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Medical and nursing students' co-learning in digitalized health care eco-system

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Abstract

The demographic change in Finnish population has forced us to develop digital solutions to meet health care requirements. To respond to the need, we designed and piloted a one-day Multidisciplinary Digital Clinic (MDC) education for medical and nursing students.

In this report, we describe our project of the one-day MDC education of digital solutions in primary care for medical and nursing students, and their learning experiences. Additionally, we describe the realization of the intended learning outcomes. The MDC education was conducted by flipped learning method with pre-studying materials. The MDC day was divided into three topical workshops: Remote Care, Digital Symptoms and Health care assessment, and Assessment of Need for care. Students formed three multidisciplinary teams.

The students (N=108) valued the opportunity to train with modern technological equipment. Learning in the multidisciplinary teams enabled their knowledge and expertise sharing beyond study field limits, and provided a unique opportunity to discuss together, and thus, helped generate future-proof cooperation skills. The MDC training improved students' understanding of digitally enhanced health care services and increased their understanding of the automated digitalized service pathways, and the continuity of care.

In conclusion, the students described MDC as a unique opportunity, and future oriented education. The MDC encouraged students to get involved in the digitally and technologically enhanced health care ecosystem in their professional careers.

Keywords: multidisciplinary education, co-learning, undergraduate, health care, digitalization

Introduction

The changes in Finnish population related to the enlarging number of elderly citizens [1], and behavioral changes of younger populations' way of using health care services [2,3] have forced to develop digital solutions to meet these revolving

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health care requirements. The future societal changes in health care services also challenge health care education.

The medical and nursing education has traditionally been separated in Finland. However, health care education involving medical and nursing students and teachers can be conducted utilizing co-educational methods.

To respond to the novel demands of digital health care services through medical and nursing education, we designed and piloted an obligatory one-day Multidisciplinary Digital Clinic (MDC) education for undergraduate medical and nursing students. We wanted to provide them opportunities to learn and discuss different online and digital health care solutions in the multidisciplinary environment. This educational intervention united Finnish nursing students at Tampere University of Applied Sciences (TAMK) and medical students at the Tampere University (TAU). To our knowledge no such education has been organized in Finland previously.

The aim of this report is to describe the one-day education of digital solutions used in primary care setting for undergraduate medical and nursing students, and their experiences based on feedback questionnaire. Additionally, we describe the realization of the education's intended learning outcomes.

The basis and objectives of the Multidisciplinary Digital Clinic project

The purpose of the MDC project was to combine and implement expertise of different disciplines. This co-teaching method aligns well with the Strategy of the Tampere Universities [4] and enables close collaboration with the regional fast revolving working life.

The national objectives for graduating physicians include the digital communication and interaction competencies [5]. The eHealth section of the MEDigi [6,7], and SotePeda 24/7 [8] projects have defined the Competence Objectives for eHealth. The digital social- and health services strategy of Finnish Nurses' Association consists of different areas including digitalization in relation to customer and nursing activities, research, development, and management [9].

The intended learning outcomes (ILOs) of MDC education were based on Finnish ILOs for graduating physicians, and MEDigi-project's ILOs for eHealth, and the Finnish Nurses Association's strategy.

The ILOs were:

The student 1. knows the digital solutions used in primary care, 2. can utilise digital consultation in and between practices, 3. can use multidisciplinary team in patient care in different solutions, 4. knows how to support continuity of care in multiple service solutions, and 5. knows factors that may have an effect in using remote services.

Methods and results

Two clinical instructors (TAU) and three senior lecturers (TAMK) planned and implemented the MDC together. We estimated competencies equally between medical and nursing student groups to enable the collaborative learning.

The MDC education was based on the principles of flipped learning method. The pre-studying materials were available prior to training sessions in a digital platform. The materials included presentations, videos, and introduction materials. The aim of the pre-studying was to prepare students and

provide basic information about the modern health care eco-system in Finland.

The MDC day was divided into three topical workshops, 1. Remote Care utilizing VideoVisit diagnostic equipment [10], 2. Symptoms and Health care assessment by Omaolo application [11], and 3. Assessment of Need for care utilizing the Hoituki health care phrasing application [12]. Students were divided into three multi-disciplinary teams circulating different workshops. The day ended with reflection discussion.

We encouraged the students to provide feedback by e-questionnaire about their experiences to develop the content and the structure of the MCD education. We used content analysis for the qualitative data, and descriptive analysis for the quantitative data.

The total of 108 last year undergraduate medical (n=70) and nursing (n=38) students attended the MDC training days, and 69 participated (64 %) in the feedback questionnaire. The responses were evenly distributed among the medical students (53 %) and nursing students (47 %).

The ILOs were achieved based on the qualitative feedback. The overall competency to understand and function in the modern digitalized and remotely facilitated health care eco-system was improved, and the comprehensive understanding of the current and prospective digitalized health care enhanced.

The students valued the opportunity to train with modern technological equipment and had an understanding and demand for well-functioning technical and digital infrastructure. They found it necessary to train communication in online or digitally enhanced environments, especially the need to use structured reporting models in consultations.

The need and value of co-learning utilized in the MDC training were emphasized in the students' feedback. Learning in the multi-disciplinary teams enabled knowledge and expertise sharing beyond study field limits and provided a unique opportunity to discuss and ponder together.

Discussion

The MDC training provided a unique opportunity to co-learn and co-teach in the multi-disciplinary team. Our pilot resulted similar findings to previous research [13], which enabled expertise and experience exchange among students potentially enhancing their future collaboration and improving the quality of care in the future health care eco system.

The students considered the MDC training improved their understanding of the current digitally enhanced health care services. The opportunity to train as professionals in a digital health care environment proved to improve students' comprehensive understanding of the care pathway in the system and the continuity of care through digitalized automated services. They also recognized the factors influencing automated service responses.

The students described the training day as an experience, unique opportunity, and future oriented education though some students expressed disappointment due to repetition and technical challenges. Overall, the students experienced the MDC as a great and extremely useful training session, and it encourages medical and nursing students to get involved in the digitally and technologically enhanced health care eco-system in their professional careers. This generates future-proof skills based on the understanding of different health

care professions and their professional perspectives.

We conclude based on the results and our experiences, that the MDC provided productive and encouraging learning experiences, and is worth developing and continuing.

Conflict of interest statement

The authors declare no conflict of interest.

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