COMPETENCE MANAGEMENT IN REMOTE HEALTHCARE

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Abstract

This study aims to build a competence development model for nurses who work in remote healthcare. Since COVID-19 pandemic forced the field of healthcare to figure out new solutions to execute efficient patient care safely and with as little patient contact as possible, remote care took a major leap forward. Remote care works in a hybrid operating environment, where different participants work remotely from each other. With the help of competence management, possible knowledge gaps can be recognized and narrowed down. With the means of information and knowledge management, and competence management process, competence needs can be recognized. Efficiently used, the competence development model can be used to further recognize and develop competencies that nurses in remote care need.

Keywords: Competence management, remote care, hybrid operating environment, competence development model.

1. Introduction

Healthcare is a field that goes through major changes all the time. Challenges in healthcare come from different directions, when population is ageing, prevalence of chronic diseases is increasing, and the structure of diseases is changing. (Fukada, 2018, p. 1; Paunu and Helander, 2023, p. 213) The traditional hospital-centric care is moving towards more virtual and distributed care that takes advantage of the latest technologies, for example artificial intelligence, data analytics, home-based healthcare, and 3D printing (Wehde, 2019, p. 24). This means that technological solutions can be used to answer the challenges that healthcare is facing, when continuous data collection and exchange between patients and healthcare professionals reduces the need for physical visits in physical buildings (Paunu and Helander, 2023, p. 213).

In this study, we aim to answer the research question: *How the competence management of nurses can be supported in remote care?* Through an action-oriented case study, we form a competence development model to be used in remote care to sufficiently monitor and develop needed competencies. Current state of competence development and competencies needed are based on interviews (n=10) with the nurses who regularly work remotely from the patients.

2. Competence management in remote healthcare

Competencies can be defined as the ability to apply knowledge and skills to different contexts, such as work, leisure and learning (Ala-Mutka, 2011, p. 18). It is a way to put in practice one's knowledge, know-how, and attitudes, inside a specific context (Berio and Harzallah, 2005, p. 21). Competence evolves through learning and making use of acquired knowledge and skills (Medina and Medina, 2015, pp. 280, 285; Konttila *et al.*, 2019, p. 746). Competence management involves the specification of an organization's competence needs, competence sourcing, the identification of competence gaps, and developing competence through training and coaching (Lindgren *et al.*, 2004, p. 436). It constitutes of, for example, selection, training and development, performance measurement, and internal promotion (Medina and Medina, 2015, p. 286).

Remote care is quite a new field, where nurses work without face-to-face contact (Lau, Bartle-Clar and Bliss, 2019, p. 134). It is strongly multidisciplinary practice that includes, for example, innovative methods of practice, resourcefulness, limited clinical diagnostic support, and knowledge of public health (Smith *et al.*, 2008, pp. 159–160). Before COVID-19, the use of digital applications in medicine were restricted to the use of electronic health records (EHRs), but lately it has been allowed to expand the use of technological devices in medicine. Nowadays, different devices include for example smartphones, mobile wireless devices, wearable devices, health portals, and implantable devices. (Eurlings *et al.*, 2019, p. 6;

Konttila *et al.*, 2019, p. 746) Monitoring symptoms remotely has the potential to improve patients' quality of life, reduce costs, and enable timely and early treatment in situations where the need for care is increasing due to advancing illness (Walker *et al.*, 2019, p. 78; Scalvini *et al.*, 2020, p. 155).

In remote care, the competencies can be seen as the skills, knowledge, and abilities required for nurses to effectively deliver healthcare services to patients remotely (Melnyk *et al.*, 2014, p. 7). These competencies include various aspects, for example technological proficiency, assessment and triage, communication skills, problem-solving, collaboration and teamwork, and professional development (Kajander-Unkuri *et al.*, 2014, p. 799; Melnyk *et al.*, 2014, p. 7; Fukada, 2018, pp. 1, 3–4; Oyewunmi, 2018, pp. 430, 440; Vydrová and Bejtkovský, 2018, p. 23; Konttila *et al.*, 2019, p. 746; Mrayyan *et al.*, 2023, p. 6). Remote care works in a hybrid operating environment with nurses and doctors, patients, and service providers, which integrates physical and virtual care with telemedicine technologies and allows a better control of hospitals' occupancy (Pilosof *et al.*, 2023, p. 1). Competence in nursing is complex, relative, and variant, and a hybrid environment emphasizes all of these aspects when working through third-party systems (Nabizadeh-Gharghozar *et al.*, 2021, p. 2).

3. Research context and method

Empirical data was collected from the Finnish Heart hospital in Tampere and Hämeenlinna during early summer 2024. The research material consisted of 10 interviews with remote care nurses. At the same time, the literature of remote care, hybrid operating environment, and competence management was studied. The literature review formed theoretical background for this study, and the empirical research, which was done as interviews (n=10) and analysed with the means of qualitative content analysis, helped to bring the theory into practice. Combined, theoretical and empirical research formed answers to how the competence management of the nurses can be supported in remote care. Based on the analysis, a competence development model was formed.

With literature review, the purpose is s to show how the phenomenon under study has been studied in the past and how the current study is related to previous studies (Hirsjärvi *et al.*, 2009, p. 258). It is used to show the understanding of the field and its key theories, ideas, and concepts (Saunders *et al*, 2019, p. 74). On the other hand, research interview is a conversation between two or more people, where the interviewer asks concise and unambiguous questions and listens closely the interviewee talking (Hyvärinen *et al.*, 2017, chap. 2; Saunder *et al.*, 2019, p. 434). The interview aims at information collecting and is therefore in advance planned goal-oriented activity (Hirsjärvi and Hurme, 2022, para. 4.1.2).

The interviews were semi-structured in which the questions were basically same for everyone, but the answers were not tied to the answer options (Hirsjärvi and Hurme, 2022, para. 4.2.3). With this type of interview, the interviewer wants information about specific things, and do not want to give the interviewees too much freedom. Still, the interviewer wants to clarify and deepen the answers, so there are no ready-made answer options. (Saunders *et al.*, 2019, pp. 437–438) Interviews were transcribed, translated, and anonymized using identification numbers to strengthen the validity of our research. Translated transcriptions were coded in relation to the wanted themes, for example *Competencies, Hybrid operating environment, The amount of remote work, and Systems and technologies*.

4. Results and discussion

### 4.1. Competence management in hybrid operating environment

Hybrid operating environment means a wide range of things and practices in which people work. It can mean an IT infrastructure setup that combines on-premise resources with cloud-based services (Dittakavi, 2022, p. 33). It can also mean working in different places and in close collaboration with other operators (Mirbabaie *et al.*, 2021, p. 365). In healthcare, hybrid operating environment can be seen as a use of technologies and digital solutions to implement remote care, as well as different participants working together. Hybrid operating environment needs flexibility from everyone to work properly and it allows organizations to choose the most suitable deployment for each workload or application. (Tysowski and Hasan, 2013, p. 172; Franken *et al.*, 2021, p. 1139) It is quite new thing in healthcare to have flexibility in work or for example where you work. Remote care allows nurses to work from home which is seen as a positive thing. *"This definitely increases work well-being, increases meaningfulness by at least 10% when you can work remotely." (N4)*

Hybrid operating environment reduces the amount of hospital visits from patients. It gives them more freedom to live their lives although being sick. It also brings security for the patients, when they know, they are monitored all the time, and they have a backup in the hospital. As patient education is an important part of nurses' work, hybrid environment can be seen as an advantage with it. In the remote platforms, nurses can send messages to the patients and ensure that patients have written instructions. Also, if patients

have something to ask, they can send a message to nurses via platforms. This saves both time and resources from everyone, when unnecessary calls and hospital visit are reduced.

However, hybrid operating environment set challenges also for competence management. In overall, it shifts the competence requirements towards emphasis on digital technologies and communication skills through digital channels. Competence management is the way in which organizations manage their competencies of individuals and groups. It can be organized through competence management process (Figure 1), which helps organizations to systematically develop competencies (Berio and Harzallah, 2005, pp. 21–22).

Figure 1. Competence management process architecture (modified from Berio and Harzallah 2005).
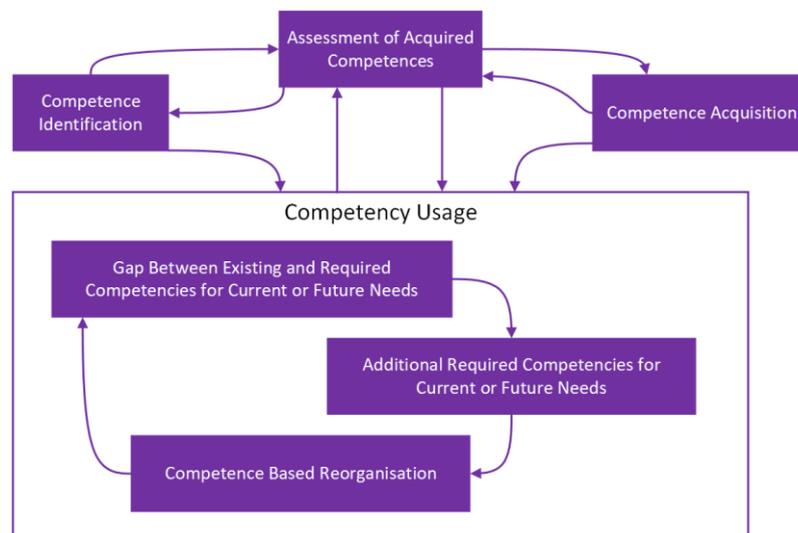
Nurses need many different competencies in remote care carried out in hybrid operation environments. 60% of the interviewed nurses mentioned technical skills and as N2 said: *"You need to know how to use all of the systems smoothly and understand their differences"*. Also, N3 said: *"Using these programs require some kind of IT skills, some kind of general knowledge of how these current systems work"*. Other competencies that were mentioned several times, were evaluation of treatment, experience, and pharmaceutical knowledge. As N1 said: *"You have to have an eye to see, if that person fits into the program"*. Also, evaluation was seen important, since most of it is made via phone, so a nurse needs to have a competence to do the evaluation just by hearing the patient: *"You have to be able to evaluate what happens when everything isn't quite normal"* (N8). This was also linked to experience by N3: *"Treatment evaluation, and that comes with experience. The experience is one skill."* Experience was seen also as a knowledge from other specialties: *"It's good that you have multidisciplinary experience, i.e., from other than the heart side"* (N1). In the interviews, nurses also pointed out adaptation to changing situations, decision-making capacity, and communication skills. As N5 said in the interview: *"It's always easier to work so that you have a patient face-to-face"*. This emphasizes the importance of good communication skills, when interaction is limited.

4.2. Competence development model for remote care

Based on the literature review and the interviews from the nurses, answer to the research question can be found. The answer consists of two paths: hearing all the remote care participants and making use of the means of knowledge management. Hearing different users gives wider perspective of what is needed when executing safe and efficient remote care. The means of knowledge management consist of systematically executing competence management process and identifying competence needs, and support in making tacit knowledge explicit. These two paths make the base for the developed model (Figure 2).

When the competence gaps have been recognized, it is essential to think, how to answer those needs. One way is to make a clear orientation plan that is systematically followed with every new remote care nurse. It is also important to provide further education for nurses who are already working in remote care. Providing further training will help the nurses to keep their competencies up to date and to evolve their knowledge about remote care practices. The last part is to make clear instructions that are available for everyone. Clear, written instructions ensure the safety of the care, when nurses have a backup, where they can check instructions at any time.

Figure 2. Competence development model.

Systematic implementation of the phases of this proposed competence development model can help the organization to recognize, what competencies are needed, how they can be acquired, and how to develop competencies further.

5. Conclusions

This study contributes to competence management literature by introducing a competence development model for timely context: remote care. With the developed model, a unified way of working can be introduced in hospitals and among them, who do remote care. Based on the interviews, there are no specific ways of developing or evaluating competencies, and sometimes even clear instructions are missing. In the future, the competence development model needs to be further developed to answer real needs of the nurses and to create concrete suggestions of working to develop remote care nurses' competencies.

As future research avenue, the role of knowledge management, especially the potential of application of SECI-model (Nonaka and Takeuchi, 1995) in competence development could be studied in more detail than in this paper. From a competence development perspective, the knowledge management approach consists of the acquisition, transformation, dissemination, and protection of knowledge and expertise (Väyrynen *et al.*, 2015).

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