



Research article

The influence of digital learning on health sciences students' competence development– A qualitative study

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ABSTRACT

Background: Health care experts need high levels of competence, yet there is little evidence on the influence of digital learning on health science students' competence development.

Objectives: This study aims to describe health sciences students' experiences of the development of their competence and the influences of digital learning upon their competence.

Design: A qualitative descriptive research.

Participants: A total of 15 health sciences students were interviewed.

Methods: The data was collected by using individual semi-structured interviews during the spring of 2021. The data was analyzed using content analysis.

Results: The health sciences students felt that their expertise encompasses motivation for future career development, understanding the social and professional influences on their career development, versatile expertise in various aspects of health sciences, and developing competence in different learning environments. The students recognized that digital learning requires the active participation, digitalization is a part of a successful learning environment, and digital learning challenges social interactions. The students' digital learning facilitated competence development, which broadened their understanding of the skills relevant to health sciences; however, these benefits could only be obtained when including adequate support.

Conclusions: The results hold social value for the development of health sciences education as policy-makers can use the presented information to develop high-quality, digital learning procedures.

1. Introduction

Identifying sustainable solutions to public health challenges will only be possible if professionals in this field show high levels of competence. There is already an immense burden on public social and health care systems. The global health care workforce will have a shortage of 12.9 million skilled workers by 2035 (WHO, 2014). Health sciences education provides students with the prerequisite skills to take up expert positions and apply evidence-based practices in health care. It is critical to ensure that the available education is sufficiently designed to meet the needs of society.

Health sciences education, Bachelor's, Master's and Doctoral studies (Keystone masterstudies, 2021), builds a wide range of health-related expertise so that students can take on different roles in the health

sector (The Council of the European Union, 2018). A Bachelor's degree represents level six of the eight-level EQF, which outlines the competence level requirements for a certain type of education (EU, 2017). Generally, the term competence is defined as a combination of knowledge, skills, and attitudes, and is understood as a holistic concept for the development of a certain level of expertise (Gonczi, 2013). This study focuses on Bachelor of health sciences students who have completed their studies remotely in a newly developed degree programme.

Higher education has been designed to develop students' competencies by offering e.g., advanced knowledge of a specific field, critical understanding of scientific theories, advanced practical and cognitive skills, decision-making and communication skills, cultural and ethical nous, and responsibility in managing individuals or groups (EU, 2017). Evidence-based practice is essential to health sciences competence; this

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type of practice involves understanding evidence, the ability to critically appraise research, applying evidence in practice, and evaluating practices to ensure quality of care (Albarqouni et al., 2018). The JBI Model for Evidence-Based Healthcare clarifies that this practice includes evidence generation, synthesis, transfer, and implementation (Jordan et al., 2019). WHO (2016) has highlighted patient-centeredness and effective practices as core competencies in health care. In addition, graduates should be able to collaborate in interprofessional teams (Nummela et al., 2019), be skilled at applying digital solutions in health care (Konttila et al., 2019), and consider cultural issues (Cai, 2016). Leadership skills are also needed to provide well-coordinated and safe care (Sfantou et al., 2017).

Efficient and well-designed education is pivotal to building competence among health care experts. In EU, the Digital Education Action plan (2020) states that the use of efficient, sustainable digital methods are part of a flexible education system. Furthermore, digital competence – which encompasses understanding how digital technologies support communication and innovation, managing digital devices, and assessing digital information – has been identified as a key skill in continuous learning (The Council of the European Union, 2018).

Any changes to the current health sciences education programme must be based on a comprehensive understanding of the links between competence and digital learning. Digital learning involves utilizing information and communication technologies (ICT) in learning. Educators play a vital role in digital learning through their guidance of students. (Kumar Basak et al., 2018.) Digitalization has enabled students to actively participate, learn, and collaborate irrespective of time and place (Männistö et al., 2020). Flexible student-centered digital methods can support students' metacognition (McGarry et al., 2015), while digital environments promote collaborative learning to increase deeper understanding and interaction (Järvelä and Hadwin, 2013). Sormunen et al. (2020) previously stated that digital learning has increased students' motivation, saved resources and broadened learning environments. Digital platforms are already widely used, and emergent technologies will further improve learning analytics to support students and educators (OECD, 2020b). In our study, digital learning is understood to include also distance learning, where the students and educators learn in different places synchronously or asynchronously utilizing ICT.

The digitalization of education faces certain challenges, such as technical obstacles and the educators' and students' abilities to use ICT (OECD, 2020b; Sormunen et al., 2020). Globally, the availability of devices, speed and stability of an internet connection (Sormunen et al., 2020), and adequate security should be considered (OECD, 2020b). Using videoconferencing has led to motivational problems because the nature of common interactions has changed (Langegård et al., 2021). Deciphering nonverbal interaction, which occurs rather easily in face-to-face interaction increases cognitive load (Bailenson, 2021). These challenges highlight that the development of digital learning and education requires resources and investment (EU, 2020; Männistö et al., 2020; Sormunen et al., 2020). Furthermore, the success of collaborative tasks in digital environments requires that users understand socioemotional processes as well as self-, co-, and shared regulation in the learning (Järvelä and Hadwin, 2013).

Health sciences students' experiences of digital learning have been previously investigated. Prior studies have never specifically concerned Bachelor's degree health sciences students. Our understanding of the relationship between competence development and digital learning is limited. In order to fill this gap, we aimed to describe health sciences students' experiences of the development of their competence and the influences of digital learning upon their competence. This type of information is important to developing health sciences curricula and digital learning opportunities through student-led procedures to ensure highly competent expertise.

The research questions were:

1. What kinds of experiences do health sciences students have regarding their competence development?
2. What kinds of experiences do health sciences students have of digital learning during their health sciences education?
3. How does digital learning influence health sciences students' competence development?

2. Materials and methods

2.1. Study design

The present research adopted a qualitative approach, including inductive content analysis, to provide meaningful descriptions of the health sciences students' experiences of the studied phenomenon. Inductive content analysis is a suitable method because the studied phenomenon has not been comprehensively examined earlier (Kyngäs, 2020).

2.2. Participants

A total of 15 health sciences (major in nursing science) students enrolled at University in North Europe were involved in the study. Students were recruited by purposive sampling from entirely remote learning program. The inclusion criteria for participation in the study were: i) currently in the first year of health sciences studies; and ii) participation in a voluntary interview. The participating students had an average age of 23 years (19–40, all female). Their educational backgrounds are described in Table 1. Each student gave their written consent about participation.

2.3. Data collection

The data were collected in Teams (Microsoft Corporation, Redmond, WA) during spring 2021 by two researchers (S.P-S, R.K) through semi-structured, individually conducted thematic interviews that were used to gather deep experiences from the students (Tong et al., 2012). The interview themes were set according to the research questions: 1) the development of competence in health sciences; 2) digital learning; and 3) how does digital learning influence health sciences competence development (Table 2). The results of the first pilot interview were included in the total data analysis since no major changes were made. The interviews had an average duration of around 60 min (42–89 min). The researchers were research group from the same university who didn't know the participants, but had understanding about health sciences. The researchers used videorecording feature in Teams after which the content was anonymized. Data saturation, the point at which no new topics were raised, was achieved after interviewing the 15 participants.

2.4. Data analysis

The collected data were analyzed through inductive content analysis

Table 1
Backgrounds of the participants.

Background	Participants (n = 15)	Participants (%)
Gender	Female	15
	Male	0
Education	General upper secondary degree	9
	Vocational education	1
	Degree from university of applied sciences	2
	Dual degree (both upper secondary degree and vocational degree)	2
	University degree	1
Social and health care education	3	
		100
		0
		60
		6.7
		13.3
		13.3
		6.7
		20

Table 2
Themes and questions of the interviews.

Theme: Health science competence development	
1.	Why have you applied to study health sciences?
2.	From your experience, how do you understand what kind of health sciences' competence areas (including knowledge, skills, attitudes and responsibilities) define health science expertise?
3.	From your experience, what kind of studies support the development of health sciences competence in your degree programme?
4.	How else can you develop your skills, which you will need as a health sciences expert in the future?
5.	What kind of challenges are related to the development of competence in health sciences?
6.	What kind of competence do you want to have after graduation? Why?
7.	What kind of problems do you encounter in working life and how can you prepare for them in your studies?
8.	How do you plan to develop your expertise in health sciences after graduation in order to meet the challenges of the future?
9.	Would you like to share more on the topic?
Theme: Digital learning and its association with competence development	
1.	What kind of experiences do you have about digital learning in health sciences education?
2.	What kind of digital teaching methods have been used in your education? What kind of experience did you get from those?
3.	How does digital learning promote the development of your competence?
4.	What kind of challenges does digital learning bring in developing your competence?
5.	How did you experience the interaction in digital learning?
6.	How do you experience digital learning influence upon the development of your competence in health sciences?
7.	What different digital methods would you like to have to increase your competence?
8.	Would you like to share more on the topic?

(Kyngäs, 2020) to provide a deep understanding of health sciences students' experiences with the studied topics. First, one researcher (S.P-S) listened to the video-recorded interviews for several times, made notes and transcribed all the interviews into a Word document. The researcher searched the data for answers to the research question. A single concept or sentence was chosen as the meaning unit. After searching for the original expressions, the researcher coded (simplified) the expressions, grouped the codes of the same meaning and named them with a term describing the category. The categories were combined into new categories, constantly ensuring that they corresponded to the research question. This was continued until new categories couldn't be formed. The researcher (S.P-S) did the analysis separately for all three of the research questions. The findings were discussed with the other researchers (R.K, K.M). Regarding the development of competence in health sciences, 553 codes were grouped into 93 subcategories, 15 categories and four main categories. Regarding the digital learning, the 352 identified codes were grouped into 50 subcategories, nine categories and three main categories. A total of 136 codes were related to how digital learning affects competence development, were grouped into 28 subcategories, eight categories, and two main categories.

2.5. Trustworthiness

Conducting qualitative research, assessing the credibility, dependability and confirmability of the data is essential (Kyngäs et al., 2020). Credibility was ensured by truthful reporting of students' experiences and dependability by using the same questions in all interviews. Confirmability was enhanced to keep the objectivity in questions, avoiding que the question setting, keeping students anonymous in analysing the data, reading transcripts multiple times, categorising data on identified themes and discussing the results with other researchers involved in the study. To ensure the quality of the reporting SRQR checklist (O'Brien et al., 2014) was used.

2.6. Ethical considerations

The Dean of the University of Oulu approved conducting of the research study. Ethical approval was not needed because all of the participants were over 18 years of age, and no sensitive data were gathered (Medical Research Act 488/1999). The research was conducted in accordance with the rules of good research ethics (Declaration of Helsinki, 2013). Students were informed about the study, voluntariness, withdrawing and using the data. The data were stored in line with GPDR (European Parliament, 2016).

3. Results

3.1. Health sciences students' competence development

Health sciences students' competence development was explained by four main categories; 1) Personal drive in future career development; 2) Social and professional influence on career development; 3) Versatile expertise aimed at developing health sciences expertise; 4) Development of health sciences competence in versatile learning environments (Table 3).

3.2. Personal drive in future career development

The development of health sciences competence included a personal drive in future career development that included interest in the field, motivation to study health sciences, desire to develop expertise, and continuous learning as parts of this growth process. The participating students expressed an interest in the field, i.e. healthcare organizations. "Well, the main reason is that I'm a practical nurse from my previous education, and in working life [I have] an increased desire to understand why this thing works the way it does ... Why this organization works the way it does." (P4). Students reported intrinsic motivation towards topics related to human beings, and regarding developing expertise, willingness to promote health and gain broad expertise. Students felt continuous learning is an extension of their study career; however, found it challenging to create a career plan with uncertainty about the field and future work as a health care expert.

3.3. Social and professional influence on career development

The social and professional influences on career development were divided into the influence of social factors on self-development and professional influence on the continuous competence development. The students felt that health sciences graduates need to show resilience and

Table 3
Health sciences students' experiences of their competence development.

Main category	Category
Personal drive in future career development	Interest in the field
	Motivation to study health sciences
	The desire to develop health sciences expertise
Social and professional influence on career development	Continuous learning in the process to become an expert
	Social influence on self-development
Versatile expertise aimed at developing health sciences expertise	Professional influence on the continuous development of competence
	Management of current scientific knowledge
	Theoretical knowledge of health sciences
	Critical thinking skills
	Communication and interaction skills
Development of health sciences competence in versatile learning environments	Leadership and management skills
	Ethical skills
	Studies support competence development
	Different methods of teaching
	The organization of teaching

broad expertise to deal with continuous changes in society. Regarding professional influence and working life, the students shared that a lack of experience in the health care sector is a challenge to competence. *“Well [...] I have never been working in health care to get a concrete impression of what kind of problems they may face.”* (P10). Nevertheless, the participants believed that a Bachelor's degree would improve their chances of employment.

3.4. Versatile expertise aimed at developing competence

The students shared that versatile expertise aimed at developing competence includes management of current scientific knowledge, theoretical knowledge of health sciences, critical thinking skills, communication and interaction skills, leadership and management skills, and ethical skills. The participants reported that the management of current scientific knowledge comprises understanding and utilizing relevant information. Theoretical knowledge of health sciences included broad health-related issues.

In terms of critical thinking skills, the students mentioned developing their problem-solving and reflective thinking abilities. Students considered the ability to communicate and interact, including also digital skills. *“I would like to participate in digitalization and fortunately I have been able to develop it [...] that (digital skills) is what I want to develop and have after graduation.”* (P5). Leadership and management skills included the ability to facilitate change and guide a team. Understanding the financial aspects of health care processes and having knowledge of legislation were also perceived to be important. In addition, ethical skills – including the knowledge of different religions, awareness of cultural differences, and research ethics – were reported to be essential.

3.5. Development of health sciences competence in versatile learning environments

Development of health sciences competence in versatile learning environments included the support of the studies in competence development, different teaching methods, and the organization of teaching. The students felt that studies supported their competence development by fostering theoretical knowledge and understanding of social and health care systems, and clarifying how digitalization will influence health sciences. Studies that are linked in working life were perceived to support competence development. *“Studies should at least partly be related to working life and the problems that come from there, so it would be good, especially because I have never worked in the health care sector or in any work like that and have no such experience.”* (P10). Regarding teaching methods, interactive, independent, and collaborative methods were all perceived to support learning. The participants shared that they applied the knowledge gained from their studies to build competence. Although they felt that distance learning provided flexibility, they also expressed a desire for face-to-face teaching. *“That perhaps a hybrid model would be the best way to learn, to have both face-to-face and distance learning [...] you can go to face-to-face teaching and have social contacts and learn interaction in a different way than in distance [learning].”* (P3). Regarding the organization of teaching, the students felt that the combination of various methods yields the best results. They felt that both feedback from the educator and live virtual discussions promote interaction, but these activities are difficult to manage in digital environments.

3.6. Health sciences students' experiences of digital learning

Health sciences students' experiences of digital learning were explained by three main categories; 1) Student's active role in digital learning; 2) Digitalization is part of building a successful learning environment; 3) Social interaction is present in digital learning (Table 4).

Table 4
Health sciences students' experiences of digital learning.

Main category	Category
Student's active role in digital learning	Personal factors related to digital learning Emotions related to digital learning Learning progresses at an individual rhythm
Digitalization is part of building a successful learning environment	Arranging the digital teaching Teaching methods in digital learning Technology as an enabler of learning
Social interaction is present in digital learning	Interaction in digital learning Collaboration in digital learning An educator's support promotes digital learning

3.6.1. Student's active role in digital learning

The participants felt that student have an active role in digital learning, which includes personal factors related to digital learning, emotions related to digital learning, and the progression of learning at an individual rhythm. The students felt that distance learning requires self-initiative. Preconceptions about digital learning have turned positive. Distance learning has caused students to have both positive feelings and strong negative emotions. *“I already felt in November-December that I couldn't stand this, because I was mostly sitting inside the four walls. Yes, it's enough for me and this is not nice at any level. It is more suffering than beneficial.”* (P13). When discussing the progression of learning at an individual rhythm, the participants felt that their studies have progressed still well.

3.6.2. Digitalization is part of building a successful learning environment

This category consisted of arranging the digital teaching, teaching methods in digital learning, and technology as an enabler of learning. A criticism of distance learning was that there is little teacher-led teaching or attempts to apply face-to-face teaching methods into distance learning. *“Maybe some educators are not able to teach [in the digital way]. They are used to being close to the students, like doing all the nice things in the classroom and now had to change everything in the remote [setting] that causes feelings of complexity in teaching.”* (P15). In terms of digital teaching methods, the students felt that the learning platform was clear, and that various digital methods motivate and support learning. The students expressed hope that educators would boldly try different digital methods. Technology as an enabler of learning mainly centered around the functionality of a network, which – at times – can also be a challenge. Furthermore, the students agreed that information technology is important to supporting learning.

3.6.3. Social interactions present in digital learning

This category, which concerned social interactions, included interaction in digital learning, collaboration in digital learning, and an educator's support for digital learning. The interaction on the e-learning platform was felt superficial, nevertheless, these interactions were more satisfying with an educator's support. The students felt that video-based conversations are more difficult to participate in than face-to-face conversations. *“I think the interaction is always much more rewarding when you're face-to-face and you will see the other person's gestures better, and probably hear better, so it is more one-sided via the Internet.”* (P1). However, students agreed that it is rather easy to participate in remote discussions. In addition, certain actions, such as turning on the camera or use digital channels, were reported to improve interaction. The students described collaborative methods as meaningful. Moreover, they shared that collaboration is fostered by a positive attitude and the commitment of each student. In terms of support from educators, the students felt that e-learning platform was effective, but expressed problems when

returning to it in e-learning platform. The students identified that educators' active role contributed to the interaction's success.

3.7. Students' experiences of how digital learning influences health sciences competence development

Students' experience with digital learning influences their competence development was explained by two main categories; 1) Development of broad knowledge and skills in health sciences; and 2) Adequate support in the digital learning environment (Table 5).

3.7.1. Development of broad knowledge and skills in health sciences

This main category involved technological and digital skills, building deeper knowledge, communication and interaction skills, co-operation skills, the ability to manage one's own activities, and adapting to change. The students felt that being exposed to digitalization develops the core working skills of health care experts, e.g., technological and digital skills that are important in patient guidance. "[...] Nowadays, technology is used in working life a lot. Patients will utilize it, for example, by checking some things at home, so it's important to use technology in health science [education]." (P1). Digital learning was perceived to negatively affect developing social skills, but positively affect co-operation skills. The students reported that during education virtual networking to working life/companies isn't that good than face-to-face. Students reported that adapting to continuous changes and digital methods takes time.

3.7.2. Adequate support in the digital learning environment

This category included educators' and peers' support for competence development and the importance of learning solutions in the development of competence. Although the students felt that the educators had been supportive during digital learning, they nevertheless reported that digital channels made it difficult to ask for help. "And that, if you feel that you don't find an answer to something or it is really challenging, it is not easy to ask for help. You need to take the effort to send an email, so it is more difficult." (P8). Moreover, the scarcity of feedback from educators, along with challenges in receiving assessments of their work, negatively affected learning. The students highlighted that various learning solutions, e.g., presentations, digital materials and other methods to support learning, are important to developing competence, provided that they do not lead to technological problems.

4. Discussion

This study aimed to describe health sciences students' experiences of the development of their competence and the influences of digital learning upon their competence. When asked about competence development, the students understood that this concept is important to their future career and showed motivation to develop their skills. They also understood the value of continuous learning and how to ensure lifelong learning, but experienced insecurity about the expertise. Motivation is

Table 5

Health sciences students' experiences of how digital learning influences competence development.

Main category	Category
Development of broad knowledge and skills in health sciences	Technological and digital skills
	Deeper knowledge
	Communication and interaction skills
	Co-operation skills
	The ability to manage one's own activities
Adequate support in the digital learning environment	Adapting to change
	Educators' and peers' support for competence development
	The importance of learning in supporting competence development

defined as a goal-directed process that drives individuals to act and develop; as such, it is intricately associated to learning and performance (Cook and Artino, 2016). In our study, the students expressed, that societal changes drive competence development and reported valuing working life networks. As such, they identified the lack of work experience as a challenge to competence development. An OECD (2020a) report on continuous learning highlights investments in training which is relevant to the current labor market.

Versatile expertise was identified among the students. The presented findings are similar to what has been reported in research about which health sciences competencies are needed in society. For example, researchers have stressed that the use of evidence-based practices are closely linked to the overall quality of care (Albarqouni et al., 2018; Jordan et al., 2019). Students reported interest in topics related to human beings. Understanding human-centeredness in service delivery is a prerequisite of effective services (WHO, 2016).

In developing health sciences digital education, it is essential to understand experiences about digital learning in addition to competences. The participants of this study highlighted the active role of students. Students felt that they need to show self-initiative in digital learning. Männistö et al. (2020) stated that digital learning environments motivate and increase students' self-direction and ability to solve problems. In addition, Sormunen et al. (2020) stated that digital learning affords students learning in an individual rhythm. The interview responses provided mixed responses: certain students felt digital learning to be inspiring, while other students perceived it to be stressful and superficial. Thus, the findings suggest that enhancing the teaching quality in digital learning environments will benefit students' competence development.

Students mentioned the organization of teaching and learning methods in accounts of digitalization as part of a successful learning environments. The students perceived that traditional face-to-face teaching methods are ineffective in distance learning. Special applications and solutions were perceived good, but could still not eliminate the need for face-to-face interactions. The design of a digital environment and the amount of feedback students receive both have significant impacts on the learning process (Männistö et al., 2020). The students felt that technology offers many possibilities for learning, but a stable internet connection was identified as a challenge. Moreover, students felt that technology should support teaching flexibility. Earlier studies have stated that digital methods save resources (Sormunen et al., 2020) but the internet connection and access devices (e.g. virtual reality) have proved to be a challenge (OECD, 2020b). There is evidence that active participation can be expected to improve group learning outcomes (Hadwin et al., 2018).

Students identified the importance of social interaction in digital learning and stated, that lack of interaction in the digital learning environment may have been detrimental to learning. Notably, the shift to remote learning has decreased social interactions (Langegård et al., 2021). Collaboration was an aspect of digital learning that students were satisfied with. Collaborative skills are still essential in future work (WHO, 2014). In terms of collaboration, Järvelä and Hadwin (2013) have shown that collaboration requires both the student's self-regulation as well as co- and shared regulation. Social interaction and emotions play a major role. Digital videoconferencing is associated with excessive cognitive load, which affects communication as students need to take turns speaking and actively interpret the gestures of others (Bailenson, 2021). It has been established that – during collaboration – socially shared regulation takes time to develop (Järvenoja et al., 2020). Computer-supported collaborative learning requires careful planning (Järvelä and Rosé, 2020).

An educator's support and presence are important even if the teaching is digital. Männistö et al. (2020) highlighted, that educators in digital environments should ensure to clear directions, afford opportunities for interaction and feedback. Blau and Shamir-Inbal (2017) demonstrated that digital teaching motivates and promotes thinking

skills, engages students, and enables learning progress through assessment and reflection. EU has identified the use of learning analytics as an area that needs improvement to solve relevant educational challenges (OECD 2020b). This type of development could help educators focus on social interactions and student-centeredness. The student experiences captured in the interviews revealed that digital learning influences health sciences competence development by enhancing versatile expertise, e.g., critical thinking, communication, and understanding that digitalization is relevant to patients in social and health care. Digital learning solutions enable competence development but also demand support from educators if effective. Student-centred teaching is the solution's objective. Digital learning should be carefully planned and implemented to maximize the positive effects on competence development.

4.1. Study limitations

This study had a clear limitation. Only Bachelor's degree students participated in the study may mean that the presented findings are not fully representative of how digital learning is implemented at higher education institutions. Future studies could also interview Master's degree students, educators, and health care experts.

5. Conclusions

This study has social value as the presented results demonstrate that digital learning has a noticeable influence on health sciences students' competence development. When developing curricula, decision-makers should recognize that social influences affect versatile expertise among students. We suggest that the design of digital learning should take into account the student's active role, the availability of various digital methods, as well as the potential to apply hybrid solutions that ensure both flexibility and face-to-face social interaction. Education should have stronger connections to working life. Digital learning methods, learning analytics, and educators' digital competence should be strengthened to ensure high-quality education, sufficient support for well-being and competence development.

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Ethical approval

The Dean of the University of Oulu provided a statement (15.2.2021) that the planned research was ethically acceptable. Ethical statement of ethical committee was not required.

CRedit authorship contribution statement

Sari Pramila-Savukoski: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Visualization. **Raila Kärrnä:** Formal analysis, Investigation, Visualization, Writing – review & editing. **Heli-Maria Kuivila:** Writing – review & editing, Supervision, Writing – review & editing. **Jonna Juntunen:** Writing – review & editing. **Miro Koskenranta:** Writing – review & editing. **Ashlee Oikarainen:** Writing – review & editing. **Kristina Mikkonen:** Conceptualization, Methodology, Formal analysis, Visualization, Writing – review & editing, Supervision.

Declaration of competing interest

Given her role as Editor of the target journal, Professor Kristina

Mikkonen had no involvement in the peer-review of this article and has no access to information regarding its peer-review. An independent editor was given full responsibility for the editorial process of this article.

Data availability

The data that support the findings of this study are available on request from the corresponding author (S.P-S). The data isn't publicly available due to privacy and ethical restrictions.

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Appendix A. Supplementary data

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