

Opinion

For a dissertation on the topic:

**“The floods – health and ecological problems for the Danube region”
Of**

Rositsa Vasileva Petrova, MD

For awarding the educational and scientific degree “Doctor”

In the field of higher education 7. Healthcare and sport,

Professional field 7.1. Medicine,

Scientific specialty **“Disaster Medicine”**

By

Assoc. Prof. Nikolina Koleva Valkanova, PhD, MD, designated for an outside member of the Scientific Jury with Order for completion with the right of defense No P109-594 from 18.12.2020 of Prof. Valentin Ignatov, PhD, MD, and President of Medical University - Varna

Details of the procedure

For the competition Ass. **Rositsa Vasileva Petrova, MD** has presented the documents in the procedure according to the requirements of the Law on the development of the academic staff in Republic of Bulgaria and the Regulations for the development of the academic staff of MU – Varna. No procedural infringements have been established.

With an Order of the President of MU - Varna No 109 286 16.09.2019 **Rositsa Vasileva Petrova, MD** has been enrolled as a doctoral student in an independent form of education for obtaining the educational and scientific degree "Doctor" in the field of higher education: 7. Healthcare and sport; Professional field: 7.1. Public health, specialty: “Disaster Medicine”. A protocol for successfully passing the doctoral exam has been presented. Given the decision of a meeting of the Academic Council of the Medical University "Prof. Dr. Paraskev Stoyanov ” - Varna on protocol/ No 52/26.11.2020, regarding readiness for public defense and determining the composition of the Scientific Jury, completed the program with the right of defense with Order of the President of MU – Varna No P109-594 from 18.12.2020.

Biographical data and career development

Dr. Rositsa Vasileva Petrova was born on 08.04.1971 in the city of Lovech. She graduated Medicine in 1995 at the MU - Pleven and Economics (Insurance and Social Work. Health Management.) in 2004 at the Business Academy “Dimitar Tsenov”, city of Svishtov. She acquired the specialty “Occupational Medicine” in 2009 and Disaster Medicine in 2020. She has began work in 1996 as a Doctor in pre – hospital care (Individual Practice for Primary Medical Care – Dr. Vasileva. Antiva Consult OOD) and has managed an Occupational Medicine Service in the city of Svishtov.

Since 2016 she is an Assistant at the Department of Hygiene, Medical Ecology, Professional Diseases and Disaster Medicine in the city of Pleven. She teaches all bachelors and masters at MU – Pleven. She participated in a course in Medical Provision in case of a Radiation or Nuclear Accident or Terrorism at the National Center of Radiobiology and Radiation Protection (NCRRP) – city of Sofia.

She participated in the project “Study of the predictive values of the Human placental lactogen”, with supervisor Assoc. Prof. Yordan Popov in the city of Pleven.

She is a member of the BMA, Bulgarian Society of Public Health and Bulgarian Association of Public Health.

Literature review

The review reflects the chronology and current state of the problem in our country and worldwide. Historical data on floods in the world and the Republic of Bulgaria prove one of the most common causes of disasters, serious material damage and human losses - hypothermia, drowning, injuries from fallen trees and large parts of buildings, injuries from broken glass, acute stress reactions. Refers to modern political documents, etc., as well as to numerous studies on specific types of disasters, on prevention, global prevalence, the factors influencing the problem under consideration. Only if we know well the nature and specifics of floods can we more easily protect ourselves from them or influence them when they occur. The various definitions of floods, their classifications by different authors, their origin, frequency, scale, scope and severity, causes, recurrence, consequences, duration and their impact on the deterioration of the sanitary and hygiene condition of the flooded area (affected water supply and sewage systems, landfills, etc.) are considered. Industrial and household waste spreads along the water flow and creates a potential danger from different infectious diseases, disturbs the infrastructure of the respective settlements and interrupts communication which is an obstacle for conducting the necessary rescue and evacuation activities. The doctoral student shows a very good knowledge and interpretation of the modern scientific literature on these issues. She reflects the chronology and current state of medical and environmental problems in Bulgaria, which helps her achieve her goals and objectives. She uses more than 200 sources, predominantly ones of recent years.

The literature review helps to focus our own research on the most epidemiologically significant issues not yet included in the national prevention programs in the Danube region.

Research methodology

The author uses a wide range of methods adequate to achieve the goal. The methodology includes: staging and materials, survey, signs of the current observation, place of the study, choosing two settlements. The methods are quantitative and qualitative. SPSS PC statistical software package, version 22 was used. Statistical processing with a coefficient of reliability that is estimated at the highest significance p less than 0.05. Described in detail, but not used in all variants. The results are presented tabularly and graphically.

Objective and tasks:

The objective is formulated precisely and clearly:

- To study and analyze the health and environmental problems for the Danube region, as well as the awareness and the level of readiness of the society for proper behavior and protection in case of floods.

It includes 5 research **tasks** related to the study of the danger of floods in the Danube region, the preparedness to meet the disaster, the medical possibilities for it and proposals for recommending raising awareness and preparing the society for flood protection.

The 4 formulated research hypotheses give an estimate of the floods, the awareness and the preparation of society in different age groups of the population and ways to decrease the negative consequences through education.

Relevance of the problem

The topic of the dissertation is contemporary and dissertable. The work expresses the scientific research of Dr. Vasileva on the importance of flood control in a certain region of the country – Danube region, in their prevention and control on one hand and the population's preparation for timely and adequate reaction in case of an emergency situation. The topic is relevant, with long history and a lot of dynamics in knowledge and practice on global and national level, with lots of achievements, invested resources and problems that have not yet been solved.

After the changes in the executive branch in **2009** and **after the closing** of the Ministry of Emergency Situations there are problems regarding coordination between different institutions and structures, and in case of eventual flood it is not designated who, when and based on what information should perform the protection of the population. The main causes for floods are:

- global climate changes,
- environmental instability and
- imbalance in the environment,
- increasing population density, spreading urbanization,
- deforestation and increasing desolation.

Amplified by all these factors the floods cause increasing level of human suffering, economic and human losses. Scientists have proven that urbanizing of 50% of the catchments may increase the frequency of the floods from once every 100 years to once every 5 years, which is 20 times more.

Own research

The human society is not prepared enough, not informed enough and not trained enough to oppose this increasing real risk or to cope with the occurrence of such disaster as the flood. Maximum total affected people worldwide from 1975 to 2005 are due to floods – 50.8%, droughts – 33.1% and wind storms – 11.09%. **Serious problems occur** that should be solved by the executive authorities, the medical service and the military units of the risk territories.

This is why the own research of the candidate is directed in several directions:

- **To cover the needs of the society** for knowledge and awareness depending on the structure of the population in the studied region on one hand and to give instructions and visual materials for behavior in case of, during and after the flood in the affected regions in accessible form that can be used by the population.
- Regardless that they are a natural phenomenon, there is a possibility they can be managed in a significant degree by human activity and regulated **with human**

intervention through offering different forms of education and restructuring the medical help in case of occurred emergency situations. A National plan for disaster protection and more specifically the part “Floods” has been adopted with a Decision of the Council of Ministers (DCM) No 973 from 29.12.2010.

- **Implementation of basic** preventive measures in the activity of the medical - prophylactic facilities in order to reduce the negative effects and to limit the occurrence of epidemics during and after floods.
- **Offers developed protocols** to prepare the Health Facilities (hospitals) inside and outside the flood areas.

The author develops in detail a research of risk groups that includes development and analysis of the knowledge for the population behavior during a flood: sociological surveys in two groups of respondents among 240 Bulgarian citizens from two age groups 18 – 39 years (120 people) and 40 – 64 years (120 people) from the Danube region.

I consider as very topical the research of the main tasks of the medical service (hospitals) in case of flood, as well as the measures and the main means of protection.

Special and different is the character that floods have compared to the organization of the medical service in case of other disasters with mass character. If necessary, a medical station should be opened near the flooded territories in case there is no health facility nearby. During a flood the medical losses are not located in a specific region or at one place but along the flooded area. There are difficulties related to search and rescue of victims of the water disaster. It is hard to rely on first aid only from the available medical teams.

Findings, contributions and conclusions:

The findings are formulated in accordance with the obtained scientific data.

They are made after each task: The danger of floods - 7 findings, from the surveys of the young age group – 11 findings, for the mature age group – 6 findings, for the medical service in the Pleven and Svishtov area (provided 1668 hospital beds and 2000 medical specialists) – 4 findings.

General findings: give the main identified problems in floods and approaches to overcoming them:

- The Danube region covers a big part of Northern Bulgaria (42.5%), it is a part of the international basin of the Danube river, the population density is significant – 44% of the total population.
- The main risk of floods in the Danube region is natural. The regions with significant potential risk of floods represent 49% of all populated places and municipalities.
- According to the preliminary assessment of the risk of floods by all functioning water bodies (rivers, lakes) 43.13% are in a state of a serious risk.
- The Floods Directive has had a positive impact on the entire Danube region and has led to progress in assessing the risk of floods.
- The 5 step approach in the process of evaluating and managing the floods is observed by both studied municipalities – Pleven and Svishtov. Both municipalities have developed and currently available preliminary assessment of the risk of floods, maps of the areas at risk, maps of the areas with risk of floods and a plan for managing the risk of floods.

- A River basins management plan has been adopted for the entire Danube region and areas for their protection have been created.
- The problems that had occurred during the floods in Republic of Bulgaria in 2005 led to 146 changes in our legislation for improving the protection of the population in case of floods. The improvement process is applied in both studied municipalities and shall continue to apply.
- The conducted research regarding the public's awareness for the causes of floods shows good awareness (65% correct answers in the mature group and 44% correct answers in the young group).
- The acquired knowledge and skills for protection in case of floods are not sufficient.
- A good organization of the medical service in case of floods has been created in both municipalities – Pleven and Svishtov.
- The hygienic and anti – epidemic measures are properly applied by the Regional Health Inspection - Pleven and Svishtov and they do not allow the occurrence of an epidemic situation in case of eventual flood.
- In the survey both age groups from 18 – 39 years (81%) and 40 – 64 years (66%) have expressed a high percentage of desire to acquire more knowledge regarding protection and proper behavior during a flood or another disaster.
- A high percentage of respondent (70%) agree that is necessary to increase the awareness, knowledge and skills in case of floods.
- Over 50% of respondents are willing to participate in groups at school, college and university to improve their theoretical and practical preparation.

The formulated recommendations and contributions of the dissertation are made based on own data from the scientific research.

The discussion of the results is made competently, thoroughly and comprehensively. The results are presented in the individual studies, and an in-depth discussion is proof of a good knowledge of the problem.

I agree with the self - assessment of the contributions in two groups – **Scientific and theoretical: 5, contributions with scientific and applied character – 5.**
Scientific and theoretical:

The dangers from major floods in the Danube region have been studied and an assessment of the potential risk has been made.

All health consequences and environmental dangers for the society have been analyzed in detail. The main measures and means for protection from floods have been presented.

Two schemes are proposed: for early warning and notification of flood danger in hospitals and basic organizational scheme for initial distribution of the affected population for evacuation and treatment in hospitals.

The main preventive measures in the activity of the medical - prophylactic establishments are presented for implementation in order to reduce the negative effects and to limit the occurrence of epidemics during and after floods.

Sociological studies regarding the awareness and willingness for protection in case of floods have been conducted in two age groups 18 – 39 years and 40 – 64 years of Bulgarian citizens from the Danube region and the obtained results have been compared.

Scientific and applied:

Protocols for preparing the Health facilities (hospitals) inside and outside the flood areas have been developed.

The actions and responsibilities of the management, medical staff, transport and patients at risk in the area and outside the flood area are defined.

Two types of leaflets with recommendations for the development of plans for protection of personnel from sites and companies in case of floods have been developed and distributed.

The Health facilities (hospitals) from the Danube region are systematized in flooded and non - flooded zones for the rivers Danube, Iskar, Zlatna Panega, Beli Vit, Gostilya and Lomya.

Insufficient awareness, low self - evaluation for knowledge and skills regarding proper behavior and protection against floods in sociological surveys among 240 Bulgarian citizens from two age groups 18 - 39 and 40 - 64 of the Danube region have been proven and analyzed.

The dissertation is written in proper language, precise regarding terminology. The part "Own research" is precise, with probative effect.

The summary of 51 pages fully reflects the content of the dissertation of 168 pages. The results of the dissertation are currently available to the medical community.

3 full – text publications related to this dissertation have been made in the Varna medical forum. The data confirm the necessity of implementing the approaches developed by Ass. Dr. Vasileva for optimizing the activities for improving the population awareness and the readiness of the medical service to deal with the consequences of the floods.

Critical notes and recommendations:

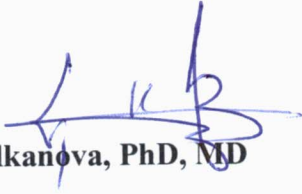
I had the opportunity to give detailed critical notes during and after the discussion at the Department. The candidate has taken them into consideration and the dissertation looks completed.

Conclusion

The presented dissertation is on a current topic, developed at a good methodological level, with a complex approach. The results have been discussed in the wide context of international and national studies.

Based on the overall assessment of the documents presented to me I consider that Dr. Vasileva fully covers the requirements of the Law on the development of the academic staff in Republic of Bulgaria, the Regulations for its implementation and the Regulations for the development of the academic staff of Medical University – Varna. I give my positive vote for awarding **educational and scientific degree "Doctor"** in the field of higher education 7. Healthcare and sport, professional field 7.1 Medicine, scientific specialty "Disaster Medicine" to Assistant Dr. Vasileva.

28. 01.2021
City of Varna

Prepared this opinion: 
Assoc. Prof. Nikolina Valkanova, PhD, MD