

RESEARCH ARTICLE

Healthcare professionals' perceptions of digital health competence: A qualitative descriptive study

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Abstract

Aims and objectives: This study aims to provide insight into healthcare professionals' lived experiences of digital health competence with the objective of improving the knowledge of how digital health competence is perceived by healthcare professionals.

Background: Healthcare professionals need to adjust to the digital era to provide quality and ethical care. Previous research has rarely adopted a healthcare professional's standpoint to describe their perceptions of digital health competence, even though their perspective in how new care practices are designed and implemented is vital.

Design: A qualitative descriptive study.

Methods: Healthcare professionals (nurses and allied health professionals) from versatile healthcare settings were recruited for individual semi-structured interviews in Sweden ($n = 5$) and Finland ($n = 15$) (spring 2019–summer 2020). Purposive and convenience sampling was used. Participants' backgrounds were in the public and private sectors. The interviews were transcribed for inductive content analysis. The SRQR guideline guided the study process.

Results: Healthcare professionals' perceptions of digital health competence are connected to competence to provide patient-centric care through digital channels, using technology and digital health systems, interacting with the patient through digital means, evaluating what digital health is and combining digital and traditional methods. Professionals' perceptions of their own digital health competence were divided, with the participants either reporting sufficient competence or perceiving a lack of skills in some specific areas.

Conclusions: Healthcare professionals' perceptions of digital health competence focus on the ability to provide patient-centric care by evaluating the need and possibilities for using digital health services jointly with more traditional methods. This study provides a sound basis for digital health research, but future studies should focus on elucidating factors which affect digital health competence and competence development.

Relevance to clinical practice: The results of this study can guide healthcare practices and digital health implementation, as well as function as a basis for instrument or theory development. Health care and nursing leaders should enable the resources to hybrid practices in patient-centric care provision.

KEYWORDS

competence, content analysis, descriptive study, digital health, health personnel, nurses, perceptions, telemedicine

1 | INTRODUCTION

The digitalization of health care has changed healthcare professionals' roles and responsibilities (WHO, 2020, Odendaal et al. 2020). Rapidly changing technologies and new modes of digital communication have increased the frequency at which healthcare professionals (HCPs) need to update their skillset to provide patient-centric care, for example service accessibility, care quality, individualized care and patient participation (Ahonen et al., 2015; Mattson, 2016). Additionally, changes in the professional role may require adjustment and new competences as the power balance between HCPs and patients shifts towards patients being more informed of medical and health-related issues (Borell, 2016; Nazeha et al., 2020). Therefore, HCPs need to develop their competences to match evolving patient needs, or risk being able to advance need-based patient-centric care (Baldwin et al., 2016). In addition to technical competence in using digital systems (European Commission, 2016), HCPs also need to be able to critically evaluate how digitalization has an impact on the provision of ethical patient care (Lupton, 2017) and understand how to best use digital solutions at work (Borell, 2016).

2 | BACKGROUND

The World Health Organization (WHO) has defined digital health (or eHealth) as the use of digital technologies in activities related to health. This umbrella term encompasses a broad range of technologies such as mobile-health (mHealth), telemedicine, telehealth, sensor-based monitoring, digital health games and health information technology (WHO, 2019, European Commission, 2012, Lupton, 2014). Digital health services can strengthen the healthcare system by improving the efficiency of care in hospital settings, enhancing adherence to clinical guidelines (Keasberry et al., 2017), providing opportunities to support clinical practice (Shojania et al., 2009) and advancing patient-centric care (Sittig & Singh, 2010). The Nordic countries (such as Finland and Sweden) have high ambitions to strengthen digitalization in health care, yet the end-user (patients and professionals) perspective requires reinforcement (Allvin et al., 2020; Hyppönen et al., 2017; Lundgren et al., 2020).

HCPs include nurses and licenced allied health professionals (e.g. occupational therapists, physiotherapists and paramedics) who work in the healthcare field and aspire to improve and support

What does this paper contribute to the wider global community?

- Healthcare professionals' digital health competence focusses on the critical assessment of using digital tools along with traditional methods according to patient needs.
- Healthcare professionals perceive that digital health solutions transform professional-patient interaction which requires new competences.
- Familiarity, interest in new technologies and user experience enhance healthcare professionals' digital health competence.

health outside the fields of nursing and medicine (WHO, 2016, Cambridge Dictionary, 2020, UAS Act 2014/932). To ensure service efficiency in health care, HCPs need to have up-to-date competence in using digital health in their work. Simultaneously, critical digital health studies have reminded that concerns such as the digital divide causing inequalities, issues with patient integrity and safety, and the work environment of HCPs need to be addressed and resolved from the perspective of competence in digital health (Erlingsdóttir & Sandberg, 2016; Lupton, 2014). Patients are generally accepting of digital health solutions (Wass et al., 2017; Zanaboni & Fagerlund, 2020), while digital health services have been shown to positively affect various aspects of patient well-being, for example adherence to medication (Jeminiwa et al., 2019) and healthy behaviours (Posadzki et al., 2016).

The definition of competence is multifaceted and occasionally vague, comprising knowledge, skills, performance, attitudes and values (Cowan et al., 2005; Mikkonen et al., 2018). More specifically, a holistic framework of professional competence was previously presented by Cheetham and Chivers (1998) and includes five sets of competences: cognitive (including informal tacit knowledge, knowledge and understanding); functional (including skills and know-how); personal (behavioural competences); ethical (including appropriate personal and professional values); and meta-competences (including learning, reflection and the ability to cope with uncertainty). Digital competence has been defined as the confident, critical, collaborative and creative use of information technology (European Commission, 2016). Digital

competence is part of the basic information and communication technology (ICT) skillset, which enables an individual to access, retrieve, produce and present information—as well as communicate in collaborative networks—via the Internet (Vuorikari et al., 2016).

HCPs need various competences to integrate digitalization in their daily work, which includes motivating and guiding patients in the use of digital health (Konttila et al., 2018; Kujala et al., 2018; Nazeha et al., 2020; Purc-Stephenson & Thrasher, 2010). HCPs' competence in digitalization has been previously described as consisting of sufficient skills in using digital technology to provide high-quality ethical patient care, social and communication skills to use digital technology in health prevention, diagnoses and treatment, willingness and motivation to apply digital technology in a professional context, and collegial and organizational support to enhance positive experiences in digitalization (Konttila et al., 2018). Previous reports of HCPs' experiences of using digital health services have highlighted both negative and positive aspects, with the negative experiences most commonly related to HCPs' perceptions of their lack of competence in communication with patients through patient portals (Laukka et al., 2020), treatment and screening algorithms threatening their clinical competency (Odendaal et al. 2020) and doubts over whether digital health improves patient care (Ross et al., 2016). Barriers such as the poor design of services and careless implementation process as well as lack of access to devices have been identified as inhibiting the use of digital technology in health care and HCPs possess concerns over technology taking time from direct patient care and causing additional stress due to malfunctioning systems (Brown et al., 2020). On the contrary, the positive experiences of digital health have been connected to HCPs' digital literacy and the belief that digital health benefits patients (Odendaal et al. 2020, Ross et al., 2016). Moreover, HCPs' acceptance and implementation of digital health are influenced by competence, abilities and experience (Ross et al., 2016). For this reason, healthcare organizations must ensure that nurses and other HCPs are competent in digital health due to constantly changing roles and responsibilities, along with the increasing importance of digital technology in health care (Nazeha et al., 2020; While & Dewsbury, 2011). This study aims to provide insight into HCPs' lived experiences of digital health competence with the objective of improving the knowledge of how digital health competence is perceived by HCPs. The research question was What are HCPs' perceptions of digital health competence?

3 | METHODS

3.1 | Study design

A descriptive qualitative design based on the philosophy of critical realism was chosen to capture HCPs beliefs and perceptions of digital health competence and gain a deeper understanding of a topic less studied by using inductive approaches (Mikkonen & Kyngäs, 2020; Žukauskas et al., 2018). Critical realism acquires participants' perception as experienced by them and accepts it as knowledge of

reality, which is mediated by one's beliefs and perspectives taken as truth (Tong et al., 2012). Individual semi-structured interviews were used to collect data on the studied phenomenon from the participants (Polit & Beck, 2017; Ryan et al., 2009). Standards for Reporting Qualitative Research (SRQR) (O'Brien et al., 2014) guided the research and reporting process of this study (supplementary material).

3.2 | Setting and participants

In Finland and Sweden, a mixture of purposive and convenience sampling was used to obtain a knowledgeable and willing sample of HCPs from the broad and heterogeneous group that meet the inclusion criteria (Kyngäs, 2020; Robinson, 2014). The inclusion criteria were licenced to work in the field of nursing or as an allied health professional and having work experience as a HCP. For the interviews conducted in Sweden, the ability to communicate sufficiently well in English was set as a language requirement to eliminate any misunderstanding due to language barriers between the researcher (EJ) and participants (van Nes et al., 2010). In Finland, the language requirement was either English or Finnish, as the researcher's (EJ) mother tongue is Finnish. In Sweden, information concerning participation in the study was distributed widely among public healthcare organizations in a county in southern Sweden, while additional candidates were purposefully sought from outside of the public sector. The participants were later chosen from this pool of candidates. In northern Finland, the participants were recruited by distributing information about the study through email to a group of HCPs from various healthcare settings. Because of the global pandemic situation, only HCPs on study leave could be recruited.

3.3 | Data collection

Data were collected from the Finnish and Swedish participants at two distinct time points by the first author. In Sweden, face-to-face interviews with HCPs ($n = 5$) from different work and professional settings were conducted in May 2019. Interviews with the Finnish participants ($n = 15$) were conducted by using Zoom video meetings (Zoom Video Communications, San Jose, CA) during April–July 2020 due to the global pandemic situation. A zoom is a useful tool in qualitative interview data collection (Archibald et al., 2019). The interview topic guide was based on a previously conducted systematic review of HCPs' competence in digitalization (Konttila et al., 2018), which had identified the following themes: professional knowledge and skills (digital capabilities, professional skills and change of work habits, ethical issues); specific attitudes (experiences, factors influencing attitudes); as well as psychosocial and organizational predictors (social influence, facilitating conditions, expectations) that influence competence in digitalization. Additional questions, both general and linked to personal experiences of digital competence, were asked to uncover more detailed information (Polit & Beck, 2017). The formulation and sequence

of original questions was slightly modified, while the interviews were being conducted (Gudkova, 2018). The interview also included several questions covering demographic factors, including age, profession and years of work experience. At the end of each interview, the participant had the possibility to add or comment on anything related to the discussed subjects. Interviews were audio-recorded and transcribed verbatim afterwards. Data saturation, or the point at which no new information or suggestions of new dimensions of theoretical categories can be obtained from interviews with additional participants (Polit & Beck, 2017), was reached after a total of twenty participants had been interviewed. All of the interviews were conducted during working hours and lasted between 29–83 min (mean duration: 52 min).

3.4 | Data analysis

The data were analysed by the first author (EJ) and continuously confirmed by other co-authors (KM, AO, JA, AMT, MK and MM) by using inductive content analysis to reveal the multifaceted experiences HCPs have had about digital health competence and provide a broad description of the phenomenon (Elo & Kyngäs, 2008). NVivo software (V.12; Alfasoft AB, Gothenburg, Sweden) was used to handle the data during the analysis. The data were initially read through repeatedly so that the researcher was familiar with the HCPs' perceptions (Kyngäs, 2020). Next, to start the analytical process, one sentence was chosen as the unit of analysis (Elo & Kyngäs, 2008) and the data were broken into meaning units, or codes. The research question was referred to during the coding process. Each sentence related to the study question was classified as an open code, after which the open codes were grouped together according to their contents and named appropriately (Kyngäs, 2020). Several direct quotations from the Finnish interviews were translated into English.

3.5 | Ethics

Research permission was granted in Sweden and Finland according to the corresponding data legislation (Personal data act, 2000). Research Ethics Committee approval was not required since the study does not involve minors, direct or indirect physical or physiological harm to the participants, or clinical trials (Medical Research Act, 2010). The ethical principles of Responsible Conduct of Research from The Finnish Advisory Board on Research Integrity were followed when conducting this study (RCR, 2012). A written invitation letter with information about the research purpose, aim of the study, voluntary participation, anonymity, confidentiality and the data handling process was sent to the participants, while a separate informed consent letter was collected from all participants as per GDPR requirements (Information Commissioner's Office, 2018; Resnik, 2018; Stang, 2015). Following data collection, all personal data were removed from the transcripts to ensure participant anonymity. Additionally, only the participant's

profession and age are specified when direct quotations are displayed in the results section. Hence, information about the participant's country, city or workplace was not reported. When conducting the interviews, the researcher explained the purpose of the study, introduced herself and explained her own background in health care (physiotherapy) to increase the respondents' trust in the interviewer and the study (Polit & Beck, 2017). The collected data will be stored for 10 years in a password-protected computer (Information Commissioner's Office, 2018; Personal Data Act, 2000). After that, all formats of data will be completely disposed with the assistance of the organization's (University of Oulu) research data support system.

3.6 | Validity and reliability

The research process has been thoroughly explained to enable readers to decide whether the results are transferable to other contexts (Kyngäs et al., 2020). To increase credibility and authenticity, all phases of the research process have been described as precisely as possible, and the lived experiences of the respondents have been shown by providing excerpts from the original data (Polit & Beck, 2017). Because the author is familiar with the research topic through literature review and personal experience as a HCP, objectivity was maintained throughout the research process and the researcher's own preconceptions were kept aside to not influence the reporting of results (Holloway & Wheeler, 2010; Kyngäs et al., 2020). Key informant verification was confirmed by defining clear inclusion criteria by ensuring that all participants were licenced health-care professionals and had work experience in Finland or Sweden. The authors ensured that the participants represent the Finnish or Swedish HCP community since in those two countries digitalization is profoundly integrated into daily healthcare work. Notes about the interviews and the researcher's thoughts were written throughout the process to maintain reflexivity (O'Brien et al., 2014). Still, the author's prejudices in data collection, data analysis, interpretation and reporting cannot be completely dismissed.

4 | RESULTS

A total of 20 HCPs were individually interviewed. The participants varied in age, work experience and professional background. The most common profession among the participants was a Registered Nurse (50%) working in various healthcare settings, while the participants showed average work experience of almost 13 years. Additionally, a majority of the participants were female (85%). Demographic information pertaining to the interviewees is presented in Table 1. The content analysis of the data identified 347 open codes which were organized into sub-categories ($n = 62$), categories ($n = 20$) and main categories ($n = 6$) representing HCPs' perceptions of digital health competence, including their own level of digital health competence. These categories are presented in Table 2.

4.1 | Professionals need to be able to provide patient-centric care through digital channels

According to the interviewed HCPs, providing patient-centric care through digital means is a crucial aspect in digital health competence. Providing patient-centric care through digital means includes the ability to acknowledge a patient's willingness to use digital health, evaluate the patient's digital capabilities, assess how to provide equal services and incorporate the patient's needs into digital health services. HCPs expressed that a patient's willingness to use digital health determines whether the professional can use digital health services during the care process. The participants also acknowledged that variation in patients' willingness to use digital health services was connected to competence. An important part of evaluating a patient's willingness to use digital health services was assessing the patient's digital capabilities. According to the professionals, a patient's age and digital readiness determined whether the patient is capable of using digital health services. The HCPs perceived that—generally—older age is linked to worse digital skills, as younger patients are more accustomed to using various digital equipment, which improves their skills.

... but when thinking about a slightly older user, they might not have such good skills in using the basic features...

Registered Nurse, 29

... the older generation is not fast to learn, and for them it is very difficult while it is normal for the younger generation. Concerning the older patients, I think a lot about them because I am working with

older people. For them it is very difficult to follow the development.

Assistant nurse, 36

Moreover, HCPs perceived that it is important to acknowledge aspects such as the patient's background and familiarity with digital tools, along with the patient's own evaluation of their skills and the evaluations of other professionals, when evaluating the patient's digital capabilities. Overall, the professionals perceived that digital health services can only be used to the extent of the patient's needs and must be provided in constant collaboration with the patient. Hence, the professional needs to not only evaluate what is best for the patient, but also determine how digital channels can be used to ensure patient-centric care. Professionals from the field of rehabilitation reported that certain parts of a patient's assessment, such as measuring spasticity or reflexes, cannot be conducted via digital channels but perceived that other specific methods are especially beneficial when organized digitally, for example mental health therapy. Therefore, the professional needs to be competent at evaluating whether digital health services are appropriate for the patient's situation and what the purpose of the care or rehabilitation session is.

...and another aspect of this competence is the skill and ability to evaluate what can be done remotely and what cannot.

Registered Nurse, 57

That is actually the big thing, what kind of customers or patients is the rehabilitation for, what is the purpose of the therapy and all that.

Physiotherapist, 47

TABLE 1 Demographic characteristics of the interviewed healthcare professionals

		All (n = 20)	Finland (n = 15)	Sweden (n = 5)
Age (years)	Average (Range)	40.4(27–57)	40.8(27–57)	39.2(33–48)
Gender	Female	17 (85%)	13	4
	Male	3 (15%)	2	1
Profession	Registered Nurse	10 (50%)	9	1
	Physiotherapist	6 (30%)	5	1
	Occupational therapist	2 (10%)	1	1
	Ambulance nurse	1 (5%)	–	1
	Practical nurse	1 (5%)	–	1
Healthcare setting	Specialized health care	10 (50%)	7	3
	Primary health care	7 (35%)	6	1
	Private healthcare providers	2 (10%)	1	1
	Other public institution	1 (5%)	1	–
Work experience (years)	Average (Range)	12.8 (1–33)	13.6 (1–33)	10.4 (3–17)

TABLE 2 Healthcare professionals' perceptions of digital health competence (an overview of sub-categories, categories and main categories identified during content analysis)

Main category (n = 6)	Category (n = 20)	Sub-category (n = 62)
Professionals need to be able to provide patient-centric care through digital channels	Incorporate the patient's needs	Evaluating what is best for the patient Setting goals together with the patient Evaluating what can be done through digital channels Everything cannot be in a digitized form Giving responsibility to the patient
	Evaluate the patient's digital capabilities	Evaluating patients' potential digital readiness Evaluating patients' age-related digital skills
	Acknowledge the patient's willingness to use digital health services	Patients have varying willingness Willingness determines competence
	Evaluate how to provide equal services for patients	Evaluating that patients receive the same quality service Evaluating the patients' digital competence to ensure equality of optimal care
Professionals need competence in using information technology and digital health systems	Adequate ICT ^a and digital technology competence	Competence in using ICT Competence in using the computer Competence in using digital equipment Competence in using digital programmes
	Design of the digital health systems	Digital health services need to be simple Digital health services need to be easy to use
	Solving technical problems	Know-how to reach out for IT support Competence to solve technical problems
Professionals need competence in interacting with the patient through digital means	Patient counselling in digital environments	Guiding the patient to use different digital health solutions Guiding the patient to find reliable and appropriate information Lack of organizational preparedness to implement digital guidelines Patient counselling through digital means can be challenging Patient counselling competence Guiding the patient verbally
		Using video channels in interaction Not being able to communicate by using video
		Interaction through digital means needs to be reciprocal Interaction through digital means requires experience Competence to face the patient in a humane way Lack of human contact or connection in digital health Digital health services change interaction
		Motivating the patient Connecting with the patient Using interaction skills Communicating by the rules
	Competence in communication	Assessing the patient's skills in retrieving written information Documentation competence
	Competence in writing	

TABLE 2 (Continued)

Main category (n = 6)	Category (n = 20)	Sub-category (n = 62)
Professionals need competence to evaluate what digital health is	Exploring how to use digital solutions in patient care	Using technical solutions in patient care Using the information provided by digital health services Marketing digital health in patient care
	Examining the digital health possibilities	Understanding the contents of digital health services Staying up to date with the digital changes Observing digital health critically
	Exploring digital health creatively	Thinking about digital health from a creative perspective Circumstances define how digital health can be used Using digital health boldly
Professionals need competence to combine digital means and traditional methods	Competence in finding information	Exploring the information Knowing what to search for Having media literacy
	Evaluating the patient's situation through digital means	Strong professional competence Conducting a patient care assessment Relying on the information that a patient provides
	Perceptions of increased digital health services in daily work	Digital health supports the professional's work Digital health provides service options Digital health is a natural part of work
Professionals' ability to evaluate their own digital health competence	Own digital health competence is sufficient	Basic competence to use digital health services and tools Being confident in own digital health competence Being familiar with digital health increases competence
	Own digital health competence requires improvement	Lacking digital health competence There is room for competence improvement Insecurity in own digital competence

^aInformation and Communication Technology.

Using digital health services in patient care was also perceived to increase a patient's participation in care and rehabilitation processes, which reflects a professional's competence to give responsibility to patients and set goals together with them. The professionals perceived that digital health is beneficial for this division of responsibility and enables the provision of more intensive care for those with specific needs.

... and it is nowadays easier to transfer the responsibility more to the patients. I mean in a good sense, to justify their own part.

Registered Nurse, 49

I think that this eHealth, hopefully, will create a situation in which we give responsibility to the patients and they will take it, that's the real.... This way we can devote our time to those who can't be responsible for themselves. That's something I hope for the future.

Occupational therapist, 48

In terms of how digital health services should be tailored to a patient's specific needs, the professionals reflected about how the equality of services needs to be evaluated to assure ethical and high-quality care.

If one thinks about these ethical [aspects], then of course there is the question whether we can simply offer the same level or quality therapy or service. Is it good enough then?

Physiotherapist, 47

I think the target group should also be evaluated from the ethical aspect, not everyone can be obliged to learn new tools and... certainly not everyone is willing to do that.

Registered Nurse, 27

These excerpts demonstrate how the respondents viewed service equality from the quality perspective, with some participants expressing that it is plausible that digital health services will be developed

further than traditional methods, which will cause problems as not everyone can be obliged to use digital services.

4.2 | Professionals need competence in using information technology and digital health systems

The interviewed HCPs perceived that using information technology and different digital health systems requires versatile competence, for example experience in using various ICT tools and problem-solving when faced by technical problems. Additionally, the respondents noted that a system's simplicity and ease of use affect HCPs' ability to use the systems. According to the professionals, one needs to have mastered basic computer skills, as well as the ability to use smartphones, tablets and headsets, to be competent in providing digital health services. This is because digital health solutions are offered through various equipment and applications. The participants mentioned the following programmes as a critical part of digital health competence: electronic health record (EHR) systems; electronic appointment systems; Microsoft Excel; and programmes for creating individual rehabilitation or exercise instructions. The quotation below demonstrates how the current digital health services should not require special skills, but rather basic computer competence:

Probably the easiest is to think about the technical competence. In my opinion, the current health care services that are offered to the patients ... as a professional my experience is that rather basic skills are enough.

Occupational therapist, 43

Therefore, digital health systems were perceived to be simple and easy, while the respondents perceived that programmes and applications are usually designed to be simple for HCPs to use. The participants perceived that a digital health system must be simple and well-functioning, as HCPs will otherwise not use the system:

But of course, they are not so complicated. They must be made as simple so that people can use them. If they would be complicated, the services wouldn't be bought.

Registered Nurse, 53

Nevertheless, although a service might be simple and easy to use, a HCP may sometimes have to troubleshoot to solve technical issues, which requires certain IT competence:

A couple of times it has happened that the connection didn't work, so... And then the employees don't necessarily know how to open the connection again or contact anyone who could open it. That is a tricky thing.

Physiotherapist, 55

Thus, the participating HCPs perceived that using IT and digital health systems is generally easy, but may require certain technical skills, such as solving sudden technical problems and reaching out to specialized IT personnel for support.

4.3 | Professionals need competence in interacting with the patient through digital means

The participants perceived that HCPs must pay special attention to interaction skills when using digital health services. This is because the participating HCPs reported that their interaction with a patient is different when using digital channels. Hence, HCPs who provide digital health services need skills in communicating with the patient, writing messages in digital environments and using video channels to interact. Additionally, the respondents reported that HCPs need specific competence to counsel patients in digital environments, that is the professional should be able to interact with the patient in a humane way when providing counselling in a digital environment. However, this may be a challenge as the respondents also perceived that digital health services lack human contact and connection, as shown in the following quotations:

And then if one thinks about some distance equipment or such, that all procedures would be transferred to a video transmission that would replace physical contact and some sort of proximity. So there is also an ethical question about whether it is ethically correct to transfer everything online.

Registered Nurse, 27

You don't have the same connection with the patient, therapist or doctor.

Physiotherapist, 33

Maintaining the reciprocity of the HCP–patient interaction was viewed as an aspect of digital health competence. Moreover, the interviewees perceived that digital health services are changing the foundations of interaction, as the digital environment is completely different from face-to-face interaction. This was expressed by one of the interviewees as follows:

Well one needs those interaction skills, guiding patients through digital services is, after all, very different from face-to-face guidance, as one ought to have some sort of understanding for how to communicate the fact that they are a professional, and the ability to stay in the professional role.

Occupational therapist, 43

Consequently, the professionals perceived that HCPs should be competent at acknowledging the rules of communication when interaction happens in a digital environment. As interaction through

digital channels was perceived to be somewhat challenging, the professionals felt that skills in connecting with the patient by building a trusting relationship, supporting patients and encountering the patient were essential aspects of digital health competence. Motivating the patient was an additional aspect of interaction competence which was evident, for example, in using information from Health Village (an open website which provides reliable health information) to encourage and support the patient to make independent decisions on health-related issues:

... if the patient hasn't previously exercised at all, the professional should have the competence to motivate the patient, for example, by showing contents from Health Village to encourage the patient to start exercising.

Physiotherapist, 34

This includes communication and informing patients about the digital health possibilities, including professional support in accessing services. For example, a professional can give the patient a Health Village business card and explain how the service can benefit the patient.

Physiotherapist, 33

Hence, different skills related to patient counselling in digital environments were perceived to be a part of digital health competence. Notably, the professionals should be able to guide patients to find suitable and reliable information, assess patients' skills in retrieving written information and instruct patients in how to use different digital health solutions. This guidance may involve showing the patient how certain equipment or applications function, finding appropriate applications and services, or assisting the patient with various IT issues. The various digital health options were perceived positively, and experienced to support healthcare professionals' guidance, as one of the interviewees explained:

It is actually good to have options to be used in guidance so the professional can give more information and tips about what the possibilities are, what the patient can do on their own, where to go obtain information and then on how to use self-care support applications...

Registered Nurse, 49

The respondents perceived that verbal guidance and communicating through writing were specific skills that HCPs need to have in order to interact with patients via digital channels. In both cases, the professional needs skills to articulate things clearly and efficiently. Competence in verbal guidance includes the skill to speak calmly, which is emphasized when there is no possibility to physically touch the patient, as noted by one of the interviewees:

It is evident that oral and verbal guidance are enhanced because you cannot go physically touch the patient to guide them 'well you should feel this in here' and so on, so I think the importance of verbal guidance is emphasised.

Physiotherapist, 30

Additionally, HCPs who are competent at patient counselling should be effective during the counselling process, and the participating professionals perceived that previous experience was beneficial to competence development. Some of the interviewees reflected that—due to organizational reasons—they still had unclear instructions on how to conduct patient guidance in digital environments. Therefore, the responses reflected that HCPs continue to perceive digital patient guidance as challenging. Aspects such as poor internet connection, external disturbances and the inability to effectively use body language were perceived as barriers to patient guidance:

Well of course, if one thinks about the chat service, I think it is kind of strange that when using it, you cannot use body language at all. That it is not there, and it cannot be interpreted.

Registered Nurse, 57

The HCPs agreed that seeing a patient through a video connection helps the professional gain a better perception of the patient's situation, as well as improves the human nature of interaction. However, this also requires that the HCP is able to use the camera and sound to gain all of the benefits of the video connection:

... and you must know how to set the camera if you have to, for example, show things with your foot so that the patient can see. Also, you need to know how to explain the patients to position themselves in front of the camera so that the physiotherapist can see what is happening.

Physiotherapist, 30

Therefore, interaction through digital means was perceived to require new competences, while video connection was perceived as an important tool in assisting patient-professional communication.

4.4 | Professionals need competence to evaluate what digital health is

According to the respondents, understanding digital health and the possibilities it provides is a part of digital health competence. HCPs need to be able to explore how digital solutions can be

integrated into patient care, as well as creatively examine all of the digital health possibilities. The professionals also reported that they need to be knowledgeable about the contents of different digital health services and stay up to date about which digital health solutions are available and which are currently in use. A professional's knowledge of different digital health possibilities was also considered to increase trust between the patient and the professional:

Well, I think it demands a certain kind of familiarity about what services can be offered to the patients. And that of course increases the expertise and trust towards the nursing staff, especially if they demonstrate their own competence and knowledge about the tools.

Registered Nurse, 27

Moreover, the participants acknowledged that digital health should be observed critically and that HCPs should be adept at evaluating which purpose(s) digital health services are used for. Therefore, HCPs should be competent at exploring how to use digital solutions in patient care based on an understanding of how to use information from the systems, learning to use digital services quickly and determining which situations a certain programme is appropriate for. Furthermore, the professional should understand the technical possibilities of the programme, as well as which applications work with different equipment. In this way, HCPs who are knowledgeable about digital health systems will be competent at marketing and promoting digital health to patients:

... us nurses should more actively market these solutions to the patients and remind them that there is that device, go try it and give us feedback.

Registered Nurse, 53

The professionals reflected on how the use of digital health has prepared them for unexpected challenges during patient encounters in digital environments. Hence, HCPs should also be competent at exploring digital health creatively, as situation-specific circumstances might not support the original plan for care provision or rehabilitation:

I was forced to give up on some, one could say therapeutic goals... [...] You cannot demand the same things... In a way the guidance and teaching are completely different. You must adjust your own actions and adapt to the situation. [...] You just have to start doing, see how it goes and try to find the suitable methods and techniques for the patient encounter.

Physiotherapist, 47

HCPs need to identify new methods of instructing if the initial techniques are not working or if the patient does not have the

necessary tools. Thus, HCPs need the skills of adaptation, creativity and courage to effectively use digital services during care provision and patient guidance. It should be noted that the current pandemic situation affected the professionals' views on how creativity was important to rehabilitation.

4.5 | Professionals need competence to combine digital means and traditional methods

The participants also addressed the combination of traditional methods (i.e. face-to-face meetings with patients) and digital means as an aspect of digital health competence. The professionals perceived that digital health provides service options which support their work. The following quotations demonstrate HCPs' perceptions of how common digital health services already are and how professionals can benefit from digital health:

... you use it every day and it's getting more and more common, an everyday thing, it's like you don't think about it, you use it and it's a, I don't know...

Assistant nurse, 36

Well, my experience is that they [digital equipment] are already used in that way [support professional's competence]. If one thinks about it, doctors use internet all the time, they have computers and different measuring instruments are used. [...] So they [digital equipment] are definitely also part of nursing or whatever one can think of, supporting patient care.

Registered Nurse, 27

Digital health was perceived to support traditional methods by providing different options for how patient care or rehabilitation can be organized. The idea of combining digital health and traditional methods as a hybrid option was regarded as an especially positive change:

It could also be done as a hybrid form. You can take two, three distance visits and then the patient is asked to come for a physical visit. [...] I think that it [digital health] is going to be one service option.

Physiotherapist, 47

The respondents perceived that using digital health requires competence in finding the correct information, as well as media literacy so that the HCP can critically evaluate the available information. The following quotation is related to how HCPs need to critically evaluate the benefits of using a specific digital health service:

Of course, there is also the aspect that if one is part of selecting a specific service, for example, home care, that there needs to be a critical evaluation of what

services can be used and what their individual worth is. One should have critical literacy in that, and the attitude to not directly jump into it like 'yeah, this is a good thing'. We must assess the benefits and disadvantages and stuff like that.

Registered Nurse, 28

Professionals working in rehabilitation considered evaluating the patient's situation through digital means to be challenging in their work context. The respondents stated that conducting a patient assessment through digital means can be challenging because it often includes touching the patient. The participating HCPs perceived that these types of challenges require new competences:

How can one examine the patient without touching them? One cannot palpate the patient so the assessment requires a whole new mindset compared to a normal situation.

Physiotherapist, 30

The respondents perceived that they should possess certain competences related to assessing the information patients provide through digital means. This was an important aspect, as the HCPs discussed how they have to rely on information which may be subjective, as it is largely based on the patient's own evaluation. The interviewees reflected on how the professional needs to be more sensitive to patients' self-reported information, with one of the interviewees explaining:

One must have a more sensitive ear, that's what I think. And the competence to tackle the small matters that the professional hears because these might underlie the bigger issue.

Occupational therapist, 43

Strong professional skills in one's own professional field were viewed to be equally important when the HCP used digital health services or traditional methods. Even when working in digital environments, HCPs should be able to take on the expert role, that is the professional who has clinical knowledge of the subject matter.

4.6 | Professionals' ability to evaluate their own digital health competence

The interviewed HCPs also reflected on how they perceive their own digital health competence. These views of digital health competence were divided, as some participants perceived that they had sufficient digital health competence, while others stressed that they should improve their digital health competence. Those who reported sufficient digital health competence perceived that they either possess the necessary basic competence to use digital health or that they are confident in their use of digital health services. Most of the

respondents perceived that their previous experience of using these services increase their digital health competence and enhances the perception that their own skills are sufficient. The participants noted that using different digital solutions and equipment made it easy to learn new aspects of digital health. This was explained by one of the interviewees:

I have such a long experience that I believe I can go quite far just by reading the instructions. But then again, so it... Of course, it depends on what it is, what aspects does it have, but I generally believe that I can handle it... As I said, this depends on what it is.

Registered Nurse, 57

Nevertheless, some of the participants reported that their competence in digital health is currently lacking, they have insecurities about their competence and/or their competence needs further development. Even though most of the participants reported sufficient digital health competence, some participants identified specific areas that need improvement, as mentioned in the extracts below:

My skills in guiding the patient in digital environments are probably quite good, but maybe I should consider these approaches from an even broader perspective and be bolder in using them.

Occupational therapist, 43

Some programmes are a bit challenging, there are so many sections to fill to get into the programme, so with that I sometimes need help.

Physiotherapist, 55

The participants' insecurities of their digital health competence most often concerned lacking technical competence, the use of specific programmes or equipment, and difficulties in evaluating their own competence due to minimal experience in using digital health solutions.

5 | DISCUSSION

The aim of this study was to describe HCPs' perceptions of digital health competence. The results indicate that HCPs perceive digital health as a multifaceted entity which requires diverse competences. These competences were related to providing patient-centric care through digital channels, using technology and digital health systems, interacting with the patient through digital means, evaluating what digital health is and combining digital means and traditional methods of care and rehabilitation. The participating professionals generally perceived that they possessed sufficient ICT competence, which is in line with what has been reported in previous research (Kujala et al., 2018). Familiarity, interest in new technologies and experiences of using different digital health systems were all perceived

to increase digital health competence, which has not been extensively acknowledged in previous research (Henneman et al., 2017; Konttila et al., 2018; Ross et al., 2016).

HCPs seemed to possess complex perceptions of how digital health affects patient care and, subsequently, the competence requirements of HCPs. Ambivalent perceptions of the effects of digital health have already been previously reported (Odendaal et al. 2020, Laukka et al., 2020). The interviewees had a positive outlook on digital health services, either as a whole or specific aspects of digital health, but also recognized the challenges associated with digitalization. These aspects were explored from the perspectives of how digital health should be incorporated into patient care and how digital solutions can be combined with traditional methods, which has not been evident in prior research. Moreover, HCPs perceived that both traditional patient care and approaches including digital solutions require the same clinical competences, which is in line with what has been reported in previous research (Purc-Stephenson & Thrasher, 2010). Concerns over access to devices or time use in direct patient care were not evident among the participants' responses, even though visible in prior research (Brown et al., 2020).

Digital health was perceived to fundamentally change interaction skills and the ways in which HCPs conduct patient assessments. The professionals reported that although digital health services may be highly beneficial for specific therapeutic methods or follow-up visits, some procedures and rehabilitation assessments cannot be conducted through digital means; therefore, digital health is most useful when combined with traditional methods. The lack of physical contact was perceived to be a major challenge of digital health services, as was the inability to be present during interactions with the patient. Hence, the participants' experiences indicated that the decision to use digital health services should depend on the patient's digital capabilities and willingness, since care provision needs to be patient-centric. As such, HCPs need to be competent at evaluating whether the patient benefits from digital health and whether the planned digital solutions support the patient's needs (de Veer et al., 2011).

The participants described how a patient's digital skills are affected by their age, which should be considered when evaluating a patient's digital capabilities. Based on their previous experiences, the participants had specific concerns about how "older" patients will manage if basic healthcare services are increasingly digitized, as well as how caring for non-digital native patients will affect their job performance and competence requirements. Previous literature also supports that older people might require traditional methods in tandem with digital health services (Zanaboni & Fagerlund, 2020). This concern follows the previously presented criticism towards increasingly digitized services, causing potential inequalities and division between generations (Lupton, 2014). Still, the notion that advanced age determines digital health capabilities was not unanimously agreed upon by the professionals, as certain participants felt that older patients can be just as adept as younger patients in using different digital technologies.

The critical evaluation and utilization of information provided by digital technologies has been defined as a part of digital competence (European Commission, 2016). The respondents covered this issue by describing how professionals need to evaluate the contents of services to determine whether the solutions only benefit the companies they have been developed by. The aspect of effectiveness was also discussed. However, previous research has concluded that digital health can provide significant benefits on the individual, organizational and societal levels (Keasberry et al., 2017; Sittig & Singh, 2010). Additionally, the presented results indicate that HCPs should be competent at exploring all the available digital health possibilities, yet the participant responses revealed that many HCPs only have limited experiences of all the digital health possibilities that are available for their day-to-day work. Therefore, in reflection on five sets of competencies (Cheetham & Chivers, 1998), further investment should be imposed on the improvement of cognitive and functional aspects of HCPs' digital health competencies. The ethical aspect of competence was included in HCPs' perceptions from the perspective of service equality. Correspondingly, it has been shown that HCPs do not take full advantage of digital health possibilities in their work (Henneman et al., 2017) and for example nurses have been previously categorized as being either integrated or non-integrated according to how much emphasis they put on ICT in their work (Lupiáñez-Villanueva et al., 2011). Additionally, experience has been recognized to influence the implementation of digital health (Ross et al., 2016). Therefore, digital health services should be implemented in a more systematic way to assist HCPs identify which aspects of digital health are most relevant for their position.

As the data were gathered at two different time points (spring 2019 and spring-summer 2020), the effects of the global pandemic in relation to the Finnish professionals' answers should be discussed. The results indicate that Finnish HCPs—as a result of COVID-19—had the opportunity, or requirement, to transfer some functions of their daily work into a digital form. As such, their perceptions of digital health were positively affected by the unexpected turn of events associated with the pandemic. Hence, at least some differences in perceptions of digital health competence between the Finnish and Swedish respondents derive from the sudden increase of digital health possibilities and experiences. Nevertheless, the changes in work practices associated with this "digital leap" were described both positively and negatively by the participants, and for some Finnish participants, the pandemic had no effects on their working methods.

5.1 | Limitations

The trustworthiness of research can be assessed by evaluating credibility, dependability, transferability and authenticity (Elo et al., 2014). The respondents were gathered by using purposive and convenience sampling methods. When a sampling method is used to approach willing respondents in a specific population, participants with a positive outlook on the research subject might be more willing to join the

study, leading to possible participant bias. However, the sample was appropriate, as it comprised individuals with the best knowledge on the subject matter (Elo et al., 2014) and the target population was chosen according to the research objectives (Emanuel et al., 2000), that is all of the respondents had recent experiences of working in health care and possessed at least some experience in using digital health services. The interviews with Swedish participants—which were not conducted in the HCPs' native tongue—introduced potential bias into the research (van Nes et al., 2010). However, the influence of the language barrier was minimized by considering the participants' answers in the interview context. Nevertheless, the uneven sample from the countries (5 vs. 15) can present potential bias to the results, especially since the larger Finnish sample was collected after the COVID-19 outburst.

Due to the global COVID-19 pandemic in spring 2020, the plan to recruit study participants from Finnish public healthcare services had to be changed, which may have affected the trustworthiness of the results as some of the participants were still completing their higher education at the time of the interviews. The research setting and respondents were described as thoroughly as possible to increase the transferability of the study (Polit & Beck, 2017). Additionally, variability in the data complicated the construction of meaningful categories even though the unit of analysis was kept rather broad (Kynäs et al., 2020; Robinson, 2014). To enhance trustworthiness, the analytical process and results were discussed among the research group members, which included experienced professionals.

6 | CONCLUSION

According to the HCPs' perceptions, digital health competence should be focussed on ensuring the provision of patient-centric care through digital channels, using digital technologies and health systems, interacting with the patient through digital means, evaluating what digital health entails, combining digital approaches with traditional methods and evaluating professional competence. The results of this study highlight how HCPs perceive that digital health services must be critically evaluated and implemented based on patient needs. As health care entails methods and procedures which cannot be completely digitized, competence in digital health requires especially the skill to combine digital tools with traditional methods, such as using new hybrid solutions in health care. Some HCPs still report limited digital health experience and, thus, an insufficient understanding of all the digital health possibilities. More emphasis should be appointed on exposing HCPs to various digital health possibilities to increase familiarity, interest and user experience, which are perceived to increase digital health competence. Further studies should be designed to identify which aspects affect an individual's knowledge of digital health, along with the workplace practicalities involved in digital health use. Additionally, more information is needed on the aspects that enhance HCPs' digital health competence development. The presented results are relevant to clinical practice and education that aims to assist digital health adoption

by providing an understanding of how HCPs perceive digital health competence to influence the provision of patient-centred care. The results can be further used in instrument development and building an evidence-based theoretical model by defining HCPs digital health competence. The model could be implemented into continuous education of HCPs in various healthcare settings.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

EJ, AO, JA, AMT, MK, MM and KM made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; involved in drafting the manuscript or revising it critically for important intellectual content; given final approval of the version to be published and should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author (EJ). The data are not publicly available due to privacy or ethical restrictions.

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