



## STUDY OF THE AWARENESS AND READINESS TO ACT IN DISASTERS OF FOREIGN CITIZENS TEMPORARILY RESIDING IN THE CITY OF PLEVEN

Rositza Vasileva<sup>1</sup>, Anton Georgiev<sup>2</sup>, Penka Kostadinova<sup>3</sup>

1) Department of Hygiene, Medical Ecology, Occupational Diseases and MBS Sector, Medical University, Pleven, Bulgaria.

2) Department of Obstetrics and Gynecology, Medical University, Pleven, Bulgaria.

3) Department of Social Medicine and Health Management, Medical University - Pleven, Bulgaria.

### ABSTRACT

According to official data from EM-DAT (the International Disaster Database for Disaster Epidemiology) in 2021, the number of catastrophic events related to natural disasters worldwide was 432, exceeding the average annual number of 347 from 2001 – 2020.

In this context, a study involving 240 citizens from 31 different countries who were temporarily residing in the city of Plevan was conducted. This study aimed to gauge their willingness to take adequate action and provide medical assistance in various disasters.

All foreign citizens temporarily residing in Plevan had experienced a disaster situation, with over half having experienced more than one. However, the awareness among these two analyzed groups about potential disaster threats was found to be very low.

Our study revealed low awareness and a lack of willingness to act during disasters. Only 20% were familiar with early warning sirens; more than half did not have home or property insurance; 88% did not possess an evacuation backpack; and only 15% were knowledgeable about collective remedies.

The study's results highlight the need for systematic, in-depth work from responsible institutions to prepare foreigners for potential disasters and accidents.

**Keywords:** natural disaster, disaster risk, public health, public awareness, medical insurance,

### INTRODUCTION

The city of Plevan is strategically exposed to a number of potential disasters, mainly related to the climate, 90% of the leading disasters are due to the weather. In a UN report cited by Reuters, a double increase in disasters of natural origin was registered [1, 7]

According to official data of EM- DAT (The International Disaster Database- Center for Research on the Epidemiology of Disasters- CRED), in the last 20 years, the Republic of Bulgaria has been mainly affected by floods, ex-

treme temperatures, storms, fires and earthquakes, the same being the leading for the Danube region, where the city of Plevan is located [4-7]

In the period from 2002 to 2017, the Republic of Bulgaria mobilized the Solidarity Fund of the European Union five times due to disasters, four of which were classified as a “major natural disaster” and one as a “regional natural disaster” [4- 7].

### PURPOSE

The purpose of this study was to assess the knowledge and preparedness of foreign citizens temporarily residing in the city of Plevan for responding to and protecting themselves during disasters.

### MATERIALS AND METHODS

Annual reports of the European Council on Strengthening Disaster Protection Mechanisms, reports of the United Nations Office for Disaster Risk Reduction and reports and opinions of the Center for the Study of Disaster Epidemiology in Leuven, Belgium were used.

A survey was conducted in the period from 01.12.2021 to 01.12.2022 among a sample of 240 participants from all foreign students and specialists who have the status of long-term resident students, according to the Law on Foreigners in the Republic of Bulgaria.[1] Participants in the sample were randomly recruited personally by the interviewers. Among them, 155 are from EU member states, including Germany, France, Italy, Spain, Greece, and 85 from non-EU countries, such as Great Britain, Ireland, India, Japan, Turkey, Korea, China, Canada, Sri Lanka, Lebanon , Yemen, Libya, Egypt, Zimbabwe, Turkmenistan, Kosovo, Ukraine, Russia, Libya, Egypt, Pakistan, etc. The study participants have the following completed education: 1% with primary education, 41% with secondary education, 33% with bachelor's degree and 25% with master's degree. The largest group of respondents have completed secondary education.

The participants are divided into the following groups: by age, 64% are from 18 to 25 years old, and 36%

are from 26 to 35 years old. According to the duration of the temporary stay, they are also divided into two groups: 54% have a short stay of up to 5 years, and 46% have a stay of more than 5 years. The limit of 5 years is in accordance with the law on foreigners in the Republic of Bulgaria[1].

The questionnaire contains 25 questions, of which 14 are dichotomous, 7 are multivariate. All questions are of closed type and allow only one possible answer. The last four questions of the survey contain personal information about the respondents such as gender, age and others.

The survey was conducted among foreign citizens residing in the territory of the city of Pleven on the occasion of training or specialization in medicine. All respondents were trained in Disaster Medicine. This implies a certain level of awareness /Who possesses sufficient information in a given area/[2] and preparedness /Who has preparation; prepared, trained/[3].

The study used a sociological method to investigate awareness and preparedness for disaster protection using an anonymous survey approach. The survey questions were developed personally by the researchers, participants in project 13/2022 at the MU-Pleven.

Data were entered and processed with the statistical package STATGRAPHICS Plus.

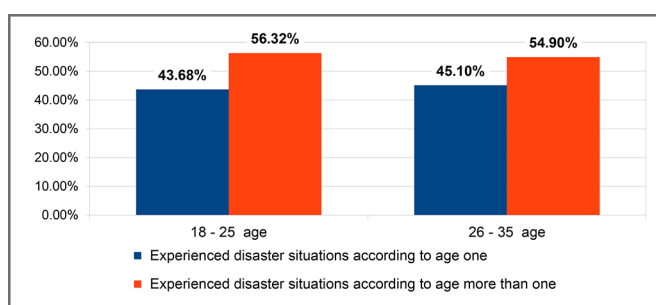
## RESULTS AND DISCUSSION

Respondents gave the following answers to the questions asked:

To the question “How many disasters have you experienced so far?”, the following responses were received: 45% of 240 respondents experienced one disaster situation (pandemic), 55% more than one: flood, earthquake, disaster, people from Ukraine and Russia mention for the war.

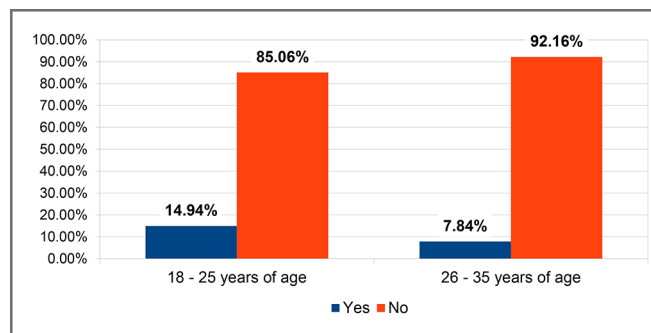
The distribution of responses by age in the two groups: 45%, one disaster situation and 55% more than one (Fig. 1).

**Fig. 1.** Experienced disasters according to age



The low level of awareness about the presence of a potential threat of a natural or anthropogenic disaster on the territory of the city of Pleven is striking. The first group has 15% awareness of the problem. In the second group, only 8% are familiar with the problem. (Fig. 2)

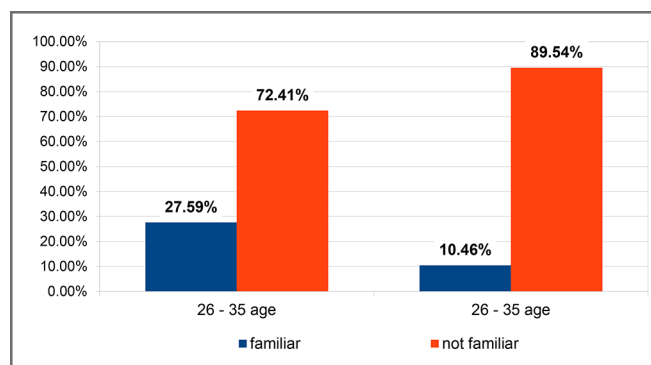
**Fig. 2.** Awareness of potential disasters by age



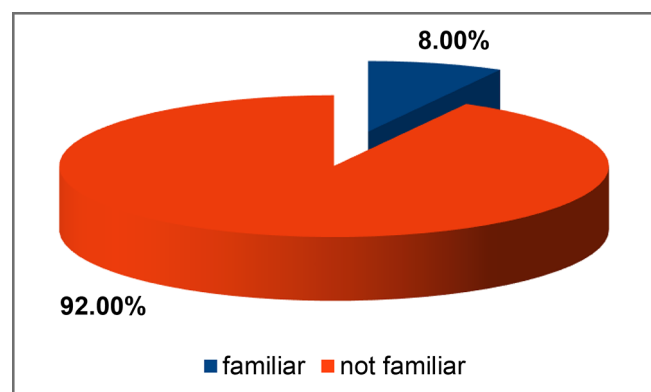
The awareness of both groups is very low and endangers their life, health, property in a real disaster situation. High awareness is a person’s guarantee of survival and coping in a disaster situation.

To the question, “Are you familiar with the disaster protection plan in your temporary settlement (Pleven)?” The first group is familiar to 25%, the second 10% (Fig. 3). Out of all 240 persons, 17% are familiar with the protection and evacuation plan (Fig. 4).

**Fig. 3.** Familiar with disaster protection plan by age

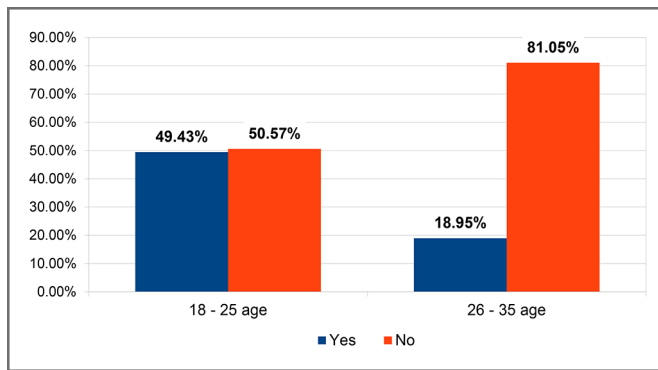


**Fig. 4.** Familiarize yourself with the disaster protection plan



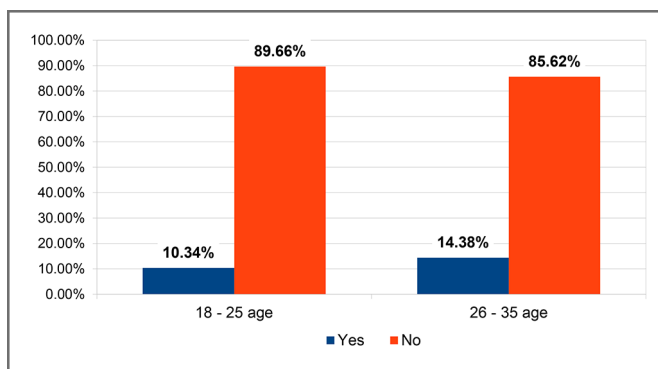
Half of the first group heard sirens early warning. In the second group, 20% of the respondents heard for early warning (Fig. 5).

**Fig. 5.** Knowledge of the early warning signal by age



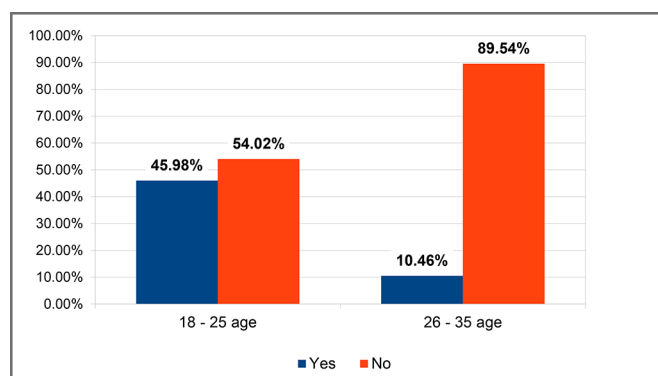
Alarming low levels are obtained in the two groups on which phone they should call in case of disaster, the first group knows the correct phone number, 10%, the second group- 15% (Fig. 6).

**Fig. 6.** Emergency telephone awareness by age



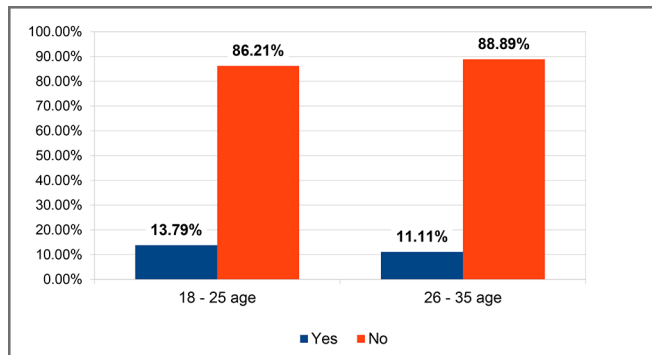
Less than half (40%) of the first group and 10% of the second have a home and property insurance (Fig. 7).

**Fig. 7.** Home Insurance Use by Age



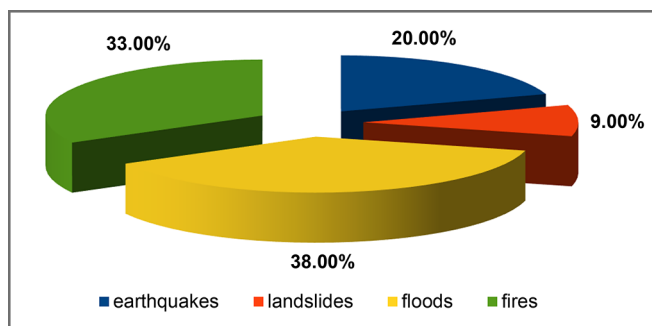
A low percentage of both groups (12%) has prepared a backpack with documents and dry food for evacuation (Fig. 8).

**Fig. 8.** Prepared Disaster Evacuation Backpack by Age

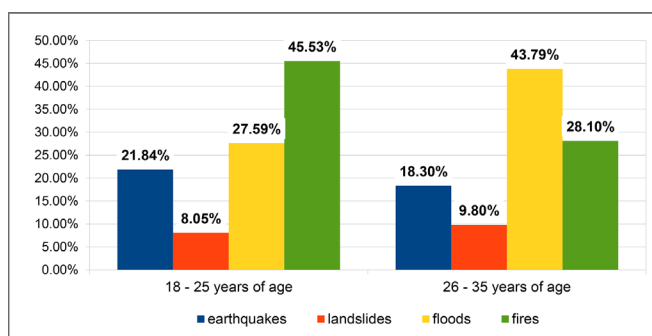


The distribution of natural disasters characteristic of Pleven shows that the highest frequency is attributed to floods (38.00%), followed by fires (33.00%) (Fig. 9). In their responses, the older group displayed the highest level of concern for floods (42.89%), while the younger group expressed the greatest risk perception related to fires (45.53%) (Fig. 10).

**Fig. 9.** Knowing the frequency of natural disasters characteristic of the Pleven region

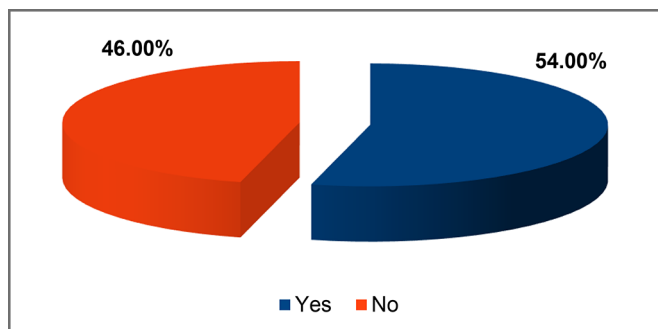


**Fig. 10.** Knowing the frequency of natural disasters characteristic of the Pleven region by age



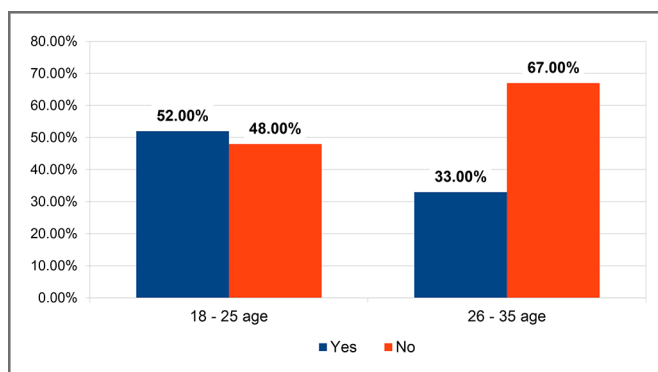
More than half (54%) believe that the impact of disasters on human life can be reduced by prior preparation, 46% believe that people are helpless (Fig. 11)

**Fig. 11.** Opinions about the impact of disasters on human life



The self-assessment of providing first aid in an accident area is high, 60% in the second group and 45% in the first group (Fig. 12).

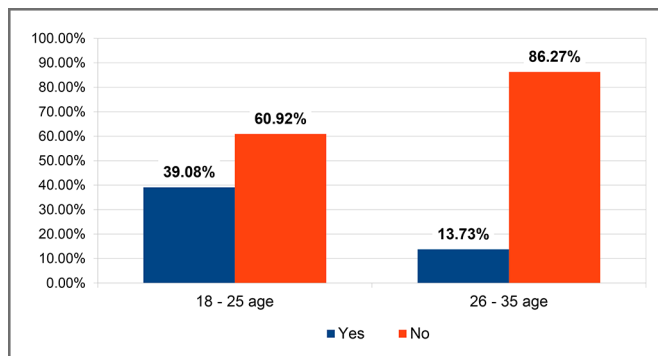
**Fig. 12.** First aid preparation by age



We rate both groups' first aid self-confidence as high.

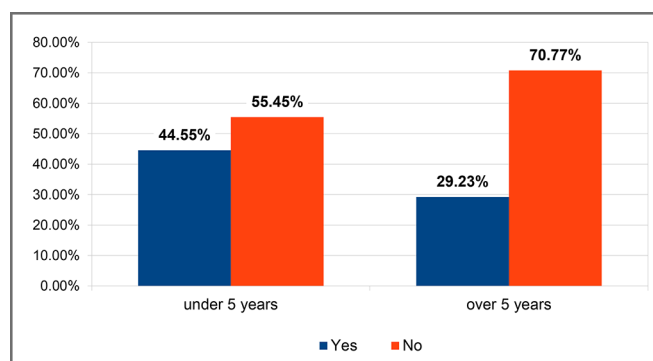
The awareness of the collective means of protection (hideouts, shelters) in both groups is very low, 40% of the first group and 15% of the second (Fig. 13).

**Fig. 13.** Awareness of collective remedies by age



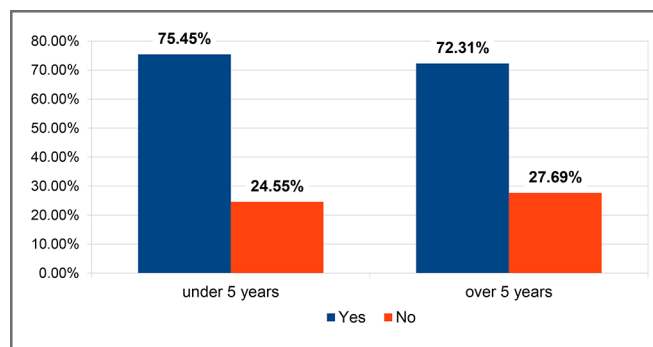
Self-esteem was low in both correct behavior and protection groups, 45% first and 30% second group (Fig. 14).

**Fig. 14.** Knowledge of action and protection in a disaster situation by layover



More than 70% of all survey participants noted a need to increase their own knowledge of proper behavior and protection in a disaster situation (Fig. 15). A preferred method is a training course (Fig. 15).

**Fig. 15.** Opinion on the need to increase knowledge of disaster protection during layovers



According to official data from EM- DAT (The International Disaster Database – Center for Research on the Epidemiology of Disasters- CRED) in 2021 the number of catastrophic events related to natural disasters worldwide is 432, which is higher than the average annual number of 347 from 2001-2020.

In 2021, the total number of catastrophic events in the world has been 432, deaths – 10,492 people, 101.8 million affected, economic losses 252.1 billion US dollars. Floods lead the world with 223 crisis events, compared to an average of 163 recorded 2001-2020. During the monsoon season (June - September 2021), deadly floods occur in India, killing 1,283 people. In China (July 2021), the Henan flood affects 14.5 million and resulted in 352 deaths, economic damage of US\$16.5 billion. The floods in Nuristan and Afghanistan were particularly severe, with 260 victims. These catastrophic floods resulted in landslides in Central Europe and losses of US\$40 billion [7, 8].

Storms are the second most frequently recorded disasters: 121 events in 2021. The number of reported storms from 2001-2020 the annual average is 102. Among the significant ones is a Typhoon Rai in the Philippines, affecting 10.6 million people and 457 deaths. Tropical Cyclone Sehora in April killed 226 people in Indonesia. North

American winter storm kills 235 and causes \$30 billion in damage. Hurricane Ida caused 96 deaths and US\$65 billion in economic costs [7, 8, 18].

In 2021 there were 3 extreme temperature events. During the period 2001-2020, a total of 21 extreme temperature events were registered.

Their consequences are serious. At the beginning of April 2021. A cold wave caused massive agricultural damage of US\$5.6 billion to vineyards in France.

In the summer of the same year, a heat wave in Western and North America led to sharp peaks in mortality: Canada- 815 and the United States- 229 deaths. The actions of the heat waves also coincide with a large number of forest fires -19 compared to 2001-2021, an average of 11 per year. The deadliest forest fire of 2021, with 90 victims, is in Algeria. At the end of the year, the Marshall Fire event in Colorado caused economic damage of 3.3 billion US dollars, making it the 9th worst disaster of 2021. [7, 8, 18].

The American West faces prolonged droughts, with the economic costs of \$9 billion, globally with Africa and Asia most affected.

Earthquakes do not significantly exceed those of 2001/2020 according to the world's climatologists, there are no mega earthquakes. The earthquake of August 2021 The magnitude 7.2 earthquake in Haiti was estimated to be the deadliest, with 2,575 deaths, and the magnitude 7.1 Fukushima earthquake caused an economic cost of US\$7.7 billion [7, 8, 18].

In well-developed countries of the world, national strategies for prevention, warning and combating disasters have been developed and implemented. State, public institutions, scientists and others take an active part in them [5, 6, 7, 8, 9, 10].

The main legislation for the protection of the population and disaster management in the city of Pleven is the Disaster Protection Act (DPA) [SG No. 102/19.12.2006] [4]

The Republic of Bulgaria has developed a National Disaster Risk Reduction Program 2021-2025 [5] and National Strategy for Disaster Risk Reduction 2018-2030 [6].

The national risk assessment (2015) does not cover all risks that may have an impact on in the city of Pleven, such as extreme temperatures and anomalies. Summer has maximum temperatures of up to 43°C, winter is cold with high humidity of 75%, a prerequisite for the formation of fogs and icing [8, 9, 10, 11]. The old mixed sewage system is the reason for the poor ecological condition of the Tuchenitsa River [10-17].

The specialists from "Geozashchita" EOOD describe in Pleven 181 pcs landslides at 1113 for the Danube region [10-17]. Their consequences are floods or destruction of building stock for the city of Nikopol, the villages of Somovit and Milkovitsa, and the Gulyantsi municipality [10, 11]. Precipitation with a high erosion index was

recorded in Pleven, Lovech and Vratsa [10, 11, 12, 16, 17].

An earthquake with an intensity of 9 on the Medvedev-Sponheuer-Karnik scale may occur on the territory of the city [10, 11, 12, 16]. Fire may occur in forest and field areas during thunderstorms [10, 11, 12, 16, 18].

## CONCLUSIONS

Surveys of foreign citizens temporarily residing in the city of Pleven prove low awareness and insufficient knowledge of disaster protection.

It was established that all foreign citizens temporarily residing in the city of Pleven have experienced a disaster situation, and more than 55% of them more than once.

The lowest is the awareness of the two researched groups (15% and 8%) about the potential threats of disasters on the territory of Pleven, as well as the degree of awareness among the two groups (17%) about the disaster protection plan in the temporary settlement.

The analysis regarding the awareness and readiness for action of the two studied groups of temporarily resident citizens:

- Insufficient hearing and recognition of early warning sirens in a disaster (20%).
- A small percentage of both groups (10% and 15%) know which phone to call in case of a disaster.
- Less than half (40% of the first group) and (10% of the second group) have homes and property insurance.
- Most people (88%) do not have a prepared evacuation backpack.
- Awareness of the collective means of protection (hideouts, shelters) in both groups is low (40% and 15%)
- Everyone's confidence in proper behavior and disaster protection is low (30%)

The respondents show a high degree of readiness and a high self-assessment regarding their readiness (60%) to provide first aid to victims in the area of the accident.

More than 70% noted a need to increase their own knowledge of proper behavior and protection in disasters and would prefer to receive additional training.

We live in a very dynamic and rapidly changing time. Disasters of natural and anthropogenic origin occur continuously. Climate change and global warming are at the root of all natural disasters. Human society experienced a pandemic that affected all walks of life. Soon after, in the month of February 2022, a war broke out between Russia and Ukraine.

These changes impose the need for every member of society, regardless of gender and age, to be well informed and adequately prepared for actions in the event of a crisis or disaster situation. Mobility, competence, flexibility will help us survive and help other victims nearby. The overall low assessment of the work with the temporary resident citizens in the city of Pleven can be changed by organizing and conducting training courses and seminars.

## REFERENCES:

1. [Law on Foreigners in the Republic of Bulgaria] [in Bulgarian]. 05.07.1999. National Assembly of the Republic of Bulgaria Sofia. [cited 2023 Jan 04] [[Internet](#)]
2. Talkoven onlinerechnik [in Bulgarian]. [cited 2023 Jan 04] [[Internet](#)]
3. Talkoven onlinerechnik [in Bulgarian]. [cited 2023 Jan 04] [[Internet](#)]
4. [Disaster Protection Law.] [in Bulgarian] Ministry of Energy, Bulgaria. SG. No. 60 of July 7, 2020. [[Internet](#)]
5. National Disaster Risk Reduction Program 2021-2025. [in Bulgarian]. Decision No. 865 of the Council of Ministers of the Republic of Bulgaria. Sofia. 26. 11. 2020. [[Internet](#)]
6. National Strategy for Disaster Risk Reduction 2018-2030. [in Bulgarian]. Decision No. 505 of the Council of Ministers of the Republic of Bulgaria. Sofia. 19. 07. 2018. [[Internet](#)]
7. Chan EYY, Guha-Sapir D, Dubois C, Shaw R, Wong CS, Challenges of Data Availability and Use in Conducting Health-EDRM Research in a Post-COVID-19 World. *Int J Environ Res Public Health*. 2022; 19(7):3917. [[PubMed](#)]
8. Huang KS, He DX, Tao Q, Wang YY, Yang YQ, Zhang B, et al. Changes in the incidence and prevalence of ischemic stroke and associations with natural disasters: an ecological study in 193 countries. *Sci Rep*. 2022 February 2;12(1):1808. [[PubMed](#)]
9. United Nations International Strategy for Disaster Reduction (UNISDR) Terminology. 2009. July 2, 2013. [[Internet](#)]
10. Order to determine the registered composition of the Regional Council to reduce disasters. [in Bulgarian]. Order No. RD-12-08. District Governor of Pleven District. Plevan 20.02.2020. [[Internet](#)]
11. Order for the updated composition of the Regional Staff for the implementation of the Regional Disaster Protection Plan on the territory of Pleven district. [in Bulgarian]. Order No. RD-09-119. District Governor of Pleven District. Plevan 13.09.2022. [[Internet](#)]
12. Minutes No. 1 of the meeting held on November 2, 2017. [in Bulgarian]. Minutes No.1. District Governor of Pleven District. Plevan 26.10.2022 [[Internet](#)]
13. [They are testing the early warning system on October 1.] [in Bulgarian]. Plevan. 27.09.2019 [[Internet](#)]
14. [Eleven dead and ten injured in fires in Plevensko in 2019.] [in Bulgarian]. Plevan. 11.01.2020 [[Internet](#)]
15. Conclusions from a debate at MU- Plevan: Covid is a test for everyone, not only for medicine. [in Bulgarian]. 14.09.2022. [[Internet](#)]
16. Annual analysis of the health-demographic situation and the health network in the Plevan region for 2021. [in Bulgarian]. Regional health inspection Plevan. Plevan [cited 2023 Jan 04] [[Internet](#)]
17. Probabilities for dying by sex, age and basic causes of death. [in Bulgarian]. National Statistical Institute. Sofia. 28.06.2022 [[Internet](#)]
18. Natural Hazards & Disasters. An overview of the first half of 2022. Centre for Research on the Epidemiology of Disasters (CRED). Brussels. September 2022. [[Internet](#)]

*Please cite this article as:* Vasileva R, Georgiev A, Kostadinova P. Study of the awareness and readiness to act in disasters of foreign citizens temporarily residing in the city of Plevan. *J of IMAB*. 2023 Jul-Sep;29(3):5067-5072. [Crossref - <https://doi.org/10.5272/jimab.2023293.5067>]

Received: 03/02/2023; Published online: 08/09/2023



### Address for correspondence:

Dr. Rositsa Vasileva, MD  
Department of Hygiene, Medical Ecology, Occupational Diseases and Emergency Medicine Sector, Medical University – Plevan  
1, Kliment Ohridski Str., office 189., Plevan, Bulgaria.  
E-mail: [dr\\_rvasileva@abv.bg](mailto:dr_rvasileva@abv.bg)