The effect of distance-based learning on the fifth stage medical students' perception in peripheral vascular diseases course: a questionnaire survey

Periferik damar hastalıkları stajında uzaktan eğitim sisteminin beşinci sınıf tıp öğrencilerinin algılaması üzerine etkisi: Anket çalışması

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Task-based learning (TBL), a part of the active learning process, is an educational model integrating problem-based learning system with the multidisciplinary training viewpoint. "Task" is used in a meaning of clinical "duty" or "work" (1-3).

E-learning, distance education and computer-supported education systems have gained popularity in undergraduate education. Many medical schools have adopted course management systems to facilitate e-learning activities. Modular object-oriented dynamic learning environment (Moodle) is the most commonly used (4).

The aim of the study was to assess the effects of distance-based learning in combination with the traditional teaching system on the undergraduate medical students' perception by means of a satisfaction questionnaire.

The educational program for the students in their fifth years in our Medical Faculty has been constituted on the basis of TBL for ten years. The principal aim of the program of the peripheral vascular diseases course carried out by the Cardiovascular Surgery Clinic is to provide the students with: (i) an access to the fundamental learning objectives, (ii) an implementation of their theoretical knowledge in a clinical practice, and (iii) an improvement of their clinical skills.

The feedbacks of the fifth stage students on the Peripheral Vascular Disease course collected over 3 years were evaluated. Afterwards, web-based electronic portal named "Moodle" (4) was installed with the aim of contributing to the solution of the problems confronted with during the courses. Our clinic was the first one in our medical school to introduce Moodle platform for the students.

There were two groups in stage V in the spring term with 27 students. All of them were included in the study. The students were equipped with individual passwords for access to the system (Fig. 1).

The lecture notes of the voluntary teaching staff were made available for download immediately after their presentations. Summaries, presentations, case report samples, videos with applied examples, practical examination cards, educational scenario examples and quizzes were uploaded. The system was enriched with an interactive discussion platform. Except for the addition of the computer-supported system, no change was made in the running of the course-scheduled program.

The students were asked to complete pre-course and post-course questionnaires to evaluate their feedbacks on the peripheral vascular diseases course carried out in combination with a computer-supported education system. The questionnaire enabled participants to evaluate the diverse parts of the running of the course including its content, ability to facilitate students' access to the course material, contribution to the practical implementations and the elimination of the anxiety about the exams. Participants' responses were rated on a 2-point Likert scale (1=agree, 2=disagree).

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Figure 1. Computer supported education system prepared for peripheral vascular disease course

Table 1. Results of the pre-course and post-course questionnaire and feedbacks of the students on Peripheral Vascular Disease course

Concept	Pre-course (n=27)	Post-course (n=27)	*p
Concern about attainment of the presentation documents, n (%)	10 (37.0)	2 (7.4)	<0.05
Inadequate supply of supplementary source materials, n (%)	7 (25.9)	2 (7.4)	<0.05
Insufficiency in visual material, n (%)	13 (48.1)	5 (18.5)	<0.05
Concern about Block exam, n (%)	15 (55.5)	4 (14.8)	<0.05
Concern about TUS, n (%)	17 (62)	11 (40.7)	<0.05
Insufficiency in the content of the scenarios, n (%)	6 (22.2)	4 (14.8)	NS
Insufficiency in surgical practices, n (%)	5 (18.5)	3 (11.1)	NS

Data are presented as number (percentage)

*Mc-Nemar Chi-square test
NS - not significant, TUS - Examination for speciality in medicine

The statistical analysis of the data obtained from the inquiry was made with SPSS 17.0 for Windows (SPSS, Inc., Chicago, USA) using *Mc-Nemar* Chi-square test. Differences of $p<0.05$ were considered significant.

At the beginning of the course, one third of the students had anxiety about the access to the presentation documents. This percentage was found to be significantly decreased with the introduction of the new system ($p<0.05$). The problems originating from the inadequate supply of supplementary source materials were shown to be decreased due to the computer supported education system ($p<0.05$). The respondents' view that the visual material was insufficient changed significantly at the end of the course ($p<0.05$). The implementation of the new system was found to reduce the anxiety about the exams ($p<0.05$) (Table 1).

No difference was observed in the content of the scenarios prepared for the course ($p>0.05$). Additionally, no difference was found between the views of the students regarding the inadequacy of the surgical implementations ($p>0.05$).

It is not always possible to represent every disease in the curriculum during the clinical education. In these situations, various videos properly prepared with regard to the learning contents can support the education system (5). Most of the students indicated that although they had seen the arterial and venous system diseases on the patients, they understood them more clearly with the videos on the digital system.

On-line formative evaluations have the potential to provide the students with a chance for self-evaluation whenever and wherever they desire (6). In our study, the outcomes of these evaluations were visible on the system by the students and the teaching staff. Therefore, the missing points in the given lecture come on the scene and the complementation of them is provided by giving an immediate feedback to the students and making the required changes in the system.

A cornerstone of medical education is the practicum. Nevertheless, acquiring common skills before practicing on real patients is essential for the physician (7). For that purpose, we benefit from structured scenarios. Students are encouraged to deliver learning objectives from these scenarios. Then, they make researches according to these objectives. This learning method directs the students towards deep learning (8, 9).

At the end of the course, the question bank and the documents in the digital environment were left open to maintain access of the students after their graduation. In that way, the participants will have an access to the system wherever they want after the graduation, can update their knowledge and can exchange considerations with their colleagues.

Our results indicate that the combination of the traditional teaching system with a computer-supported education system results in an increased students' satisfaction, decreased concern about the exams, and increment in the attainment of the source materials. E-learning may have a particular role in explaining complicated disease mechanisms in cardiovascular surgery.

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