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Shared Decision Making – A Key Competence of All Health Care Professionals. Evaluation and Adaptation of a Digitally Enhanced Learning and Teaching Unit

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ABSTRACT

The Covid-19 pandemic induced a radical shift towards digitally enhanced learning and teaching (DELT). Success of this adaptation depended on how much DELT had been provided before. The Bavarian Virtual University (BVU) is a university network to fund, promote and support DELT. The Ludwig-Maximilians-University Munich as a part of this network implemented the DELT course “Shared decision making (SDM) - a part of evidence-based medicine” in 2015. Based on regular evaluations and due to the latest developments, a media-didactic and content-related adaptation will be conducted now. Clinical cases will be embedded in a framework structure of SDM. Videos, podcasts and literature of doctor-patient interaction will be provided. To enable different health care professions to have a positive learning experience, the course will be linguistically adapted. The interaction between students and teacher will be enhanced by a transparent distribution of tasks and an issue-specific chat forum. SDM is an interdisciplinary general concept. With regard to the academization of different health care professions, the demand for DELT will increase. However, medical competencies can't be taught fully online, since face-to-face patient interaction is mandatory. Communication skills can be practiced theoretically but have to be applied in reality.

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Introduction


Within the year 2020, medical education changed radically. The COVID-19 pandemic and its consecutive public health measures challenged medical universities and their traditional concepts of teaching. The vast majority of European universities closed their campuses in March 2020 [1]. The European University Association (EUA) survey on “digitally enhanced learning and teaching (DELT)” affirms that 95% pivoted to distance teaching throughout the institution, while 4% provided it in some faculties [2]. This sudden and disruptive shift from face-to-face teaching to DELT varied by size, governance models, and disciplinary differences. The smoothness of this transition was largely depending on how much DELT provision had been provided hitherto [3].

A very well-established structure for sharing knowledge in terms of DELT since the year 2000 is the Bavarian Virtual University (BVU). The BVU is a network of 32 partner universities in Bavaria, which aims to fund, promote and support the development of DELT units and specifically support exchange and

usage on an interuniversity basis. All courses are developed by professors of at least two of the member universities, whereby one university takes on the conceptual and operational management of the course development and supervision. Finally, the implemented digital courses can be used across member universities free of charge [4].

The Institute of General Practice and Family Medicine, Ludwig-Maximilians-University Munich (LMU) has been developing and implementing five DELT courses together with different partner universities since 2015. In terms of the “Shared decision making - a part of evidence-based medicine” (“Shared decision making – ein Teil evidenzbasierter Medizin”), the LMU acts as the leading university concerning the conceptual and operational management. Both topics are of utmost importance for daily work of general practitioners as well as other medical disciplines and health care professionals like applied health sciences, nursing sciences, public health, epidemiology, health care managers, community nurses, midwives, pharmacists, health promoters, physician

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assistants and many more [5–10]. Especially shared decision making (SDM) affects almost all medical fields and types of health care provision as an interdisciplinary general concept [11–16].

SDM facilitates decision making based on the partnership between health care provider and patient. As a patient-centred approach, a (health) decision is taken including the following core steps: bi-directional exchange of information, bi-directional deliberation of options and coming to a decision that is agreed by both parties of the decision process. It is a frequently advocated approach in clinical practice for preventive measures, diagnostic procedures or therapeutic options in health decisions [17–20]. Trials and systematic reviews show positive effects of SDM on affective-cognitive (e.g. improved patient satisfaction, less decisional conflict) [21], behavioural (e.g. health behaviour and adherence) [22] and health outcomes [15,16,23,24].

With its positive influence on the patients' health status, incorporating concepts of patient-centeredness and respecting patients' rights, SDM should be increasingly applied in providing health services. In order to introduce the concept to various health professions, and to adapt the course to the latest developments in terms of DELT, there will be a media-didactic and content-related adaptation of our BVU-supported digital course "Shared decision making - a part of evidence-based medicine" in cooperation with the Coburg University of Applied Sciences (HAW Coburg) in 2021, which we would like to present in this article.

Materials and Methods

As a regular feedback, all participants are invited to evaluate our digital BVU courses after completion. This anonymous evaluation is reported collectively to the course supervisor every semester. Students have the opportunity to estimate how many hours they had spent on the course in total during the semester. Furthermore, they were asked to rate 11 items (e-supplement 1) from 1 (very bad) to 7 (very good; 8 not sure). Finally, the students had the possibility to answer four open question with free text answers (e-supplement 2).

In addition, every BVU online course is evaluated on its content, use of media in instructional design and the technological implementation by two experts from outside of Bavaria. These peer evaluations take place regularly: once after the first two semesters and, thereafter, after five sessions of a given course.

These experts evaluate offered courses regarding

- (1) Online description of the digital learning unit (kurse.vhb.org)
- (2) Course content and didactic preparation

2.1 Learning content – applicability

2.2 Didactic methodology

3. Technical and media didactic implementation

4. Overall rating

5. Recommendation to the BVU- programme committee

6. Additional notes to the BVU- programme committee

We updated this learning unit at the end of 2018 i.e. we uploaded recently published articles and removed outdated articles, checked the guidelines for actuality and revised the functionality of listed web links.

Apart from that, an evaluation of the entire emergency remote teaching activities offered by the Institute of General Practice and Family Medicine, Ludwig-Maximilians-University Munich (LMU) was conducted for the summer semester (SS) 2020. Medical students as well as teachers were surveyed anonymously online to get a first insight according to feasibility, acceptability, relevance and practicability of our media-didactic adaptation of established learning offers [25]. Based on this feedback and our own experiences (e.g. how to activate students in an online-lecture) we developed our media-didactic and content-related adaptation of the BVU-supported digital course "Shared decision making- a part of evidence based medicine", which has been funded since May 2021.

Results

Students' Evaluations

The number of students who completed the BVU-supported digital course "Shared decision making- a part of evidence based medicine" in recent semesters (winter semester (WS) 2015 to WS 2021) has ranged between $n = 21$ –78 and reached a peak with the beginning of Covid-19 pandemic in spring 2020 (SS 2020; $n = 216$ participating students). The majority of students (about 70%) were medical students of the LMU. Other participants were mainly students of health care management or health promotion (HAW Coburg), as well as students of health and care education or nursing sciences (Evangelische Hochschule Nürnberg; Figure 1). Students, who could be affiliated to "another university", are mainly medical students of the Friedrich-Alexander University Erlangen-Nürnberg (FAU).

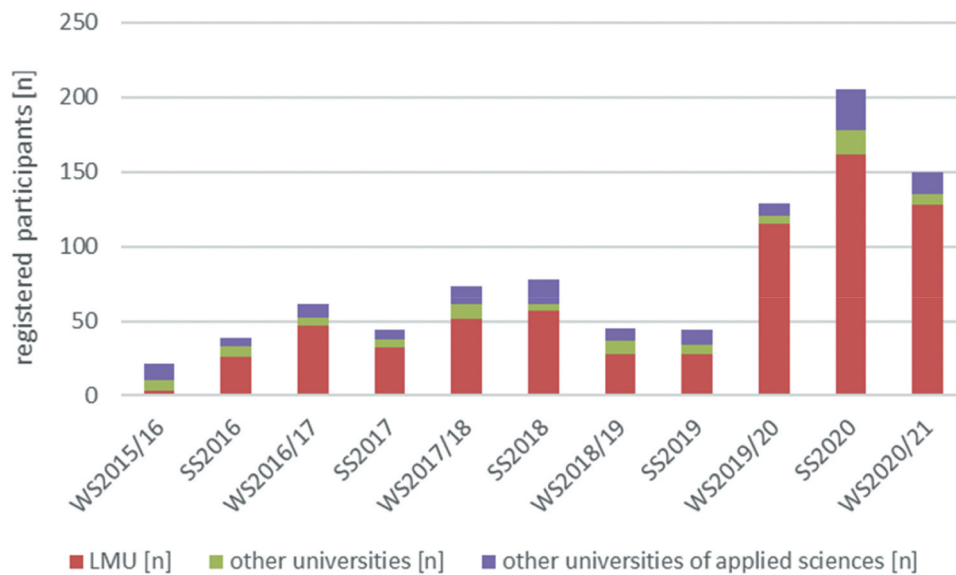


Figure 1. Registered participants over time.

The estimated average time to complete the course varied significantly, from two hours in summer 2017 to five hours in summer 2019, although the content of the course did not change during this time. Students who indicated a short processing time (2 to 2,5 hours) to complete the course were more dissatisfied with the course in general (arithmetic mean: 3.3) in comparison to students who estimated the average procession time about 5 hours (satisfaction with the course in general; arithmetic mean: 6.3). An overview of the evaluations over time indicates an increasing general satisfaction of the students with the course (arithmetic mean of item 11: a score of 2 in WS2016/17 increased to a score of 7 in WS2018/19 and SS2019). The main reasons for

being dissatisfied with the course can be identified in the Pareto diagram below the cumulative line (Figure 2). These were namely unstructured and non-understandable teaching materials (item 7), missing professional support (item 8), missing guidance from the course supervisor (item 9), as well as missing technical supervision of the course (item 10).

Based on the four open questions of students' evaluation, the main requests for improvement focussed on the educational level of the presented clinical cases. Some of the cases were perceived as very easy, whereas others seemed to be too advanced, especially for non-medical students. Some model solutions seemed to be contradictory, and learning material should be

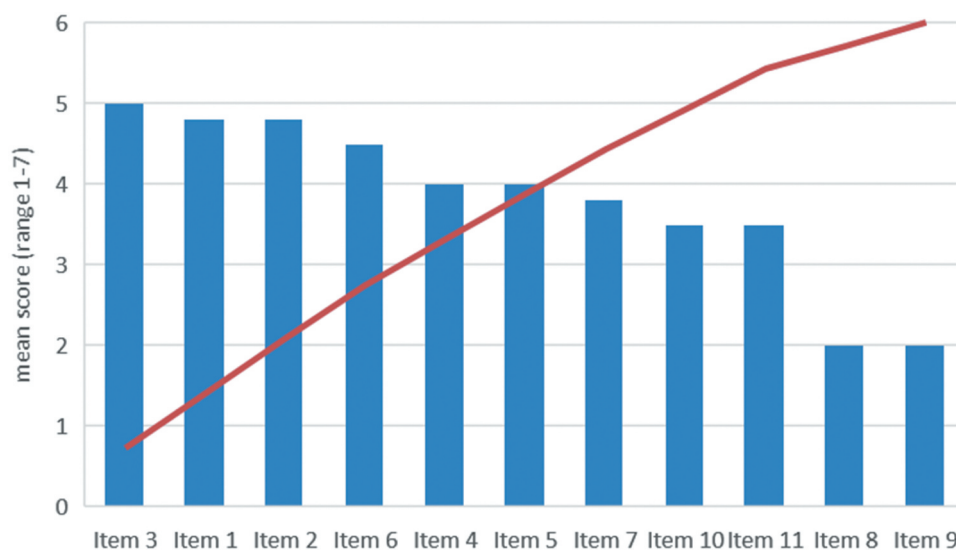


Figure 2. Pareto chart of students' evaluations from WS 2015 to WS 2021.

updated. Altogether, the relevance of the topics shared decision making, health promotion and prevention, as well as physician-patient communication, was considered to be very high. Students appreciated that they were flexible in terms of the learning time and the variety of clinical cases.

External Evaluation

The feedback of the external evaluation should be specified based on the different health care professions and degree programmes for which the course was designed. A statement of learning objectives and an update of cases would be required.

The specified number of hours according to the course description (two hours per week and semester) seems realistic according to the external evaluation, whereas a processing time of 2–5 hours to complete the course does not seem feasible. Communication between the students and their tutor should be intensified and improved. Regular technical support for the participants would also be desirable.

We were also advised to update the course contents following the current guidelines of the German Society for General Medicine (DEGAM) and the Association of Scientific Medical Societies (AWMF). In addition, our

didactic concept had to be enhanced to reflect the interdisciplinary topic of SDM and thus, to address students from health professions other than medicine. With the increasing evidence for the efficacy of SDM and the international attention for SDM in recent years, as well as increased use in everyday clinical practice, the introduction to the concept of SDM in particular has to be presented in a more comprehensive and in-depth manner. The clinical cases should be updated with current SDM-specific evidence and (electronic) decision-making aids (decision aids).

Revision of Content and Medical Didactic Concept

In general, the course “Shared decision making - a part of evidence-based medicine” aims to convey communication strategies and tools for risk communication as well as to apply a patient centred approach in different clinical situations and health decisions of daily practice. Within the course, ten clinical cases are supposed to be conducted, that were chosen because of their high prevalence in primary health care: hypertension, mammography, osteoporosis, prostate-specific antigen (PSA) screening, respiratory infections, statins (CSE-blocker), anticoagulation, nursing care, living will and palliative medicine.

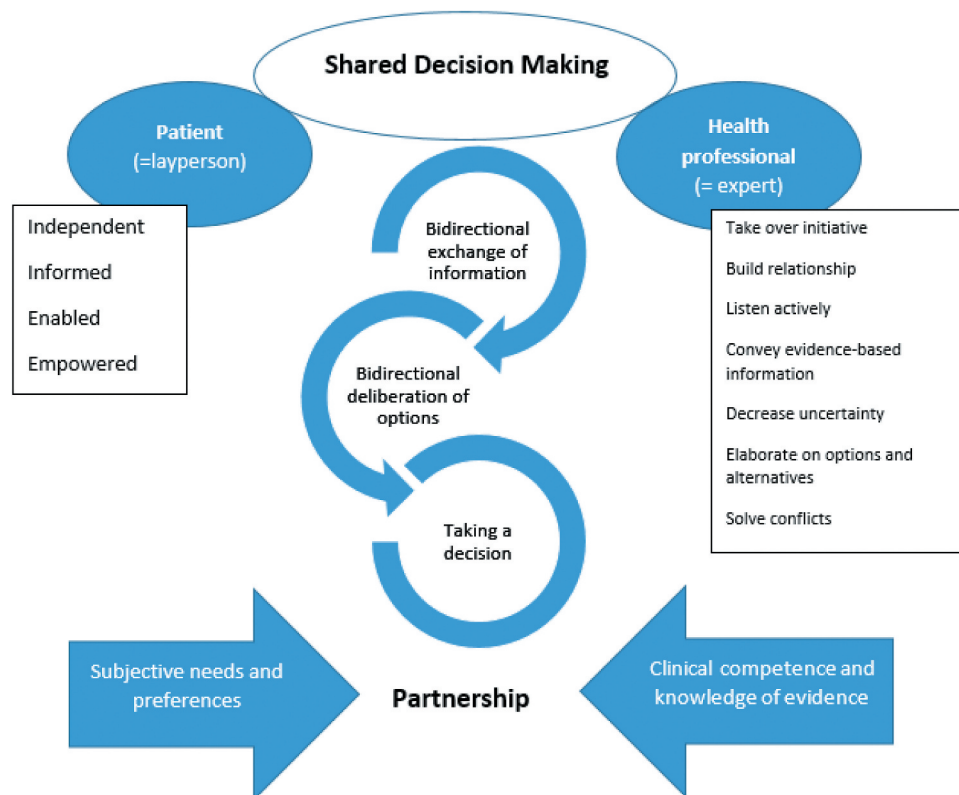


Figure 3. Framework structure of shared decision making [18,26,27].

To improve this learning unit, the cases are to be embedded in a clear framework structure on the topic of SDM (Figure 3). Furthermore, the topic of SDM should be incorporated more strongly within the clinical cases. The existing cases should focus more on the use of SDM in medical decision-making. In-depth literature on the various models of doctor–patient interaction will be provided for the participants and further links will be offered to deepen different aspects of the subject (e.g. decision aids (IPDAS)).

Students should understand that background knowledge and sufficient evidence is important to provide clear and correct information to the patient. We will also cite studies that show that doctors sometimes lack the background knowledge for a safe and adequate (risk) communication with their patients. In order to enable other health care professions to have a positive learning experience, the clinical cases should retain their medical focus, but be linguistically adapted so that they are more understandable for non-medical professionals.

Furthermore, the clinical cases will be checked to ensure that they are up to date, e.g. guideline up-to-dateness (DEGAM, AWMF). The previous examination mode (multiple-choice questions) will be retained for the revised course version.

Until now, communication between students and lecturers took place mainly via email. In the upcoming revision, we will make use of more video/web conferences, in order to address students' questions and offer support, as well as to receive suggestions for improvement, e.g. as a closing event. The interactive exchange between the students should be made possible by a chat forum.

Learning Objectives

At the end of the BVU-supported digital learning unit “Shared decision making - a part of evidence-based medicine”, the participants should be able to name and describe different models of decision-making (paternalistic, participatory, informed) and explain the concept and key aspects of SDM. Furthermore, they should know the areas of application and outcomes of SDM in clinical practice, as well as the legal background of SDM (patient rights law, duty to inform, patient autonomy).

Graduates should be able to name the evidence and the importance of physical activity and inactivity in maintaining health and conduct a primary preventive counselling on physical activity. Additionally, they should be able to evaluate the evidence with regard to its relevance and validity critically, reflect on evidence-

based and non-evidence-based preventive measures and identify trustworthy and evidence-based sources of information by themselves. Furthermore, they should be able to perceive, adopt and respect the patient's perspective (ideas, feelings, autonomy, values, social, cultural environment) and include them in further decisions. They should try to offer support to their patient in forms of expressing concern and understanding, willingness to help, basic partnership, guidance on personal responsibility. They will be encouraged to deal with the subjective disease theory and explanatory models of their patients, align them with the medical disease theories, values and interests and integrate them into the treatment. Finally, they should strive to improve the quality of care and patient safety by applying the best available evidence and best practice and adopt a patient-centred (congruent, accepting and empathic) basic attitude and be able to communicate accordingly.

Sustainability and Dissemination

The Institute of General Practice and Family Medicine, LMU Munich has a lot of experience of already successfully developed and implemented digital BVU learning units, as well as three semesters of DELT (two hours per week and semester of lectures and seminars each) due to the Covid-19 pandemic.

The HAW Coburg is currently founding a new Faculty of Integrative Health Sciences, starting in 2021 with a bachelor's degree in midwifery. Further degrees for academic health care professions are being planned. Compulsory elective courses will play a central role in the new Faculty of Integrative Health Sciences and in the study paths of different health care professionals in the future. Thus, the target audience for the BVU-supported course “Shared decision making - a part of evidence-based medicine” at the HAW Coburg will increase significantly in the next few years. Especially with regard to the academization of different health care professions, planned future health care faculties and medical campuses in Bavaria, it can be assumed that the demand for online courses in this specialist area will steadily increase. All the more important are high-quality offers like our course, from which all medical and health departments can benefit.

Conclusion

The evaluation of our BVU-supported course “Shared decision making- a part of evidence-based medicine” as well as of other digitally enhanced learning and teaching

units at the LMU indicated a high popularity of this innovative type of medical teaching by students and teachers, which further increased since the pandemic. Especially the students would like more online teaching in the future, mainly because of its enhanced flexibility of learning anywhere, anytime [25]. However, it has to be kept in mind that there are fundamental differences between emergency remote teaching in response to a crisis and well-planned online learning [28].

Compared to the times before the pandemic, DELT is now much more widely accepted and used across Europe. Blended learning continues to be the most popular delivery mode, and is increasingly mainstreamed: on average, it is used in 75% of academic institutions across Europe. Mostly in response to the pandemic, some institutions also started to provide hybrid learning and teaching, i.e. provision of courses which can be attended both physically and virtually. In general, it can be expected that digital capacity concerning DELT will be boosted beyond the crisis [2]. There is a clear agreement on the top enablers of and barriers to DELT, and on measures to address them: proactive participation of staff and students turns out to be the number one enabler, followed by professional development support to staff and strategy, and funding. Largely these factors (or the lack of them) are also identified as the top barriers to DELT at European higher education institutions. Notably, in some systems, national regulation and external quality assurance are mentioned as barriers to DELT [2].

Of course, not all medical competencies can be taught fully online. Thus, a cautious approach about the clinical competencies is necessary, since face-to-face interaction with the patient is mandatory. Especially communication (e.g. shared decision making) between patient and health care provider can be practiced theoretically but has to be translated and applied in the setting with real patients. Consequently, our BVU-supported course “Shared decision making - a part of evidence-based medicine” might be understood as a blended learning unit, as it is a mix of formal and informal learning [29]. Theoretical knowledge will be taught online and might be applied and practiced in typical clinical scenarios virtually. In the upcoming patient contacts during the curricula of the different health care disciplines, these learned competencies have to be translated and applied.

Further, as we expect digitisation in health care to expand rapidly in all medical students need to be taught to practice digital skills and handling of digital health technology within their curriculum to be best prepared for their future jobs. Medical students should be introduced e.g. to electronic health records, video consultations,

usage of electronic health applications as well as artificial intelligence (AI) in diagnostics and treatment are increasingly implemented and become routine practice.

Especially digital decision aids are a powerful and accessible resource for health professionals and patients, that should not only be embedded more often in clinical consultations but also in medical education to learn about benefits and risks of their usage [30]. It is a responsibility of medical faculties and national curricula to increase digital literacy of medical students and to enable future physicians to lead the introduction of new technologies in a rapidly evolving digital world.

Making sure that it is patients who benefit the most from digitalisation in health care will remain a key challenge in years to come, and new approaches in medical education that improve the digital literacy of physicians and better integrate patients' views will be crucial. In turn, this means that patients' wishes are a crucial measure for anticipating how digitalisation of health care contributes to their health and well-being [31].

Strengths and Limitations

Our evaluations indicate a high acceptance of our BVU-supported course “Shared decision making - a part of evidence based medicine” concerning content and media didactic concept with requirements for improvement. It is quite encouraging that a first and fast update of this learning unit at the end of 2018 led instantly to an increase in general satisfaction among participating students.

It has to be mentioned that the students' evaluations are not fully representative, as just about 5% (less than $n = 10$ students) of all registered participants evaluated the course every semester. Further, the queried items of the evaluation might have missed out some aspects of interest (e.g. transferability of theoretic content to practice, or missed other clinical cases).

Significance

The COVID-19 pandemic has fuelled the digital transformation in medical education. The momentum to increase and improve online learning opportunities for students and professionals in the field of health must be used. Interdisciplinary learning is a big chance, as well as innovative DELT to prepare students for skills that are crucial to be applied face-to-face in the clinical context.

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Disclosure Statement

No potential conflict of interest was reported by the author(s).

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