ORIGINAL PAPER

Foreknowledge of the Fourth Semester Students about Medical Informatics at the Medical Faculty University of Sarajevo

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ABSTRACT

Introduction: High educational and teaching standards were the main reason why from the begging student satisfaction surveys and assessments of the students' knowledge, attitudes and opinions were paramount in the educational process at the Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo. **Aim:** The aim of this study was to evaluate general knowledge of the fourth semester students about informatics and medical informatics and compare it with previous generations. **Methods:** Students at the beginning of the fourth semester and before second planned lectures receive "Questionnaire for biomedical students about use and knowledge of information technologies". Collected data was retrospectively used for this study. The scientific study committee of the Cathedra for Medical Informatics reviewed and approved the database for using this study. At the beginning of the survey, all students were informed that their data could be tracked. Also, all students were informed and got lectures on surveys, development and use of questionnaires for the examination of the patient/student satisfactions and how results of the survey and analysis could help continuously improving quality of the teaching process. **Discussion and Conclusion:** Medical students come to the faculty with significant IT knowledge and skills. It can even be argued that students rank their knowledge in some way lower than we as teachers estimate based on their practical work. They organize groups on social networks where they exchange information about lectures and exams. It is common for each study year to have its own group. Through this group, information and presentations that teachers send to students are exchanged. One of the goals of teaching medical informatics is the method of searching for medical information on the Internet. The skills learned in medical informatics classes complement those learned earlier and provide a solid base for physicians who are able to supplement their knowledge using IT technologies when they need it.

Keywords: Medical informatics, Curricula, Quality assessment of education, Sarajevo University.

1. INTRODUCTION

Since the establishment of the Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo almost 30 years ago its founder prof. dr. Izet Masic has set quality of education as an essential backbone and one of the fundamental steadfast for the training of future doctors (1-5). The Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo was very first cathedra for Medical informatics at the Bosnia and Herzegovina medical faculties and universities (6-10). Curricula and syllabus of the medical informatics was created in accordance with recommendations of the EFMI (European Federation for Medical Informatics) working group and IMIA (The International Medical Informatics Association). Goals and objectives of the IMIA Health and Medical Informatics Education working group are to disseminate and exchange information on Health and Medical Informatics (HMI) programs and courses, to produce international recommendations on HI/MI programmes and courses and to support HI/MI courses and exchange of students and teachers (11-14). Also,

to advance the knowledge of how informatics is taught in the education of health care professionals around the world, how in particular health and medical informatics is taught to students of computer science/informatics, and how it is taught within dedicated curricula in health and medical informatics. High educational and teaching standards were the main reason why from the begging student satisfaction surveys and assessments of the students' knowledge, attitudes and opinions were paramount in the educational process at the Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo.

2. AIM

The aim of this study was to evaluate general knowledge of the fourth semester students about informatics and medical informatics and compare it with previous generations.

3. METHODS

This study was based on the survey performed at the Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo during the five year period (2016-2020). Students at the beginning of the fourth semester and before second planned lectures receive "Questionnaire for biomedical students about use and knowledge of information technologies". Collected data was retrospectively used for this study. The scientific study committee of the Cathedra for Medical Informatics reviewed and approved the database for using this study. At the beginning of the survey, all students were informed that their data could be tracked. Also, all students were informed and got lectures on surveys, development and use of questionnaires for the examination of the patient/student satisfactions and how results of the survey and analysis could help continuously improving quality of the teaching process.

The "Questionnaire for biomedical students about use and knowledge of information technologies" was developed at the Cathedra for Medical Informatics at the Medical Faculty University of Sarajevo by prof. Masic and his assistants Dr. Novo and Dr. Pandza and had four revisions. Fourth revision of the questionnaire was used for the five year survey in the period from 2016 to 2020. The questionnaire consists of five chapters (General data of the examinee, General informatics knowledge and use of computers, Knowledge level on information technologies before enrolled at the faculty, Current knowledge on the use of information technologies and Future education in the area of information technologies) and 22 questions. For each questions several answers were provided.

When compiling questions and developing the questionnaires, it was taken into account that the number of questions is rational, also that the questions are simple and categorical, and formulated on that way that the answer to them is possible in well-known objective criteria. Moreover, the questions are concrete and precise, they are not suggestive or embarrassing and offensive, and on the forms with numerical features next to the question are marked the unit of measure in which the answer is sought. Students needed 20-25 minutes to fill in the questionnaire.

4. RESULTS

Total number of the students examined were 661 (2016: n=103; 2017: n=126; 2018: n=134; 2019: n=188; 2020: n=110). 39% of males and 69 of female students. 100% of all students stated that all use computers as well as they use Internet (81% regularly and 19% temporarily). 80% of the students use computer at home, only 20% faculty computers. Most of the examinees use computers for the information, then for communication, education and for the entertainment/fun. The most of the students use computers to access social networks, then to find information and check web sites, and finally to download programs of a software. Only 2% of students do not use Internet because they do not need to or do not know how to use it. 78% of the students got necessary knowledge to use computer independently working on it, 50% independently working on computer and thought regular education. Only 8% attended commercial ITC courses.

Only, 41% of the student know and know how to use computer components. 61% of the students know and use MS Word very well, MS Excel know and use 23% of the medical students, Power point know and use 69% of all students. Out of 78% of the students know very well and use Internet and know terms as server, browser, web site, URL, link www or download.

The most of the student need more practical work on computers (44%), distance learning (40%). To be better prepared to work in family medicine clinics student need more knowledge on data bases and about MS Office (94% in total). Out of 75% of the students find curriculum and education for medical informatics appropriate and satisfactory.

It is very interesting that students, even in the period before corona pandemics, use to propose online weeks and requested more practical work with focus on use of MS Office, Internet and Social networks.

5. DISCUSSION

The use of information technology by medical students depends primarily on previous knowledge in this area. The questionnaire determined that all students use the Internet, which was to be expected considering their status and level of education. Students were also frequent users of general social networks, and educational clips from You Tube, considerably more than other professionals.

According to Hinojo-Lucena et al, 90% of students agree with the improvement of learning through the use and participation in the collaborative social network, these results are similar to those of Dambal et al.,3 explaining in both cases that collaborative learning has a greater effect on the retention of content than on an individual learning (13, 14).

About 80 percent of students use a computer at home while the rest is available in college. Internet students are most often used to communicate via social networks

and somewhat less often to gather information, primarily those related to taking exams. It is necessary to emphasize what knowledge and skills students want to improve during their education in medical informatics (15-18). Knowledge of office applications and working with databases are a top priority for students. Familiarity with medical information systems is necessary so that after the completion of the study, they can manipulate the patients' data for the purpose of treating patients.

The development of modern technology and the Internet has enabled the explosive growth of distance learning. Distance learning is a process that is increasingly present in the world. This is the field of education focused on educating students who are not physically present in the traditional classrooms or student's campus (15. Distance learning became more popular during corona crisis. During the crisis, the physical presence of students was banned at the Medical Faculty in Sarajevo, and therefore distance learning was introduced.

Although 61 percent of students stated that they know how to use MS Word, all students sent seminar papers whose quality corresponds to that of experienced users. Given the fact that students have the obligation to send a seminar paper in MS Word and a presentation in MS Power, we believe that their skills will improve significantly by the end of their studies. As for the graduated medical students, from our personal experience we can say that when they come to the clinic, they are able to acquire all the necessary skills for keeping medical documentation without problem.

6. CONCLUSIONS

Medical students come to the faculty with significant IT knowledge and skills. It can even be argued that students rank their knowledge in some way lower than we as teachers estimate based on their practical work. They organize groups on social networks where they exchange information about lectures and exams. It is common for each study year to have its own group. Through this group, information and presentations that teachers send to students are exchanged. One of the goals of teaching medical informatics is the method of searching for medical information on the Internet. The skills learned in medical informatics classes complement those learned earlier and provide a solid base for physicians who are able to supplement their knowledge using IT technologies when they need it.

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