
**TRAINING IN CLINICAL IMMUNOLOGY AS A NECESSITY IN BACHELOR
CURRICULUM OF MEDICAL LABORATORY ASSISTANT**

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Abstract: In the process of learning, students need to acquire not only knowledge and skills but also to form certain qualities, important for the professional activities. In various diagnostic laboratories, one of which is the Laboratory of Clinical Immunology are created conditions for a proper model and style of work. Work in immunological laboratory requires specific knowledge and practical skills that are acquired through specialized theoretical and practical training of students only in the course of Clinical Immunology.

Aims: opinion survey of students in "Medical laboratory" about the need of training in Clinical Immunology.

Materials and Methods: An opinion poll among students of specialty "Medical laboratory" with applied method - Direct group inquiry in strict compliance with the principles of voluntary and anonymity.

Results: The results show that students appreciate and find the knowledge gained from free electives Clinical Immunology useful, but insufficient because of the short duration of training. The majority of students recommended improving training to increase the number of hours of Clinical Immunology.

Conclusions: It is appropriate that the opening of the discussion adjustment of curriculum for the specialty "Medical laboratory" with a view to introduce the discipline immunology in the unified state requirements.

Keywords: immunology, curriculum, laboratory technicians.

INTRODUCTION

In line with European strategies for development of the labor market in the European Union, current and future medical professionals should be prepared to implement innovation in their professional activity. To meet the growing demands of the market of medical services they need to be motivated to continuously acquire new knowledge and skills. For this aim, training of students must use a variety of methods, forms and means. They must create conditions to build proper models and style of work in different diagnostic laboratories, one of which is the Laboratory of Clinical Immunology. In the training process, it must be learned not only knowledge and skills but also to be formed certain qualities important for professional activities.

Quality and availability of modern diagnostic and scientific methods in the field of clinical immunology are continuously increasing with the advent of new technologies, the use of digital processing and memorizing information. Work in immunological laboratory requires specific knowledge and practical skills that are acquired through specialized theoretical and practical training of students in Clinical Immunology. This requires largely enrichment and improvement of theoretical and practical knowledge of medical technicians.

Laboratory of Clinical Immunology at the University Hospital "Prof. Dr. Stoyan Kirkovich" Stara Zagora meets the requirements of the Medical Standard in Clinical Immunology (1) and is the basis for practical training, practical training and internship of students from professional direction which is "Health care" to a degree of professional Bachelor on specialty "Medical laboratory" (2).

Modern lines of training of this kind specialists include organizing and conducting educational and educational process according to one state requirements in Bulgaria and European requirements based on experience and traditions of medical education in the country in implementation of health education medical standards.

According to the Ordinance on uniform state requirements for acquiring higher education in the specialty "Medical laboratory" of professional direction "Health care" to a degree "professional bachelor", adopted by Decree № 238 /26.09.2008 the Council of Ministers of Republic of Bulgaria, the course Immunology is not provided (3).

In connection with this, in 2012. Medical College, Stara Zagora was revealed free electives (SID) Clinical Immunology. Our goal was to develop a curriculum Clinical Immunology as elective course. Based on this

program to be proposed to the inclusion of clinical immunology, as a mandatory course in the curriculum for "Medical laboratory assistant".

Course content Clinical Immunology:

COURSE

The lectures provided by the curriculum are divided into the following topics:

- Immunity - definition, types and shapes. Nonspecific and specific immunity. Immune system - organs of the immune system. Cells of the immune system - ontogenesis of blood cells. Key populations and subpopulations of lymphocytes - T, B lymphocytes and NK cells. Immune response. Primary and secondary immune response.
- Antigens - structure, types, alloantigens - blood group antigens ABO system, Rh system autoantigens. Antibodies - structure, classes and function. Mechanism of action of the antibodies.
- immunodiagnostics. The antigen-antibody reactions. Use of the antigen-antibody reaction in the immunodetection. Immunological methods.
- immunopathology and clinical immunology - Diagnosis immunodeficiencies - primary and secondary (AIDS), autoimmune and allergic diseases.

practicals

- Methods for the Study of humoral immunity: determination of immunoglobulins, complement, acute phase a protein, cytokines, monoclonal immunoglobulins and cryoglobulins - immunodiffusion, immunoelectrophoresis, immunofixation, nephelometry, turbidimetry, enzyme immunoassay
- Methods for the determination of autoantibodies: ANA, ANA-typing, rheumatoid factor, anti-antibodies kardiolipinovi - immunofluorescence microscopy, nephelometry, turbidimetry, enzyme immunoassay (ELISA, Immunoblot)
- Methods for the study of cellular immunity: immunophenotyping, phagocytosis, oxygen blast
- Methods for separating blood cells - principles of separation with Ficoll and fluorescence activated cell sorter
- Procedures for measuring lymphocyte activation - microscopic, flow cytometric, radioimmunoassay

The course of Clinical Immunology aims to provide knowledge and practical skills in the field of medical immunology. To utilize mandatory minimum knowledge of basic and clinical immunology with emphasis on the laboratory immunology and immunodiagnostics. To acquire practical skills to perform basic immunological analyzes. Discuss the principles of organization and tasks of the laboratory of clinical immunology. The program is consistent with the need for basic knowledge in immunology and clinical immunology professional bachelors of specialty medical laboratory and the acquisition of practical skills to prepare for work in immunological laboratories. After successfully completing the course, students should have knowledge about the basic principles and mechanisms of action of the immune system in normal and pathological, to know the basic principles of immunodetection and organization of the immunological laboratory.

In light of these facts we aim: 1) study the opinion of students trained in SID Clinical Immunology on the need for training 2) preparing a reasoned proposal for the introduction of clinical immunology, as a compulsory subject in the curriculum of "Medical laboratory. "

MATERIALS AND METHODS

An opinion poll among 32 students from specialty "Medical laboratory assistant" with applied method - Direct group inquiry in strict compliance with the principles of voluntary and anonymous. When processing data used mathematical and statistical methods enabling real evaluation of the data.

RESULTS AND DISCUSSION

After completion of the course Clinical Immunology students express their opinion on whether conducted training available to them level. 91% of respondents answered positively to the question, and only 9% think that training was not accessible level. (Fig. 1)



Fig.1 Accessible level of training

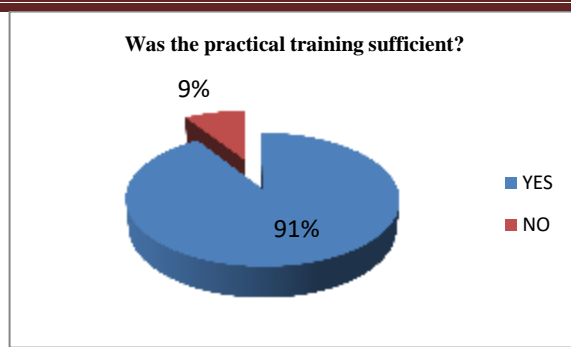


Fig.2 Practical training

A significant number of surveyed students (91%) believe that the practical focus during the course was sufficient (Fig. 2). Practical training has a number of specific features and advantages, the use of which leads to build important skills and techniques. Through practical activities students need gradual, consistent and available to form professional skills and habits, commitment to the profession and responsibility to human health.

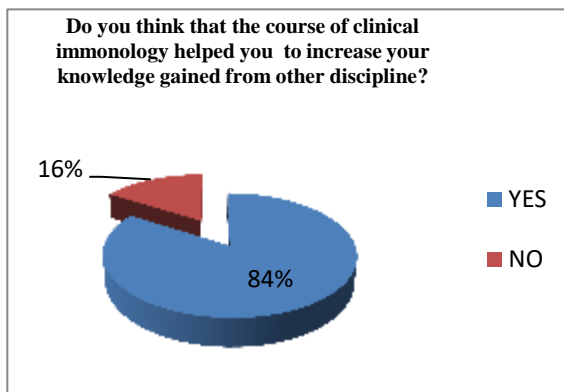


Fig.4 Benefit from the knowledge gained

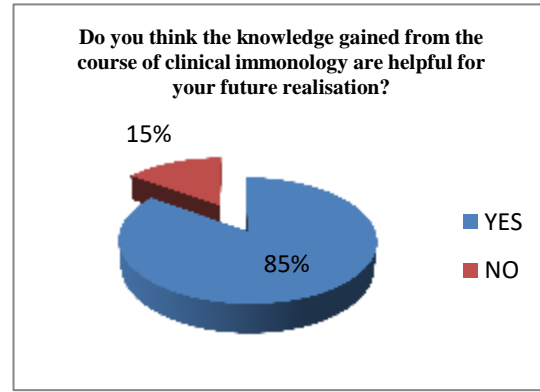


Fig.3 Increasing the knowledge gained from other disciplines for future realization

By responding to the third and fourth question emphatically expressed the opinion of the majority of students. They state that the course of Clinical Immunology has helped them to increase their knowledge acquired from other disciplines and this knowledge will be useful for their future realization (Figure 3 and Figure 4).

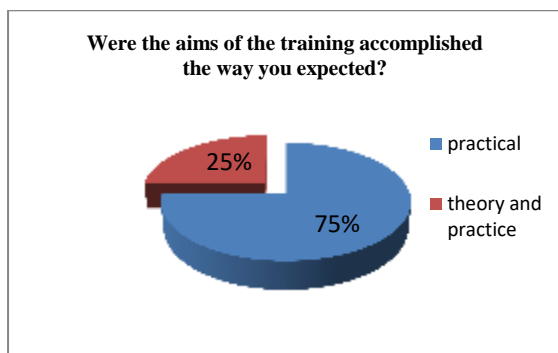


Fig.5 Accomplishing the aims of immunology training

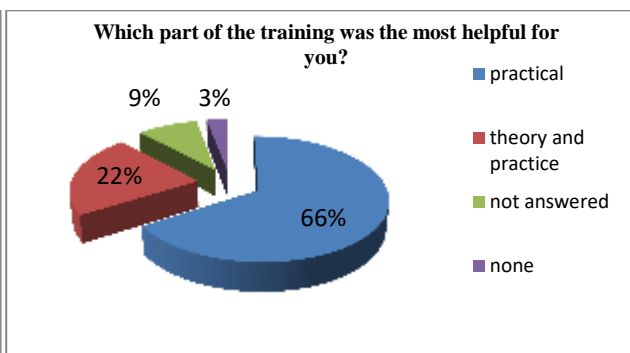


Fig.6 Benefit from the training in clinical immunology

Therefore as no surprise and the answer to the fifth question, which according to the expectations of students on achieving the objectives of training in Clinical Immunology justified by the majority of respondents 75% (Fig. 5). Guarantee the quality of students' education is the application of knowledge - theoretical and practical skills in educational and practical bases. So improve the professional competence of future medical technicians and

ensure implementation in a real working environment. That is not surprising and answer seven. 66% of students responded that the practice has been most useful to them, while 22% believe the theory as part of their training has been useful (Figure 6).

It is noteworthy that the majority of students (62%) the duration of the course as insufficient (Figure 7). According to the curriculum are provided: - forms of lecture-handling workload of 20 hours - 10 hours of lectures and 10 hours exercises - forms of extracurricular work - for self-monitoring and izpita- 5:00.

Logical consequence of the previous question is emphatically expressed by the interviewed students desire for greater workload of training in Clinical Immunology. The opinion of students that need extra hours of theory and more practice Clinical Immunology (Fig. 8).

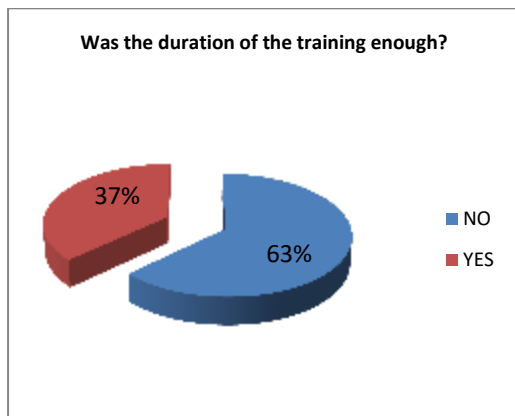


Fig.7 Duration of training in clinical immunology

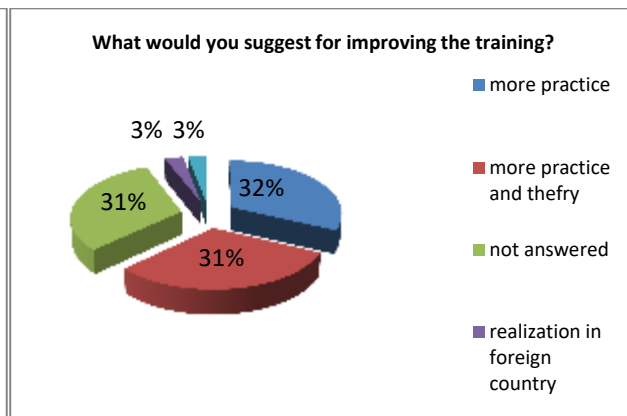


Fig.8 Suggestions for improving the training in clinical immunology

CONCLUSION

On the basis of the findings of the inquiry can draw the following conclusions:

- Specialized theoretical and practical training in Clinical Immunology is not provided in the curriculum for the specialty "Medical laboratory assistant" and is not performed in any of the other subjects. Without training in clinical immunology laboratory medical graduates remain inadequately prepared for clinical practice regarding immunodetection.
- It is appropriate for opening a discussion adjustment of curricula for specialty "Medical laboratory assistant" with a view to introducing the course "Clinical Immunology" In a state requirements for acquiring higher education in "Medical laboratory assistant" of professional field "Health Care" a degree "Professional Bachelor" (3).

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