1 Introduction

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Some people call the current era revolutionary. The revolution we are witnessing is caused by digitalization and it penetrates and conquers all aspects of people's daily lives. People use the internet extensively, and they are also, searching for health information using various digital devices, apps and other solutions. They show an interest in taking control of their own health (NHS England, 2017).

This is one of the reasons why a growing demand for developing tailor-made and patient-centered care in the coming years has become crucial. In addition, an aging population with chronic illnesses as well an increasing number of life-style-related diseases generates problems which need to be solved to secure citizens' access to healthcare services (WHO, 2012). As healthcare costs have increased in many countries, it is vital to use every opportunity to curb the raise of costs in societies. A future challenge will involve providing more treatment and high-quality care with the same resources as previously (Kaplan & Porter, 2011; WHO, 2015). Therefore, there is a need for integrated, economically more efficient care. By providing smarter care, online or digitally, with more focus on prevention and early detection of diseases, European societies will be better equipped to respond to the availability of healthcare services than before. Furthermore, the World Health Organization has argued that the exploitation of e-health opportunities can increase equality among citizens of all societies (WHO, 2012).

Recent ICT progress and technological developments have also transformed the workflow in the field of healthcare. The sort of care that requires the physical presence of a healthcare provider, is now partly implemented through online services. Electronic transfer of data, telecare and tele-coaching can contribute to the development of a model that enables patients' active participation in their healthcare process (Elf, Ossiannilsson, Neljesjö, & Jansson, 2015; Sawesi, Rashrash, Phalakornkule, Carpenter, & Jones, 2016; Brady, Segar & Sanders, 2018). Through the active participation and support from a healthcare team, patients become more independent than before in managing their chronic illnesses.

The educational institutions training healthcare students need to integrate the use of new methods and smart technologies into their curricula to ensure that future nurses will be equipped with digital skills as part of their digital literacy (Stauffer, 2020). Eshet noted already in 2004 that digital literacy is among the survival skills of the digital era. According to him, digital literacy includes a large variety of complex cognitive, motor, sociological, and emotional skills, which users need in order to function effectively in digital environments (Eshet, 2004).

The Erasmus+ Strategic Partnerships for Higher Education project, DigiNurse: ICT supported Self-Management of Patients responds to the future challenges related to the digitalization of future healthcare by developing a model to strengthen nursing students' digital competence. The project was funded by the European Union and was launched in September 2017. It was a three-year project which ended in December 2020 (including an extension of the project due to the COVID-19 pandemic). The research consortium consists of four partner universities: in Portugal (Escola Superior de Enfermagem de Coimbra, Belgium (Thomas More Turnhout), Slovakia (University of Ljubljana) and Finland (Karelia University of Applied Sciences, Karelia). Tampere University of Applied Sciences coordinated the project.

The context of the project was in nursing education and the main goal was to develop a DigiNurse Model. The model enables students to practice their digital coaching skills before entering the working life. Several studies show that existing curricula of nursing education include elements of patients' health promotion or guidance, but these elements are imprecise and not necessarily considered from digital learning and teaching perspectives (Mann, Medves & Vandenkerhof, 2015; Mather & Cummings, 2019). Through the development of the DigiNurse Model and its pilots, student nurses learn to use various digital and pedagogical methods, technical devices, online communication and international networking. All the acquired and tested skills are essential capabilities in implementing healthcare in the 21st century (WHO, 2015.) In addition, teachers and healthcare professionals who supervise students in clinical training are educated to utilize the model in teaching and guiding nursing students. The teamwork of the project members strengthens their cooperation, networks and personal relationships which will be made use of in the future.

This e-book on the DigiNurse project introduces the processes, results and versatile materials developed in collaboration with students, teachers and all the project partners. The content and sequence of the e-book reflects the progress of the project. All chapters follow the same structure: an in-

troduction, content, references and recommended reading where applicable. As an exception, the structure of Chapter 6 (The DigiNurse Model Integration into Curricula) is different. It starts with all partner universities introducing their institutions, and subsequently presenting the pilots and piloting experiences of each university. Finally, the chapter is concluded by a description of international piloting.

Chapter 2 describes the start of the project, the expectations and impact of the project results, and the start of implementation of the project. The course of the project process is presented in Figure 3, page 20. The following chapter (3) is focused on reviews of current research literature. These were extensively carried out to find key components for the model construction. Based on the project application, the project team chose three main areas for the review, namely pedagogical approaches, technological practices in education, and the best practices in digital teaching and learning. Diverse examination of the research literature generated enough variety to compare different pedagogical methods, coaching techniques and technological approaches, and resulted in determining the most suitable combination for the DigiNurse Model. The work was distributed among all project partners. In sub-chapter 3.1, the concept of coaching is discussed by the Belgium and Karelian teams, while in sub-chapter 3.2, the Slovenian team wrote about the pedagogical approaches used in the digital era. The TAMK team carried out an explorative inquiry of research literature published in the period 2013–2017 on the best practices in digital teaching and learning in nursing (3.3).

Chapter 4 introduces the philosophical and practical bases of the DigiNurse Model. The model basis consists of ethical considerations and evidence-based nursing, salutogenesis, positive health, a chronic care model and transversal skills required in the 21st century. Diverse and up-to-date

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literature has been used to define the concepts. The project team reached a consensus of the structure of the model in early 2020. At the beginning of chapter 5, the journey of developing a Common Model (5.1) is discussed and this is followed by a comprehensive description of the DigiNurse Model (5.2). Each concept contributing to the DigiNurse Model is presented based on theory and practical application, at the same time providing the reader with certain specific means and tools for using the model. The concepts of the DigiNurse Model include health literacy (5.3), self-management (5.4), digital care (5.5), coaching (5.6), coaching models (5.7) and technology and data care (5.8).

This project aimed at curriculum development and an enhancement of nursing students' digital competence in support of patients' self-management. During the development of the model, its' parts were piloted, which provided ideas for the improvement of the model. Simultaneously with the piloting, the integration of the model into the curricula of the participating universities was launched. Their experiences of the integration process are illustrated in Chapter 6 where subchapters are dedicated to explanations by the universities of how the integration was carried out at them (6.1 TAMK, Finland, 6.2 Karelia, Finland, 6.3 Thomas More Turnhout, Belgium ja 6.4 ESEnfC Portugal, and 6.5 University of Ljubljana, Slovenia). First, the universities present themselves to the reader. Subsequently, each partner university describes their pilot protocols and nursing students' experiences on the implementation of the DigiNurse Model. In addition to the experiences, chapter 6 contains suggestions for using the DigiNurse Model. Finally, each university presents its curriculum as a reference.

As the discussion section of this publication, chapter 7 summarizes the entire course of the project process. Challenges and achievements of the project are presented in relation to the expected results in a reflective manner (7.1). Subchapter 7.2 introduces the project's conclusions to the reader. Descriptions of the authors are available in Chapter 8 and appendices in Chapter 9.

This e-book is a result of collaboration between the project team members from all partner universities. The editorial board has adjusted the content of the articles for consistency and clarity. The teamwork and joint efforts have resulted in producing an international publication, which will hopefully aid curricula development and guide changes needed in the future. The collaboration and networking among universities from four European countries have provided new information, knowledge, skills, appreciation, friends and, above all, respect to the power of international cooperation.

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