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Original article

STUDY OF THE AWARENESS AND READINESS FOR PROTECTION IN CASE OF FLOODS OF THE BULGARIAN CITIZENS FROM THE DANUBE REGION (PLEVEN MUNICIPALITY AND SVISHTOV MUNICIPALITY) - PART 1.

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ABSTRACT

A survey of 240 Bulgarian citizens from the Danube region, the Republic of Bulgaria, was conducted to examine their awareness and readiness for protection and proper behavior in floods. The participants in the study were divided into two age groups: young people aged 18 to 39 years and mature from 40 to 64 years.

The percentage of respondents who have experienced a flood in the past is high (24%).

The two analyzed groups are well informed about the risks and disasters causing epidemics (34% young group and 45% adult group).

The groups are well informed about the potential threat of floods in the settlement (45% young group and 25% mature group).

We give high marks to the two studied groups for the fact that they have preliminary insurance of the home, property, have a backpack prepared for evacuation, know how to swim and maintain their systematic skills (84%). All this will help in a real situation to save their lives.

Keywords: floods, disaster situation, flood protection, awareness, preparedness, correct behavior,

INTRODUCTION

In the period from 2005 until 2021, floods in the Republic of Bulgaria account for 40% of all natural disasters.

The risk of potentially catastrophic floods is significant in Europe and our country.

The registered past catastrophic floods in the Republic of Bulgaria are mainly of rain-river type.

The highest number was 1657 in 2005, after which there was a slight decrease and increase in the annual number in 2010. - 651pcs.

The most severe in recent years are the floods in Eastern Bulgaria (June 2014), hail in Sofia (2015) and floods in the Burgas region (2017 and 2018).

Risk regions for catastrophic floods in the Danube region are the major rivers - Danube, Ruse Lom, Vit, Osam, Yantra and Ogosta.

Of the past floods on the territory of Bulgaria, 70% are the result of river overflows.

The causes of catastrophic floods are in addition to heavy rains and snowmelt, non-maintenance of riverbeds and dikes.

On February 6, 2012, the village of Biser was flooded due to a broken wall of the Ivanovo dam. This incident raises issues related to the control and monitoring of dam facilities.

Catastrophic floods take the lives of people and animals. Worldwide, 500,000 die from drowning each year, in Bulgaria, 160 people/year, 30% of them are children. Floods in the affected areas are causing the loss of livelihoods of the local population, loss of production and mass migration of people with prolonged exposure. (ID Perepelitsa, 2006).

MATERIALS AND METHODS

A survey of 240 Bulgarian citizens from two municipalities in the Danube region - Pleven and Svishtov. The participants in the study are divided into two age groups: young from 18 to 39 years and mature from 40 to 64 years.

A sociological method was used to study flood awareness and preparedness. The chosen method is an anonymous survey using a questionnaire filled in personally by the respondents.

RESULTS AND DISCUSSION

The Danube region covers a large part of Northern Bulgaria (42.5%) and is part of the international basin of the Danube, the population density is 44% of the total population of the Republic of Bulgaria. In this region is the capital Sofia with 50% of the total population.

Natural floods in the Danube region represent a major risk in the last 10 years (from 2010 to 2020). Of all past natural disasters - 54% are significant floods. According

to GIS, the level of probability of river and rain floods in the Danube region is high.

In the period from 2010 until 2020, Rainfloor-type floods predominate. Rainfall floods are leading 88% of them, 70% of torrential rains and 32% of river floods. For the period from 2015 to 2020. the average number of rainy days is 121, according to NIMH - Pleven branch at BAS. The municipality of Pleven is dominated by rainfall 138 days a year and 51 days with fog, precipitation up to 10 mm and 75% humidity. With the increased risk of an overflow of local rivers in the Danube region:

Danube river near the towns of Vidin, Lom, Nikopol, Ruse and Silistra

- Iskar River near the town of Svoge
- Vit River passing through the city of Pleven
- Osam River passing through the cities - Letnitsa, Lovech, Troyan
- Yantra River passing between the towns of Veliko Tarnovo and Gorna Oryahovitsa, Gabrovo
- Rositsa River passing through the town of Sevlievo
- Dolapdere River passing through the town of Tsar Kaloyan

Three rivers are identified with medium (moderate) risk of overflow - Elena, Chernyalka and Gostilya.

The sewerage network in the municipality of Pleven is morally and technically obsolete and is not able to absorb wastewater fully. During torrential or intense rains, surface water collects in the lower part of the city and causes dangerous floods.

In the Danube region, out of 797 dams, 26 (3.26%) are extremely dangerous and with a serious risk of devastating floods. Areas with a significant potential risk of very dangerous floods represent 49% of all settlements and municipalities, 43.13% of functioning water bodies (rivers, lakes) are in a state of serious risk. A River Basin Management Plan has been adopted for the Danube Region, approved by Order RD-293 / 22.03.2010. of the Minister of Environment and Water, zones for their protection were created in 2016. An updated RBMP 2016-2021 has been adopted.

Man-caused floods are not reported for the observed period in the Danube region, and the risk is defined as insignificant.

A serious environmental problem for the air in the municipality of Pleven is its pollution with fine dust particles (PPP10) in the period from 2013. until 2016 incl., concentrations of PM10 above average limit values †(over 40 micrograms per cubic meter), are a prerequisite for deteriorating human quality of life and serious damage to the environment.

The old sewerage system of mixed type in the municipality of Pleven is the main reason for the poor ecological condition of the Tuchenitsa River. No investments have been made in the water supply and sewerage sector for more than 50 years. The water supply network urgently needs replacement and reconstruction. To date, only 15% of water pipes have been renewed.

A very serious problem for the municipality of Pleven is the large number of landslides, 181 of which 125 are periodically active, 43 potential, and 13 stabilized. The heavy spring-summer rains are a special danger for the activation of landslides.

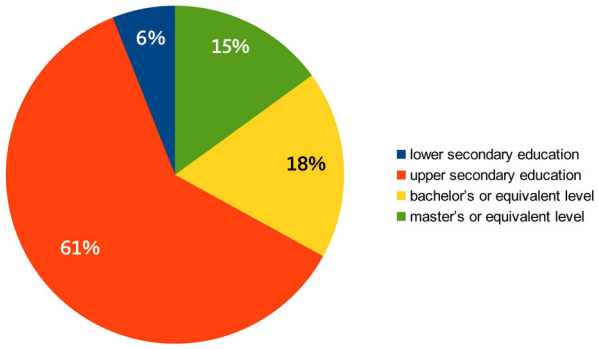
Consequences of landslide activity:

- Demolition of buildings.
- Demolition of parts of the road, street network, bridges, overpasses.
- Demolition of railway infrastructure.
- Destruction of water bodies, riverbeds, ravines.
- Destruction of electrical and plumbing.

Results and discussion

41.6% of men and 58.33% of women were surveyed. With secondary education are 61%, bachelors 18%, masters 15% and mainly 6% (Fig. 1).

Fig. 1. Distribution of respondents by education.



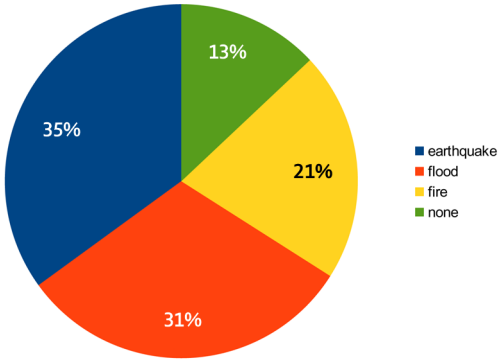
In a big city, they noted that 52% of the adult age group 40 to 64 live and 48% of young people aged 18 to 39.

In a small town, they noted that 45% of the adult age group 40 to 64 live and 55% of the young age group 18 to 39.

In the village, they noted that 68% of the mature age group 40 to 64 live and 32% of persons aged 18 to 39 years.

To the question "Which of the following disasters have you experienced so far?" The following answers were received: the highest percentage survived an earthquake 35 %, flood 31% and fire 21%, have not survived a disaster 13%. More than one disaster was noted by 12.5%. (Fig. 2)

Fig. 2. Experienced disasters



Of interest is the question, "Which of the following disasters causes an epidemic?"

The correct answers to the question are floods, earthquakes, terrorist acts.

The answers of the adult age group: 45% of floods, which is a correct answer,

42% industrial accident, wrong answer, 8% floods and accident, also correct answer and 5% earthquakes (Fig. 3).

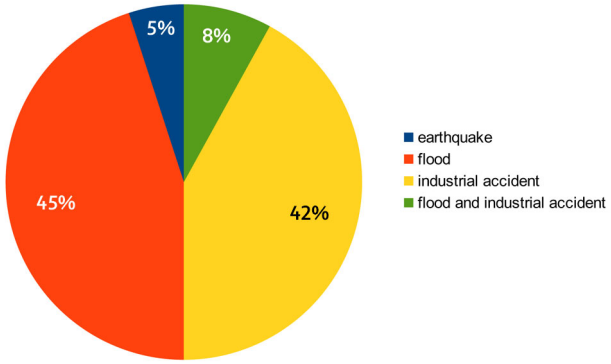
On this question from the survey, 20% of the correct answer is given by the young age group.

The difference in the correct answer between the two groups was statistically significant (p e"0.05).

The higher relative share of correct answers is due to the great life experience of the adult age group.

One-third of all respondents (43%) correctly answered the question that an epidemic could occur after an earthquake, a terrorist act.

Fig. 3. Disaster leading to an epidemic



To the question, "Are you informed if there is a potential flood threat in your area?" The young age groups 18-39 answered as follows: 45% are informed, 55% have no information about a potential flood threat. In the age group of adults, 25% have information, and 75% do not.

The percentage of those who answered "no" to both groups is alarmingly high (65%), which poses a serious threat to their lives in the event of a potential accident.

According to this education, the best informed about the potential threat of floods are people with secondary education (70%) and the least informed about the risks of floods are only 5%, these are people with primary education (Figure 4).

Good information correlates with higher education.

To the question, "Do they have a prepared backpack/bag with important documents, dry food and readiness for evacuation in case of disaster, including flood?"

In the young age group, 55% answered yes, the adult age group, 45% (Fig. 5).

Half of the respondents are without a prepared backpack, documents and food for evacuation in case of flooding will be seriously hampered in a real situation.

Fig. 4. Flood threat information

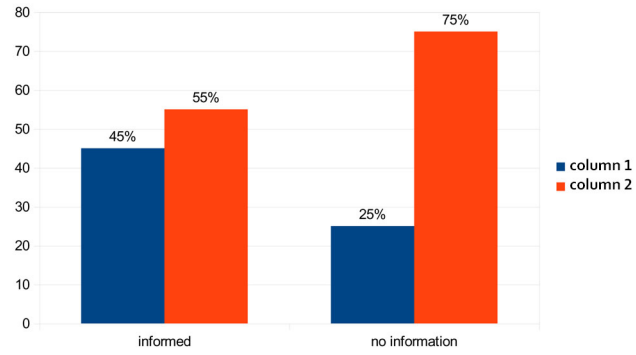
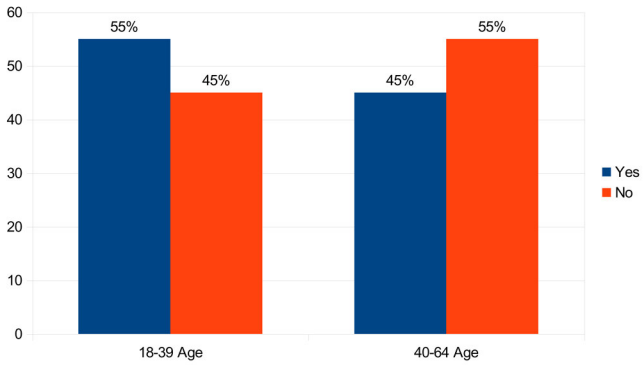
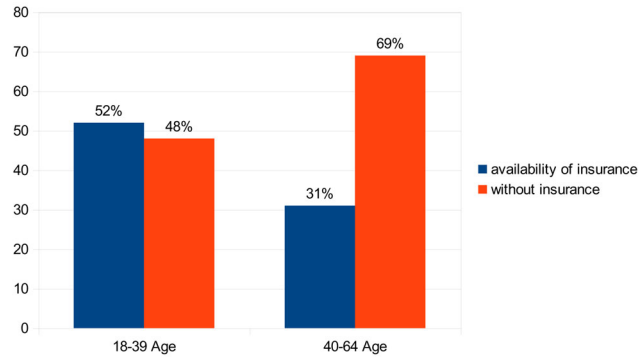


Fig. 5. Prepared backpack and readiness for evacuation



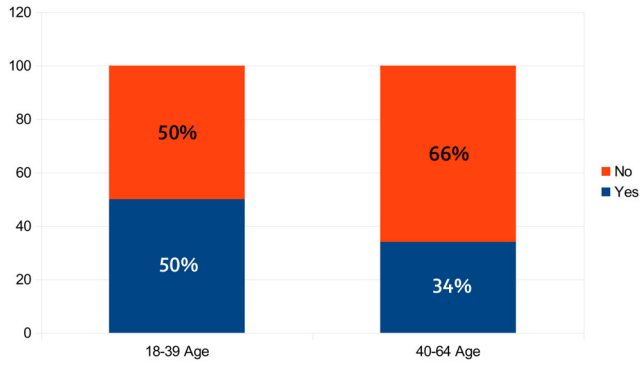
It is noteworthy that less than half (31%) of the mature group have a pre-made home and property insurance. On the same issue, the young group is better, more than half (52%) have pre-concluded insurance of their property in case of disaster of natural or another origin (Fig. 6).

Fig. 6. Availability of home and property insurance



In the skills for swimming and systematic maintenance of the skill, leading again are the respondents from the young age group 50% indicated that they know how to swim and train swimming. Less than half - 34% of the mature group 40-64. have noted that they can swim, which makes them vulnerable in a real disaster such as a major flood. (Fig. 7).

Fig. 7. Maintaining swimming skills



CONCLUSIONS

1. A high percentage of all 240 respondents survived a flood (39%) and more than one disaster (12.5%).

2. More than half (65%) are not informed about the potential threat of flooding in the settlement where they live, study and work. This makes them vulnerable in a potential disaster situation.

3. The adult age group is better informed than the young, 45% versus 20%, of which disasters pose the greatest risk of epidemics.

4. We give a very high rating to the young age group for the fact that they can swim (50%) and systematically maintain the skill.

5. We give high marks again to the same young group for having a backpack prepared in their home (55%) with the most necessary for evacuation and also for having taken out home and property insurance in advance at their own discretion (52%)). All this will help in a real situation to save their lives.

6. High is the percentage (69%) of the mature age group who do not have pre-made insurance for their home and property in case of a flood or another natural disaster. This makes them vulnerable and unprepared for future disasters, including floods.

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