



## CONCERNING STIMULATION OF MEDICAL AND DENTISTRY STUDENTS CREATIVE THINKING BY MEANS OF MEDICAL PHYSICS PAPERS

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### ABSTRACT

*The purpose* of the investigation was to analyze the papers effect of medical and dentistry students on their general medical physics education. *Methods.* The task to write papers on topics of medical physics was assigned to medical and dentistry students in Medical University of Sofia. The papers were constructed according the following consequence: literature survey, analysis, classification, derivations. *Results and Discussion.* Papers of medical and dentistry students on different topics of medical physics are presented. The development and the clinical application of the methods described are discussed. A special attention is emphasized on student's motivation to study medical physics.

**Key words:** medical physics education, papers,

### INTRODUCTION

The medical physics education in the Medical University of Sofia is strongly profiled with tendencies of application in medicine and dentistry. That is why some of more important to it are the methods of Roentgen diagnostics, nuclear magnetic resonance and the based on it method of image diagnostics called magnetic resonance imaging, laser diagnostics, thermography, positron emission tomography etc. [2].

The inquiry with students of medicine and dentistry, first year of education, showed an approval to the Manual and the Notebook [1] (used for practical physics classes). Some of the students think the Manual's text as very complicate, easy to explain by the insufficient knowledge from the high school [8].

The development of the modern medical education is connected with the requirement of fast development of diagnostics and therapy methods and a considerable globalization in medicine [10].

A tendency of integration of fundamental and clinical science and practice, of introducing a problem based education, distant and continuing

education is recommended [3, 4, 6, 7]. Different educational methods with students of medicine and dentistry, and feed-back by tests, oral exams, inquiries, reports and others are applied [8].

As one of the most important condition in realizing a successful Medical Physics education is the student's motivation, i. e. to find an application of the studied material in their future activity as medical specialists [9], we choose to give them an opportunity to write a paper on a topic preferred. That way they can use not only the Physics Manual, but also a specialized literature and Internet sites. Such kind of feed-back is extremely useful to look in details at some difficult topics (from physical point of view) with important medical application.

The purpose of this investigation is to analyze the effect of papers, workout by medical and dentistry students, first year of education in the Medical University of Sofia, on the results of their general medical physics education.

### METHODS

Some topics from different parts of the material studied during the course of medical physics

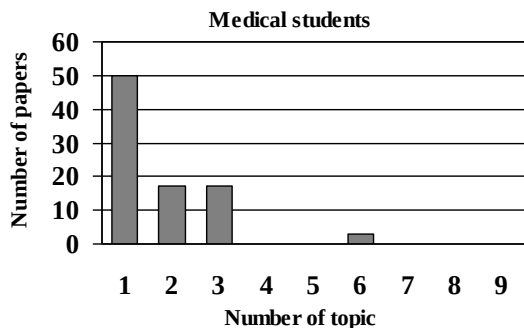
education in the Medical University of Sofia, were introduced on student's attention and according to their own choice and preference, some of them wrote papers, under the consultation of their professors, with some educational heuristic educational additions [5]. The papers are constructed according the following consequence: I. Introduction; II. Physical basis of the event/method; III. Design of different kinds and parts of the equipment; IV. Medical and Dentistry application; V. Conclusions, based on the comparison with other methods, analysis, classification and derivations.

## RESULTS AND DISCUSSION

Papers of medical and dentistry student's, workout on the base of literature and clinical research and analysis, are presented. They are gathered around the following topics:

1. Eye. Optical system.
2. Electron microscopy.
3. Nuclear magnetic resonance imaging.
4. Electron magnetic and nuclear magnetic resonance.
5. Positron emission tomography.
6. Thermography.
7. Dosimeters and detectors of ionizing radiation.
8. Magnetic field.
9. Radionuclide diagnostics

Obviously the greater part of medical students shows preference to the topic "Eye. Optical system.", "Electron microscopy" and "Nuclear magnetic resonance imaging" (Fig. 1).



**Figure 1.** Number of papers, written by medical students on topic 1-9.

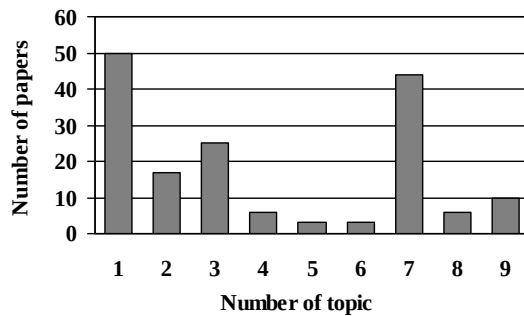
The distribution of papers on topics 1-9 (for medical and dentistry students) is presented on Fig. 2. This result shows the percent of preference of topics for both medical and

dentistry students ("Eye. Optical system" – 30.5 %, "Electron microscopy" – 10 %, "Nuclear magnetic resonance imaging" – 15 %, "Dosimeters and detection of ionizing radiation" – 27 %, "Radionuclide diagnostics" – 6 %). The percent is calculated over the full number of papers (164).

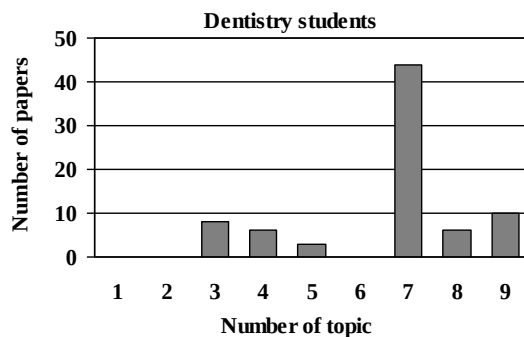
For the students of dentistry, the picture is somehow different (Fig. 3).

The numerous of the observed papers demonstrate that students would like to obtain information that can be used in their professional life. Students would like contact with their professors that give them the opportunity to ask all kind of questions and to understand in details the topic of interest.

That way students could be informed about the development and the state of the methods under consideration and their application.



**Figure 2.** Number of papers written by medical and dentistry students on topic 1-9.



**Figure 3.** Number of papers written by dentistry students on topic 1-9.

An important result of this work is the student's ability to deepen the information as well as to obtain an additional motivation during the education in the field of medical physics.

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