

REVIEW

by Prof. Stela Lyudmilova Georgieva, MD, PhD
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Regarding Dissertation on the topic:

KNOWLEDGE, ATTITUDES AND PRACTICES RELATED TO CROSS- INFECTION CONTROL IN DENTAL LABORATORIES

for awarding educational and scientific degree "Doctor"

in Higher Education Field 7. Health care and sport
Professional Field 7. 4. Public Health
PhD Program „Health Care Management“

with candidate: **NELA GEORGIEVA KALPAKCHIEVA**

In view of protocol No. 1/ 04.02.26 of the meeting of the Scientific Jury, determined by **order No. R-109-62/27.01.2026** of the Rector of the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, Prof. Dr. Dimitar Raykov, MD, D.Sc, on the basis of Art. 258-269 of the ZZD, I have been appointed to present a review on the procedure for acquiring the educational and scientific degree "Doctor", to Nela Georgieva Kalpakchieva, full-time PhD student at the Medical University - Varna, Faculty of Public Health, Department of Healthcare, with scientific supervisor Prof. Klara Georgieva Dokova, MD, Ph.D.

Career development of the PhD student

PhD student Nela Georgieva Kalpakchieva graduated in 2012 with a professional bachelor's degree in Dental Technology at the Medical College of MU "Prof. Dr. Paraskev Stoyanov"- Varna. In 2018/19, she successively acquired a bachelor's degree and a master's degree in Healthcare Management at the same University. In 2023, she was enrolled as a full-time PhD student in the PhD program "Healthcare Management" at the Department of Healthcare of MU-Varna. In parallel, from 2025 to the present, she is in a process of acquiring a specialty „Public Health“.

She began her professional career as a Dental technician at the SMTL D. Kalpakchiev in Varna. At the same time, she was a part-time lecturer at the Medical College - Varna, and since 2018 - a lecturer at the same educational institution, teaching various academic disciplines and providing teaching practice.

Nela Kalpakchieva shows an affinity to scientific research, which is expressed in participation to scientific projects, scientific forums in Bulgaria and abroad. She published the scientific results in full-text publications in scientific journals. Her enrollment as a PhD student to develop a dissertation on the topic "Knowledge, attitudes and practices related to the control of cross-infections in dental laboratories" is also a confirmation of her research interests.

Assessment of the dissertation work

General characteristics

The dissertation was written on 161 standard typewritten pages and illustrated by 39 tables, 34 figures and one annexes.

The bibliographic reference includes 178 literary sources, of which 22 are in Cyrillic and 156 in Latin.

The abstract was presented on 67 pages and reflects well the content of the dissertation work.

Relevance of the topic

The relevance of the Dissertation's topic is undeniable. According to the Global Strategy of Infections Prevention and Control of the World Health Organization (WHO), healthcare-associated infections (HAIs) are among the most common adverse events occurring in the context of healthcare provision. At the same time, the Strategy emphasizes the position that "no one receiving or providing healthcare should be at risk from the consequences of preventable infections."

During the process of providing dental health care, dental teams and patients might be exposed to infectious biological agents, including Hepatitis B and C virus, HIV, Mycobacterium tuberculosis, Staphylococcus, Streptococcus and other viruses and bacteria that can be found in the oral cavity and respiratory tract. To prevent this risk, as well as to create a culture of safety, awareness and professional responsibility, regulations, protocols and recommendations for the prevention and control of infections in dental health facilities and dental laboratories were established. Therefore, the knowledge, attitudes and practices of dental professionals in infection control are of decisive importance for good practice and ensuring a safe environment for patients and the team.

Despite the extreme importance of the problem from a theoretical and practical point of view, infection control in dental laboratories in Bulgaria has not yet been sufficiently studied. This fact determines the choice of topic by the PhD student Nela Kalpakchieva for the present work as purposeful, innovative and significant for improving the quality and safety of dental care in our country. An in-depth study in this direction with outlining trends, discovering statistically significant relationships and formulating synthesized conclusions, can be a valuable source of information and a basis for creating an algorithm for evaluating the implemented activities and their improvement.

Quality assessment of the dissertation work

The literature review constitutes about 1/3 of the total volume of the dissertation work. Based on a significant number of literary sources (178) in Cyrillic and Latin, in a scientific and at the same time easy-to-read style, an in-depth analysis of international policies and recommendations for the prevention and control of infections in the field of dentistry, with a focus on dental laboratories, has been made. International and national professional organizations with an influence on the development of knowledge and practices in this direction were presented. The regulatory framework of this activity in Bulgaria has been examined.

Of great practical importance is the description of potentially infectious materials for removable, non-removable and combined prosthetic constructions and orthodontic

appliances. Attention was drawn to the target group for such infections. It is important to know that the infectious agents found on the surface of the models do not show pathogenic potential to healthy individuals, but may pose a serious risk to patients with long-term use of antibiotics, corticosteroids and immunosuppressive therapy. Laboratory areas with an increased risk of contamination are commented on in-depth.

The above is based on a review and comparative analysis of the results of a large number of studies in the USA, Western European countries, Brazil and others, related to the knowledge, attitudes and practices of dental technicians around the world and the control of infections in their professional work. For a good overview of the information, the publications included in the review were presented in a table.

The indicated publication years of the articles show that they cover a relatively long and at the same time modern stage of the development of dental practice. All of them were published in the period 2000 – 2023. The additional periodization made by the doctoral student demonstrates the gradation of interest from disinfection practices to the immunization status of workers, use of personal protective equipment, a system for disposing of laboratory waste to the creation of a written policy for infection control in laboratories and training courses for staff. The table also contains information about the location and time period of the study, the design of the level of data presented, and the sample size.

It is of significant benefit to establish the need for continuous training, since the identified discrepancy between infection control practices and accepted standards is often due to insufficient knowledge and motivation of workers. Another emphasis is the immunization policy of dental laboratories, as according to some of the cited studies, valid immunization against the hepatitis B virus is a mandatory condition for employment.

In addition to being well structured, the literature review ends with a brief summary of the main information, which facilitates its perception and comprehension. The conclusions drawn from the literature review contribute to the correct formulation of the goal and objectives of the present study and make it relevant to contemporary scientific research in this direction.

The purpose of the Dissertation was clearly formulated and is in accordance with the title of the dissertation. It is aimed at studying the knowledge, attitudes and practices related to the control of cross-infections in dental laboratories in Bulgaria. The goal was supported by five specific tasks contributing to its achievement. Working hypotheses have been formulated to clarify the relationships and dependencies between the variables under consideration.

The methodology of the study was described in details in each of its parts. Various methods were used for collecting empirical data and their analysis.

For the historical review of the development of international policies and recommendations for good professional practice regarding infection control, a keyword search was conducted in international databases PubMed, Scopus, Research gate and official websites of the World Dental Federation, the World Health Organization, the Center for Disease Prevention and Control, the Bulgarian Association of Dental Technicians etc.

An expert consultation with health control specialists was conducted for the Bulgarian regulatory documents.

To study the knowledge, attitudes and practices related to infection control in dental laboratories and the disinfection and communication practices of dentists, the PhD student Nela Kalpakchieva developed original questionnaires, complying with all methodological requirements for the preparation of a scientific study questionnaires. They were presented as appendices to the Dissertation.

The diversity and detailed description of the methods used, the application of strict criteria for inclusion and exclusion of individuals in the study, and the application of modern electronic methods for distributing questionnaires and collecting information are impressive.

Statistical methods for data analysis and hypothesis testing are also competently presented. All of this speaks in favor of the doctoral student's ability to develop and use tools for conducting scientific research.

The results were presented in a good logical sequence, competently discussed and richly illustrated. The figures and tables are informative and clearly demonstrate the emerging trends.

Important for future management decisions is, for example, the fact that over 80% of working dental technicians have not completed postgraduate training, as well as the relationship between work experience and participation in such training. Although older practicing dental technicians tend to report a higher self-assessment of their knowledge, they are less likely to participate in such training.

There is a lack of knowledge among staff regarding post-exposure policy, requirements when working with sharps, risk assessment, and the need to use personal protective equipment. The proportion of dental technicians familiar with the existence of protocols for the above-mentioned requirements is low. In this regard, I see the proposed algorithm for conducting infection control training both as a routine practice and incidentally, in case of new or changing risks, as a significant contribution of the Dissertation. This is supported by the established positive attitude of a significant portion of respondents towards conducting such training.

Statistically significant relationships between some variables have been established, which helps confirm the study's hypotheses and can serve to justify preventive activities. The results reveal the alarming fact that more than half of the surveyed dentists (52.5%) do not show the necessary responsibility towards the problem of infections and respond that they do not disinfect the materials they send to dental laboratories and do so occasionally. Although at a low rate (3.5%), transporting materials between the laboratory and the office instead of in a closed container in a napkin or other unprotected method is still common. Even more worrying is that such unprofessional behavior increases with age and increasing work experience, as the study found.

The presented and illustrated results were followed by an in-depth discussion by the PhD student. In the discussion she comments on the results from the perspective of comparability with other studies in Bulgaria and abroad, as well as from the perspective of existing standards.

Notes and recommendations

The Dissertation **meets the requirements in terms of volume and structure, and no significant weaknesses were found** in it.

I recommend:

1. The results of the study to be widely popularized through the publication of a monograph and articles in scientific journals.
2. The recommendations should be directed to the competent and responsible structures in order to serve to optimize their work.
3. Activities should be undertaken for the actual implementation of professional postgraduate training in accordance with the algorithm proposed in the dissertation

Conclusion

The PhD thesis of Nela Georgieva Kalpakchieva is an in-depth complex scientific study of an actual public health problem on a global scale. Innovative approaches and methods in the research practice were applied. The results were competently analyzed, and the considerable amount of information is synthesized into **eleven concise and essential conclusions**, accurately reflecting the obtained results. **Well-founded recommendations** have been made to the interested and competent structures to reduce the risk and limit the frequency of infections in dental practice - the Legislative Authorities, the Professional Organizations of Health Professionals in Bulgaria, the Ministry of Health and the Regional Health Inspectorates.

I believe that the Dissertation with **theoretical, methodological and practically-applied contributions**, and substantiated scientific evidence for the needs of public health and the health system in our country has been realized. The PhD thesis fully meets the requirements for awarding the educational and scientific degree "Doctor".

I strongly recommend to the Scientific Jury to award the educational and scientific degree "Doctor" to Nela Georgieva Kalpakchieva on the PhD Program "Public Health Management " in Professional field 7.4. Public health, Higher education field 7. Health care and sports.

19.03.2026 г.

Member of Scientific a jury:

/Prof. S. Georgieva, MD, PhD/

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