

REVIEW

By Assoc. Prof. Nevyana Feschieva, MD, PhD

Of a PhD thesis on the subject of:

Contemporary Models, New Approaches and Perspectives in Training Students of the Medical Laboratory Technician Speciality

By Yordanka Yordanova Mihailova

Research Supervisor:
Assoc. Prof. Emilia Georgieva, PhD

The doctoral thesis is submitted for awarding the educational and scientific degree

Philosophy Doctor in higher education area 7.1. Healthcare and Sports,
7.4. Public Health – professional field, Scientific Specialty Healthcare Management

I have been appointed as an external member of the Scientific Jury under Order No. P 109-511/18.07.2023 of Prof. Svetoslav Georgiev - Rector of the MU – Varna. The Rector's order was based on the report of Assoc. Prof. Katia Genova Eguruz, PhD, Head of the Nursing Care Department (Report No. 102-2805/15.11.2023), Faculty Council decision of the Faculty of Public Health (Minutes Meeting No. 214/22.11.2023), and a report by Prof. Antonia Dimova-Yordanova, PhD. Dean of the Faculty of Public Health (report No. 104-1391/27.11/2023). At the first meeting of the Scientific Jury (on 11/12/2023), I was tasked to prepare a review of the doctoral thesis on "Contemporary Models, New Approaches and Perspectives in Training Students of the Medical Laboratory Technician Speciality". The thesis is submitted for awarding the educational and scientific degree Philosophy Doctor in Healthcare Management, professional field 7.4. Public Health.

Brief biographical data and career profile of the doctoral student

Yordanka Mihaylova graduated from the Medical College – Varna in 1990 with a speciality as a Medical Laboratory Assistant. In 2001, she obtained a Master's degree in Health Administration from the Medical University of Varna. In 2006, again from the Medical College as a Pharmacy Assistant. In 2007, she obtained a Master's degree in Social Pedagogy from The

Shumen University “Bishop Konstantin Preslavski”. Later on, in 2015, Mihaylova acquired a Master's degree in Healthcare Management from MU-Varna.

Yordanka Mihaylova was enrolled as a full-time doctoral student in 2020 in the doctoral program in Healthcare Management at the Department of Nursing Care, MU-Varna. She meets the scientometric requirements of the Rules and Regulations for Academic Staff Development of MU-Varna regarding doctoral studies. She was authorised to defend her doctoral thesis by the Order of the Rector of MU-Varna. No violations of the procedure were found.

In 2022, Mihaylova acquired a speciality in Public Health. She has spent most of her professional career working in her primary field as a medical laboratory technician. She worked for 22 years in the clinical laboratory at the Children's Home for Medical and Social Care in Varna. Ever since 2012 until now, she has been a lecturer at the Medical College – Varna in the Medical Laboratory Assistant Educational Sector. She also has professional experience in her second speciality – from 2006 to 2012, Mihaylova worked as an assistant pharmacist at Maxifarm Ltd.

Yordanka Mihaylova speaks English, French and Russian at a very good level and Italian and Spanish at a conversational level.

She participated in two projects: 1. Student internships – Phase 2, as an academic mentor for the educational organisation MU-Varna. Within the framework of the project, she was a Mobility Programme participant in Edirne, Turkey. 2. Project of the Ministry of Education financed by the EU (PROJECT BG05M2OP001-2.016-0025-C02) – "Establishing a Multidisciplinary Educational Environment for the Development of Workforce with Integral Competencies in the Field of Biomedicine and Healthcare". As part of the project, the doctoral student specialised in good European teaching practices.

Yordanka Mihaylova is the author and co-author of 20 publications. She is a member of the Bulgarian Association of Healthcare Professionals and the Bulgarian Public Health Association.

Summary: Yordanka Mihailova has consistently worked towards enhancing her professional skills, as evidenced by the numerous educational and qualification degrees she has obtained. Her long-term experience as a practitioner and lecturer in medical laboratory work and her very good foreign language training are prerequisites for researching the thesis subject.

General characteristics of the thesis

The thesis is presented on 139 pages, of which 120 pages of text, 11 pages of bibliography and 4 appendices of 8 pages. It contains 10 tables and 33 figures. The bibliographic reference includes 158 literary sources, of which 96 are in Cyrillic and 62 in Latin.

The thesis is structured in seven main chapters: Introduction – 2 pages. Chapter One – Literature Review – 45 pages; Chapter Two – Research Methodology and Organisation of the study – 7 pages; Chapter Three – Results and Discussion of the survey among working medical laboratory technicians – 20 pages; Chapter Four – Results and Discussion of the survey among students – 17 pages; Chapter Five - Results and Discussion of the interview with managers of medical diagnostic laboratories – 8 pages; Chapter Six – Model of a Master's Program – 7 pages; Chapter Seven – Conclusions, Recommendations and Contributions – 4 pages.

Relevance of the thesis subject

The rapid advancement of medical technologies is continuously altering the healthcare landscape, affecting all medical disciplines. This affects the boundaries of professional expertise, the educational process – such as content and forms of training, the social status of the profession and its legal regulation. There is a growing trend of studying and comparing these sensitive problems with relevant professions in the rest of the EU countries. Moreover, ideas for resolving the issues, including changes in national legislation, have been suggested by various professional organisations. Different theses and publications related to the profession or education of X-ray laboratory technicians, midwives, public health inspectors, health assistants, and dental technicians have been published in Bulgaria only in the last 5-6 years. The significant publication activity on the issue of researchers from MU-Varna stands out. Regardless of their motivations and focus, these studies contribute to a contemporary view of the medical professions – how they function in the 21st century and point the way for their development in adapting to shifting environments. The changing landscape of laboratory medicine due to the adoption of new technologies makes it pertinent to explore the current strategies and perspectives in training students of the medical laboratory technician speciality.

Evaluation of the literature review. The doctoral student has chosen three important topics on which she has developed the overview: the medical lab technician's role and place in the healthcare system, specifics of training in the Medical Laboratory Technician speciality, the Medical Laboratory Technician profession in modern healthcare with an emphasis on the

European qualification framework and modern models in the training of medical laboratory technicians.

The first topic occupies the most significant part of the review. The development of the discipline is effectively showcased through its history. It shows the rise of medical-diagnostic laboratory work in Bulgaria over the years, innovations, automation, approaches to standardising clinical-laboratory activities, and the establishment of a national system for external evaluation of the quality of laboratory activities. The establishment of scientific and professional associations and their integration into international ones is well presented. With the regulatory concerns regarding the professional responsibilities of a medical laboratory technician addressed, the doctoral candidate turns her attention to the costly turnover rates within Medical Diagnostic Laboratories (MDL). She examines and systematises the factors affecting it: professional stress, pay-related discontentment, emigration, and the Covid-19 epidemic. On the second topic, various classifications of the types of training methods were examined. Particular attention was paid to the use of electronic learning resources. The SWOT analysis, the prospects for application, and the importance of proper teacher training were outlined. The third topic is presented by a comparative study examining the similarities and differences between medical laboratory technicians in Bulgaria and their counterparts in other EU countries (name, duration of the training, type of educational institution where it takes place, disciplines studied, and educational and qualification degree). The study was conducted within the EC Database of regulated professions in the EU.

I believe this would have been the appropriate place in the thesis for the doctoral student to share her personal impressions on these issues from her visit to Turin, Italy. She was an exchange student on a project for the development of personnel with integral competencies in biomedicine and healthcare. (These impressions are in subsection 1.3.3. of the literature review). Despite the similarities in education between the EU countries and Bulgaria, the most notable contrast lies in the degree received. In our country, it is a Professional Bachelor's degree, whereas in other EU countries, it is a Bachelor's degree. The professional bachelor's degree reduces the competitiveness of our staff in the EU labour market. The literature review shows the broad awareness of the doctoral student in the field. Based on this, she focuses on specific topics: turnover in MDL, electronic learning resources, professional bachelor's degree – suitability, and comparative analysis of Bulgaria with countries of the European Union on the training of medical laboratory technicians. The thesis methodology is built upon the selected topics in the literature review.

Evaluation of the aim, tasks, methods and organisation of the study. The thesis aims to study modern models and new approaches in the education of students in order to facilitate their competitiveness in the labour market in all EU member countries. To fulfil the aim, five tasks are set, which include: a comparative Bulgaria-EU analysis in relation to educational degrees; a study of the attitudes of students and working medical laboratory technicians regarding training for increasing the educational qualification; a study of the factors and barriers preventing the increase of educational qualification of medical laboratory technicians; survey on the opinion of users of health professionals regarding professional training and competencies of medical laboratory technicians; a Master's Program Model curriculum designed to cultivate practical knowledge and management skills in the trained medical laboratory technicians.

Three research hypotheses are formulated. The object of the study are working medical laboratory technicians from Varna – 79, students from the Medical Colleges in Varna and Stara Zagora – 100, and experts – 10. The methodology would have gained greater precision by mentioning the number of populations to which the surveyed participants belong. The applied methods are documentary, sociological (survey and interview), and statistical methods adequate to the tasks and target groups. The stages of conducting the study are reflected in Table 2, page 52. For each target group, a toolkit was developed – questionnaire No. 1 for working medical laboratory technicians (17 questions of which 15 closed and 2 open questions), questionnaire No. 2 for students of the Medical Laboratory Technician speciality (20 questions – 18 closed and 2 open questions) and a questionnaire for a semi-structured interview with experts (users of health professionals) from the three largest medical facilities on the territory of Varna. Adopting a uniform terminological definition of the group is necessary – in this methodological part, the experts also appear as MDL managers. When surveying the experts, there is a discrepancy in the name of the applied methodological approach. The term "semi-structured interview" is used in the methodology, and in Appendix No. 3 – standardised interview. It can be assumed that the second is a technical error, but it should be explained. The toolkit is described in Chapter Two, and the survey cards and the questionnaire are in Appendices 1, 2, and 3 of the thesis. The proprietary survey toolkit is synchronised with the selected topics in the Literary Review and the aim and tasks of the thesis. The opinion surveys among the different groups were conducted during the epidemiological situation of Covid-19, which affected some of the research procedures and should be accurately described. The analysis in Chapter 2 shows that the methodology guarantees reliable research results.

Evaluation of results and contributions

The results of the surveys among each target group are presented in separate chapters, ending with the author's conclusions. The analyses follow the set tasks; they are presented correctly, with good statistical evidence, and show the possibilities for the doctoral student to do independent research. Each survey (chapters four, five and six) has its emphasis but is related to the primary goal. Working medical laboratory technicians indicate low pay (93.55%), high workload (90.32%) and inability to obtain a higher qualification in the same professional field (87.10%) as the three main reasons for turnover. In no uncertain terms, they (82.28%) are resolute about the need for post-graduate training in courses on specific issues and Master's programs.

A clear indication of the desire to enhance knowledge can be seen in the fact that $\frac{1}{4}$ of individuals earned both a Bachelor's and Master's degree following their initial Professional Bachelor's degree. The lack of opportunity for a Master's degree in the same speciality limits the career opportunities. Among the competencies that young medical laboratory technicians must possess for a successful professional career, the respondents point out as very significant "ethics and loyalty in relationships", "ability to apply knowledge in practice", and "dealing with conflict situations". Their satisfaction with the acquired knowledge, skills, and career options is high. The students are motivated about their future career prospects. They are familiar with the legal framework regulating the practice of the profession. The students express a high level of contentment with their chosen field and would not hesitate to choose it again if needed; they possess an open-minded attitude and are equipped to embark on their careers, whether in our country or abroad. They actively provide suggestions for improving the training process. The level of training for graduating medical laboratory technicians has significantly advanced, meeting the demands of modern technology, according to the MDL managers. Specific proposals have been made to improve and enrich the educational practice, specialisation in a specific field of the medical laboratory, continuing education - Master's degree (or specialisation) with the possibility of narrow profiling in the diagnostic-laboratory field. The feedback from the respondents and the comparative assessment of Bulgaria and EU member states (in chapter one) point towards a unanimous suggestion to modify the graduation requirements for medical laboratory assistants. Based on the findings, the primary driving forces behind this proposal are linked to career advancement, increased salary, and employment prospects in other EU nations.

Chapter Six introduces a Master's Program Model tentatively titled "Medical-Laboratory Management." It comes as a response to the needs revealed in the study, to the doctoral student's analyses, evaluations and views. She presents a SWOT analysis of the program in which she assesses the actual environment in which the program will (would) be implemented. The curriculum developed by Yordanka Mihailova is in accordance with the current requirements of the Ministry of Education. It is consistent with today's training practices and follows contemporary European trends. Discussions, detailing of curricula, and assessment of resources are forthcoming. However, the first step has already been taken and is the product of the submitted evaluation thesis.

The conclusions reached are based on the findings of the thesis research. The results present specific data and ideas for improving the training process (resources, forms) and management-oriented skills for managing a medical diagnostic laboratory. The most important of them are reflected in the recommendations formulated by the doctoral student to the Ministry of Education and medical colleges management. I agree with the contributions presented.

The thesis summary reflects the most essential aspects of the thesis. The author has presented four thesis-related four full-text publications published in Bulgarian journals. Yordanka Mihailova is the sole author in one publication; in the other three, she is the first author.

Critical notes and recommendations

Most of the critical remarks were mentioned in the course of the thesis evaluation. The key advice I have for her is to stay on the path she has chosen and to exert "author's control" over the suggested plans: fostering scientific and applied efforts related to enhancing the learning process and further developing the Master's program, initiatives to gather like-minded people and support at the university level.

Personal impressions. I have known Yordanka Mihailova since 2000, during her studies in Healthcare Management. She is intelligent, motivated, and dedicated to her studies, with interests in healthcare and human resources management. From her continued growth, it is evident that she has successfully progressed.

Conclusion

The thesis on *Contemporary Models, New Approaches and Perspectives in Training Students of the Medical Laboratory Technician Speciality* was aimed to enhance the training of students in the specialised field and improve the employability of graduates in the job market. A combination of both quantitative and qualitative methods were utilised. The research was carried out meticulously and is solely attributed to the doctoral student. Its theoretical and practical contributions are original and significant. The thesis fully meets the requirements of the Academic Staff Development Act in the Republic of Bulgaria and the Rules and Regulations for its implementation at MU-Varna. In light of everything noted above, I confidently give a positive evaluation and recommend the honourable Scientific Jury to award Yordanka Yordanova Mihaylova with the educational and scientific degree **Philosophy Doctor** in Healthcare Management, professional field 7.4. Public Health.

01/23/2024

Reviewer:

Заличено на основание чл. 5,
§1, б. „В“ от Регламент (ЕС)
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