

REVIEW

by Ass. Prof. Dr. Nikola Georgiev Shopov, MD, PhD

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Regarding: Dissertation on the topic "Protecting the population at flood risk" with author Prof. Dr. Christianna Angelova Romanova-Radeva, MD, PhD doctoral student in independent preparation for the degree of "*Doctor of Science*" in professional field 7.1. Medicine, specialty in "Disaster Medicine".

In accordance with the Decision of the meeting of the Faculty Board of the Faculty of Public Health of protocol No. 146/16.12.2019 and Order No. R-109-429/20.12.2019 of the Rector of the MU "Prof. Dr. Paraskev Stoyanov" - Varna, I was elected as an external member of the Scientific Jury (SJ) under the procedure for public defense of the dissertation for the degree of "**Doctor of Science**" with the candidate **Prof. Dr. Christianna Angelova Romanova-Radeva, MD, PhD**. By protocol No. 1/03/01/2020 of a sitting of the SJ I was designated as a reviewer on the procedure.

The documents submitted to me by the doctoral student are in compliance with the Law for Development of the Academic Staff of the Republic of Bulgaria (LDASRB) and the Regulations for implementation of the Law for development of academic staff in the Republic of Bulgaria (RILDASRB), as well as with Art. 89, para. 4 of the Rules for the Development of the Academic Staff at the Medical University – Varna (RDAS-MU-Varna). They meet the requirements of the "Doctor of Science" degree procedure. I have no comment or comment on the documents submitted.

The evaluation of the doctoral student and the dissertation is complex and includes the research and practical activity of the doctoral student, as well as the structure, scientific characteristics and the scientific-applied results of the dissertation, evaluation of the abstract, according to the (RDAS-MU-Varna).

I. General presentation of the doctoral student

1. Brief details of the candidate's professional career

Prof. Christianna Romanova-Radeva was born in Popovo. She graduated in medicine in 1979 at the Higher Medical Institute - Varna. She has worked as a district therapist in Dobrich and since 1980 has been an assistant in the sector "Medical and Sanitary Protection" at the Medical University - Varna. In 1985 he became a senior assistant and since 1990 he has been a chief assistant at the Medical University - Varna.

In 2008 she was habilitated - an academic position "Associate Professor" and appointed as the head of the Educational-scientific Sector for "Disaster Medicine", and since 2017 he has been the head of the Department of "Disaster Medicine and Marine Medicine".

2. Scientific development

Over the years, the doctoral student goes through the following stages of scientific development:

- in 1979 he obtained a Master's degree in medicine;
- in 1985 he acquired the medical specialty " Medical and Sanitary Protection " (equated with "Disaster medicine");
- in 2006 defended his dissertation on the topic "Emergency situations in Varna region and possible hygienic and epidemiological problems", obtaining a scientific degree "doctor" in the specialty "Disaster medicine";
- in 2008 she was elected as an Associate Professor at the Medical University – Varna;
- in 2018, he holds the academic position of "Professor" in the Faculty of Public Health at the Medical University "Prof. Dr. Paraskev Stoyanov " – Varna.

3. Scientific and practical activities

Prof. Romanova's publishing activity includes four monographs with a total volume of 960 pages; six textbooks with a total volume of 1130 pages; two textbooks with a total volume of 165 pages. There are 90 published scientific articles in our and foreign journals. She has presented 89 reports and 10 scientific reports. The scientific and research activity is confirmed by its participation in 105 scientific forums and 5 research projects.

Prof. Romanova's main scientific research is studies of the health and environmental problems of Devnya Industrial Complex in emergency situations, assessment of the potential risk of toxic substances in the Varna region, natural-geographical and anthropogenic prerequisites for disasters in the Varna region, awareness and preparedness for the protection of the population of Varna region in case of disasters and others.

Since 1987, Prof. Romanova has also worked on the problems of the disabled, programs with them and for them. She has developed a national "Conceptual Model for Monitoring and Evaluation of Public Opinion for Disaster Protection", has created a "Family Hygiene and Epidemic Package", she has participated in the Association "Together Against Disasters", which includes medical services for disabled people and others.

Over the years, the PhD student has been systematically and purposefully upgrading her professional qualifications and receiving extensive theoretical and practical training. He has participated in numerous international training courses as well as a lecturer in courses in Bulgaria, some of which are:

- in June 2005, took part in a five-day international course in the city of Bordeaux, France, on the problems of the disabled "Vivre sans frontières";
- in May 2006 conducts a four-day international course in the city of Kiev - Ukraine in support of the disabled people: "Creating a world of opportunity";
- during the academic years 2013/2014 and 2014/2015, conducts training with a masters in Varna Free University "Chernorizets Hrabar", Faculty of Law, Department "Security and Safety" - for 15 academic hours on the topic: "Non-conventional cataclysms and organization of medical care";

- in August 2015, he organized and delivered a company training on the topic: "Assistance and mutual assistance at the scene of disasters and subsequent crises" within 20 academic hours in Nice, France;

- During the academic year 2016/2017, he organized and delivered a training course with members of the Society of Disabled Persons - Varna, within 20 academic hours on the topic: "First Aid (self-help and mutual assistance) of people with disabilities in emergencies".

Professor Romanova has an impressive career as a scientist with high professional competence and expertise in the field of the Medicine of disaster and catastrophes. She is a member of:

- Expert Council on the medical specialty "Disaster medicine";
- National Council for Quality of Training and Qualification in the Emergency Medical Assistance System;

- At the organizing committee of the Fourth International Seminar on Counterterrorism, organized by the MU of Varna and the University Hospital "St. Marina" – Varna;

- The Editorial Board of the journal "Scripta Scientifica Salutis Publicae" of the Medical University - Varna;

- Member of: BMS, the Bulgarian Society for Disaster Medicine, the Society of Medical Geography, the Union of Scientists in Bulgaria - Varna Branch.

She is a reviewer of articles in scientific journals and collections in the field of Disaster Medicine, Technological and Environmental Disasters, Emergency Assistance for Mass Injuries, and more.

In January 2017 Professor Romanova was appointed by order of the Minister of Health as a national consultant in the field of Disaster medicine.

Since 2013, Prof. Romanova has been repeatedly nominated as a member of the Scientific Jury for the acquisition of the Doctor, the Doctor of Science, and the academic positions of Associate Professor and Professor.

She has been the scientific adviser of five PhD students for the acquisition of the Ph.D. She is a sought-after consultant from Civil Protection, RZI, Bulgarian Red Cross, Naval Academy "N. Y. Vaptsarov" - Varna, University of Rousse "Angel Kanchev", Free University - Varna, Society of the Disabled - Varna and others, on issues related to disasters.

II. Characteristics and evaluation of the thesis

1. Content and structure of the thesis

The dissertation submitted to me for evaluation on the topic "Protection of the population at flood risk" with author Prof. Dr. Christianna Angelova Romanova-Radeva, MD, PhD is structured into 225 pages as follows:

- Introduction - 2 pages;
- Literary Review - 29 pages;
- Purpose, tasks and hypotheses - 2 pages;
- Materials and methods - 9 pages;
- Own research - 116 pages;
- Conclusion - 2 pages;
- General conclusions - 2 pages;
- Contributions - 3 pages;

- Bibliography - 21 pages;
- Applications - 10 issues with a total volume of 32 pages.

Theses in the dissertation are supported by 9 tables and 82 figures, the materials being illustrated with 5 photographs.

The bibliographic reference includes 289 literary sources, 116 of which are in Cyrillic and 173 in Latin. Of these, 131 are from the last 10 years, which indicates the relevance of the scientific data used and the studies cited. The literature review is sufficient in volume. His presentation and the cited literature indicate that the author is well aware of the problem.

The dissertation work is presented in a volume and type, corresponding to the requirements of Art. 27, para. 2 of the RILDASRB. It is made in compliance with the requirements for the ratio between the different sections, is written in a clear, scientific language and is grammatically sound.

2. The topicality and necessity of developing the thesis

The problem developed in the dissertation is very topical. Climate change and combating natural disasters are a major concern for the entire global public and a focus on the agenda of all international organizations. Numerous studies show that some of the effects of climate change on the oceans and ice cover are irreversible and humanity must be prepared for it. A 2019 report by United Nations climate experts indicates that extreme temperatures and floods have been occurring almost daily in the last decade, with an almost double increase compared to the previous two decades. Floods are most often caused by torrential rains, which, in addition to creating serious economic problems, also lead to problems related to the health of the population in distressed areas.

Unfortunately, Bulgaria is not isolated from this worrying trend. In recent years, several floods have occurred in our country, which in their scale and impact on the population are unmatched by what has happened in history so far. Between May and September 2005, 75% of the country's population with more than 3,200,000 inhabitants was affected by the floods. There were more than 20 casualties, and the material damage amounted to nearly 900 million levs. In 2014, Bulgaria is one of the most affected countries in floods and hailstorms and is ranked 6th in the world, with the lives of 31 people killed. They have caused enormous damage to the agricultural crop, industry and tourism. Varna still remembers and is recovering from the devastating flood in Asparuhovo. A dangerous hailstorm poured over Sofia on July 2015, and heavy flooding in November 2017 and 2018 also occurred in the Burgas region.

As you can see, floods can be deadly to humans and animals. They have an impact on society through mortality, increased injuries, increasing infectious threat and morbidity. The suddenness and tragedy of these disasters have an extremely negative impact on the psyche of those affected and their loved ones, impairing the working capacity and quality of life of a huge number of individuals. The significant economic losses for the victims personally and globally for the whole country, and its financial stability are also not neglected.

It is these significant problems that have been properly identified and addressed in Professor Romanov's dissertation. It emphasizes the need for prior preparation, immediate information, good coordination between the various institutions and the willingness of the

population to behave properly in flooded areas, preparedness to provide self-help and mutual assistance when needed.

There is also a need to develop an up-to-date systematic document that acts as a guide and summarizes good practices in flood management, while demonstrating the connectivity and interaction between different national institutions and non-governmental organizations for action in the event of such disasters. To a large extent, the thesis proposed by Prof. Romanova can serve as the foundation for the elaboration of a national doctrine on flood control and prevention.

3. Evaluation of the thesis

The dissertation is distinguished by its academic presentation style. The content and structure demonstrate the author's excellent ability to formulate, present, summarize and analyze significant scientific information, adapting it to meet the goals and objectives of the thesis. A cause-and-effect relationship is sought between the various factors leading to the occurrence of floods, by thoroughly examining the important problems that persist and require resolution from the protection authorities, the health care system and social assistance.

3.1. Purpose, tasks and hypotheses

The scientific aim of the dissertation is to study the risk of floods, as a major problem for the population in Bulgaria, awareness and preparation of the population for proper behavior during and after the flood, and to propose prevention for reducing the adverse effects on their health status and material security.

I think that the identified objective is clearly stated and addresses a significant problem with adverse effects on the population. It and its related tasks are up-to-date and timely, they illuminate the problem comprehensively and provide the basis for selecting precisely selected tasks and methods.

The basic argumentation about the need for better awareness and health awareness for providing assistance and mutual assistance during a flood, as an important preventive factor and reducing its negative effects, is undeniable.

Seven main tasks have been identified, the solution of which is the basis for the fulfillment of the set goal. They make it possible to cover all the main aspects of the topic under consideration.

3.2. Materials and methods

Material of theoretical research in the dissertation are publications of Bulgarian and foreign authors, secondary data from empirical studies, statistical information, using a database of Bulgarian and foreign statistical directories. Primary and secondary data from publications of our and international organizations have been researched and analyzed. It is valuable to include material from primary data from your own case studies.

The subject of the study is focused on preparation for response. Awareness and knowledge on protection and assistance of flood victims were considered and discussed. The risks of the flood are studied and determined, as the subject of the study are various sociological surveys of adults living in the Varna region.

The doctoral student skillfully uses various general research methods. An interdisciplinary approach is applied throughout the research process, which is required by the multifactorial and specific nature of the subject and the phenomena studied in the dissertation.

At the heart of some of the important studies are the applied sociological methods - sociological surveys have been made, using a questionnaire method, of populations from at-risk areas. The comparative and logical method is particularly well used. The theoretical analysis method, methods for flood risk assessment are also applied. The statistical analysis is presented in detail, using well-selected, informative statistical methods, using software products for statistical analyzes.

The applied methods and analytical tools are aimed at the accomplishment of the set scientific tasks. They enable to gather the necessary primary information, to analyze and evaluate the various aspects of the phenomena studied, and their complex use allows to study the object in its entirety and to achieve the set goal of the dissertation.

3.3. Assessment of the doctoral student's own research

Undoubtedly the greatest weight in the dissertation is the own research of Professor Romanova. They are organized and divided into six groups:

- 1) Model for determining the flood risk in Bulgaria;
- 2) Analysis and summarization of the tasks and activities of the institutions for protection of the population at national, regional and municipal level;
- 3) Research and systematization of flood health risks;
- 4) Study and analysis of medical assistance for floods;
- 5) Awareness-raising and assessment of flood protection preparations for foreign and Bulgarian citizens over the age of 18;
- 6) Preparation of a "Training Strategy for Flood Prevention and Risk Reduction".

Each of these studies is well-structured, indicating the goals, objectives, relevant discussions and results obtained, each in itself a separate scientific problem. The results are well described, statistically processed, richly illustrated with numerous figures and tables. This is a reason to be convincing. In my opinion, they are largely original and personal work of the doctoral student. The discussions summarize the findings, highlighting the open dependencies, correlations and trends obtained from sociological and statistical data. Each study leads to the definition of specific, well-formulated conclusions.

All of the own studies included in the thesis work contribute to illustrating the problems and challenges in crisis situations caused by floods. To a large extent, they also provide the right approaches and solutions to overcome them. I would particularly like to point out the developed "Flood Risk Prevention Training Strategy". It is a theoretically sound model for coordinated efforts by institutions and the population that can contribute to a dramatic improvement in safety and reduce the effects of floods. Of course, its acceptance and imposition as a common methodology for behavior is a great challenge and I see an opportunity to direct Prof. Romanova's future efforts in its successful implementation. The fact that during the course of the dissertation research 5 leaflets were developed to raise awareness and knowledge of the population on flood-causing issues during the dissertation, gives me confidence. The leaflets are distributed electronically using social networks, email and more. 1000 leaflets from the sociological surveys were distributed to respondents from different organizations and citizens from the Varna region, as well as to foreign citizens. Training seminars have been conducted, lectures on "Flood Health Risk" have been developed and presented to competent NGOs and NGO representatives. This is one huge job with a scientifically applied and strong social effect.

In a separate chapter of the dissertation, 9 basic recommendations and suggestions for flood risk reduction are formulated. To the Ministry of Education and Science - Introduce teaching disaster preparedness in schools. To the Ministry of Labor and Social Policy - Provide training for better information on the work teams on flood risk actions. Increasing the percentage of insured property, etc. There are also recommendations to the Ministry of Health, the BRC and other non-governmental organizations. Overall, the specific proposals and recommendations made are meaningful, necessary and urgent. Some of these are already under discussion in the media and are the subject of a number of experts in the field of civil protection and disaster management.

3.4. General conclusions and scientific contributions of the dissertation

In these parts of the dissertation are summarized conclusions in order to prove the need to identify, analyze and evaluate the risk of floods, as well as to identify methods and create an organization for its reduction. It has to be concluded that greater awareness and better preparation of the public in Bulgaria for the risk of floods and compulsory annual training of the population for proper actions and first aid, through the assistance of government bodies and public organizations is a cornerstone of prevention of floods.

I accept the presented 9 theoretical contributions to the dissertation. As well as the formulated 15 scientific and applied ones, some of which I noted above in the presentation.

4. Evaluation of dissertation publications

Professor Romanova presents 12 real full-text publications related to the thesis work, with a requirement of 10 - according to Art. 89, para. 1, item 3 of the Rules for the Development of the Academic Staff of the Medical University - Varna. They have been published in nonrefereed peer-reviewed Bulgarian journals. Impressive is the "Bilingual Terminology Glossary, Disaster Medicine Study Guide", published naturally in Bulgarian and English. In 4 of the publications Prof. Romanova is the first or sole author, and in 4 he is the second author, which speaks about the leading role of the doctoral student in these works. The publications are related to the topic of the dissertation or represent a stage in the development of the dissertation.

5. Evaluation of the abstract

I have no comment on the abstract. He logically follows the development of the dissertation and shows the most characteristic moments of it and the main conclusions and suggestions. It has been developed over 62 pages and is illustrated with 73 figures that represent the most important statistical results obtained from our own studies.

6. Critical comments and recommendations

I have no substantive comments and recommendations regarding the thesis work. From the documents presented to me on the procedure, I became convinced that the dissertation work, the results obtained and the contributions made were the result of a PhD student's independent, focused and in-depth research activity. Upon careful reading of all the proceedings, I did not find any signs of plagiarism or incorrect citation of foreign sources.

III. Conclusion

The dissertation work of Prof. Dr. Christiana Romanova-Radeva is devoted to a very topical scientific and practical problem - the effective fight against the consequences and prevention of floods. The author has remarkable theoretical background and practical experience to identify, formulate, analyze and synthesize large-scale and multifactorial processes such as flood disasters. I believe that she is an established specialist, researcher and teacher, and possesses undoubted professional skills and high academic potential.

The dissertation contains scientific and theoretical and applied results, which contribute to the science and in particular in the field of Disaster medicine. Based on the analysis of the overall documentation of the procedure and its compliance with the LDASRB, I have a **"positive"** opinion on the competition and the qualities of the candidate Prof. Dr. Christianna Romanova-Radeva. In this regard:

I propose to the Honorable Jury to award to Professor Romanova a **scientific degree "Doctor of Science"** in the area of higher education 7. Health and sports, professional field 7.1. Medicine, specialty in **"Disaster Medicine"**.

14.01.2020.
Varna

Reviewer: _____



/Ass. Prof. Nikola Shopov, MD, PhD