

STATEMENT

BY ASSOC. PROF. PAVLINA PENKOVA TENEVA, PhD

TRAKIA UNIVERSITY – MEDICAL COLLEGE STARA ZAGORA

Department of Healthcare

Regarding the doctoral thesis:

MODERN COMPETENCIES OF THE X-RAY LABORATORY ASSISTANT IN DENTAL DIGITAL DIAGNOSTIC IMAGING

For awarding the educational and scientific degree of Doctor of Philosophy (PhD)

Field of higher education: 7. Healthcare and Sports,

Professional area: 7.4. Public Health

Scientific Speciality: Healthcare Management

Doctoral candidate: Elka Dancheva Kostova

Information for the Procedure

Elka Dancheva Kostova was enrolled as a full-time doctoral student in the Healthcare Management doctoral program at the Department of Healthcare, Sliven Affiliate, Medical University – Varna, by order No. R-109-147/23.02.2023 of the Rector of Medical University "Prof. Dr. Paraskev Stoyanov" – Varna. The procedure is for acquiring the educational and scientific degree of Doctor of Philosophy (PhD) in the field of higher education 7. Healthcare and Sports, 7.4. Public Health professional area, doctoral program in Healthcare Management. The department council of the Department of Healthcare, Sliven Affiliate of Medical University – Varna, approved the doctoral candidate for public defence (Minutes No. 3/24.02.2026). At the same session, the Departmental Council endorsed the proposed members of the Scientific Jury.

By Order No. R-109-154/27.03.2026 of the Rector of Medical University – Varna and Minutes No. 1/31.03.2026 of the first meeting of the Scientific Jury, I have been designated to present a statement for the defence procedure of the doctoral thesis. The thesis on the **MODERN COMPETENCIES OF THE X-RAY LABORATORY ASSISTANT IN DENTAL DIGITAL DIAGNOSTIC IMAGING** was developed by Elka Dancheva Kostova, doctoral student at the Department of Healthcare, Sliven Affiliate, Medical University – Varna.

The submitted set of documentation (in print and digital) has been prepared in accordance with the Act on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for Academic Staff Development at Medical University – Varna.

The thesis submitted for defence reflects years of Elka Kostova's long-term research work, built upon her professional qualification as an X-ray technician and her career in the field.

Education and Training

Following the completion of her basic medical education in Radiology (X-Ray) Technology speciality at the Medical College – Plovdiv, Elka Kostova has consistently continued her professional development and training. In 2018, she obtained a Bachelor's degree in Healthcare Management, and in 2019, she obtained a Master's degree in the same speciality at the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

Professional Career

Elka Kostova's professional career as a radiologic (X-ray) technologist began in 2001 at the Medical Diagnostic Laboratory for Imaging Diagnostics on 100 Tsar Osvoboditel Str. From March 2006 to 2007, she worked in the Department of Imaging Diagnostics at St. Klementina Medical Centre – Varna. She continued her career at Chaika Diagnostic Centre – Varna and at the Medical Diagnostic Laboratory for Imaging Diagnostics Diamed – Varna.

Her academic career started in 2020, when she was appointed as an assistant professor at the Medical College, MU-Varna, X-ray Laboratory Assistant speciality, a position she still holds.

Since 23/02/2023, Elka Kostova has been enrolled as a full-time doctoral student in the Healthcare Management doctoral program at the Department of Healthcare, Sliven Affiliate of MU – Varna. She teaches the courses Fundamentals of Imaging Diagnostics – Parts I, II, and III and Practical Training – Parts I through V. The doctoral candidate has 2 published papers and one research project *related to the thesis*, and has a command of English and Russian.

Thesis Characteristics

The thesis is presented on 178 pages, with a standard structure for the professional field. It includes: an introduction, Chapter One – Literature Review; Chapter Two – Aim, Objectives, Methodology, and Organisation of the Study; Chapter Three – Results of Original Research; Chapter Four – Practical Approaches; conclusion, findings, recommendations and contributions; a closing summary, bibliography, and appendices. The contents correspond to the topic and reflect the research results. The bibliography contains 232 titles, of which 36 are in Cyrillic and 196 in Latin.

Topic Relevance and Clarity of Aims and Objectives

The topic relevance of Elka Kostova's thesis on the *Modern Competencies of the X-Ray Laboratory Assistant in Dental Digital Diagnostic Imaging* is determined by a number of key factors: rapid technological development in medicine, evolving roles and responsibilities within the profession, and the need for X-ray technicians to upskill in specialised software and digital equipment.

The key concern is ensuring that professionals remain adequately prepared to keep pace with rapidly evolving innovations in dental practice, with the ultimate goal of improving diagnostic outcomes and patient safety.

Literature Review

The literature review thoroughly examines the problem with considerable informational value. It is logically structured into four sections that collectively address the key aspects of the subject.

The first section offers a historical overview of how dental imaging diagnostics emerged and developed. The transition from analogue to digital imaging and the influence of digitalisation and artificial intelligence on dental imaging diagnostics are presented in detail.

The second and third sections of the literature review outline contemporary methods, techniques, and technologies in dental imaging, diagnostics and dental radiographic equipment – intraoral and extraoral techniques, as well as other imaging methods for examining the maxillofacial region.

The fourth section presents the essence and regulatory framework of the profession. Special attention is given to the various competencies the profession demands – technical and medical, ethical and communicative, as well as legal competency. The author outlines the need to incorporate additional practical sessions and simulation technologies into training in order to meet the demands of clinical practice when working with digital equipment.

The literature review and bibliography indicate the doctoral candidate's broad and well-informed understanding of the subject.

Methodology and Organisation of the Study

The research methodology is described accurately and in detail. The stated aim is to analyse the contemporary competencies of X-ray laboratory assistants in dental imaging diagnostics, to formulate guidelines for their expansion in response to digitalisation and artificial intelligence.

To achieve this aim, seven primary objectives and three research hypotheses have been formulated.

The methodology is presented in detail. The study included 317 individuals distributed across five groups:

- **Group One** – Lecturers in the X-ray Laboratory Assistant speciality (n=24)
- **Group Two** – Students in the X-ray Laboratory Assistant speciality (n=127)
- **Group Three** – Practising X-ray laboratory assistants (n=113)
- **Group Four** – Employers of graduates of the X-ray Laboratory Assistant speciality (n=46)
- **Group Five** – Experts in the fields of Radiology and Dental Medicine (n=7)

The stages of the study are described in detail and presented in tabular form. Four types of anonymous survey questionnaires and one semi-structured interview guide containing open and closed questions were developed. The study was conducted following approval by the Research Ethics Committee (REC) at Medical University – Varna. All study participants signed informed consent.

The research methods – documentary, sociological, and statistical, were appropriately applied. For the statistical presentation of results, variance analysis and non-parametric tests were used. Data are graphically illustrated through tables, bar and pie charts produced in MS Excel. The content of the semi-structured interviews was analysed using a thematic approach with the aid of the QDA Miner Lite software. Survey data were coded and entered into Microsoft Excel, while SPSS for Windows, version 26.0, was used for aggregation and statistical analysis.

Chapter Three of the thesis presents the results from the original research, revealing the actual state of the issue. The results presented are logically organised and structured. A thorough data analysis of the survey questionnaires and the interview guide, covering a total of 317 individuals, was carried out.

Based on the semi-structured interviews with the experts, the introduction of a practically oriented elective course as a form of additional training with a clearly practical orientation was identified as the primary recommendation.

Semi-structured expert interviews revealed that the introduction of a practically oriented elective course as a form of additional training was the key recommendation.

In Chapter Four, Asst. Prof. Kostova presents practical approaches for developing the professional skills and competencies of students in the X-ray Laboratory Assistant speciality, tailored to keep pace with the dynamic and rapidly changing landscape of imaging diagnostics. The elective course on Dental Digital Imaging Diagnostics and the electronic library of anonymised clinical images represent a practical and forward-looking solution to the demands of training modernisation.

Elka Kostova has formulated six recommendations based on the reviewed literature and the results of the original research. Particularly valuable are the three theoretical and three practical contributions.

The thesis summary provides a brief and concentrated representation of the thesis, contains the essential information, and gives a complete picture of its aims and objectives, achieved results, conclusions, and scholarly contributions. It is richly illustrated with tables and figures.

Based on her research, the doctoral candidate has completed her thesis alongside with two publications. In the first paper, she is a single author and in the second, the lead author. A project related to the thesis topic is also presented, which demonstrates her personal involvement in the research, its outcomes, and the following contributions.

In summary, I consider that the thesis on the **Modern Competencies of the X-Ray Laboratory Assistant in Dental Digital Diagnostic Imaging** is a thorough and sufficiently comprehensive study in which the doctoral candidate has analysed the problem in detail.

The study meets all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its implementation, and the Regulations for Academic Staff Development at MU – Varna for awarding the educational and scientific degree of Philosophy Doctor (PhD). This provides sufficient grounds to cast my POSITIVE VOTE and to recommend that the esteemed Scientific Jury to award to Elka Dancheva Kostova the

educational and scientific degree of Philosophy Doctor (PhD) in the field of higher education
7. Healthcare and Sports, 7.4. Public Health professional area, scientific speciality in Healthcare
Management.

14/04/2026

Assoc. Prof. Pavlina Penkova Teneva PhD

Stara Zagora

Member of the Scientific Jury

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