

Special themed issue: Education in clinical chemistry and laboratory medicine in various European countries

Education of medical biochemists in Bosnia and Herzegovina

Mira Winterhalter-Jadrić¹, Adlija Čaušević², Radivoj Jadrić^{1*}, Jozo Ćorić³, Sabaheta Hasić¹, Emina Kiseljaković¹

¹Department for Biochemistry, Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

²Department of Biochemistry and Clinical Analysis, Faculty of Pharmacy, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

³Department for Clinical Chemistry and Biochemistry, Clinical Centre of University of Sarajevo, Sarajevo, Bosnia and Herzegovina

*Corresponding author: rjadric@hotmail.com

Abstract

In this paper we would like to briefly introduce readers to the situation in the field of laboratory medicine in Bosnia and Herzegovina, with a focus on training in the field of medical biochemistry. As in some of neighboring countries, term *Medical biochemist* is the usual name for the *Clinical biochemist* or *Clinical chemist* in Bosnia and Herzegovina. Despite the difficult period through which the profession had passed in the last two decades, laboratory work, particularly clinical biochemistry, has managed to retain the necessary quality and keep pace with the developed world. In post war period, Society of Medical Biochemists of Bosnia and Herzegovina held regular meetings each year as a part of "life long learning" process, where both scientific and vocational lecturers presented their work. A single law on the state level would provide us with more defined and precise answers, such as: who can get a specialization, how long should last the training for medical biochemistry specialists (duration in years). This law should be in consent with the program described in EC4 or other documents given by the EFCC (European Federation of Clinical Chemistry and Laboratory Medicine) and IFCC (International Federation of Clinical Chemistry and Laboratory Medicine).

Key words: laboratory medicine; medical biochemistry; education

Received: December 27, 2010

Accepted: January 18, 2011

In this paper we would like to briefly introduce readers to the situation in the field of laboratory medicine in Bosnia and Herzegovina, with a focus on training in the field of medical biochemistry. This short article gives an overview of the situation in the field of education of personnel through the prism of current legislation. It should, however, be emphasized that Bosnia and Herzegovina, as well as other countries in transition, underwent a difficult period, of war and postwar reconstruction, which certainly effected clinical biochemistry as a field.

As in some of neighbouring countries, term *Medical biochemist* is the usual name for the *Clinical biochemist* or *Clinical chemist* in Bosnia and Herzegovina. Medical biochemistry is practiced by me-

dical doctors (MDs), biochemists, chemists and pharmacists. No official register of the members of this profession exists at the moment. Undergraduate training programme at the University of Sarajevo is different for different professions entering the field: MDs are regularly trained for 6 years at the University, pharmacists for 5 years, while chemists are educated by 4 year programme. In general, at least 5 years of university study is required for any of these professionals in order to enter the programme of vocational training in medical biochemistry, but vocational training was allowed to some trainees with BSc degree in chemistry and biochemistry. Vocational specialisation in medical biochemistry lasts for 3 years and takes place in university hospitals, with differences within syllabus regarding primary education (MD's and che-

mists/pharmacists). Syllabus for MD's is composed of theoretical and practical parts, such as general biochemistry, physiology, toxicology, physical chemistry, (lasting 2-4 months) and clinical biochemistry for 22 months. For pharmacist syllabus is composed of microbiology (2 months), hematology (6 months) and clinical biochemistry (28 months).

After vocational training, final examination, that is both theoretical and practical, is obligatory. No official re-registration system exists, plans are being developed based on a credit-point system. Current number of Clinical Chemists is around 95 with following distribution: chemists 28, MDs 16, pharmacists 36 and others 15.

Despite the difficult period through which the profession had passed in the last two decades, laboratory work, particularly clinical biochemistry, has managed to retain the necessary quality and keep pace with the developed world. During many years prominent focus of clinical chemistry has been on research, scientific and technical developments, and quality as well as on quality improvement as tools to improve patient care. Without doubt these issues represent the way forward in the performance of our laboratories. Still another factor of unmistakable importance for, finally, the well-being of patients, is a good (continuous) education. This not only holds for clinical chemists themselves, but for every member of the staff working in our laboratories.

In post war period, Society of Medical Biochemists of Bosnia and Herzegovina held regular meetings each year as a part of "life long learning" process, where both scientific and vocational lecturers presented their work. These meetings served in the exchange of the experience with leading manufacturers of apparatus and laboratory tests. We became full members of BCLF (Balkan Clinical Laboratory Federation), EFCC (European Federation of Clinical Chemistry and Laboratory Medicine) and the IFCC (International Federation of Clinical Chemistry and Laboratory Medicine), and in the year 2010, Society organized the first post-war Congress of Medical biochemists in Bosnia and Herzegovina in Sarajevo with international participation.

The International Federation of Clinical Chemistry and Laboratory Medicine has recognized this necessity for continuing education a long time ago. Since 1967 it has already an Education (and Management) Division (EMD), at that time as part of IU-PAC (International Union of Pure and Applied Chemistry). Most National Societies of the so-called developed countries continuously offer their members high level education in clinical chemistry. This starts at the training of clinical chemists and is continued during their professional life (1).

The situation regarding the education of professionals who are employed in laboratories of clinical biochemistry in Bosnia and Herzegovina is quite complex. Bosnia and Herzegovina is a Federation of two entities, with their own laws and regulations related to health care. Currently, Ministry of Health from both governments is only responsible for regulating the field of specialization in medical biochemistry.

The law in the Federation of Bosnia and Herzegovina identifies health professionals (MDs and pharmacists) and other professions working in the field of healthcare (medical assistants - chemists, biologists, and engineers of laboratory diagnostics) as candidates for specialization to be granted, while in Republic of Srpska specialization in medical biochemistry can only be granted to a medical doctor or a pharmacist, which complicates the situation further. Also, at the state level there is no legislative on medical biochemistry practice. Currently, there are some activities on the adoption of such law, as well as in neighboring countries (e.g. Croatia).

We think that a single law on the state level would provide us with more defined and precise answers, such as: who can get a specialization, how long should last the training for medical biochemistry specialists (duration in years). This law should be in consent with the program described in EC4 or other documents given by the FES-CC and IFCC.

All the data presented in this paper seem to be in accordance with material published by the Clinical Chemistry and Laboratory Medicine Educa-

tion group in some IFCC Member Countries. The main conclusions of this group were:

- School systems are comparable in different countries – entrance to University usually starts at age 18.
- University Training thought necessary to enter Clinical Chemistry and Laboratory Medicine Education mostly is Masters, MD, PhD, or Pharmacy (it is exceptional to allow a Bachelor Degree); PhD sometimes is recommended.
- In a few countries only MDs can enter profession, but this is becoming an exception. In practice clinical chemistry and laboratory medicine is a common playground for MDs and PhDs.

- Length of University training is usually 5-6 years; for MDs 5-6 years + internship (1 year). A PhD may take some extra 4 years.
- Nowhere a separate University program in Clinical Chemistry and Laboratory Medicine exists, with maybe one or two exceptions. The training may be part of a larger curriculum „Clinical Chemistry and Molecular Biology“, „Laboratory Medicine“, or „Medical Laboratory Sciences“. Thus, no University degree in Clinical Chemistry and Laboratory Medicine exists (Gerard T. B. Sanders).

It seems that the situation in our country leads to the same conclusions.

References

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Školovanje medicinskih biokemičara u Bosni i Hercegovini

Sažetak

U ovom bi članku ukratko upoznajemo čitatelje sa situacijom na području laboratorijske medicine u Bosni i Hercegovini s naglaskom na školovanje na području medicinske biokemije. Kao i u nekim susjednim državama, i u Bosni i Hercegovini je *medicinski biokemičar* uobičajeni naziv za kliničkog biokemičara ili kliničkog kemičara. Usprkos teškom razdoblju kroz koje je u posljednjih dvadeset godina prošla struka, laboratorijska je djelatnost, a pogotovo struka kliničke biokemije uspjela održati potrebnu razinu kvalitete te ne zaostaje u napretku za razvijenim svijetom. U razdoblju nakon rata. Društvo medicinskih biokemičara Bosne i Hercegovine održavalo je svake godine redovite sastanke u sklopu procesa cjeloživotnog učenja, na kojima su predavanjima o svom radu sudjelovali stručni i znanstveni predavači. Na državnoj bi razini trebao postojati zakon koji bi pružio preciznije odgovore na pitanja kao što su primjerice: tko može ići na specijalizaciju, koliko bi godina trebalo trajati školovanje za specijalista medicinske biokemije i slično. Taj bi zakon trebao biti u skladu s programom EC4 ili drugim dokumentima koje su izdale Europska federacija za kliničku kemiju i laboratorijsku medicinu (engl. *European Federation of Clinical Chemistry and Laboratory Medicine*, EFCC, prijašnji FESCC) i Međunarodna federacija a kliničku kemiju i laboratorijsku medicinu (engl. *International Federation of Clinical Chemistry and Laboratory Medicine*).

Glavne riječi: laboratorijska medicina; medicinska biokemija; edukacija