

REVIEW

by Professor Dr. Hristo Stoyanov Bozov, Ph.D.
Head of Department of Anesthesiology, Marine and Intensive Care Medicine, Military
Hospital - Varna, Military Medical Academy

External member of the Scientific Jury, appointed by Order of the Rector of MU-Varna
№ P-109-346 / 19.08.2021 for insurance under a procedure for public defense of the
dissertation

Regarding: Dissertation on the topic " MEDICAL ASPECTS OF SEA WATER INJURY"
with author Associate Professor Dr. Dimitar Stavrev. MD, PhD doctoral student in
independent preparation for the degree of "*Doctor of Science*" in professional field 7.1.
Medicine, specialty in "Disaster Medicine".

I have known Associate Professor Dr. Dimitar Stavrev since he was a student, and then
as a lecturer and researcher. He teaches at the Medical University "Prof. Dr. Paraskev
Stoyanov "- Varna since 1990. He holds the positions of Assistant, Senior Assistant, Chief
Assistant and Associate Professor. He also works as a lecturer at the University "A.
Kanchev", NULC and the General Assembly of the Bulgarian Red Cross-Varna. He
specializes in "Anatomy, Histology and Cytology" and defended his medical specialty at the
Higher Medical Institute - Sofia in 1993. In the period 2009/2011 he was a full-time doctoral
student and obtained the educational and scientific degree "Doctor" in scientific specialty:
03.01.02 Anatomy, Histology and Cytology" by the Higher Attestation Commission (HAC).

He also participates in a number of projects related to the presented dissertation:
"Health Sector Restructuring Project, Component 3: Emergency Medical Care. Field training
", " Infrastructure for sustainable development in the field of marine research and participation
in the European infrastructure EURO-ARGO ", " Find a savior in yourself ", " Raising
awareness of older people to respond to disasters, accidents, disasters and to provide first aid.
" He is the author of 99 real scientific publications on various aspects of medicine, including 2
monographs and 5 textbooks.

He has many additional qualifications, some of which are directly related to the topic
developed in the dissertation: "Modern methods of resuscitation in water accidents",
"Fundamentals of diving and hyperbaric medicine", "Marine instructor and teacher",
"Emergency psychological assistance in critical / stressful situations ", " Assessment, Testing
and Certification of Seafarers ", etc.

He is a member of the following scientific societies and organizations: Bulgarian
Medical Union; Bulgarian Anatomical Society; Union of Scientists in Bulgaria - Varna
branch; Society of Water Rescue Specialists; Bulgarian Association of Aviation, Marine and

Space Medicine; Varna Society for the History of Medicine; Bulgarian Association of Hyperbaric Oxygenation; Bulgarian Scientific Society of Public Health. For his activity he was awarded the titles "Bulgarian Doctor" by BMA, Medal and the title "Honored Worker of the Bulgarian Red Cross" by the National Council of the Bulgarian Red Cross, Honors and Awards of Civil Protection, STD "Academic", USB and others.

Characteristics and evaluation of the dissertation

The presented dissertation is 254 pages long. It is illustrated with 14 tables, 17 figures, 28 graphics and 56 appendices (in a separate volume 44 pages). The literature reference includes 363 literary sources, of which 162 in Cyrillic and 201 in Latin. The structural sections of the dissertation are distributed in the following sequence: list of abbreviations used; introduction 2 pages; literature review 68 pages; purpose, tasks and methods 13 pages; own research 127 pages in 5 chapters; conclusion, general, conclusions and contributions 10 p.

Topicality of the topic: The significant socio - economic and health risk arising from the trend of continuous increase of water injuries, poses fundamentally new and complex tasks to the public health system. Emergency medicine is called upon to unite and coordinate research in this field and to present a scientifically substantiated system of actions for prevention and elimination of possible health impacts on the population.

The selected significant scientific topic, laid down in the dissertation of Assoc. Prof. Dimitar Stavrev, MD, aims to study the marine accidents and catastrophes related to marine accidents from the marine environment to the health of those affected. It is an in-depth and multifaceted study, analysis and delineation of the most important issues that are constantly facing the protection systems of the population and the health care system. The conclusions made make it possible to identify measures to reduce and overcome water injuries at sea

The literature review consistently and systematically presents the terminological part, the historical and contemporary characteristics of water injuries at sea in the world and in our country. Data sources are Bulgarian and international publications, empirical research, information from Bulgarian and foreign databases, statistical reference books, data from Bulgarian and international organizations and institutions. The research nature of the literature review is of a contributory nature and emphasizes the need for a comprehensive scientific study of the problem.

5 main tasks are formulated, deriving from the clearly defined goal of the research. The methodology of the dissertation covers a variety of research material corresponding to the goal and tasks. Appropriately selected and used methodological system combines the advantages of different methods - Documentary, Bibliographic, Experimental, Laboratory and Questionnaire method for obtaining reliable information, addressing the multifaceted problem. Our own research on the topic examines the various aspects of marine water injuries

(causes, mechanisms, medical damage) and the overcoming of medical injuries at different stages (prevention of injuries, actions during an accident, overcoming injuries in subsequent periods). Studies involve a long period of information accumulation and one of active experimentation, analysis and summarization in recent years. Both potential victims of water injuries from coastal areas and accidentally falling into the marine environment have been studied. The factual material and the systematic methodological approach allow the formation of a research design, logically presenting the stages and the course of the scientific research ending with results, conclusions and recommendations.

The structure of the results of the dissertation "Medical aspects of water injuries at sea" corresponds to the goal and objectives, and is presented in 5 main areas:

- Study of the extreme situations at sea leading to water injuries on a global scale and their manifestation in Bulgaria

- Study of the medical needs in a marine experiment and development of a model for medical provision of such

- Creation of a system for research in marine physiology, organization of a marine medical research laboratory and results of own research in a marine research program

- Study of the readiness of the population to provide assistance in case of water injuries. Identification of measures to increase the competence of the population to act in case of maritime accidents and catastrophes.

- Research of the possibilities for creating a model for inter-institutional interaction in case of incidents, accidents and catastrophes along the coast, related to water injuries in territorial waters and areas of responsibility in the Black Sea.

The research is divided into twenty sections and subsections with a precise study of each aspect of the topic. The author shows depth and precision in collecting and analyzing empirical data. I fully share the conclusions presented in the concluding part of each section.

A thorough analysis of water injuries in accidents and catastrophes at sea has been made. It was found that they do not decrease, but diversify with new species and variants. Natural disasters are becoming more frequent and engaging. Anthropogenic accidents are increasing in size and scope. Sea tourism, sea sports, recreational fishing, professional and amateur diving are growing rapidly. In addition, the Republic of Bulgaria is not isolated from the global threat of maritime terrorism and overseas migration and related medical problems. The risk of water injury in the future is most significant in the field of maritime tourism and entertainment. Diversifying and enriching existing practices to limit it is appropriate. This should be taken into account in all public activities, both in the coastal areas and in the rest of the country, due to the increased interest in the sea from the whole population.

The author presents a system for reporting some physiological and psychological parameters directly related to the health status of participants in experimental sailing in 2019. A model has been created to study the effect of living in an aquatic environment under normal and extreme loads. It includes new approaches and research that have not been done so far. The parameters of the physiological manifestations of the respiratory, cardiovascular systems and musculoskeletal system are taken into account for the assessment of the impact of the marine aquatic environment. No less important are the psychological processes at the individual level and group level of potential victims and rescuers in a maritime accident with water injuries. The system for upgrading research approaches and expanding the scope of research increases the level of predictability and optimization of safety systems in the training and activities of maritime professionals.

The large-scale study of the skills and readiness for first aid with a focus on water injuries included people from different social categories with an active life position and social status. The summary of the results of the comparison of the different categories of subjects shows a relatively high readiness for first aid in the general case of 68.4% and a lower one for water injuries in the marine environment 43.6%. The respondents received the preparation for rendering help and self-help mainly from the BRC system, less from educational institutions and to a very low extent from the family and the mass information providers (media). No significant differences in the results were found depending on the place of residence in the different districts or according to the size of the settlements.

With the idea of expanding the possibilities for reaction in case of accidents at sea. Assoc. Prof. Stavrev seeks, experiments and proposes new forms of interaction of various structures and institutions in counteracting water injuries. The creation and testing of good informal organizational forms provides options for flexibility in maritime disaster relief systems. Careful analysis and good communication between the Bulgarian Red Cross-Varna, Medical University-Varna, the structures of the health system and others, related to water injuries at sea give grounds to develop exemplary algorithms for maritime distress.

The summarized conclusions are thematically presented and grouped covering the basic directions of the research:

- The system of assistance at sea is far from comprehensive and there are additional opportunities for development.

- The search for new forms of interaction between different structures and institutions in counteracting water injuries expands the possibilities for response to accidents at sea.

- The creation and testing of good informal organizational forms provides options for flexibility in maritime disaster relief systems.

- The good communication between the Bulgarian Red Cross-Varna, Medical University-Varna, the Structures of the health system, the Ministry of Transport, the Ministry

of Defense and others. related to water injuries in accidents at sea are realized in the simulated play of episodes with rescue in the area of responsibility of the Republic of Bulgaria. The careful analysis of the nationally and regionally played situations of incidents with water injuries in the Varna Bay, as well as the specially organized measurements in the course of the present study give grounds to develop exemplary models and algorithms.

- Such a system can successfully include various structures of informal civic organizations - tourist and sports clubs, business structures, associations with scientific and humanitarian goals, etc.

The contributions are divided into two areas: scientific-theoretical and scientific-applied. I accept the proposed contributions, which are presented specifically and accurately express the essence of the dissertation.

The abstract is prepared according to the requirements and fully reflects the main points and contributions of the dissertation. It presents the structure, methodology, results and conclusions of the doctoral student's work.

The presented dissertation is an original product. The research, the obtained results and the formulated contributions are a personal merit of Assoc. Prof. Dr. Dimitar Stavrev. The peer-reviewed work contains theoretical summaries and solutions to scientific and applied problems, which represent an original contribution to science. The candidate has in-depth theoretical knowledge on the researched issues and skillfully conducts independent research.

Scientometric indicators: In connection with the acquisition of educational and scientific degree "Doctor of Science", Assoc. Dr. Dimitar Stavrev MD There are 37 real publications in Bulgaria and abroad - 3 of them are textbooks, 2 monographs, articles - 8 in collections of reports and 24 in scientific journals (2 of them foreign). All publications meet the requirements of Art. 54 (3) of the regulations for development of the academic staff in MU Varna. The attached list fully meets the requirements for obtaining the educational and scientific degree "Doctor of Science".

Conclusion:

The dissertation presented for defense "Medical aspects of water injuries at sea" in the field of higher education 7. Health and sports, professional field 7.1. Medicine and specialty "Emergency Medicine", meets the legal provisions and regulations for the development of the academic staff of the Medical University "Prof. Dr. Paraskev Stoyanov "- Varna, characterized by topicality and originality, and the contributions represent the complex scientific - applied nature of the dissertation.

I give my positive assessment for the award of Assoc. Prof. Dr. Dimitar Georgiev Stavrev, MD. of the scientific degree "Doctor of Sciences" on the topic: "Medical aspects of water injuries at sea" in the field of higher education 7. Health and sports, professional field

7.1. Medicine and the specialty "Emergency Medicine" and I appeal to the members of the Distinguished Scientific Jury to also vote in favor.

Varna

12.10.2021 / prof. Dr. Hristo Bozov, MD

Varna

12.10.2021

A handwritten signature in blue ink, appearing to be 'Hristo Bozov', written in a cursive style.

/ prof. Dr. Hristo Bozov, MD /