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To cite this Article / Käytä viittauksessa alkuperäistä lähdettä:

Smolander, N., Huuskonen, A., Kunnas, K. & Ylistalo, E. (2023) Introduction. Teoksessa Smolander, N., Huuskonen, A., Kunnas, K. & Ylistalo, E. (toim.) DigiCare Model : Digitalized Healthcare and Coaching of Patients in an Asian Context. Tampereen ammattikorkeakoulun julkaisuja, Series C, Learning materials 26, s. 14-23.

URL: <https://urn.fi/URN:ISBN:978-952-7266-85-4>

1. Introduction



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The rising prevalence of chronic diseases worldwide poses significant challenges for healthcare systems. The DigiCare project, funded by the Erasmus+ program, addresses these challenges by developing a context-specific model for healthcare education. Partnering with universities in Bangladesh and Vietnam, the project integrates digitalization and coaching into the curriculum to enhance self-management support for chronic diseases. This e-book provides a comprehensive account of the project, aiming to inspire positive changes in healthcare practices and services. Through international cooperation, the DigiCare project facilitates knowledge exchange and skill development, contributing to transformative advancements in healthcare education and practice. In this chapter we introduce the DigiCare project and the outlines of the e-book.

The global rise in chronic diseases is a cause for alarm (WHO, 2014), as these conditions, such as diabetes and cardiovascular diseases, contribute significantly to the overall disease burden and premature mortality worldwide (Roser et al., 2021). Developed countries have long grappled with this issue (WHO, 2023), but low- and middle-income countries now face a disproportionate impact (Mustafa Zaman et al., 2020; WHO, 2016), leading to health disparities within these populations (UNICEF, n.d.). Factors like globalization, rapid urbanization, an ageing population, and unhealthy lifestyle choices contribute to the increasing prevalence of chronic conditions (WHO, 2014). Beyond the detrimental effects on individuals' quality of life, the diagnostics and treatment of chronic diseases pose substantial economic challenges

for societies (Berkman et al., 2011). Additionally, limited healthcare infrastructure and a shortage of trained healthcare professionals compound the difficulties faced by individuals living with chronic diseases (Mustafa Zaman et al., 2020; WHO, 2016).

The escalating demand for global health resources has underscored the urgent need for viable solutions. This need has been acknowledged and emphasized in the United Nations' 17 sustainable development goals (SDGs). Within the SDG action areas for Good Health and Well-being, key objectives include enhancing access to essential healthcare services, significantly increasing the training of healthcare professionals, and reducing premature mortality rates through the implementation of improved prevention and treatment measures for chronic diseases. These goals reflect the recognition of the critical importance of addressing the challenges posed by chronic diseases and the commitment to creating a healthier and more sustainable future for all. (UN, n.d.)



Self-management support plays a crucial role in the management of chronic diseases, promoting active participation and responsibility in health-related decision-making, behaviour, and well-being. The term “self-management” encompasses the skills needed to effectively manage one’s own health. Research has extensively documented the benefits of self-management in influencing disease progression. (Coulter & Collins, 2011.) However, many individuals, particularly in low- and middle-income countries, face challenges due to low health literacy, relying heavily on healthcare providers for guidance and disease management. This reliance increases the burden on healthcare systems. (Berkman et al., 2011.) Empowering individuals through self-management interventions not only improves their well-being but also reduces the strain on healthcare services (Nguyen et al., 2019; Seston et al., 2020). By equipping patients with the necessary skills and knowledge, self-management support enables them to take a more active role in their healthcare, leading to better health outcomes and improved overall quality of life.

Education plays a pivotal role in empowering healthcare professionals to support patients in self-management of chronic diseases. A high-quality healthcare education should produce competent and future-oriented professionals capable of addressing the evolving challenges in healthcare delivery. These professionals need to possess the skills to empower patients, assess their self-care needs, provide guidance and support, and act as coaches. Emphasis should be placed on preventive measures and support groups. Effective communication skills are essential for healthcare professionals to provide clear and understandable information about chronic conditions, treatment options, and self-management strategies. By understanding their ability to influence their own well-being, patients can make informed choices and actively participate in their care. Individualized care plans, developed collaboratively with patients, consider their specific needs, preferences, and capabilities. Setting realistic and achievable goals helps patients comprehend how to manage their condition and improve overall well-being. (Nevelsteen & Vandenhoudt, 2021.) Additionally, as our world becomes increasingly digitalized, healthcare professionals must be educated on the role of technology and digital devices in healthcare delivery. Targeted education is essential to equip professionals with the necessary skills to meet future healthcare needs effectively.

The DigiCare Project

The Erasmus+ Capacity Building in Higher Education (CBHE) project, DigiCare: Educating Students for Digitalized Health Care and Coaching of their Patients, addressed current and future challenges in chronic disease self-management by developing a contextualized model to improve the competence of healthcare students in digital coaching. The DigiCare project was an international CBHE project aiming to embed digitalization and coaching in the healthcare curriculum in Asia, specifically in our partner countries Bangladesh and Vietnam. The three-year (extended by a year due to COVID-19 pandemic) project of seven Higher

Education Institution (HEI) partners started in June 2019 and was a continuum of the DigiNurse project (Strategic Partnership) and antecedent to SmartNurse project (CBHE).

The DigiCare project was coordinated by Tampere University of Applied Sciences (TAMK), Finland, and carried out in partnership with the Nursing School of Coimbra (ESENfC) from Portugal, Hanoi Medical University (HMU) and Nam Dinh University of Nursing (NDUN) from Vietnam, Khulna City Medical College (KCMCH), City Medical College & Hospital (CiMCH) and Universal Medical College & Hospital Ltd (UMCH) from Bangladesh. The project was funded by Erasmus+ Capacity Building in Higher Education Programme.

The DigiCare project was carried out in the realm of healthcare student education, encompassing nursing and medical students in Asian partner universities. Our project's primary objective was to enhance the curricula of these universities through various initiatives. This included the development of the DigiCare Model, the creation of teaching materials for healthcare education, and the acquisition of expertise in utilizing effective teaching and research methods.

The DigiCare Model serves as a foundational framework for curriculum development, focusing on integrating digital healthcare practices into the educational programs. It aimed to equip healthcare students with the necessary knowledge and skills to navigate the digital landscape of healthcare effectively. The intention of the model is to help healthcare students learn how to offer support and empower patients to develop self-management skills using coaching models and digital devices. The DigiCare Model serves as a versatile framework that can be adapted and integrated into various local and regional healthcare teaching and working cultures. It encompasses specific learning objectives for digital healthcare in self-management, the necessary skills and knowledge in digital nursing and coaching, and best practices for teaching and training in digital tools and methods related to nursing and self-

management coaching. In addition, as emphasized by experts from partner institutions, the model also underscores the significance of professional communication between health professionals and patients. This communication enables patients to improve their self-management skills and actively involve their significant others in their care.



The intention of the model is to help healthcare students learn how to offer support and empower patients to develop self-management skills using coaching models and digital devices.

Healthcare curricula in European countries frequently include elements of health promotion and disease prevention in digital environments, and utilizing digital devices is care delivery (Mann et al., 2015; Mather & Cummings, 2019), but in Bangladesh and Vietnam, the concept of coaching barely exists in the healthcare context, and the role of digital tools in healthcare delivery is in its early stages. Moreover, the idea of considering patients as experts in their chronic disease is a foreign perspective in these countries. Based on insights shared by our project partners from these countries, delivering information about a patient's chronic disease or educating patients is conducted mainly, if at all, by medical professionals. Therefore, changing the healthcare education paradigm from healthcare professional -led care to patient- and family-centred care, and introducing health and wellness technologies as care delivery options, are important steps in developing and improving healthcare education and the healthcare service environment in Bangladesh and Vietnam.

The Content and Structure of the DigiCare e-Book

This e-book presents the phases of the project process, the project results, and the open-access materials. The content and structure aim to reflect the workflow of the project and the continuity of the development process. The chapters follow a consistent pattern: a short ingress describing the topic of the chapter, an introduction, content, recommendations for further reading and a list of references. The annexes to the e-book include summaries of literature reviews carried out by project partners and an example of the learning material produced as part of the project.

The e-book begins with forewords that introduce the theme of the publication from Bangladeshi and Vietnamese perspectives, respecting the visions, needs, and expertise of our Asian partners in the thematic areas of the project. The Bangladeshi perspective is written by the Honourable Md. Nahid Uz Zaman, and the Vietnamese perspective is produced by the Honourable Dr. Le Quang Toan.

Chapter 2 describes the starting point for the project, the project work process (2.1), and the different stages of the development process of the main project deliverable, the DigiCare Model (2.2). The project process is presented in a comprehensive format in Figure 1, which also integrates the elements of project facilitation. Chapter 2 similarly introduces the process involved in reviewing the evidence -basis underpinning the development of the DigiCare Model and the phases involved in conducting the literature reviews. The literature review summaries produced by our Bangladeshi and Vietnamese partners are presented in Annexes 1-6 of this publication.

The focus of chapter 3 is on the DigiCare Model. The chapter introduces the illustration of the model, which consists of four distinct, yet interrelated layers. The content of the model is based on the results of our literature reviews, empirical insights to current needs in education and training by experts from partner universities, and feedback from

our project pilots. Through the ongoing process of online and in-person workshops, consortium members identified the main concepts to be included in the DigiCare Model. The consortium also gave careful consideration to the shape of the Model. A spinning top -like shape was chosen because it suits the Asian context and forms a dynamic, easily understandable model for healthcare teachers and students to use. The spinning top consists of four layers: 1. Person, 2. Family, 3. Community, and 4. Society. The key concepts associated with each layer are discussed in sub-chapters 3.2-3.5.

Chapter 4 focuses on the DigiCare Model -based educational program. Sub-chapter 4.1 describes the structure and content of the educational program which was developed and piloted during the project. It presents an example of implementing the program and provides information about the learning packages produced by the project (DigiCare Learning Packages 1-10). The DigiCare Learning Packages are openly accessible (The DigiCare Learning Packages are openly accessible in the SlideShare and the links to the learning packages can be found in the Appendix 7.). Furthermore, an example of the educational material can be found in Appendix 7. Sub-chapter 4.2 presents the teaching methods used in our pilots. These include Flipped Learning (4.2.1), Interactive Lecturing (4.2.2), Low-Fidelity Simulation (4.2.3), World Cafe (4.2.3), Learning Diaries (4.2.5.) and Peer-Reviewing (4.2.6). A concise description of these methods and rationale for their use along with suggestions for additional reading are included.

Chapter 5 presents the evaluation tools used to evaluate the programs that were implemented in partner universities in Bangladesh and Vietnam during the project. The chapter encompasses various evaluation instruments, including the Self-Efficacy and Performance in Self-management Support (SEPSS) scale (5.2) and the Technology Acceptance Model (TAM) scale (5.3 and 5.4), which were implemented by our Bangladeshi and Vietnamese partner universities. Furthermore, the chapter delves into the evaluation of the effectiveness of the Digi-

Care educational intervention on clinical coaching skills in Vietnam and Bangladesh (5.5). It examines the impact and outcomes of the program on enhancing participants' coaching abilities. Additionally, the chapter presents the feedback form utilized to gather participant feedback and experiences following the project pilots, aimed at refining the DigiCare Model. It offers insights into the participants' perspectives and allows for improvements based on their valuable input. An analysis of the feedback results is also provided within this section (5.6).

The e-book ends with chapter 6, a discussion, which reflects on the achievements of the DigiCare project, the success of its outputs, and the different stages of the project journey. The chapter also includes honest observations on some of the challenges of coming together from different cultures and contexts to work on a common project.



The content of the e-book represents the collective efforts of all partner higher education institutions and the goals we have accomplished.

This e-book is the outcome of four years of international cooperation among the DigiCare consortium. The content of the e-book represents the collective efforts of all partner higher education institutions and the goals we have accomplished. The editorial team has carefully modified and edited the content of the chapters to ensure completeness, coherence, and clarity. As a result of our multifaceted teamwork, this publication is now openly available to all healthcare teachers and students. We sincerely hope that it will contribute to curriculum development and facilitate the necessary changes in future healthcare practices and services.

The collaboration and networking among two European universities (TAMK and ESEnfC), three Bangladeshi universities (UMCH, KCMCH, Ci-MCH), and two Vietnamese universities (HMU, NDUN) have generated a wealth of knowledge, skills, understanding, and experience in project work. It has also fostered friendships and, most importantly, instilled a profound appreciation for the significance of international collaboration as a valuable resource for the advancement of future education.

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