



## STUDENTS' PREFERENCES FOR DISASTER MEDICINE EDUCATION

Elena Valkanova<sup>1</sup>, Rostislav Kostadinov<sup>1</sup>, Romyana Etova<sup>1</sup>, Maria Semerdjieva<sup>2</sup>  
1)Department of Epidemiology and Disaster Medicine, Faculty of Public Health, Medical University - Plovdiv, Bulgaria.  
2)Department of Health Care Management, Faculty of Public Health, Medical University - Plovdiv, Bulgaria.

### ABSTRACT:

**Introduction:** Disaster medicine training is in constant development. The effort to improve education could be facilitated by the students. They could actively participate in the process by providing useful feedback as well as preferences.

**Purpose:** The aim of this study was to survey and analyze the students' preferences for disaster medicine education.

**Materials and methods:** A cross-sectional survey was conducted among students of the Medical University of Plovdiv. 166 students were surveyed on their attitude towards disaster medicine as well as preferences for the training course.

**Results:** Disaster medicine training was considered a necessary part of the education. The most approved form of education was practical training, followed by elective course. The most desired topics are those regarding direct casualty management like first aid, first medical aid, triage and evacuation.

**Conclusions:** To better respond to the expectations and educational needs of the students, modification of the training course could be considered.

**Keywords:** Disaster medicine education, disaster training, teaching,

### INTRODUCTION

Disaster medicine is in constant development related to changing or emerging natural and man-made hazards and improvement of the capabilities for prompt and efficient response. Technological development and complex political and economic processes create entirely new problems for both society and healthcare. Examples are refugee waves, the pandemic spread of coronavirus infection, the effects of global warming and more. These problems will develop and deepen, and the students will face them in their professional life. [1] University education should aim to prepare them as best as possible. Disaster medicine education has to correspond by implementing the novelties in the specialty as well as the advances in technology and social sciences in the teaching process.

The effort to improve education could be facilitated by the students. They are not just passive recipients; they could and have to actively participate in the educational process providing useful feedback as well as preferences.

### PURPOSE

The aim of this study is to survey and analyze the students' preferences for disaster medicine education.

### MATERIALS AND METHODS

A cross-sectional study was conducted in 2020 through an anonymous inquiry among students from Medical University - Plovdiv. The questionnaire for the survey aimed to investigate attitudes towards disaster medicine course and perceived benefits from it as well as preferences regarding disaster medicine training.

Analysis, processing and systematization of initial data as quantitative and qualitative variables were performed on the statistics software package IBM SPSS Statistics v.21. For all tests, the level of significance was set at  $\alpha=0.05$ .

Descriptive analysis was used to describe the structure of the analyzed variables. Analysis of variance was used for quantitative variables and frequency distributions for qualitative data. Testing of the statistical hypothesis was made with a Two Samples T-Test and Chi-squared analysis ( $\chi^2$ ).

### RESULTS AND DISCUSSION

166 students were surveyed. 61% (n=102) were medical students, 11% (n=19) studied dental medicine, and 17% (n=28) study nursing and 10% (n=17) were from medical college. The majority of them were female – 75.3% (n=125), with 24.3% (n=41) male respondents. Median age was  $22.64 \pm 0.23$ , within the interval from 19 to 35 years of age.

All of the surveyed have taken disaster medicine course as part of their university education. Almost half of them gave a positive assessment of the volume and the content of the subject. (table 1) A thorough analysis has to be performed for the purpose of establishing whether standard disaster medicine topics reflect the contemporary challenges in front of healthcare professionals.

**Table 1.** Results from the questions on students' opinion.

| Questions   | Strongly agree |      | Agree |      | Neutral |      | Disagree |      | Strongly disagree |      |
|---|----------------|------|-------|------|---------|------|----------|------|-------------------|------|
|   | n              | %    | n     | %    | n       | %    | n        | %    | n                 | %    |
| Do You think the quantity of the studied content is appropriate?  | 27             | 16,3 | 47    | 28,3 | 6       | 3,6  | 45       | 27,1 | 41                | 24,7 |
| Do you think the quality of the studied content is appropriate?   | 26             | 15,8 | 48    | 29,1 | 2       | 1,2  | 32       | 19,4 | 57                | 34,5 |
| Do You think the methods of teaching are effective?   | 29             | 17,9 | 39    | 24,1 | 2       | 1,2  | 23       | 14,2 | 69                | 42,6 |
| Do You think that the knowledge and skills acquired during the disaster medicine course are sufficient? | 17             | 10,3 | 45    | 27,3 | 9       | 5,5  | 36       | 21,8 | 58                | 35,2 |
| Do You think the topics are important and useful?   | 23             | 13,9 | 60    | 36,4 | 24      | 14,5 | 36       | 21,8 | 22                | 13,3 |
| Do You think the topics are up to date?   | 17             | 10,2 | 50    | 30,1 | 29      | 17,5 | 41       | 24,7 | 29                | 17,5 |
| Do You think it is necessary to study disaster medicine?  | 56             | 33,7 | 62    | 37,3 | 12      | 7,2  | 23       | 13,9 | 13                | 7,8  |
| Is disaster medicine knowledge necessary for the practice of medical professionals?                     | 50             | 30,1 | 56    | 33,7 | 24      | 14,5 | 25       | 15,1 | 11                | 6,6  |
| Should there be refresher courses in disaster medicine?   | 37             | 22,3 | 60    | 36,1 | 28      | 16,9 | 26       | 15,7 | 15                | 9    |
| Should there be drills with other first responders (Police, Fire safety and population protection)?     | 60             | 36,1 | 72    | 43,4 | 15      | 9    | 14       | 8,4  | 5                 | 3    |
| Do You think the medical education should prepare You for disasters?                                    | 52             | 31,3 | 75    | 45,2 | 19      | 11,4 | 12       | 7,2  | 8                 | 4,8  |

The medical graduates should have not only comprehensive theoretical knowledge, but they have to successfully apply it in practice by solving therapeutic and organizational problems, making various decisions and assuming responsibility. Passive transmission of theoretical information as a method of teaching no longer suffices. Standard didactic teaching was not very well appreciated by 42.6% (n=69) of the students. It does not correspond to the contemporary tendencies in education. [2] The students gave a dissatisfactory evaluation of the teaching methods and their usefulness in acquiring skills. 1/3rd of the interviewees find them insufficient. Examples from other researchers show that disaster medicine training that incorporates field exercises, practical skill training, simulations, role games and case scenarios receive better feedback from the participants. [3, 4, 5, 6] These findings highlight the need for balance between lectured and “processed” knowledge and stimulation of independent critical thinking and problem-solving. The latter is highly praised in modern education, but in the field of medicine, it is impossible without a firm knowledge base.

The knowledge and skills that the discipline teaches are specific and do not overlap with other subjects. 70.9% (n=118) state that the discipline should be studied. Similar surveys show even higher results. According to a study from China, 92.2% of the students believed that it should

be studied. [7] Even higher results were obtained in the Netherlands - 99%. [8]

In the light of the still ongoing Covid-19 pandemic, it became evident that dealing with disaster's consequences affects the entire health care system and mandates extraordinary measures. Having the knowledge and skill to prevent harm and provide support for the affected is essential for medical professionals. It is a promising finding that medical students recognized this. The majority believed that disaster medicine knowledge is necessary for medical practice. More than half of the respondents were convinced that there should be refresher courses and joint training with other first responders. (table 1)

A large number of possible devastating events and their relatively rare occurrence makes learning from experience impractical. Maintaining the knowledge is also challenging since it is not solidified in practice. Continuous education incorporating disaster medicine courses could solve this problem. Joint training with other first responder teams will improve one of the most critical features of disaster relief – communication, collaboration and coordination.

The most effective method for obtaining knowledge and skills, according to the students, is practical training (45.4%, n=69), followed by elective course (41.4%, n=63) and traditional lectures and classes (38.2%, n=58). Online

course and module training were least desired (22.4%, n=34). Students value the opportunity to test their knowledge in simulated reality in a supervised environment. Preferred resources were textbooks (68.6%, n=105), handbook with scenario cases (65.4%, n=100) and educational videos and films (60.8%, n=93). The university was their preferred educational institution.

The topics that were considered most important by the students were those regarding direct casualty management like first aid (89.2%, n=148), first medical aid, triage and evacuation of casualties (78.2%, n=129).

## CONCLUSIONS

The survey proves that medical students recognize the need to be prepared for a prompt medical response when a disaster occurs. They expect university education to provide them with theoretical and practical training that corresponds to the contemporary and foreseeable threats and the novelties in scientific and technological developments. Technology drives medical practice forward, and it is only logical to drive the optimization of education by modifying the volume and complexity of the subject as well as the teaching methods.

## REFERENCES:

1. Atliev K, Kostadinov R. Covid-19 and emergency medical support. *Knowledge Int J*. 2021 Jan 12;43(4):699-704. [[Internet](#)]
2. George T, Carey RAB, Abraham OC, Sebastian T, Faith MF. Trainee doctors in medicine prefer case-based learning compared to didactic teaching. *J Family Med Prim Care*. 2020 Feb 28;9(2):580-584. [[PubMed](#)]
3. Tsai YD, Tsai SH, Chen SJ, Chen YC, Wang JC, Hsu CC, et al. Pilot study of a longitudinal integrated disaster and military medicine education program for undergraduate medical students. *Medicine*. 2020 May;99(20):e20230. [[PubMed](#)]
4. Back DA, Lembke V, Fellmer F, Kaiser D, Kasselmann N, Bickelmayer J, et al. Deployment and Disaster Medicine in an Undergraduate Teaching Module. *Mil Med*. 2019 May 1;184(5-6):e284-e289. [[PubMed](#)]
5. Yamada A, Fukushima Y, Miki T, Iba T. Disaster Medicine Education and Training for Medical Student at Juntendo University. *Juntendo Med J*. 2014 Jul 31;60(2):112-118. [[Crossref](#)]
6. Bajow N, Djalali A, Ingrassia PL, Ragazzoni L, Ageely H, Bani I, et al. Evaluation of a new community-based curriculum in disaster medicine for undergraduates. *BMC Med Educ*. 2016 Aug 26;16(1):225. [[PubMed](#)]
7. Su T, Han X, Chen F, Du Y, Zhang H, Yin J, et al. Knowledge level and training needs of disaster medicine among health professionals, medical students, and local residents in Shanghai, China. *PloS One*. 2013 Jun 24;8(6):e67041. [[PubMed](#)]
8. Mortelmans LJ, Bouman SJ, Gaakeer MI, Dieltiens G, Anseeuw K, Sabbe MB. Dutch senior medical students and disaster medicine: a national survey. *Int J Emerg Med*. 2015 Dec;8(1):77. [[PubMed](#)]

*Please cite this article as:* Valkanova E, Kostadinov R, Etova R, Semerdjieva. Students' preferences for disaster medicine education. *J of IMAB*. 2022 Apr-Jun;28(2):4578-4580. DOI: <https://doi.org/10.5272/jimab.2022283.4578>

Received: 11/01/2022; Published online: 27/09/2022



### Address for correspondence:

Elena Valkanova  
Department of Epidemiology and Disaster Medicine, Faculty of Public Health,  
Medical University – Plovdiv.  
15A, VasilAprilov Blvd., Plovdiv 4002, Bulgaria.  
E-mail: [e.v.valkanova@gmail.com](mailto:e.v.valkanova@gmail.com)