REVIEW

By Prof. Dr. Hristianna Angelova Romanova, MD, DSc
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Member of the Scientific Jury, appointed by Order No. R-109-314/21.07.2025 by the Rector of MU-Varna

Regarding the dissertation for awarding the educational and scientific degree "Doctor" of Dr. Yasen Yonkov Georgiev
Dissertation topic: "Readiness for protection and response of healthcare facilities in Varna region in the event of natural and anthropogenic hazards"
Field of Higher Education: 7. Healthcare and Sports
Professional field: 7.1. Medicine
Doctoral Program: Disaster Medicine

Biographical data

Dr. Yasen Georgiev was born on May 9, 1994, in Varna. In 2013, he completed his secondary education at Secondary School for European Languages "A. S. Pushkin" – Varna. Between 2013 and 2019, he studied "Medicine" at the Medical University – Varna. Since 2020, he has been a full-time assistant and PhD student in the Department of Disaster Medicine and Maritime Medicine at the Medical University – Varna, specializing in Disaster Medicine. In the same year, he became a resident in Disaster Medicine at MU–Varna.

Education and qualification

Dr. Georgiev's education and qualifications are diverse and up to date. In 2025, he completed a specialized course in Sofia on "Disaster Response and Consequence Management for Radiological Incident" (CMDR COE – 2025). The training was part of a joint initiative between the Crisis Management and Disaster Response Centre of Excellence (CMDR COE) and the United States Department of Energy's Office of Nuclear Incident Policy and Cooperation (NIPC). During the course, participants from across the country became acquainted with the fundamentals of radiological incident management, NATO and EU crisis management mechanisms, as well as the role of CMDR COE and the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) in providing international support. In 2024, Dr. Georgiev completed an extended online course "Working with ArcGIS Online", and earlier took part in online training under project BG05M2OP001-2.016-0025 related to digital skills (intensive training). In addition, he completed a "Train the Trainers" course at the University Centre for Maritime Health, certified by the Executive Agency "Maritime Administration" – Varna. He also completed a course on "Assessment, Examination and Certification of Seafarers" at the same university centre, again certified by the Maritime Administration – Varna. Dr. Georgiev actively participated in the national naval forum "BREEZE" in 2021, 2022, and 2023.

Scientific activity and project participation

Dr. Georgiev's scientific activity and project participation began as early as 2012 when he took part in the Black Sea Symposium for Young Scientists in Biomedicine (BSYSB), where he also participated in 2018 and 2024. He actively presented at the Hybrid Scientific Conference "Sea and Health" between 2019 and

2024. In 2022, he participated in the scientific conference of the Bulgarian Scientific Society for Public Health (BSSPH) “Challenges to Public Health in the Context of a Health Crisis”, and in 2023 in BSSPH “Challenges to the Health System”. His scientific work also includes participation in research project No. 24025 “Application of Geographic Information Systems for Assessing Health Inequalities in Bulgaria”. At present, Dr. Georgiev has four full-text articles and six abstracts published in Bulgarian scientific journals and conference proceedings, totaling more than 50 pages.

His **teaching activity** is extremely diverse, covering different specialties at the Medical University – Varna. Between 2020 and 2025, he conducted classes for students of “Medicine” (Bulgarian and English programmes), “Dental Medicine” (Bulgarian and English programmes), “Rehabilitation”, “Midwifery”, “Kinesitherapy”, and “Health Management” (Bachelor degree). He also taught elective courses such as “Emergency Medical Aid during Disasters” (in Bulgarian and English), “First Aid at Home and Office” (in Bulgarian and English), and “Marine Incidents” (in Bulgarian and English). In 2025, he was a lecturer for the International Federation of Medical Students’ Associations with a lecture on “Medical emergencies at sea, evacuation and triage”, as well as guest lecturer at the 46th National Meeting of the Association of Medical Students in Bulgaria with a report “First Aid – Basics and Practical Application”. That same year, he was also a guest lecturer in the course “Save a life. CPR Workshop” organized by MUVMedSoc – the association of foreign-language students at MU–Varna. From 2020 to 2025, he fulfilled all teaching workload requirements. Teaching and communication with students were conducted both in Bulgarian and English, and Dr. Georgiev also holds a Russian language proficiency certificate issued by Lomonosov Moscow State University.

Dr. Georgiev develops an active and diverse **public activity**, encompassing both the medical and cultural spheres. In 2021 and 2022, he conducted first aid courses for the Bulgarian Red Cross, and in 2024 and 2025, he organized training sessions in basic first aid for kindergarten and school teachers. Between 2021 and 2025, he also held medical training courses for seafarers on topics such as *Elementary First Aid*, *Medical First Aid*, and *Medical Care*. For his active student involvement in 2019, he was awarded a prize by the Rector of the Medical University – Varna. Alongside his medical career, Dr. Georgiev has made a significant contribution in the field of photography – in 2015, he won first place in the “Travel” category of the prestigious international photo competition Sony World Photography Awards. Subsequently, he became a lecturer at the “PhotoSchool” photography courses in 2023, 2024, and 2025, as well as a guest lecturer at DentaPrime Academy with a lecture on “Patient Portraits” in 2024.

Dr. Georgiev is a **member** of the Bulgarian Medical Association (BMA) and the Bulgarian Scientific Society for Public Health (BSSPH).

The **dissertation** of Dr. Georgiev has a total volume of 150 pages, properly structured and including: literature review (33), objectives, tasks and methods (8), own research (52), general conclusions and contributions (3), references (10) and appendices (20).

The introduction emphasizes the significance and relevance of the research. In recent years, disaster risks have been steadily increasing, and the resulting emergency situations have affected an ever-growing number of people on local, regional, national, and international levels. Hospitals and other healthcare facilities are regarded as safe places. Nevertheless, the large number of incidents of anthropogenic and natural origin demonstrates that there are circumstances in which these institutions are

exposed to risk and face serious challenges. Of utmost importance are the issues discussed with respondents regarding the extent to which healthcare facilities are prepared for protection and response in the event of disasters.

Studies in a number of countries give a clear answer to this question – preparedness worldwide remains at a low level. Data from surveys and incident experience show that the provision of medical assistance to the injured and their evacuation, when necessary, is highly specific. Even highly qualified specialists unfamiliar with the peculiarities of disaster management and medical care under time constraints and limited diagnostic and therapeutic capacity cannot provide adequate assistance to victims.

Healthcare facilities are among the main providers of health services to society. They play a crucial role in responding to natural and anthropogenic disasters, which in turn may have significant consequences for their functioning. Natural disasters such as earthquakes, hurricanes, floods, and wildfires, as well as man-made disasters such as terrorist attacks, pandemics, etc., may disrupt hospital operations, leading to increased risks for patients, staff, and visitors.

The preparedness of hospitals to respond to natural and man-made disasters is of critical importance for reducing the risks associated with such events. Dr. Georgiev correctly emphasizes in his work that hospitals must develop comprehensive disaster management plans that identify potential risks, outline response procedures, and ensure the availability of appropriate resources, including staff, supplies, and equipment. These plans should also include communication measures with staff, patients, and other stakeholders during emergencies, as well as protocols for coordination with external agencies such as emergency services and government authorities.

Based on the literature review, the study of current issues related to the preparedness of healthcare facilities in Varna region for protection and response to natural and anthropogenic hazards is well formulated with the main objective: "To study the preparedness of healthcare facilities in Varna region for protection and response to natural and anthropogenic hazards and to propose measures to increase their resilience and reduce risk."

The well-developed and hazard-adapted tasks include:

1. Identification of risks from natural and anthropogenic hazards in Varna region.
2. Study of the main types of hospital healthcare facilities in Varna region.
3. Examination of the preparedness of hospital healthcare facilities in Varna region for protection and response to anthropogenic and natural disasters.
4. Assessment of the capacity of hospitals in Varna region to reduce risks from anthropogenic and natural hazards.
5. Development of preparedness measures for effective and timely protection and response in disasters for hospital healthcare facilities in Varna region.

The main thesis of the dissertation is that in order to effectively address natural and anthropogenic hazards affecting the activity of hospital healthcare facilities and public health as a whole, it is necessary to strengthen their resilience by implementing measures regarding infrastructure, critical systems, protection plans, staff training, and cross-sectoral cooperation.

To support the main thesis of the dissertation, the following well-argued research hypotheses are formulated:

1. Natural and anthropogenic hazards turn into disasters for societies due to the lack of preparedness of individual components of the healthcare system.

2. Disasters are the cause of numerous public health problems.
3. As critical infrastructure, healthcare facilities play a key role in protecting the population at risk of disasters.
4. To overcome challenges and increase disaster resilience, good organization and management, including preparedness for protection and response of individual parts of the healthcare system, are essential.
5. Adequate and timely disaster response requires the application of special measures to enhance the capacity of healthcare facilities.

Dr. Georgiev's main research is based on a qualitative study involving the collection, processing, and analysis of non-numeric data, with the aim of an in-depth investigation of the practices, experience, and beliefs of responsible individuals concerning disaster preparedness and response in hospital healthcare facilities. This approach allows for a deeper understanding of the problem and the generation of new ideas and solutions to overcome challenges linked to the growing risks of disasters and the emergency situations that affect more and more people at local, national, and international levels and exert an increasing negative impact on healthcare as a whole.

The object of the research is hospital healthcare facilities due to their specific role in the overall concept of disaster risk reduction and capacity building for population protection.

The chosen approach is determined by the specificity of the dissertation's object and the studied phenomena. Through in-depth interviews with responsible individuals possessing the required knowledge, skills, and competencies, it is possible to collect, process, and analyze information that supports achieving the stated scientific goal.

The research tasks were accomplished using qualitative data from in-depth interviews with open-ended questions, approved by the Commission for Scientific Research of Medical University-Varna (Protocol No. 134/20.06.2023), preserving respondents' judgment and perspective, with the option of adjusting to new research questions. Data collection was conducted under real conditions, and the responses were transcribed and described.

All applied methods and analytical tools are aimed at implementing the research objectives, analyzing and assessing separate aspects of the studied phenomena, while their complex use allows for exploring the object as a whole to achieve the dissertation's goal. For data processing and conducting the qualitative research, exploratory methods and software products – Excel 2022 and MaxQDA – were applied.

Materials from the past 20 years were used, including those from the National Center for Health Information, the National Statistical Institute, the Ministry of Health, the National Center for Public Health and Analysis, the Regional Health Inspectorates, the Regional Directorates "Fire Safety and Population Protection", the municipalities of Varna and Provadia, the World Health Organization, the European Commission, the United Nations Office for Disaster Risk Reduction, etc.

In the first chapter of the author's research, "Natural and anthropogenic hazards in Varna and Varna region," emphasis is placed on the main hazards, namely:
• Earthquakes – a serious threat to healthcare facilities, but with proper risk assessment and implementation of necessary security measures, risks can be reduced. Significant levels of morbidity and mortality in communities are linked to earthquakes.

• Fires, floods, and landslides, which are particularly relevant and active in connection with climate change.

A number of analyses were conducted, and conclusions were summarized, while also indicating main measures for the protection of the population and healthcare facilities.

The chapter on "Types of hospital healthcare facilities in Varna and Varna region" is also well developed. Hospitals and healthcare facilities play a key role during disasters. It is crucial that they remain structurally resilient and operational during emergencies. To ensure that hospitals and healthcare facilities can withstand emergencies and disasters, assessing their vulnerability is of utmost importance. The assessment was conducted thoroughly, based on the competencies and methods of public health experts.

The preparedness of hospital healthcare facilities in Varna and Varna region to protect and respond to natural and anthropogenic disasters was studied in detail through a specially designed interview questionnaire. The questions were adapted based on a World Health Organization document (Hospital Emergency Response Checklist: An All-Hazards Tool for Hospital Administrators and Emergency Managers). The aim was to reduce disaster risk and build a resilience strategy for healthcare facilities.

A combination of qualitative content analysis of responses with the personal opinions and recommendations of the interviewees was applied. A total of 22 questions were discussed, addressing the level of preparedness of healthcare facilities to respond within the scope of their competencies and experience. The questions were left open during the interviews, i.e. without detailed information or specifics, focusing on the personal opinions and viewpoints of the interviewees. The facilities were included based on specific criteria.

The interview questions cover a wide range of challenges related to the resilience of healthcare facilities and their preparedness to respond to disaster situations. Important key topics were addressed, including:

- Infrastructure resilience.
- Equipment and resources.
- Operational management.
- Staff and competencies.
- Planning and prevention.
- Practical aspects – challenges with decontamination, impact on hospital routine, response scenarios, and triage implementation in undefined locations.
- Experience and efficiency, etc.

Many and diverse recommendations were made in 9 components to enhance targeted actions by institutions, managers, and medical staff to improve the preparedness for protection and response of healthcare facilities in Varna region to natural and anthropogenic hazards:

1. Management and control
2. Communication
3. Safety and security
4. Capacity
5. Triage
6. Continuity of medical services
7. Logistics and supply management
8. Human resources

9. Post-disaster recovery

The scientific-theoretical contributions of the dissertation are particularly relevant:

1. Enrichment of the theoretical framework regarding natural and anthropogenic hazards through a detailed classification of risks for hospital healthcare facilities, based on current data and international classifications.
2. Development of scientific understanding of the vulnerability of hospital healthcare facilities to natural and anthropogenic hazards by defining specific vulnerabilities of infrastructure, logistics, human resources, and communication systems.
3. Formation of a new approach for assessing hospital preparedness, based on an integrated analysis of capacity, available resources, response procedures, and staff training.
4. Development of a methodology for studying hospital preparedness for disaster protection.
5. Creation of a new system of measures for reducing risks for hospital healthcare facilities, including structural and organizational activities specifically adapted to them.
6. Scientific substantiation of the need for integrated and regularly updated disaster protection plans for hospital healthcare facilities, combining risk analysis, capacity assessment, and recovery planning, in accordance with contemporary international guidelines.

The practical contributions are significant and real:

1. Development of specific measures to mitigate the consequences of landslides, floods, earthquakes, and fires, adapted to the conditions of hospital healthcare facilities in Varna and the region.
2. Creation of a model for assessing hospital preparedness in Varna region, including key indicators for structural resilience, resource provision, and organizational readiness.
3. Preparation of a self-assessment checklist for hospital preparedness for disaster protection, supporting managers in identifying critical weaknesses and prioritizing improvement measures.
4. Formulation of concrete recommendations for enhancing hospital capacity to respond to natural and anthropogenic hazards, with emphasis on resource optimization, staff training, and coordination with external services and partners.
5. Proposal for the establishment of a hospital command center for disaster management in healthcare facilities.

Three publications related to the dissertation have been presented.

Personal impressions

My professional contacts with Dr. Yasen Georgiev allow me to give a high assessment of his preparation and activity as a PhD student and assistant in the field of Disaster Medicine. He demonstrates responsibility towards teaching and research work at the department, showing consistency and commitment in fulfilling assigned tasks. He impresses with exceptional public activity as a lecturer on first aid, as well as with creative expression as a photographer and researcher since his student years.

Conclusion

The analysis of the provided materials and the dissertation of Dr. Yasen Yonkov Georgiev, entitled *"Readiness for protection and response of healthcare facilities in Varna region in the event of natural and anthropogenic hazards"*, together with my personal impressions, give me reason to provide a positive evaluation. I propose to the highly esteemed scientific jury that Dr. Yasen Georgiev be awarded the educational and scientific degree "Doctor" in the doctoral program "Disaster Medicine" in the field of higher education 7. Healthcare and Sports, professional field 7.1. Medicine.

12.09.2025 **Reviewer:**

Varna /Prof. Dr. Hristianna Romanova, MD, DSc/