mefanet 2017

**11th international conference
of Czech and Slovak faculties of medicine,
focused on e-learning and medical informatics
in the education of medical disciplines**

28–29 November 2017, Brno, Czech Republic

... TELL AND LISTEN TO THE STORIES THAT EDUCATE, MOVE AND INSPIRE ...

EDITORS

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NÁRODNÍ TELEMEDICÍNSKÉ CENTRUM

WELCOME WORD

Dear colleagues and students

We are pleased to welcome you at the 11th year of the MEFANET conference, which traditionally brings together experts in the field of medical and educational informatics, teachers and students from faculties of medicine and faculties of healthcare sciences across Czechia and Slovakia. Besides the methodological and educational aspects of technology enhanced learning and teaching, the conference will again be focused on the impact of this phenomenon on a specific field of medicine. For this year, the programme committee has chosen the topic "**Technology-enhanced education in obstetrics and gynaecology**".

The conference programme involves two workshops, two keynote lectures, a symposium, a topical session, a session with short communications and a commented posters tour. The workshops will focus on: (i) principles of creating, adapting, evaluating and implementing clinical practice guidelines; (ii) integration of low- and hi-fidelity simulations to maximise the pedagogical value of educational medical simulation centres.

Two excellent speakers – **Inga Hege** (Geisel School of Medicine at Dartmouth, United States) and **Sasha Benjamin Cohen** (UCSF School of Technology San Francisco, United States) – have been invited. Their keynote lectures ("**Learning clinical reasoning in virtual environments**" and "**Divergent paths / convergent needs: observations on a decade of educational technology in medical education**", respectively) will cover areas of virtual patients and curriculum mapping, both of them contributing to research in medical education and developing models of pedagogy.

A substantial part of the conference programme is supported by the **WAVES (Widening Access to Virtual Educational Scenarios)** project. It is an Erasmus+ Knowledge Alliance project, which combines skill sets of both academic and enterprise partners to make scenario-based learning (SBL) more accessible to a wide range of professions (http://www.wavesnetwork.eu).

We would like to thank all participating speakers and authors of the conference proceedings contributions. It is our sincere hope that this conference will be a valuable resource for the MEFANET community and that it will inspire further research and development in the vibrant area of medical education science.

On behalf of the programme committee and organisation team

Daniel Schwarz & Martin Komenda

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GENERAL INFORMATION

CONFERENCE VENUE
Hotel Continental Brno
Kounicova 6, 602 00 Brno, Czech Republic
GPS: 49°12'2.194"N /16°36'16.155"E
www.continentalbrno.cz

CATERING
Lunch is included in the registration fee and will be served in the foyer:
‣ to participants of the WAVES project meeting on 27 and 28 November,
‣ to all conference participants on 28 and 29 November.

REGISTRATION OF PARTICIPANTS AT THE CONFERENCE VENUE
28 November 2017 from 10.00 to 17.00 h
29 November 2017 from 8.00 to 15.00 h

INFORMATION FOR AUTHORS

‣ Data projector and PC will be available to the lecturers.
‣ The lecturers are invited to test the technical equipment before the conference start or during coffee breaks.
‣ Technical assistance will be available for the whole time of the conference.
‣ A typical time slot for a contribution having the form of short communication is 12 min + 3 min discussion.

WE KINDLY ASK LECTURERS TO STAY WITHIN THE TIME LIMIT FOR THEIR PRESENTATIONS.

MONDAY — 27 NOVEMBER

CLOSED MEETING OF THE WAVES PROJECT WORKING GROUP	9.00
LUNCH	12.00
CLOSED MEETING OF THE WAVES PROJECT WORKING GROUP	13.00
COFFEE BREAK	15.00
CLOSED MEETING OF THE WAVES PROJECT WORKING GROUP	15.30

TUESDAY — 28 NOVEMBER

REGISTRATION	8.00
CLOSED MEETING OF THE WAVES PROJECT WORKING GROUP	9.00
LUNCH	12.00
WORKSHOP: CLINICAL PRACTICE GUIDELINES – DEVELOPMENT, ADAPTATION AND EVALUATION	13.00
COFFEE BREAK	15.00
WORKSHOP: INTEGRATION OF LOW- AND HI-FIDELITY SIMULATIONS TO MAXIMIZE THE PEDAGOGICAL VALUE OF EDUCATIONAL MEDICAL SIMULATION CENTRES	15.30
OPEN MEETING OF THE MEFANET COORDINATING COUNCIL	18.00
RECEPTION	19.30

8.00 — *REGISTRATION*

9.00 — **POSTERS: A GUIDED TOUR**

10.00 — *COFFEE BREAK*

10.30 — **SYMPOSIUM: APPLICABILITY ANALYSIS OF EUROPEAN EXAMPLES OF GOOD PRACTICE IN THE DOMAIN OF ACTIVE AND HEALTHY AGEING**

12.00 — **KEYNOTE LECTURE: INGA HEGE – LEARNING CLINICAL REASONING IN VIRTUAL ENVIRONMENTS**

12.45 — *LUNCH*

13.45 — **TOPICAL SESSION: TECHNOLOGY-ENHANCED LEARNING IN OBSTETRICS AND GYNAECOLOGY**

15.45 — *COFFEE BREAK*

16.00 — **KEYNOTE LECTURE: SASCHA BENJAMIN COHEN – DIVERGENT PATHS / CONVERGENT NEEDS: OBSERVATIONS ON A DECADE OF EDUCATIONAL TECHNOLOGY IN MEDICAL EDUCATION AND ITS RELATIONSHIP TO DEVELOPING MODELS OF PEDAGOGY**

16.45 — **SHORT COMMUNICATIONS: MEDICAL INFORMATICS IN EDUCATION**

CLOSED MEETING OF THE WAVES PROJECT WORKING GROUP

Monday, 27 November, 9.00–18.00
Tuesday, 28 November, 9.00–12.00

WORKSHOP: CLINICAL PRACTICE GUIDELINES – DEVELOPMENT, ADAPTATION AND EVALUATION

Tuesday, 28 November, 13.00–15.00

PRESENTERS: LÍČENÍK R, NEŠŤÁKOVÁ K, POKORNÁ A, POTOMKOVÁ J, MIHÁL V

THE CZECH REPUBLIC CENTRE FOR EVIDENCE-BASED HEALTHCARE: JOANNA BRIGGS INSTITUTE CENTRE OF EXCELLENCE, CLINICAL PRACTICE GUIDELINES RESEARCH GROUP, PALACKÝ UNIVERSITY IN OLOMOUC; HYPER ACUTE STROKE UNIT, NORTHWICK PARK HOSPITAL, LONDON, UK; FACULTY OF MEDICINE AND DENTISTRY, PALACKÝ UNIVERSITY IN OLOMOUC; INSTITUTE OF HEALTH INFORMATION AND STATISTICS OF THE CZECH REPUBLIC; FACULTY OF MEDICINE, MASARYK UNIVERSITY

WORKSHOP: INTEGRATION OF LOW- AND HI-FIDELITY SIMULATIONS TO MAXIMISE THE PEDAGOGICAL VALUE OF EDUCATIONAL MEDICAL SIMULATION CENTRES

Tuesday, 28 November, 15.30–17.30

PRESENTERS: WAVES AND SIMU WORKING GROUPS

ST GEORGE'S, UNIVERSITY OF LONDON, UNITED KINGDOM; ARISTOTLE UNIVERSITY OF THESSALONIKI, GREECE; MASARYK UNIVERSITY, CZECH REPUBLIC; KAROLINSKA INSTITUTET, SWEDEN; BAYER, UNITED KINGDOM; INSTRUCT, GERMANY

POSTERS: A GUIDED TOUR

Wednesday, 29 November, 9.00–10.00

FACILITATORS: VEJRAŽKA M, JURAJDA M

IMPLEMENTATION OF TRAINING ON VIRTUAL PATIENTS AT ZAPOROZHYE STATE MEDICAL UNIVERSITY

FURYK O

ZAPOROZHYE STATE MEDICAL UNIVERSITY, ZAPORIZHZHIA, UKRAINE

REPOSITORY OF CLINICAL CASE REPORTS

MAJERNÍK J

FACULTY OF MEDICINE, PAVOL JOZEF ŠAFÁRIK UNIVERSITY IN KOŠICE

REGIONS OF THORAX, ABDOMEN AND PELVIS SHARED AS NEW VIDEO RECORDS OF CADAVERIC DISSECTIONS

MAJERNÍK J

FACULTY OF MEDICINE, PAVOL JOZEF ŠAFÁRIK UNIVERSITY IN KOŠICE

RESEARCH JOBS

PICTOGRAM TOOL OF PROJECT GÜRD

OLIBERIUS J

FACULTY OF HEALTH CARE STUDIES, UNIVERSITY OF WEST BOHEMIA IN PILSEN

**VIRTUAL PATIENT IN MIDWIFERY – CARE FOR WOMAN
WITH GESTATIONAL DIABETES MELLITUS**

MASKÁLOVÁ E

JESSENIUS FACULTY OF MEDICINE IN MARTIN, COMENIUS UNIVERSITY IN BRATISLAVA

EVALUATION THE FEEDBACK OF E-LEARNING IN MIDWIFERY EDUCATION

MAZÚCHOVÁ L

JESSENIUS FACULTY OF MEDICINE IN MARTIN, COMENIUS UNIVERSITY IN BRATISLAVA

**PREPARATION OF CLINICAL PRACTICE MENTORING IN MIDWIFERY –
IMPLEMENTATION OF INNOVATIVE EDUCATIONAL APPROACHES**

KELČÍKOVÁ S

JESSENIUS FACULTY OF MEDICINE IN MARTIN, COMENIUS UNIVERSITY IN BRATISLAVA

SYMPOSIUM: APPLICABILITY ANALYSIS OF EUROPEAN EXAMPLES OF GOOD PRACTICE IN THE DOMAIN OF ACTIVE AND HEALTHY AGEING

Wednesday, 29 November, 10.30–12.00

PRESENTER: GÜTTER Z

CZECH NATIONAL EHEALTH CENTER, UNIVERSITY HOSPITAL OLOMOUC AND PALACKÝ UNIVERSITY IN OLOMOUC

KEYNOTE LECTURE

Wednesday, 29 November, 12.00–12.45

LEARNING CLINICAL REASONING IN VIRTUAL ENVIRONMENTS

HEGE I

*INSTITUTE FOR MEDICAL EDUCATION AT LMU MUENCHEN, GERMANY; GEISEL MEDICAL SCHOOL AT
DARTMOUTH, HANOVER, NH, USA*

TOPICAL SESSION: TECHNOLOGY-ENHANCED LEARNING IN OBSTETRICS AND GYNAECOLOGY

Wednesday, 29 November, 13.45–15.45

CHAIRS: MAŠATA J, HUSER M

**TEACHING GYNAECOLOGY AND OBSTETRICS AT THE FACULTY
OF MEDICINE, MASARYK UNIVERSITY, BRNO**

HUSER M

FACULTY OF MEDICINE, MASARYK UNIVERSITY

TEACHING GYNAECOLOGY AND OBSTETRICS AT THE FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY, PRAGUE: PART 1
MAŠATA J
FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

VOTING SYSTEMS FOR TEACHING AND TESTING
VANĚK F
FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

RESULTS OF STUDENT SURVEY – INFORMATION RESOURCES IN TEACHING
VANĚK F
FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

TEACHING GYNAECOLOGY AND OBSTETRICS AT THE FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY, PRAGUE: PART 2
HURT F
FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

TEACHING GYNAECOLOGY AND OBSTETRICS AT THE FACULTY OF MEDICINE, PALACKÝ UNIVERSITY, OLOMOUC
PILKA R
FACULTY OF MEDICINE AND DENTISTRY, PALACKÝ UNIVERSITY IN OLOMOUC

USE OF TRAINERS IN MEDICAL EDUCATION
TURKOVÁ M
FACULTY OF MEDICINE AND DENTISTRY, PALACKÝ UNIVERSITY IN OLOMOUC

KEYNOTE LECTURE
Wednesday, 29 November, 16.00–16.45

DIVERGENT PATHS / CONVERGENT NEEDS: OBSERVATIONS ON A DECADE OF EDUCATIONAL TECHNOLOGY IN MEDICAL EDUCATION AND ITS RELATIONSHIP TO DEVELOPING MODELS OF PEDAGOGY
COHEN SB
ENHANCED EDUCATION UNIT, UCSF SCHOOL OF MEDICINE'S TECHNOLOGY, USA

SHORT COMMUNICATIONS: MEDICAL INFORMATICS IN EDUCATION
Wednesday, 29 November, 16.45–18.00

CHAIRS: MAJERNÍK J, ZAHRADNÍČEK O

MEDCIN: A PLATFORM FOR CURRICULUM OVERVIEW AND COMPARISON
KOMENDA M
FACULTY OF MEDICINE, MASARYK UNIVERSITY

SHINY APPLICATION PROVIDING GUIDANCE FOR THE CORRECT STATISTICAL TEST SELECTING AND OFFERING DATA-PROCESSING PLATFORM

ŠTĚPÁNEK L

FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

SIMULATION MEDICINE AS PART OF MEDICAL EDUCATION AT LFUK BRATISLAVA

HNILICOVÁ S

FACULTY OF MEDICINE, COMENIUS UNIVERSITY IN BRATISLAVA

DEVELOPMENT OF ITEM BANK AND ONLINE APPLICATION FOR COMPUTERIZED ADAPTIVE TESTING OF HIGH SCHOOL PHYSICS KNOWLEDGE IN 1ST YEAR MEDICAL STUDENTS

KOMARC M

FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY; INSTITUTE OF COMPUTER SCIENCE OF THE CZECH ACADEMY OF SCIENCES

WIKIS IN EDUCATION – APPROACH IS THE KEY!

KAJZAR P

FIRST FACULTY OF MEDICINE, CHARLES UNIVERSITY

MERGER: UNVEILING LINKS BETWEEN SYSTEMS FOR VIRTUAL PATIENTS DELIVERY AND CURRICULUM MAPPING

SCHWARZ D

FACULTY OF MEDICINE, MASARYK UNIVERSITY

ABSTRACTS

WORKSHOPS

CLINICAL PRACTICE GUIDELINES – DEVELOPMENT, ADAPTATION AND EVALUATION

Presenters: Radim Líčeník[1,2], Katarina Nešťáková[3], Andrea Pokorná[4,5], Jarmila Potomková[3], Vladimír Mihál[3]

[1] *The Czech Republic Centre for Evidence-Based Healthcare: Joanna Briggs Institute Centre of Excellence, Clinical Practice Guidelines Research Group, Palacký University in Olomouc*

[2] *Hyper Acute Stroke Unit, Northwick Park Hospital, London, UK*

[3] *Faculty of Medicine and Dentistry, Palacký University in Olomouc*

[4] *Institute of Health Information and Statistics of the Czech Republic, Prague*

[5] *Faculty of Medicine, Masaryk University, Brno*

The workshop will focus on the basic principles of creating, adapting, evaluating and implementing clinical practice guidelines. The objectives and characteristics of clinical recommended procedures and best practices for public health will be discussed. The workshop participants will get information about the current state of creation and implementation of clinical practice guidelines in Czechia and Slovakia. Practical lessons will exemplify best practices in cardiopulmonary resuscitation and paediatrics.

INTEGRATION OF LOW-, AND HI-FIDELITY SIMULATIONS TO MAXIMISE THE PEDAGOGICAL VALUE OF EDUCATIONAL MEDICAL SIMULATION CENTRES

Presenters: WAVES and SIMU working groups[1,2,3,4,5,6]

[1] *St George's, University of London, United Kingdom*

[2] *Aristotle University of Thessaloniki, Greece*

[3] *Masaryk University, Czech Republic*

[4] *Karolinska Institutet, Sweden*

[5] *Bayer, United Kingdom*

[6] *Instruct, Germany*

Careful integration of low- and hi-fidelity simulation modalities can lead to maximization of the pedagogical value of complex simulation centers which are nowadays often designed, built or recently launched. The integration can be achieved by incorporating different modalities into the curriculum at the time of maximum relevance. Frequently, the hi-fidelity simulations are standalone facilities manifesting poor integration into the earlier stages of a medical curriculum and often lacking integration to simpler tools, such as interactive virtual scenarios (e.g. virtual patients – VPs) which can facilitate exploring clinical management at earlier stages in the curriculum. This workshop will guide the participants through various types of medical simulation modalities and demonstrate the advantages of the relatively high-contact & low-cost simulations such as VPs to maximize overall value both financially and pedagogically, by teaching clinical management, decision-making, and training against medical error, early in the curriculum structure.

During the workshop, different approaches to the employment of simulation modalities will be presented in multiple case studies and the presentations will be accompanied by explanations detailing the pros and cons. The approaches differ mainly in two aspects: (i) the level of simulation modalities integration, (ii) the mode of participation (individual/group). The workshop participants will work and discuss in teams, aiming at a SWOT analysis of their own integration idea.

WAVES (Widening Access to Virtual Educational Scenarios) is an Erasmus+ Knowledge Alliance project, which combines skill-sets of both academic and enterprise partners to make Scenario-Based Learning (SBL) more accessible to a wide range of professions. Embedding SBL activities directly into learning platforms and Massive Open Online Courses (MOOCs) forms one of the project development highlights. Such integration provides renewed pedagogic value and ease-of-use to learners through improved integration, progress monitoring, and the delivery of feedback. By embedding SBL, MOOCs will enable development of real world skills, competency and experience rather than knowledge.

SIMU (The Simulation Centre of Masaryk University) project aims at upgrading the medical education organized by MU. SIMU will help to revise the curricula of General Medicine and Dentistry study programs. Implementation of planned modifications will enhance the practical part of teaching process due to the inclusion of a comprehensive range of simulation modalities, namely high-fidelity mannequins, virtual patients and standardized patients. An emphasis will be also placed on the development of soft skills, highlighting 21st century skills such as communication, decision-making, critical thinking, clinical reasoning, crisis communication and teamwork.

SYMPOSIUM

APPLICABILITY ANALYSIS OF EUROPEAN EXAMPLES OF GOOD PRACTICE IN THE DOMAIN OF ACTIVE AND HEALTHY AGEING

Presenter: Zdeněk Gütter

Czech National eHealth Centre, University Hospital Olomouc and Palacký University in Olomouc

The project "Applicability analysis of European examples of good practices in the domain of active and healthy ageing" has been initiated with respect to the increasing life expectancy and a growing prevalence of chronic illnesses. Attention must be paid to these trends from the point of view of the entire society and with regard to sustainability of healthcare systems in EU countries. Ageing populations of EU countries are a consequence of successful healthcare systems: mortality reduction and growing numbers of healthy older people are benefits of this development. The aim of the project is to bring the examples of innovative good practices in terms of care provided to ageing populations with chronic diseases from abroad to the Czech Republic and to recommend implementation possibilities in the specific conditions of Czech healthcare.

The symposium provide examples of good practices using ICT tools to provide health and social care to chronically ill patients and older people. The symposium will present the methodology for the evaluation of good practices with respect to their potential implementation in the specific environment of healthcare and social care in the Czech Republic. Various areas in which the Czech Republic is different from other European countries in terms of implementation of ICT tools into clinical practice will also be discussed. Among others, the discussion will involve economic efficiency and objective assessment of investments to the equipment that is needed for a good practice, subsequent maintenance of either the entire system or individual equipment etc. The discussion will also cover topics such as payments to health insurance companies abroad, based on whether or not the provided care is a standard of care etc.

One part of the workshop will be devoted to legislative definitions used in the Czech healthcare system that are closely related to the ethics of healthcare in connection with the areas of social medicine, such as the geographical availability of health care, mutual integration of healthcare and social care, specific prevalence of diseases in the Czech population, the current model of healthcare or the range of good practice with regard to the number of patients with specific diseases and conditions in the Czech Republic. The technical part of the workshop will be focused on technical requirements in the implementation of good practice, which is important due to the absence of e-health or shared electronic patient records in the Czech Republic. We will also discuss issues regarding the strategy of eHealth in the Czech Republic and compliance with standards such as Dasta or HL7, or technical compatibility with ICT infrastructure. From the security point of view, one part of the workshop will be devoted to the issue of personal data protection, including the General Data Protection Regulation (GDPR), which has been developed relatively recently.

The discussion will also focus on the evaluation of viability of particular GPs in cases where it is possible to use the "Health Technology Assessment" (HTA) methodology. The MAST methodology (Model for Assessment of Telemedicine) was proposed for ICT-based telemedicine systems in Europe. MAST enables multidisciplinary evaluation of telemedicine applications in seven domains (characteristics in the context of the disease, safety, clinical efficacy, patient perspective, economic effects, organisational aspects and social, ethical and legal aspects).

In practice, the MAST methodology will not necessarily guarantee the successful implementation of a specific eHealth service. That is the reason why the European project Momentum has proposed a set of 18 success factors that are a prerequisite for a successful deployment of telemedicine services. These factors are also included in the GPs' analysis of viability in the specific environment of the Czech healthcare system.

Zdeněk Gütter *is an expert in healthcare innovations based on information and communication technologies. Besides system-oriented aspects such as the integration of care, he focuses on tools for the assessment of technologies and telemedicine services, implementation and evaluation of their impact. He is particularly involved in research in the area of telemedicine applied to healthcare provided to patients with chronic diseases. He coordinates several programmes and EU projects in the Czech National eHealth Center (NTMC) at the University Hospital Olomouc (UHO).*

KEYNOTE LECTURES

LEARNING CLINICAL REASONING IN VIRTUAL ENVIRONMENTS

Inga Hege

Institute for Medical Education at LMU Muenchen, Germany
Geisel Medical School at Dartmouth, Hanover, NH, USA

Clinical reasoning is a complex set of skills healthcare students have to acquire during their education. However, especially in virtual environments it is still not clear how clinical reasoning can be taught in an optimal way. We developed a research-based tool following a concept mapping approach that supports the clinical reasoning process. Four qualitative and quantitative studies revealed several interesting results. For example, the patient representation influences the clinical reasoning process in various aspects. We conclude that careful emphasis should be put on instructional design aspects, such as cognitive load, complexity, patient presentation, feedback, and adaptability to learners needs.

Inga Hege is an Associate Professor for medical education at the Institute for Medical Education at LMU Munich, Germany. Since 1 July 2015 she is at the Geisel School of Medicine at Dartmouth for a 1.5-year Marie-Curie Global Fellowship funded by the EU. Until June 2015 she also worked as a software-developer for the Instruct, a company which develops the virtual patient system CASUS. She discovered her passion for medical education – especially for case-based e-learning and virtual patients already during medical school and wrote her MD thesis about the creation and evaluation of an interactive computer-based learning program for occupational medicine.

DIVERGENT PATHS / CONVERGENT NEEDS: OBSERVATIONS ON A DECADE OF EDUCATIONAL TECHNOLOGY IN MEDICAL EDUCATION AND ITS RELATIONSHIP TO DEVELOPING MODELS OF PEDAGOGY

Sasha Benjamin Cohen

Enhanced Education unit, UCSF School of Medicine's Technology, USA

There have been many new trends introduced to medical education since the beginning of the 21st century: competency-based models, EPAs, mapping systems, asynchronous learning, integrated and accelerated progressions thru the curricula, interprofessional team-based curricula and more. Too often these have diverged from the process of developing the technologies that would allow for practical implementation of these models, leaving a wide rift in thinking between pedagogical aims, and the tools available to support those aims. This talk looks at impressions from a decade in the field, and proposes ways of thinking about a more convergent culture and means of moving forward.

Sasha Benjamin Cohen is the Director of Technology Strategy & Development for the UCSF School of Medicine's Technology Enhanced Education unit. He is also the Director of the Ilios Project, an open source community supporting the Ilios Curriculum Management platform.

TOPICAL SESSION

TECHNOLOGY-ENHANCED LEARNING IN OBSTETRICS AND GYNAECOLOGY

Chairs: Jaromír Mašata, Martin Huser

This year's topical session is devoted to the practical part of teaching process in obstetrics and gynaecology facilitated with modern information technologies. The session will be contributed by experts from three workplaces in the Czech Republic:

- Charles University, First Faculty of Medicine, Department of Obstetrics and Gynaecology
- Palacký University in Olomouc, Faculty of Medicine and Dentistry, Department of Obstetrics and Gynaecology
- Masaryk University, Faculty of Medicine, Department of Obstetrics and Gynaecology

List of lectures:

- **Martin Huser**: Teaching gynaecology and obstetrics at the Faculty of Medicine, Masaryk University, Brno
- **Jaromír Mašata**: Teaching gynaecology and obstetrics at the First Faculty of Medicine, Charles University, Prague: part 1
- **František Vaněk**: Voting systems for teaching and testing
- **František Vaněk**: Results of student survey – information resources in teaching
- **Karel Hurt**: Teaching gynaecology and obstetrics at the First Faculty of Medicine, Charles University, Prague: part 2
- **Radovan Pilka**: Teaching gynaecology and obstetrics at the Faculty of Medicine, Palacký University, Olomouc
- **Marie Turková** : Use of trainers in medical education

MODERN TRENDS IN MEDICAL STUDENT EDUCATION IN THE GYNAECOLOGICAL-OBSTETRICS DEPARTMENT OF THE GENERAL UNIVERSITY HOSPITAL PRAGUE AND FIRST MEDICAL FACULTY AT CHARLES UNIVERSITY

Jaromír Mašata

First Faculty of Medicine, Charles University, Prague

The teaching of these subjects by our faculty is divided into a two-week session in the 5th year of the studies, mainly of an introductory nature, and a practical two-week internship during the summer.

Our department then organises a four-week internship. The practical aspect focuses on proper methods of taking a history with obstetric and gynaecological patients and the skills necessary for a ward round. We also concentrate on the work done in outpatient clinics. Furthermore, we introduce all students to basic surgical procedures in all sub-specialities of obstetrics and gynaecology, including live demonstrations of caesarean section, urogynaecology surgery, oncogynaecology surgery and laparoscopic surgery. We also organized live transmission of ultrasound examinations.

As part of the training we provide hands-on instruction to develop familiarity with performing gynaecological and obstetrical examinations (on simulators), along with basic obstetrical and surgical instruments. Each student also undergoes hands-on training of episiotomy suturing on a simulator, a course of labour management on a simulator, and training in vacuum and forceps delivery. In addition, we offer elective training on laparoscopic simulators and hands-on training with ultrasound machines.

Students also have the opportunity to view all our lectures on our website (in each case with a commentary).

SHORT COMMUNICATIONS

MEDCIN – A PLATFORM FOR CURRICULUM OVERVIEW AND COMPARISON

Martin Komenda, Matěj Karolyi

Faculty of Medicine, Masaryk University, Brno

Keywords: *curriculum mapping, standardisation, data analysis, software development*

The MEDCIN project (Medical Curriculum Innovations) brings new experience, original results and a complex expertise in the domain of curriculum innovation. The existing theoretical background was combined with modern development technologies and a new web-based platform for curriculum analysis, overview and comparison was successfully implemented in practice. In general, the MEDCIN project (http://medcin-project.eu/) primarily focuses on the following topics: (1) to standardise the OPTIMED curriculum management system, (2) to propose an innovative methodological background in the field of curriculum analysis and overview, (3) to build an original model for the comparison of medical curricula and (4) to increase the awareness of existing educational standards produced by MedBiquitous.

In order to effectively and properly design and implement the MEDCIN platform, the following pedagogical, software development, data mining and visual analytics methods and techniques were adopted and used: (1) Outcome-based approach representing statements of what a learner is expected to know, understand and/or be able to demonstrate at the end of a period of learning. (2) Agile engineering process providing an easy adoption of new and frequently changing requirements and helping to satisfy various needs of the academic community. (3) CRISP-DM helping us to identify, to analyse and to visualise hidden relations between medical curriculum building blocks. (4) Narrative visualisation used to understand how design techniques that prioritise particular interpretations in visualisations that tell a story "can significantly affect end-users".

The MEDCIN platform (http://platform.medcin-project.eu/) brings an innovative web-based application for an online visualisation of curriculum data, which helps (1) to understand the structure of imported curriculum data using a methodology for formal medical curriculum description, (2) to overview available data using a set of analytical and data mining techniques, (3) to compare individual curriculum using a computational model for systematic relationship exploration based on data mining and natural language processing methods and (4) to disseminate the know-how of curriculum innovation using a best-practice methodology for achieving comparability of higher

education quality across Europe. MEDCIN provides new curriculum innovation technologies for standardisation and overview of the existing study programmes. It significantly helps curriculum designers during the development and harmonisation of a well-balanced curriculum. An expert evaluation and a correct interpretation of the unveiled patterns can determine new knowledge for improving the outcome-based concept in practice. The MEDCIN platform helps to reduce the time spent on a global overview and systematic evaluation of a curriculum, which plays an important role in the process of continuous curriculum innovation.

Links: http://medcin-project.eu/

SHINY APPLICATION PROVIDING GUIDANCE FOR THE CORRECT STATISTICAL TEST SELECTING AND OFFERING DATA-PROCESSING PLATFORM

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Keywords: *statistical computations, R, biostatistics, ShinyApps, data processing, statistical support, decision making, flowchart*

Each researcher often faces the problem of correct choosing of the right statistical method which should by applied in order to analyse her data properly. What is more, potential struggling with a choice of the best possible statistical method is not the only difficulty a researcher can get into. Other step of statistical analyses requiring individual and non-routine approach is data processing. We introduce an application based on flowchart diagram navigating to applicable statistical method and offering a platform for online data processing, which both is our attempt to simplify these phases of statistical analyses.

The application is built with R language and is freely available online. The R is a programming language and environment designed for statistical computing and graphics and is both free-as-in-beer and free-as-in-speech. R is widely used among statisticians, econometricians, biologists, or physicians. One of R packages, Shiny – providing an online framework for R scripts –, was used to upload some offline written chunks of R code on server dedicated to online R computations.

There are two important and a bit innovative components of the application. Firstly, it is a flowchart introducing a decision tool for selection of the optimal statistical method, based on researcher's data and hypotheses. The key decision points of the flowchart require answering the questions dealing with data types and structures, empirical data distributions, number of compared samples and whether analysis compares measures of average or measures of variability.

Secondly, it is one of the application tabs that enables optional and tailored data processing, using native R code inputted by a user. Incorporation of a raw R code input-output interpreter into the web-based application reaches a necessary compromise between sufficient power of data-processing application tool, which is demanding, and inevitable uniqueness and particularity of each one analysis, which usually makes each analysis noticeably hard.

However, the step of data-processing is optional; a user can do the data processing on her own before she uploads her (processed) data into the application.

The application is available at R server of the First Faculty of Medicine, http://shiny.statest.cz:3838/statisticke_nastroje/. Application uses Czech language since we aim on Czech-speaking researchers and particularly students.

The flowchart integrated into application helps to make correct statistical decisions depending on character of inputted data and intended statistical hypothesis; its design arises both from common good practise and from author's experience in this field.

It enables a researcher who has before any analysis collected some data and formulated a research hypothesis, to pick the most appropriate statistical method by going through the flowchart step-by-step as she progressively makes the decisions by answering the ordered questions offered by the chart. Since that moment the researcher has been advised with the flowchart which method to choose, she is linked to another tab of the application which allows to use the suggested method and to upload researcher's data and performing an analysis.

The necessity of data processing the way a user should programme a code chunk via R language seems to be a feasible solution how to deal with complexity and heterogeneity of data processing phase of analyses, since a clickable approach to data processing wouldn't be customizable enough.

Statistical methods which are implemented so far and are linked with the flowchart, cover both parametric ones such as t-tests, F-tests, ANOVA and others; and non-parametric ones such as Wilcoxon tests, Kruskal-Wallis tests or Friedman ANOVA and others.

A quality of statistical results presented in research article significantly affects the overall impact of the publication. Consequently, the correctness analytic methodology choice may substantially influence whether the scientific work will eventually be accepted, or rejected for publication by a research journal.

A user-friendly online flowchart mapping the decision-making process of possible statistical test choosing and pointing out the most appropriate one, is the way how to make the described process less difficult and more easy-to-follow. The direct connection between best possible statistical method and graphical interface performing the method computations could increase a level of user comfort. Although the processing of data is not "clickable" (and could not be at all), coding-like interface can still improve overall usefulness of the application during the data analysis phase.

Links: http://shiny.statest.cz:3838/statisticke_nastroje/

SIMULATION MEDICINE AS PART OF MEDICAL EDUCATION AT LFUK BRATISLAVA

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Keywords: *simulation, medical education, physiology*

Simulation medicine is a form of medical education that uses simulation and simulators as a mean of education. This technique replicates the clinical situation and imitates reality with aims to educate students, teaching of clinical skills and to evaluate their results.

The simulation implementation at Faculty of Medicine, Comenius University (FoMCU) started in 2013 when Institute of Simulation and Virtual Medical Education was established. At FoMCU we use a variety of techniques. These include simple verbal hypothetical simulations, computer simulations, partial-task simulators, virtual reality, standardized patients, to complex high-fidelity simulators-manequinnes.

After the establishment of the Simulation center at the FoMCU, the Institute of Physiology was the first to include clinical scenarios for 2nd Year in MD program curriculum. There are four clinical cases taught during the Human Physiology Course. They are mandatory part of practical lessons. Additionally, simulations on high fidelity simulators are part of teaching in Pediatrics, Neonatology, Internal Medicine, Gynecology and Obstetrics, Pathophysiology, Nursing and Social Medicine at FoMCU in Bratislava.

Use of simulations in medical education is increasingly important also because both in our country and globally, availability of direct patient contact in medical education is decreasing due to reduced number of patients available to students in university hospitals. Clinical skills training and patient management during simulations and subsequent debriefing creates a prerequisite for enhancing the clinical competencies of students, professionalism, patient communication and team collaboration.

DEVELOPMENT OF ITEM BANK AND ONLINE APPLICATION FOR COMPUTERIZED ADAPTIVE TESTING OF HIGH SCHOOL PHYSICS KNOWLEDGE IN 1ST YEAR MEDICAL STUDENTS

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Keywords: *item response theory, psychometrics, computerized adaptive testing*

Computerized adaptive testing (CAT) – a novel and ever increasingly used method of a test administration - offers numerous theoretical and methodological improvements that can significantly advance educational testing procedures. By adapting a test to an individual respondent's performance, CAT increases precision of a measurement process compared to traditional linear testing (in which all examinees answer the same set of items), without compromising comparability across examinees. The aim of this paper was to demonstrate (a part of) development of item bank (IB) and online application for CAT assessment of high school physics knowledge.

For creation of the current IB we used three different sets of items (N1 = 30, N2 = 32, N3 = 32), which were utilized for assessment of high school physics knowledge between 2013 and 2017 (total N = 4138 students). These three sets of items were merged and multiple imputation method (10 imputations resulting in 10 datasets) was used in order to obtain a full response matrix. Dimensionality of responses to all 94 items was examined using exploratory factor analysis (principal components). A 2-parameter logistic item response theory (IRT) model was used to estimate the item parameters (difficulty and discrimination), which were subsequently utilized in a Monte

Carlo and post-hoc simulation of CAT to assess usefulness of CAT for given IB. An online CAT application was created in R environment using *mirtCAT* R package.

Exploratory factor analysis (EFA) revealed that there is one general factor (which could be interpreted as "knowledge of high school physics") accounting for correlations between item responses. Both EFA and IRT analysis identified two problematic items, which were excluded from the IB. Global reliability (Cronbach's alpha) of the IB containing N = 92 items was α = 0.916. Monte Carlo simulation has shown that adaptive administration of the proposed item bank may be very useful. For instance, CAT requiring widely acceptable measurement precision (SE = 0.45 which represents test reliability of 0.80) resulted in administration of N = 25.6 (SD = 17.4) items on average per examinee. CAT application using this IB was successfully tested in offline mode using R environment.

Knowledge of high school physics is routinely examined in 1st year students throughout the medical schools in Czech Republic. Therefore we believe that the presented CAT IB and CAT application might be of great importance to many experts from the field. Moreover, we believe that the presented approach to development of CAT tools might serve as an inspiration in many other areas of medical educational assessment – such as admission tests or their sample versions, but may be used also for effective psychological assessment or in patient reported outcome measures.

WIKIS IN EDUCATION – APPROACH IS THE KEY!

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Keywords: *wiki, e-learning, web 2.0*

The amount of information in medicine exponentially increases. Modern study materials such as wikis can capture the dynamic growth of medical knowledge. For medical students and young doctors, a good accessibility is the main difference between wikiprojects and the traditional sources of information.

In education, and particularly in medical education, we see different approaches - from memorisation and testing, through individual cognition, to a new environment with informational technologies and social networks. We want to compare different views of these approaches to wiki projects.

If we treat wiki as a static textbook, the correct results will not be achieved. Some educators rightly point to the shortcomings they have found. However, if we exploit the potential of the wiki in all steps of its creation and use, the probability of its success is high, as confirmed by numerous active and thriving wikiprojects at various medical faculties.

Students going through education have other requirements compared to academics involved in scientific research. Higher education should show students how to work with different types of information sources and how to develop skills to maintain the external knowledge.

Links: http://www.wikiskripta.eu

MERGER: UNVEILING LINKS BETWEEN SYSTEMS FOR VIRTUAL PATIENTS DELIVERY AND CURRICULUM MAPPING

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Keywords: *virtual patients, curriculum mapping, natural language processing, machine learning*

The MERGER project brings together medical students and experts from the field of clinical medicine, information science, applied informatics and biomedical engineering, and proposes to develop methods for automated detection of links between existing information systems for virtual patients delivery and medical curriculum mapping.

The MERGER project will utilize a large amount of text data collected in systems for medical curriculum management and mapping (e.g. OPTIMED), and systems for virtual patients delivery (e.g. AKUTNE.CZ). The developed detection algorithms will employ natural language processing techniques and machine learning methods. The ground truth data for detector training will be provided by medical students.

The project developments will enable to answer the following research questions: 1) Is it possible to determine the distance or similarity between a virtual patient and a selected curriculum segment (e.g. learning unit, learning outcome)? Can these distances or similarities be transformed into binary links between those entities? 2) What is the accuracy of a regression model that, based on the features computed from word frequencies in a single merged text corpus, determines the strength of the link between a virtual patient and a curriculum building block? 3) Do the curriculum segments (learning units, learning outcomes) form a suitable entity for automated annotation of virtual patients?

This contribution is an interim report of the MERGER project development.

Links: http://www.akutne.cz, http://opti.med.muni.cz

POSTERS: A GUIDED TOUR

IMPLEMENTATION OF TRAINING ON VIRTUAL PATIENTS AT ZAPOROZHYE STATE MEDICAL UNIVERSITY

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Keywords: *virtual patient, D-PBL, medical error*

Medical education is a long and complex process that includes database creation, clinical skills development and competence enhancement. PBL (Problem-Based Learning) is a long-term course of medical education development; it is the most effective in those spheres where cognitive activity, constant extension of theoretical and practical knowledge, speed of decision making, confidence

in their own abilities and independence. PBL requires using special methodical support – cases. A case is a special clinical case, description in a set sequence of events.

The problem-based training methodology was introduced into the educational process of ZSMU in 2014, and since 2015 the clinical PBL methodic – D-PBL – in the frames of the project TAME-Training Against Medical Error of the Erasmus+ KA2 programme (2015-2018).

For realization of D-PBL a database of surgical virtual patients (VPs) was developed. VP is an interactive computer simulation captured from the real life of clinical scenarios that is created for the purposes of education, training and evaluation of students' knowledge and performance with the help of the OpenLabyrinth platform.

A working group consisting of surgeons and IT support personnel was created for development of VP cases. The regular trainings and meetings were organized to teach and provide any required assistance to the newly involved staff members during their work at the OpenLabyrinth platform. OpenLabyrinth is an open-source platform for creating and playing virtual patients. 6 VP cases in the surgical area were created for the period of 6 month; these cases cover 10 the most frequent dead medical errors. Above, we cite an overview of one of the surgical VP cases created by ZSMU working group at the OpenLabyrinth platform.

REPOSITORY OF CLINICAL CASE REPORTS

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Keywords: *education, case report, repository*

Medical education involves various methods showing students the clinical examples based on real stories. Even if the evidence based medicine is considered as one of the most relevant methods revealing background of systematic research and relevant outputs, individual case reports have also a great potential to increase students' medical knowledge. Clinical case reports represent documentation of clinical observations that describe common and rare cases, characteristics of known and unknown diseases, variations in diseases and/or their combinations, side effects of drugs usage, as well as the ways the professionals use to solve particular case respecting their recent best knowledge.

Considering the possibilities of modern technologies and the fact that our teachers presented clinical cases to our students in many heterogeneous forms, including paper based and oral ones, we decided to concentrate their work in this area to the one unified and online available place. The advantages for teachers include the possibility to use generalized structure of reports and minimal requirements on technical skills. On the other hand, the students can find everything in one system and are allowed to study individual cases wherever and whenever they need. Because of great potential of mefanet's portal platform, we preferred to use our local instance of it to host repository of our clinical reports generated in various clinical disciplines. Furthermore, using this way and depending on authors decision, the individual case reports can be shared via Central gate to all students studying at medical faculties in Czech Republic and Slovakia.

To start our work, to address the widest community of clinical teachers and to reach maximum number of possible cases, the management of the faculty organized a meeting with clinical teacher

in September 2017. During that meeting, the teachers were informed about the ideas of that educational activity, general structure and demonstrative example of case reports as well as about the portal and the ways how to publish case reports. The idea was accepted very positively and first case reports were send to the redaction within few days after the meeting took place. As we expected the majority of case reports was prepared in internal medicine, surgery and dental medicine too. The teachers generated several tenths cases within two-month period, and the activity still continues. The reports are published after rearranging to meet the requirements of the portal. However, all the cases will be reviewed by guarantors of particular disciplines. Then, each reviewed report will be labeled by the review logo to allow students recognizing reviewed and unreviewed reports.

Our goal is to generate repository of qualitative case reports covering all clinical branches to support clinical education process. Even if the scientific impact is minimal, we suggest the critical thinking of medical students will be improved thanks to the combination with traditional clinical bed side teaching. The highly resonant problem in reaching meaningful quantitative levels is motivation of teachers. Therefore, the best quality case reports finished and reviewed by the end of the year will be financially rewarded.

Links: https://portal.lf.upjs.sk/clanky.php?cat=obrazove-kazuistiky

REGIONS OF THORAX, ABDOMEN AND PELVIS SHARED AS NEW VIDEO RECORDS OF CADAVERIC DISSECTIONS

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Keywords: *anatomy, dissection, education, video*

Human anatomy, one of the core medical subjects, was always taught as a combination of traditional lectures and practical lessons at our faculty. Changes in curricula caused, except of others, also the reduction of teaching hours dedicated to anatomy. Recently, the lectures have 126 teaching hours as well as 126 teaching hours of practical lessons. This situation forced us, not only to compress the extend of topics, but also to use other teaching methods offering our students more illustrative and complete materials with explanations related to all structures of human body.

Despite of various discussions lead by professionals from the area of anatomy and different conclusions dealing with importance of prosections and dissections, we suggest the dissections are invaluable part in medical education. Therefore, the main aim of our work is to optimize teaching of anatomy respecting decreased dedicated time, space limitations of dissecting rooms and shortage of cadavers while keeping the importance of teaching based on cadaveric dissections. Prior to the dissection, the individual topics are introduced to the students by didactic lectures. These lectures build up knowledge base, needed to understand terminology, structures, functions and interaction of particular anatomical systems. One of the activities in our current project was to capture all important dissection processes and to offer them to the students during lectures, exercises, but also for home preparation to enhance competences of medical students.

Based on our previous work, where the anatomically demonstrative and educational video-clips of upper and lower extremities where created, we continued in recording of cadaveric dissections

realized at the Department of Anatomy. The new video records of thorax, abdomen and pelvic regions were captured in both 2D and 3D formats. Then, the best of the captured scenes were selected and used to be processed in the final educational versions. A set of 42 new clips was produces during this year an archived in both the off-line and on-line versions. Full HD quality records are distributed using DVDs, and in local network's archive available for authorized users. Compressed FLV versions are shared through faculty's portal and set to be accessible to all MEFANET members.

Changes of anatomical teaching minimized the role of cadaveric dissections. In some cases, it was completely replaced by modern approaches including plastic models, multimedia learning packages, simulation tools or virtual reality animations. However, it is necessary to bear in mind that the students and thus the future physicians and doctors will work with real patients having real health related problems that have to be solved as best as possible. Therefore, we suggest continuing in teaching of human anatomy based on cadaveric dissections. This also enhance students' manual skills and foster their understanding of relationships between symptoms and pathology. Availability of educational video clips based on real cadaveric dissections helped us to reach the best and the most illustrative educational outputs.

Links: https://portal.lf.upjs.sk/clanky.php?cat=digitalni-video

PICTOGRAM TOOL OF PROJECT GÜRD

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Keywords: *pictograms, tool, language, barrier, paramedic*

Czech and German emergency medical service workers often have to intervene in an area around the Czech-German border. The goal of "Concept of coordination and realization of crossborder cooperation between emergency medical service workers" project (GÜRD) is to make the cooperation between Czech and German emergency medical service workers easier and more effective. Thanks to Project GÜRD, a tool was created. The tool's main purpose is to help to overcome the language barrier between a paramedic that is handing over a patient to a doctor in the ER, if one of them speaks Czech and the other one speaks German. The tool uses pictograms, so it is easy to use and to orientate in. The tool was first tested on April 4th, 2017 during tactical training "Salvátor" in Karlovy Vary and proved to be useful in helping to overcome the language barrier, helping to save the time needed to hand over a patient and helping to give enough information about the patient. The tool is going to be tested again during the next training on November 2nd, 2017. The results of the testing will be published in Jakub Oliberius' bachelor thesis, written under Faculty of Health Care studies of University of West Bohemia. The poster shows the latest version of the pictogram tool and explains how to correctly use it.

VIRTUAL PATIENT IN MIDWIFERY – CARE FOR WOMAN WITH GESTATIONAL DIABETES MELLITUS

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Keywords: *gestational diabetes, virtual patient, midwifery education*

Although the primary focus of midwifery is on uncomplicated pregnancy, all midwives and mid-wives´students too, must learn how to screen for and, in some cases, comanage the care of women with gestational diabetes. It is essential know how to detect early symptoms of GDM, because GDM is asymptomatic disorder. Early identification woman with GDM is very important for midwives to implement successful interventions for diabetes management.

The basis of our work is a virtual patient, which is available on the platform Open Labyrinth. Virtual patient is used for training only simple procedures in midwifery and therefore in the design a branched schema of virtual patient is used. This virtual patient is open to students of midwifery on the website: http://www.jfmed.uniba.sk/pracoviska/ucelove-pracoviska/simulacne-vyucbove-centrum/virtualni-pacienti/.

The principal goal of our project was the development of virtual patient simulation for GDM, specifically on the algorithm of midwifery management of woman with GDM (such as dietary management, physical acitivity, self-monitoring of glucose...) The algorithm of interventions was logically processed step by step, including the rationale for correct and incorrect answers.

Virtual patient as well as this case of GDM provide valid, cost-effective teaching and helps students to train especially clinical reasoning skills in midwifery education.

EVALUATION THE FEEDBACK OF E-LEARNING IN MIDWIFERY EDUCATION

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Keywords: *e-learning , students' feedback, midwifery*

The aim of authors is present the feedback results of the midwifery students in the e-learning course of nursing midwifery major with an emphasis on the acquisition of the knowledge and specific practical skills in the care of a woman during pregnancy, childbirth, postpartum period as well as in a newborn care.

The study material is composed of audiovizual educational elements (pistures, recorded videos with audio comments), which enable clearer, more visual and easier comprehension of selected topics and to create preconditions for acquiring essential practical skills. The e-learning course is run in the HTML and PHP programming languages. The course is available at url: http://techniky-pa.jfmed.uniba.sk/. Information about the existence of the e-learning course is published on the portal of MEFANET JLF UK. To verify the feedback responses we used the exploratory questionnaire method, which contained ten questions with the possibility of marking the scale answers and two open questions for expressing the subjective positive and negative opinion on the

e-learning course. Thirty-seven students of midwifery were involved in the evaluation. The results were processed by the descriptive statistic method.

Concerning the results of the feedback evaluation, we can observe that the e-learning course has very good proven itself. Most of the students expressed their positive experience with the e-learning course (clarity, complexity, efficiency, flexibility, motivation, attractiveness, convenience in the way of acquiring knowledge compared to the full-time form of education). Pointing out the negative sides, the students emphasized the fact that the videos were in English (they would rather welcome Czech and Slovak languages instead) and that during their e-learning course they did not have direct personal contact with a teacher in case of any ambiguity.

In the following stage of our research we consider it important to validate the feedback questionnaire in order to ensure its accuracy and objectivity and make it the basis for knowledge regarding the modification of the teaching. The use of the achieved results can be very helpful, especially for the decision-making processes if the current status of e-learning courses is optimal or not.

PREPARATION OF CLINICAL PRACTICE MENTORING IN MIDWIFERY – IMPLEMENTATION OF INNOVATIVE EDUCATIONAL APPROACHES

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Keywords: *mentor, mentor competencies, clinical environment, midwifery, effectiveness of teaching*

Clinical education (on-the-job training) covers an essential and important component of midwifery education, considering that midwifery is a practice-based profession. Exposure of students to the clinical learning environment is one of the most important factors affecting the teaching-learning process in clinical settings. There is a broad range of international studies developed and published within multiple European projects comparing clinical learning environment in relation to organizational aspects of clinical learning or clinical supervision.

The aim of the project is to make the clinical environment more effective by creating a new study program of continuous education– Mentor of clinical practice in the field of midwifery assistance in terms of preparation for accreditation. The content will be structured into the following modules: Introductory Module, Behavioral Module, and Leadership and Performance Assessment of Practical Activities.

The innovation of study material to master the key competencies of a mentor of clinical practice will include basic theoretical knowledge and interactive exercises to train management and assessment of practical activities of midwives in the performance of their professional practice, supplemented by an e-textbook, which will include a record of clinical practice.

The concept of a mentor in clinical practice is currently highly up-to-date with an emphasis on expanding the potential for professional growth of midwives and ensuring the effectiveness of co-operation among healthcare workers and health education.

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