



NEW TRENDS OF TRAINING IN INFORMATION TECHNOLOGY IN MEDICAL COLLEGE OF SOFIA

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Abstract

The information technologies are the fastest developing science area in the world. This and the increase of the information in medicine determine the need of qualitative ICT training of medical professionals. Boom of information in medical science and practice poses to the health professionals high demands on their competence in the field of information technology.

The article presents the results of the student's survey conducted in Medical College of Sofia on the needs of education in „Application of IT in healthcare practices”.

The purpose of this study is to analyze the need for quality and adequate ICT education in medical schools to ensure the competence of health professionals.

The survey results show that the ICT training in Medical College of Sofia has to change in the direction of increasing the hours of practices hours and separate the electronic data capture and information systems in medicine in additional discipline.

Keywords: ICT training, ICT in healthcare, health professionals training,

INTRODUCTION

Information Technology and Information Industry is one of the most dynamic areas in the world. This is one area where there is a close connection between science and practice, between innovation and business. The rapid development of information technologies and their application in medicine and everyday life makes it necessary for quality and appropriate training in informatics, especially from the medical universities. The information boom in medical science and practice poses to the health professionals high demands on their competence in the field of information technology.

The use of information technology in modern health care at all levels of medical help required knowledge to work with them to meet patients' needs for quality and high qualified service by medical professionals.



Furthermore the collection of clinical data is expensive and time-consuming. Currently, only minimal data are encoded routinely. Any analysis requiring new data elements consumes significant resources to develop a sampling plan for the data, to develop data-collection instruments, to train the data abstracters, to collect the data, and to analyze the data.

Health Care Financing Administration (HCFA) the part of the U.S. Department of Health and Human Services (HHS) recognize that the process of standardizing and automating representation of medical information is essential for increasing the efficiency of their programs. (Campbell, 1994)

Precisely why among the studied until now disciplines, the training of students in medical universities to work with these modern technologies is needed.

The aim of the studies in information technology rather to nurture habits and skills in the use of methods and means of provided by information and communication technologies than to acquire knowledge in informatics. The effective implementation of this requires training related to ICT, a lifelong continuous training (Zlatanova et al., 2015), e-learning (Petkov et al., 2013; Vodenicharova et al., 2015), distance learning (Popov et al., 2015) and use of information technology is in daily exercise.

The purpose of this study is to analyze the need for quality and adequate ICT education in Medical College Sofia, necessary for classified and competent training of graduate health professionals.

MATERIAL AND METHODS

A questionnaire survey is made in March and April 2016. Total 130 interviewed students from the Medical College - Sofia, are presented in Table 1 by scientific specialty.

Table 1: Student distribution by scientific specialty

Indicator / specialty	Medical laboratory assistant	Radio laboratory assistant	Rehabilitation therapist
Surveyed students	55	30	45

Respondents students submit their views on:

- need for new knowledge and skills for work associated with the advent of new information technologies in medical practice;
- capabilities in the uptake of such knowledge and skills.

The electronic survey is implemented by using an electronic system for data capture REDCAP, integrated into the intranet network of the Medical University of Sofia. The use of this system significantly reduces the probability of error, wrong input and can provide faster and more reliable collection of information and possibility of its multiple and multipurpose use. As a tool, it can realize substantial economies compared with the collection of data on paper (Bart, 2013).

The questionnaire can be opened at web address:
<https://redcap.mu-sofia.bg/surveys/?s=FJWNMD74JF>

RESULTS

To be competitive all health professionals need basic knowledge of the nature, the need, the application and types of information technology used in healthcare. From a survey conducted among students found that 80.4% of respondents identified as necessary acquisition of knowledge in information technology during their

education at the Medical College - Sofia and only 8.4% answered that they are not need such knowledge for their future work in health / Figure 1 /

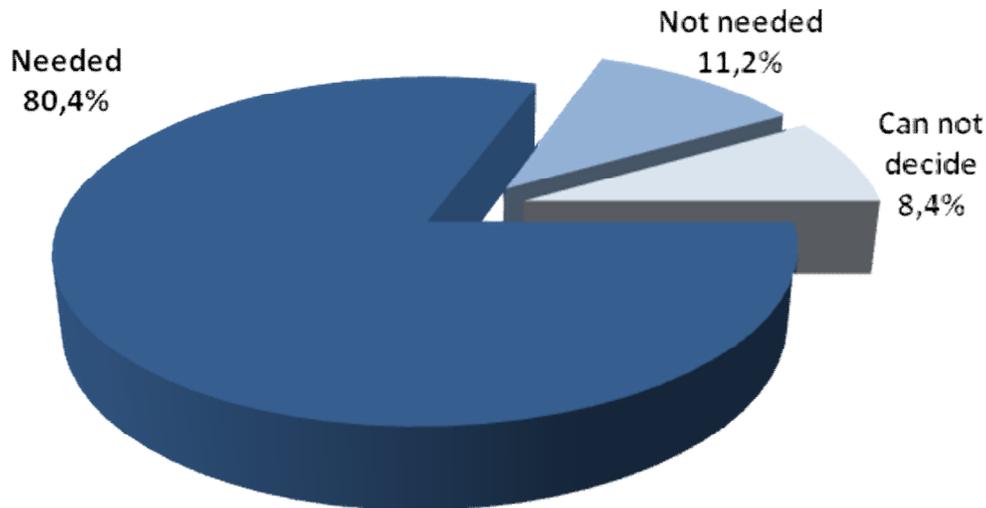


Figure 1: The need of IT knowledge

This is a confirmation of inner conviction of surveyed students that training in information technology is necessary, but at the same time is interesting the question of knowledge that they wish to receive. The preferences of students in terms of learning material are presented in [Table 2]. Overall, in the opinion of students the lower need of basic IT training, suggesting that it is well represented in the lecture course.

Analysis of the relationship between the studied specialty and content, shows that we have a significant correlation $p = 0,023$ and $\chi^2 = 14,675$ at $df = 6$. Medical laboratory assistant are 51.33% of student marked 'Data capturing and analyzing' and 47,06% of students marked 'Information systems in Healthcare' as an important education content, while Rehabilitation therapist are 21,62% of students marked 'Data capturing and analyzing' and 23,53% of students marked 'Information systems in Healthcare' as an important education content. Evident that specialty Medical laboratory assistant, where we are dealing with data and information systems has a greater interest in such learning content and less on basic competence in IT, while specialty Rehabilitation therapist, where work with less data and information systems students focus on basic knowledge of IT.

Overall, this puts the matter to teachers in information technology to change the learning content complies with the individual needs of each specialty.

Table 2: Importance of educational content in the field of IT for work as health professionals

Educational content	Total		Medical laboratory assistant(55)		Radio laboratory assistant(30)		Rehabilitation therapist (45)	
	Num	%	Num	%	Num	%	Num	%
Base IT knowleges	23	17,69%	5	21,74%	3	13,04%	15	65,22%
Application ot IT in Healthcare	38	29,23%	15	41,67%	7	19,44%	14	38,89%
Information systems in Healthcare	32	24,62%	16	47,06%	10	29,41%	8	23,53%
Data capturing and analyzing	37	28,46%	19	51,35%	10	27,03%	8	21,62%

Simultaneously with the question of educational content must be investigated and the views of students on the form of training. To the question "Which forms of teaching define as significant for the quality of education?", The largest share is determined response "Practical exercises" - 71.24%, followed by "Lectures" - 38.24% and "Seminar exercises" - 24.45%. / Figure 3 /. The percentage of answers is more than 100% because respondents gave more than one answer.

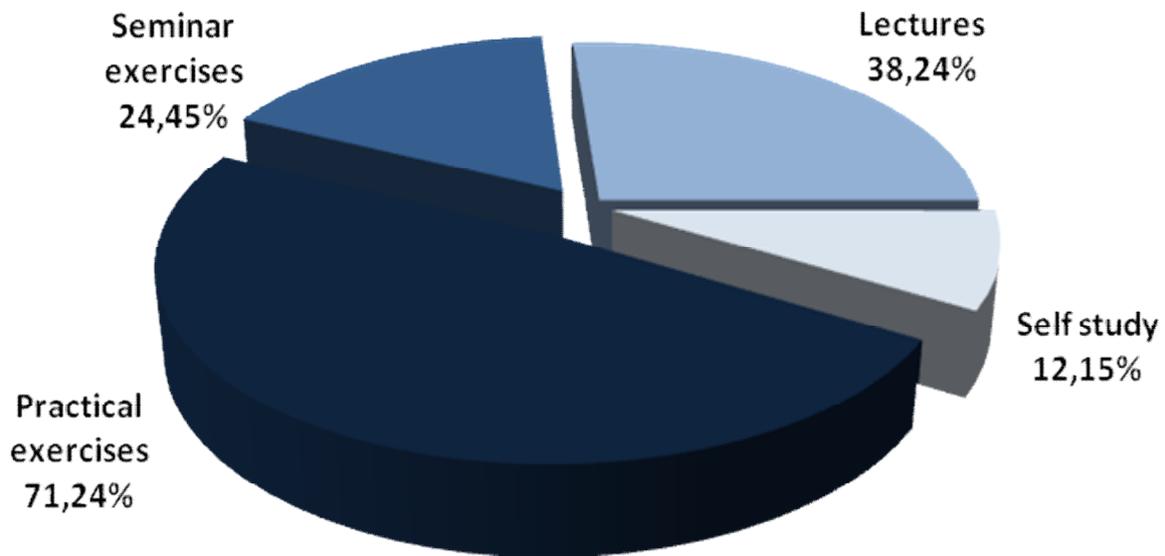


Figure 2: Teaching forms significance for the quality of education

From this research it is clear that for the students practical and seminars are important for the quality of education. Nearly ¼ of the students believe that the practical classes are essential. This may be determined by the fact that college education is rather practical than theoretical nature.

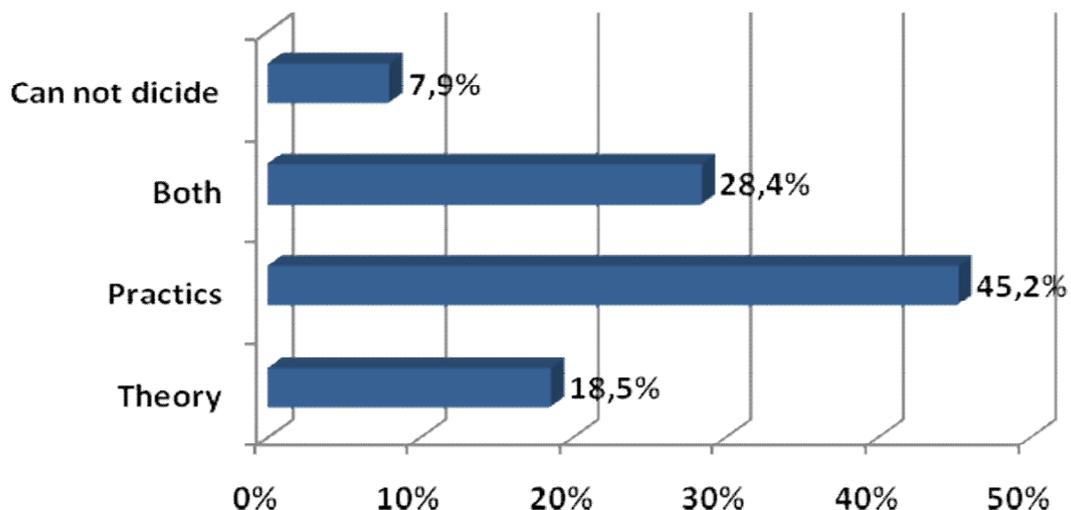


Figure 3: Assessment of training forms

In a survey conducted among students we looked for the answer to the question: "Where there are weaknesses in the teaching forms in your IT study?". As shown in Figure 3 results demonstrate a number of

problems in the system of teaching. As least overlapping are evaluated practical training / laboratory and seminars / (45.2%). If we add to this critical assessment of both forms of training (28.4%) and the respondents "Can not decide" (7.9%), have to conclude a serious reconsideration of IT teaching in Medical College - Sofia. The results show that in the opinion of students feel deficiency in practical training and confirmed the opinion of the importance of practical exercises. This in turn may be a prerequisite to explore the possibilities of integrating the teaching of IT in the education of students in special subjects across the curriculum with an emphasis on practical application in the relevant scientific field.

Changes in the learning process should be directed to those forms that create conditions for higher quality of teaching and easier learning from student of studied material with a view to their future realization as health professionals.

The modern medicine, with its pace of development is unthinkable without the introduction of the new information technologies in medical science, education, medical practice and health care management. To that the efforts of engineers, programmers, mathematicians, economists, and system analysts are harnessed, and their skills need to be adapted with close medical knowledge and skills. These professionals must have a thorough knowledge about the specifics of medical problems expressed in the design, creation, development, improvement and maintenance of medical information systems, medical technical devices and medical software. It is essential and healthcare professionals be able to use all the possibilities of informatics - to master the methodology for obtaining, processing of information to find form, means and language of communication to describe information problems and tasks in the narrow professional field and participate in solving them.

CONCLUSIONS

From the presented results we can deduce the following conclusions:

The changes in the health care system emphasize the need for implementation of the latest information technology in medical science, education, medical practice and health care management.

The ongoing training of Information technologies does not meet the needs of students educated at the Medical College - Sofia. A thorough re-evaluation of educational content with greater overlap of information technology is needed.

Changes can be made in the following areas:

- Increasing the hours of exercises;
- Introducing a supplementary discipline compulsory, elective or optional, which presented in more detail information systems in health care and electronic data processing;
- Change of curricula, in order to add to the specialized topics related to the application of ICT according specialty.

So the changes would improve both the current work and future employability of the students educated in Medical College - Sofia

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REFERENCES

Bart T.,(2013), Comparison of Electronic Data Capture with Paper Data Collection – Is There Really an Advantage?., Business Briefing, Pharmatech.

Campbell K.E., Das A.K. & Musen M.A., (1994), A Logical Foundation for Representation of Clinical Data, Journal of the American Medical Informatics Association ,1(3), p.218-232,

Petkov V., Velikov St., Zlatanova-Velikova R., (2013), E-Learning chalanges and perspectives in Medical Colledge of Sofia – Part 1, Health and Science, no 4, ISSN 1314-3360, pp.36-39 /in bulgarian/

Popov N., Shtereva-Nikolova N. & Lyubomirova K., (2015) Implementation the project of distance learning in faculty of public health, International Journal on New Trends in Education and Their Implications, January 2015, Volume: 6 Issue: 1 Article: 11, pp. 83-88, www.ijonte.org.

Vodenicharova Al., Zlatanova T., Alexandrova M. & Zlatanova – Velikova R., (2015) Role of E-learning in the Faculty of public health - Sofia, International Journal on New Trends in Education and Their Implications, January 2015, Volume: 6 Issue: 1 Article: 13, pp. 98-103, www.ijonte.org.

Vodenicharov Ts. (2014), There is no alternative to professional health management, Medical meridians, magazine for strategic health management, 2 /in Bulgarian/.

Zlatanova T., Zlatanova – Velikova R. & Vodenicharova Al., (2015) Continuing medical education in Bulgaria – organization and attitudes, International Journal on New Trends in Education and Their Implications, January 2015, Volume: 6 Issue: 1 Article: 15, pp. 112-119, www.ijonte.org.

Zlatanova – Velikova R., Velikov St. & Vodenicharova Al., (2015). The electronic test in continuous medical education. International Journal on New Trends in Education and Their Implications, Volume: 6 Issue: 1 Article: 17, pp. 131-137, www.ijonte.org.