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## APPLICATION OF INNOVATION METHODS AT FOREIGN STUDENTS IN MEDICINE FOR OPTIMIZATION OF LEARNING PROCESS IN PRE-CLINICAL EDUCATION

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### ABSTRACT

**PURPOSE:** Purpose of this study is to follow the necessity of creation of terminological reference book in Bulgarian and English language, including terms and phrases, common in the specialized literature. These terms and phrases have to be explained easily in comprehensive way, without reducing their scientific value, in part of the studied pre-clinical disciplines: human biology, cytology and histology, physics and biophysics, chemistry and biochemistry, and human anatomy. **METHODS:** Anonymous inquiry was conducted among foreign students, regarding necessity of creation of terminological reference book in Bulgarian and English language and preferred design of educative handbook. **RESULTS:** Most of the students approve the idea of creating such handbook, finding it useful in assimilation of knowledge in pre-clinical disciplines. **CONCLUSIONS:** Based on the analysis of the pedagogical experiment, it could be concluded that inquiry results completely match the direct observation of lecturers in different disciplines and strengthen their opinion regarding the need of creating such handbook and implementation of additional forms of education.

**Key words:** medical education, terminological reference book, new educational methods, inquiry, successful education

### INTRODUCTION

The period of preclinical study should have a dual purpose: to provide a vocational training in basic scientific knowledge essential to good clinical practice, and to educate medical students in the methods and skills of science. Professional element defines the core of learning plan, which consists of assimilation of basic scientific knowledge, used by doctors in their practice (1).

Education in pre-clinical disciplines within high medical schools in Bulgaria is profiled and directed towards mastering medicine profession. In this meaning, it upgrades the education in the respective disciplines in the secondary schools, but, due to many reasons, serious gaps in students' knowledge are being observed. Filling these gaps should start from

the basics – assimilation and understanding of basic terms in the studied pre-clinical disciplines. This problem is much more serious for many foreign students in medicine, which along with the gaps from secondary school, have also a very serious language barrier.

The medical science is being characterized with own, strictly-specific terminology, which should be learned and assimilated from the future specialists. Modern educational practice shows that the use of many insufficiently precise and clearly defined terms from the professors, greatly complicates the perception and understanding of information in relevant discipline (2, 3). At the same time, modern educational practices shows, that usage of large number unclear and precisely defined terminology from the lecturers, significantly complicates perception and assimilation of the respective learning discipline. From one side, this leads to aspiration for learning the material by-heart, which is a precondition for making mistakes in interpretation and practice implementation of the learned theory in future.

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To avoid this incorrect approach from students, it would be of use to create a guidance book, in which basic terms from some disciplines from pre-clinical education are explained in one easy and comprehensive way. This would help both lecturers and students in assimilation of the complicated material in the respective discipline.

The research goal is to analyze the need of creating one terminological guidance book in both English and Bulgarian, including basic terms and key definitions, described in easy and comprehensive way, without reducing their scientific value in part of the studied pre-clinical disciplines: Human Biology, Cytology and Histology, Physics, Biophysics, Chemistry, Biochemistry, and Human Anatomy.

**MATERIALS AND METHODS**

Comparative analysis of test results in pre-clinical disciplines in first and second semester: Human biology, Cytology and histology, Physics, Biophysics, Chemistry, Biochemistry, Human anatomy, of Bulgarian and foreign students from Faculty of Medicine in SU “St. Kliment Ohridski” for academical 2007/2008, 2008/2009 and 2009/2010 (Figure 1).

Among foreign students was conducted anonymous inquiry with their opinion about necessity and preferred design of educative handbook – terminological reference book in Bulgarian and English language, including basic terms and key-words in the pre-clinical

disciplines. Achieved results are shown in Figure 2.

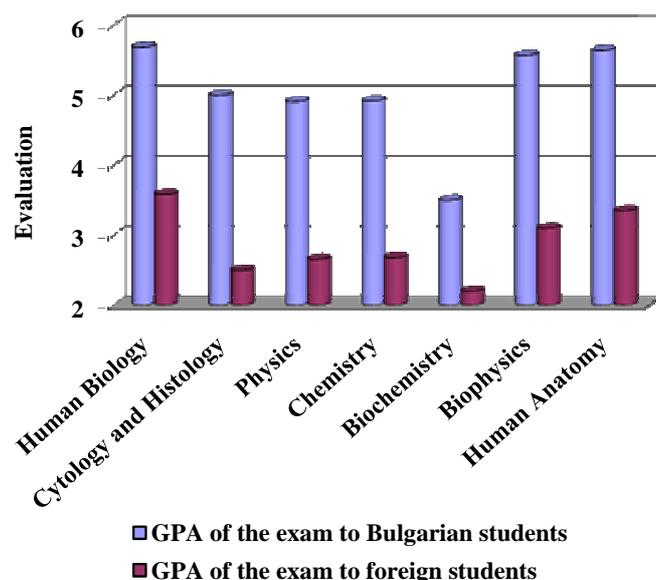
**RESULTS AND DISCUSSION**

In organization of educational process at Faculty of Medicine, within Sofia University, individual characteristics, interests and capabilities of the foreign students. Due to language barrier, the feedback student-lecturer is difficult and the result of education is not satisfying (Fig.1).

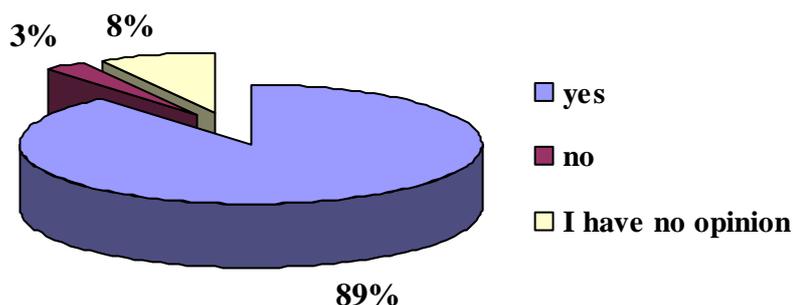
Unsatisfying results from the tests of foreign students in pre-clinical disciplines clearly reveal that introduction of new additional educational methods and forms is needed.

Successful realization of educational targets requires:

- To be analyzed and approbated the ideas and targets of lecturer’s collective for development and optimization of educational process within Faculty of Medicine;
- To follow with quality and quantity parameters the effectiveness of the implemented innovational methods and forms through regular feedback and tests, inquiry and statistically processed data for the results of the foreign students in their education;
- To be created terminological reference books, including basic terms from the studied disciplines for clear and correct interpretation of the most common terms, which would help overcoming the difficulties in understanding the educational material, etc.
- To implement additional consultations and seminars, which would help foreign students in their educational course and will provide opportunity for successful taking of the tests;



**Figure 1.** Comparison between average grades from above listed pre-clinical disciplines for Bulgarian and foreign students.



**Figure 2.** Results from inquiry among foreign students from Faculty of Medicine answering the question: Do you think that creation of terminological reference book in Bulgarian and English, including basic terms and key-definitions from part of the studied pre-clinical disciplines, would be useful for you?

Inquiry results reveal that most of the students approve the idea of composing such reference book, as it will significantly increase assimilation of knowledge in the listed disciplines. From the analysis of the performed pedagogical experiment could be summarized, that the inquiry results completely correspond to lecturers' direct observations and strengthens their opinion regarding the urgent need of creation of such reference book and implementation of additional educational forms for these students.

Creation of terminological reference book would help for more result-oriented and upgrading preparation of the foreign students in medicine in all universities educating such students.

The inquiry is part of pilot research for foreign students' opinion regarding the level of education. Upcoming we have wider research, including inquiries with more questions, which would provide detailed research for opinion and ideas of the foreign students for optimization of educational process and other forms of feedback – implementation of special input-output tests in different pre-clinical disciplines, which would provide an idea about lecturing effectiveness, specially organized discussions in various topics with students, etc.

Creation of terminological reference book in Bulgarian and English, including basic terms and key-definitions from the studied pre-clinical disciplines, targeting mostly the education of foreign students is in completion

phase and its publishing is upcoming. In process of creation are detailed questionnaires and various forms of feedback, aiming to accumulate information about education at Faculty of Medicine within Sofia University "St.Kliment Ohridski".

#### CONCLUSION

Based on inquiry and comparative analyses of results of Bulgarian and foreign students at Faculty of Medicine in Sofia University, were achieved conclusions regarding necessity and preferred design for reference book in Bulgarian and English language with basic terms and key-words from the pre-clinical disciplines, studied by students.

Creation of terminological reference book would help for more result-oriented and upgrading preparation of the foreign students in medicine in all universities educating such students.

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