Quality Assessment of Medical Education and Use of Information Technology

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Abstract. Extensive and fast advancements in biomedical sciences created a significant delay in receiving relevant and updated information in medical practice – physicians use old techniques and treat patients incorrectly. Bosnia and Herzegovina signed the Bologna Declaration on 18 September 2003, and in the light of this new approach to university education, and the process of joining The European Union, the authors set the following aims: to determine the current level of knowledge among medical students at the Medical Faculty of the University of Sarajevo, to determine the level of knowledge among medical students before their enrolment at the faculty, and to find out students opinion on their needs for further education. Students also left their suggestions on what should be changed in the curriculum. 203 students were included in the survey and results show that they demand more practical work, direct contact with patients and presentation of interesting clinical cases. Many of them use the internet as professional education means. Professional papers are rarely used. At present, the availability of learning material is insufficient at the faculty library.

Keywords. medical education, information technology, quality assessment

1. Introduction

Medical education can still be summarized as the teaching of different paradigms and formulas from the basic sciences later applied in clinical disciplines and medical practice. The content has always been at the first level of medical education curricula – knowing the fact itself, but contemporary education elevates basic medical practice to a different level – where and how to find information. The traditional static concept of medical education needs to be changed in order to educate creative physicians who are focused on the problem in daily practice (self-directed). Extensive and rapid advancements in biomedical sciences has created a significant delay in receiving relevant and updated information in medical practice – physicians use old techniques and treat patients incorrectly. Continuous medical education (CME), as a paradigm of contemporary medical education, is intended for reducing this delay. In many countries, continuous medical education is obligatory and well structured in order to enforce free thinking and train for future continuous improvements of knowledge and practice.

The widely accepted model is that physicians should become educators themselves – for young colleagues, nurses, staff, patients and the community. In their everyday work, doctors constantly take the position of a role-model and, as such, need to accept

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the responsibility for being up-to-date with general developments, while making sure that their continuous education constructively influences the surroundings.

Increased demand for CME is followed with the development of the education process and new education technologies. Today, just in the USA, there are over 100 websites that offer on-line CME courses [1]. In order to fulfil the CRISIS criteria, CME must offer: convenience, relevance, individualization, self-assessment, independent learning and a systematic approach [2].

It is clear that this shift in medical education is being widely accepted – mostly offered as continuous medical education – and that information technology is playing a major role in ensuring efficiency in the transfer of knowledge and process evaluation. This creates a need for additional and important changes in medical education at various levels, especially at the level of undergraduate medical studies bearing in mind that many newly-appointed physicians do not use information technology to ensure up-to-date treatment and quality healthcare [3–5].

2. Aims and Methods

Bosnia and Herzegovina signed the Bologna declaration on 18 September 2003, and in the light of this new approach to university education, and the process of joining the European Union, authors set the following aims:

- to determine the current level of knowledge among medical students at the Medical Faculty of the University of Sarajevo,
- to determine the level of knowledge among medical students before their enrolment at the faculty,
- to find out students opinion on their needs for further education.

To achieve this, we conducted a survey among students of the last semester (XII) of the Medical Faculty of the University of Sarajevo in 2006 and 2008 – a total of 203 students. The students were selected randomly and the survey was done at the faculty (at the end of lectures). Data was collected using specially prepared questionnaires ("Questionnaire – Knowledge and use of information students among students of biomedical faculties") with questions and variables relevant for assessment of knowledge and quality assessment.

3. Results

Out of 203 students, 137 were female and 66 male, which corresponds to a general trend of more females enrolling at the Faculty of Medicine in Sarajevo.

Answers to the question on use of literature during medical education show that professional journals are rarely used, but it is obvious that the internet is of great importance since 36% of students in 2006 and 52% in 2008 use the internet for this purpose – this practice will probably increase each year. Results show that 14% of students used professional journals in 2006, while only 5% used them in 2008.

Answers to the questions on quality and quantity of practical work with patients show that only a few students consider this part of education well organized and sufficient. They want more practical work, more contact with patients and presentation of interesting clinical cases (Figure 1).
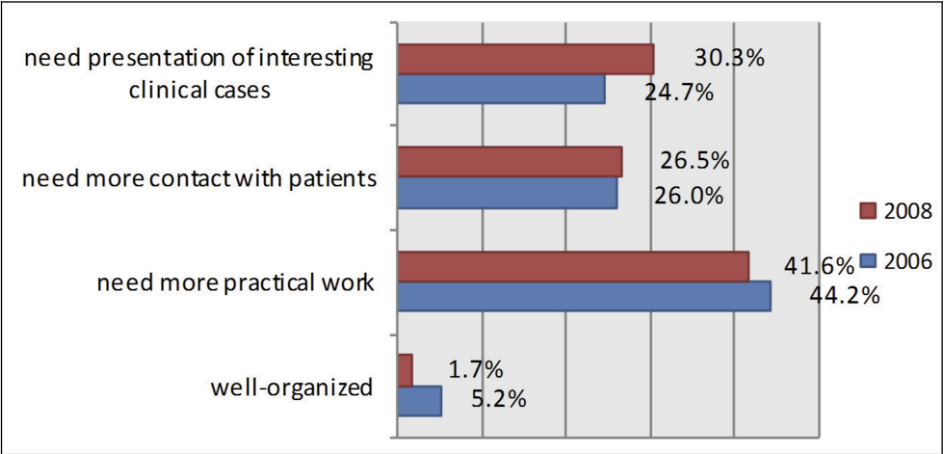
Figure 1. Attitude of students towards practical work

The students' opinion of the teaching assistants did not change in last two years. There are a large number of students who think that the teaching assistants have no enthusiasm and interest in the students. One third thinks that there is insufficient time to perform practical tasks (Figure 2).
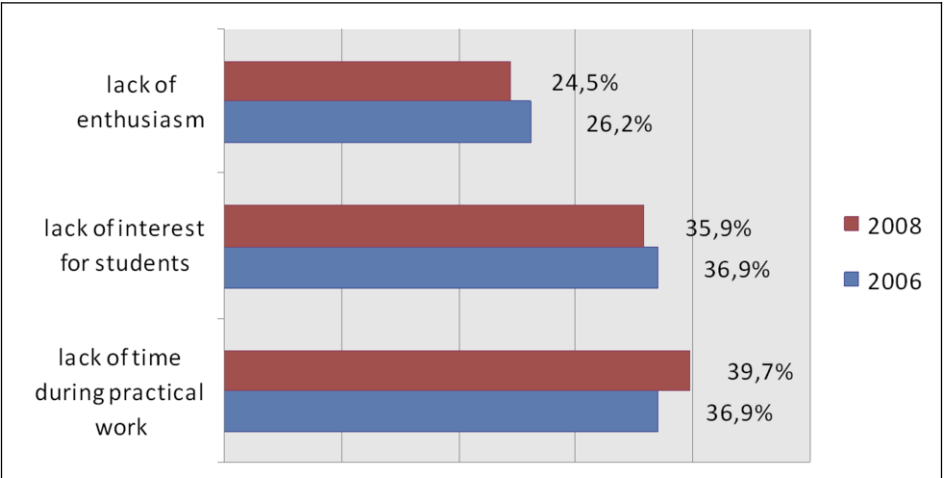

Figure 2. Students' opinion of the teaching assistants

The last question was "How do you assess the quality of education at the Cathedra for Medical Informatics?" and the results show that 47% of students find the education process "satisfactory", 38% "bad", 14% "good" and 1% "outstanding".

On the question of the availability of books in the library, the majority of students (68.9%) responded with strong disagreement that books are available (mark 1 using the Likert scale – equal to extremely insufficient with no marks 4 or 5 at all).

Answers to the question "What should be added to the medical informatics curriculum at the Medical Faculty?" show that 19% of students do not want any

changes, 33% request more education in text editing software, 28% request more education in use of the internet and 20% request implementation of distance learning.

4. Discussion

Comparing the results of the survey of two generations of final semester (XII) students at the Medical Faculty of University of Sarajevo, we came to the conclusion that their attitude toward educational system remained the same. This is a disappointing discovery since the results of the survey show that students are quite dissatisfied with the educational system. We are going through a transition towards the Bologna system, but still, no improvements have been registered. Students pointed out that there is a lack of opportunity to learn and to do practical medical work because the medical and educational system is inappropriate.

The results show that students consider the faculty library almost unusable. They also consider the groups for practical work to be overcrowded. The promising fact is that students notice that some cathedras are trying to make their lectures better and more interesting by, for example, inviting foreign professionals as visiting lecturers. Use of internet and new technologies increases the students desire to learn and know more – one of the noticeable results is a higher number of students visiting various medical congresses each year as either active (papers accepted) or passive participants.

The health sector and especially medical education are one of the most evident potential beneficiaries of the internet revolution and World Wide Web as a resource. Basic skills of use of computers and networks must be a part of all future medical curricula. The impact of technical knowledge on both the patient and the doctor must be understood and acknowledged, especially by those involved in medical education in order to have the necessary changes. Medical faculties should work on introducing modern teaching techniques and offering all available information technology (tele-education, distance learning, lecture pod casting etc.) to their students. Satisfaction of students with use of information technology in medical education is noticeable, but more effort is needed in order to fully implement new methods of medical education at the faculties – this especially being the case with biomedical faculties in Bosnia and Herzegovina [6–8].

5. Conclusions

Unfortunately, medical students at the Medical Faculty of the University of Sarajevo do not have the opportunity to regularly use computers in their educational process. What is promising is that almost 60% of students use computers and the internet to gain knowledge and improve their education. It is obvious that decision makers have to act and change the educational process, as well as the curricula, since students are not satisfied with libraries, equipment and work of the university staff.

The results of the survey presented in this paper bring us to the following conclusions:

- Reform of the medical education system must be performed as soon as possible in accordance with the needs and possibilities;

- Continuous quality of education must be assured (use of internal and external evaluation);
- Medical curriculum needs to be adjusted with the curricula used in EU member states where quality assurance is significantly implemented;
- University teachers and staff must be evaluated regularly;
- Medical students must be involved in all the reform processes;
- Volume and content of the practical medical education must be improved;
- Library services must be improved and educational facilities must be equipped for use of information technology.

The Cathedra for Medical Informatics and Cathedra for Family Medicine of the Medical Faculty of the University of Sarajevo have jointly been working on the project "Possibility of introducing tele-education/e-learning in biomedical curricula". The project was unfortunately stopped due to the lack of financial support and additional work has been postponed until the university computer network (in development) is fully available to all academic staff and students. Students were very satisfied with the possibilities the project offered (online lectures, tele-exams etc.) and authors strongly believe that this method of education can overcome the difficulties and dissatisfaction showed trough results of this paper.

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