partner universities, ie University of Turku (UTU), Turku university of applied sciences (Turku UAS) and Open University of Catalonia, Spain (OUC).

Content and methodological solutions of the literature review were chosen. Content was defined based on the objective of T2.1 by selecting the key concepts and search terms by the UTU research team in collaboration with Information Specialists of the UTU library (Table 1). After defining search terms, other partners were asked to comment on them, and finally all partners of the WP2 accepted the search terms by consensus. Methodologically, a systematic research literature review was selected for the type of review by the UTU research team in WP 2.

2. Review protocol

A protocol was made in order to conduct the systematic research review. The protocol included a description of the databases for searching studies, inclusion and exclusion criteria for the studies, literature search process, the quality appraisal of the studies, data analysis and reporting. The protocol was made by the UTU research team, and it was registered PROSPERO CRD42023413979.

Table 1. Search terms for the systematic review on digital skills

Search terms
digital or digitalization or digitalization or e-health or ehealth or mhealth or electronic health or telecare or mobile health or digitization or digitization or telecommunication or tele-based or web-based or information technology or information technology or m-health or digital technology or telemedicine or telehealth
and
professional competence or competence or competency or skill or expertise or know-how or capability or capacity or knowledge or qualification or ability deficiency or aptitude proficiency or data literacy
and
oncology nursing or medical oncology or oncology or cancer nursing or cancer care
not
review [Publication Type] or systematic review [Publication type] or meta-analysis [Publication type])

Six databases were selected in order to find international studies on health care professionals' digital skills as comprehensively as possible (PubMed, CINAHL, Web of Science, Scopus, Cochrane, and ERIC). Inclusion and exclusion criteria were decided in order to conduct search systematically (Table 2).

Table 2. Inclusion and exclusion criteria of the studies

Inclusion criteria	Exclusion criteria
Health care professionals' digital skills described by themselves, other health care professionals, patient, or significant others.	Other than health care professionals' (patients, family members, informal caregivers, students) digital skills described.
Description is focused on health care professionals' digital skills in aims, methods, or results of the study.	Description is not focused on health care professionals' digital skills (but rather on application, equipment, technology, or educational program) in aims, methods, or results of the study.
Research studies, proceedings, strategy papers, theoretical models.	Protocol articles, reviews, posters, book chapters, editorials, letters
Cancer care or oncology setting	Other setting than cancer care; for example, digital learning

The search process was planned according to Preferred Reporting Items for Systematic Reviews and Meta-analyses [1]. Covidence software was decided to use to manage the review process. Before using the software, it was ensured that all collaborating partners are competent to use the software. The partners were educated by the experts of the Covidence software by an expert of Finnish Nursing Research Foundation.

The quality appraisal tool of the studies was selected based on evaluation of different tools, and the CASP check list [2,3] was selected. In addition, the duty of quality appraisal was decided to be on the team of Open University of Catalonia. Data analysis of the review was planned to use inductive content analysis [4,5]. Data reporting of the review was planned to do together with all partners, the original manuscript created by the team in the University of Turku. After a careful analysis of the journals in the field, UTU team suggested the journal (Digital Health) and it was decided to select. The submission date, as in the original proposal, was the end of September 2023. Furthermore, the order of the authors (Tuominen, Poraharju, Carrion, Lehtiö, Leino-Kilpi, Moretó, Stolt, Sulosaari & Virtanen) was decided.

3. Review process and results

The review process was carried out according to the protocol. Systematic literature search was carried out from six international databases in collaboration with the UTU research team, UTU Information Specialists and partners in the Open University of Catalonia and Turku UAS, in March 2023. Before the full text screening process, the information specialist searched for the full text research articles on behalf of the search group. The research articles were selected using the Covidence software, resulting 25 studies (Table 3).

Table 3. Selection process of the studies

Identication of the records	Records identified from databases (n=4563)	Duplicate records removed (n=2133)
Screening of the records	Records screened (n=2479)	Records excluded (n=2390)
	Studies sought for retrieval (n=89)	Studies not retrieved (n=0)
	Studies assessed for eligibility (n=89)	Studies excluded (n=65)
Included studies	Studies included in the review (n=20) Studies included from citation searching (n=4)	
	Total studies included in the review (n=24)	

Relevant data of the international studies selected were extracted and tabulated. The qualitative (12), quantitative (10) or mixed methods (1) studies and one white paper meeting the inclusion criteria were published in 2005–2023 in eight countries globally (USA 10 studies, Canada 4, England 2, Netherlands 2, Denmark 1, Uganda 1 and Turkey 1). The studies were published during the last 18 years (2005-2023), but the majority (n=16) during the last few years 2028–2023.

The quality appraisal of the studies was made using CASP tool by two independent researchers. For qualitative studies a 10-item CASP scale (0–10) for qualitative studies was used (CASP 2022) focused on validity of the study, accuracy of the results and transferability. For quantitative studies, a 12-item CASP scale (0–12) for cohort studies was used (CASP 2022) focusing on validity of the study, internal validity of the study and external validity of the study.

Health care professionals in the studies under investigation were nurses (4 studies), psychosocial cancer care providers (2), medical oncology providers (1), radiation oncology nurses (1), radiation oncologists (2), surgical learners (1), and trainees and fellows in radiology/radiation oncology (1).

Due to the different nature of the studies and the scarcity of group-specific results, it was not possible to report the skills of the different health care professionals separately.

Data analysis was made using inductive content analysis resulting the description of the required and existing digital skills and development needs of the digital skills of the health care professionals in cancer treatment and care.

As an outcome of this review, a total of six main areas of the digital skills were identified. The main areas of the digital skills were 1) skills for information technology, 2) skills for ethical practice, 3) skills for creating a human-oriented relationship, 4) skills for digital education and support, 5) skills for delivering difficult news and 6) skills for implementing digital health (Tuominen et al. 2024). Under the main areas, there were 22 sub areas of the skills focusing on required, existing skills and development needs of the skills (Table 4).

Table 4. Areas of the digital skills (modified from Tuominen et. 2024)

Main area of the skills	Sub area of the skills	Required skills	Existing skills	Development areas of the skills
Information technology	Using digital technologies	x	x	x

	Preparing digital appointment	x		
	Assessing digital health information		x	x
	Assessing digital resources			x
Ethical practice	Protecting patient's privacy	x		x
	Ensuring confidentiality	x		x
	Ensuring patients' concent	x		
Creating a human oriented relationship	Adapting a person-centred approach	x		
	Building rapport	x	x	x
	Providing individualized care	x		
Digital patient education and support	Proving e-counseling			x
	Individualising education			x
	HCP-patient interaction		x	x
	Providing information	x		
	Obtaining necessary information			x
	Ensuring understanding	x		x
	Providing support	x	x	
Delivering difficult news	Showing support			x

	responding to patients' emotions			x
Implementing digital health	Creating a standard digital health policy			x
	Implementing digital health guidelines			x

Detailed examples about the required and existing skills as well as development needs of the skills are available in the review article (Tuominen et al. 2024).

No skills could be analysed and described at professional or country level according to the systematic literature review approach. However, the systematic literature review provided a systematic overview of the digital skills of the health care professionals generally in oncology and development needs. Thus, the training needs of health professionals in digital skills can therefore be defined in terms of the aim at T2.1.

The manuscript was submitted in the end of September 2023 to the journal Digital Health. Before submission, an English language checking was made by official translator Anna Vuolteenaho. After the review process, the review article was published in the journal Digital Health (Impact factor 2.9) first online in March 2024 and it is viewed and downloaded 650 times (https://journals.sagepub.com/doi/10.1177/20552076241240907). The members of the research team in different countries have also sent information about the published article in their own networks.

Two conference presentations based on this review article will be published: 1) Tuominen et al. 2024. Advancing digital skills in patient education for healthcare professionals in cancer care: A systematic review. Sigma 35th International Nursing Research Congress. Singapore, Asia. 6.–8.8.2024 Virtual event. Accepted as an oral presentation. 2) Tuominen. et al. 2024. Digiosaamisen kehittämistarpeita syöpää sairastavien hoitotyössä. XVIII Kansallinen hoitotieteellinen konferenssi Hoitotiede yhteiskunnassa 11.–12.6.2024 Tampere,

Oral presentation. Finnish presentation in Finnish national nursing science conference.

In conclusion, related to the objectives of DigiCanTrain WP2, this review provided information on six main areas of the digital skills of the health care professionals including 22 sub areas of the skills from three point of view: required, existing skills and development needs of the skills. However, no skills could be analysed and described at professional or country level according to the systematic literature review approach. In addition, there some other limitations in the review: the focus of the studies analyzed, the concept of the skill and methodological quality of the studies included. First, the studies mainly focused on describing the digital skills, not on the assessment of the skills, and no assessment instrument had been used in the studies. Second, the concept of skill was defined either as an independent concept or as a part of the concept of competence, which may lead to overlapping definitions. Third, the methodological quality of the studies was not very high, which may limit the generalizability of the results. However, the systematic literature review provided the overview of the digital skills of the health care professionals in oncology and development needs. The training needs of health professionals in digital skills can therefore be defined in terms of the aim of T2.1. Some implications can be considered also for health policy and further research. The review indicates the implementation of ethical and practical guidelines to support digital cancer care. Enhancement of the digital technologies in cancer care requires the assessment of health care professionals' digital skills and educational needs, and therefore there is a need for the development and validation of assessment instruments in further studies.

4. Partners for the review and review management

Authors of the review were decided among WP 2 partners (Turku UAS, OUC), by the leading group from UTU. Research team in University of Turku had 19 meetings and with all WP 2 partners 8 meetings (prepared by the researcher Leena Tuominen, mainly on-line, by using the zoom of the University of Turku) during 27.3.2023–19.9.2023.

Good scientific practice was followed through the whole review-process (ALLEA 2023), but no ethical approval of ethical committee was needed, due to the nature of review. 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. All the data of the review, manuscript versions and analyses made are stored in the security protected Seafile of the University of Turku. 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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