



*Original Contribution*

**STUDY ON THE LEVEL OF DISASTER PREPAREDNESS AMONG  
VETERINARY PRACTITIONERS**

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**ABSTRACT**

**PURPOSE:** This study was focused on veterinary practitioners in Bulgaria with the aim to investigate and present their level of preparedness for disaster response and continuance of professional activities after disaster events. **METHODS:** A sociological survey through a questionnaire with open and closed questions was sent to veterinarians throughout the country personally or via e-mail. **RESULTS:** Veterinary practitioners in Bulgaria are not legally engaged in disaster prevention, excluding the prevention of contagious animal diseases. At the same time veterinarians could assist the population not only in case of biological contamination but also in any crisis situation caused by natural, technical, and human factors. The study showed that one-third (34.38%, n=11) of the respondents had supplied their practices with emergency equipment, while 75% (n=24) of them had secured the continuity of communications. Another 21.88 % (n=7) of respondents had arranged in advance a meeting place for staff after evacuation to meet and plan the reorganization of their activities. Only 3.13% (n=1) of the respondents had conducted simulated evacuations in arranged training. **CONCLUSIONS:** The findings could be used for drafting guidelines and teaching materials for professional training, enhancing the veterinary practitioners to perform more effectively in emergencies and thus raise the disaster resilience of the community as a whole.

**Key words:** disaster resilience; disaster risk reduction; veterinary practices; resources; labour standards.

**INTRODUCTION**

Disaster resilience is characterized by the ability of the population to predict, to cope with, and to recover from disastrous events. The biggest challenge in such cases appeared to be the protection of life, property and vital infrastructure. Common in all disaster situations were issues related to the functioning of an early warning system; food and water provisions; health and decontamination; collection and proper disposal of waste; ensuring

sustainable shelters; power supply; information, communication and transport infrastructure.

Considering the residents of a particular village as an integral part of the overall system for disaster preparedness, Taha *et al.* (1) investigated the awareness and the role of the population in managing disasters and crises at a local level. The authors' survey found relatively good but still insufficient level of awareness and understanding of the concepts of civil protection and crisis management among the respondents concerning indicators such as evacuation, hygiene, communication.

The necessity of building awareness of disaster protection among the society in Bulgaria through training, experience, research and innovations

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was discussed by Slavova *et al.* (2) in their survey on public awareness as an element of the general mechanism for disaster risk reduction.

Given that the effects of natural and technical disasters could affect every professional group in society to a certain extent, different authors measured the knowledge, attitude and practices available for disaster management among representatives from the healthcare sector. Similar studies were conducted among dental practitioners and academics (3), nurses (4), pharmacists (5), employees in emergency health centres (6), and in public health system structures (7).

### PURPOSE OF THE STUDY

The multifunctional dimensions of veterinary medicine and its important role for the whole process of disaster management, made it reasonable to examine the available resources of the private veterinary sector in Bulgaria, necessary for ensuring the safety of staff and practice and the preparedness to maintain business continuity in case of disaster situation. The study aimed also to investigate the level of awareness of veterinary practitioners on disaster preparedness activities within their practices.

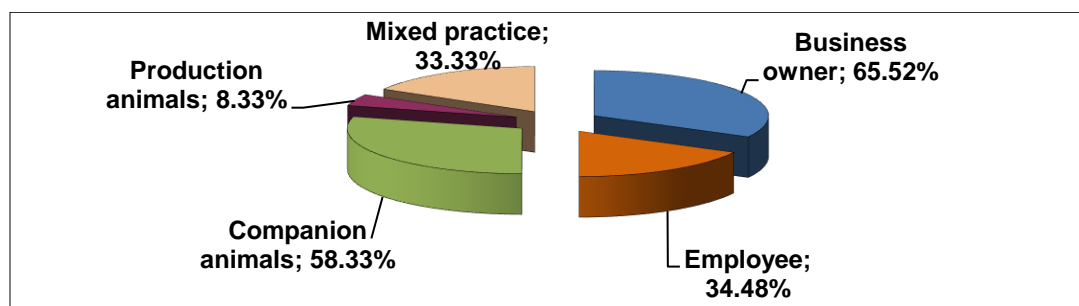
### MATERIALS AND METHODS

For the purpose of the study a questionnaire with open and closed questions was prepared, using the methodology of the empiric sociological

survey (8). The questionnaire was distributed from July to December 2018 to 134 veterinarians throughout the country personally or via e-mail. The completed and returned questionnaires were 32 in total (response rate – 23.89%). All data received were processed with IBM SPSS Statistics (SPSS-Inc., 2019, SPSS Reference Guide 26 SPSS, Chicago, USA), using descriptive statistics (frequency distribution tables), correlation analysis (Pearson correlation coefficient) and Student's t-test (t-test for independent samples). The results from the analysis (at  $p < 0.05$ ) were used to formulate conclusions relevant for the veterinary practitioners in the country.

### RESULTS

In order to establish the level of commitment to and the interest of veterinary practitioners in the activities for disaster preparedness, the respondents were distributed by a sphere of professional activity and by their status as employees or business owners. The largest share of respondents, 58.33 % (n=19), worked with companion animals (mainly representatives from big and medium-sized cities in the country, some of them - administrative centres), followed by mixed type of practice – 33.33% (n=10), while practitioners working with production animals were 8.33% (n=3) (located mainly in the small towns and rural areas). (Figure 1)



**Figure 1.** Respondents' distribution by sphere of professional activity and employment status

Data from the study showed that 65.52 % (n=21) of the respondents appeared to be owners or partners in the veterinary practice where they worked at. They were in fact decision-makers and managed all activities carried out in their practice, including planning, preparation, response during a disaster and recovery after that. Student's t-test

found significant difference in favour of veterinary practitioners – business owners and the group of respondents who declared to be able to maintain continuance in communication during and after disaster outbreak ( $t[29] = -3.43$ ;  $p < 0.05$ ). The remaining share of 34.48% (n=11) were employees, veterinarians who were part of

the practice staff and participants in the implementation of the plan for disaster preparedness and response.

The analysis of the information from the questionnaire showed that within 62.50% (n=20) of the veterinary practices there had been developed comprehensive action plans for disasters and emergencies. On the contrary, over half of the respondents – 53.13 % (n=17) -

declared lack of necessity to get prepared to respond to emergency situations. Data also showed that there was a significant positive correlation between the share of the veterinarians who had developed action plan and the share of those who had arranged relocation of their business within an alternative practice (r=0.57 at p<0.05), and had stored personal medications for 3-5 days for the veterinarians and the other staff at the clinic (r=0.57 at p<0.05). (Figure 2)

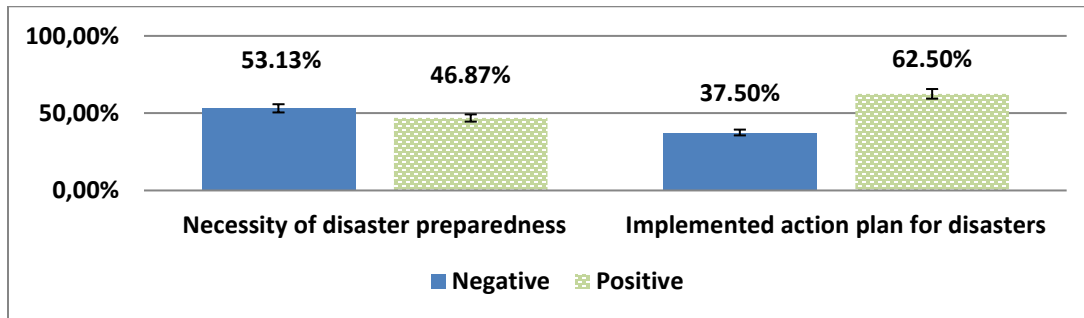


Figure 2. Respondents` distribution by indicators „implemented action plan for disasters“and „necessity of disaster preparedness“

Given the obligatory requirements for operation and exploitation of an enterprise, necessary for registration of a veterinary practice (9), 71.88% (n=23) of respondents stated they were familiar with the specific requirements for safety, more than half of them – 53.13% (n=17) - had drawn plan of the floor with marked fire-extinguishers, hazardous areas and evacuation routes on it, and

the same proportion of respondents 53.13% (n=17) had secured exits for evacuation in case of emergency. In fact, a significant difference was found in favour of veterinary practitioners – business owners and the group of respondents who declared their awareness of the specific safety rules at the work place (t[29] = -3.10; p<0.05). (Figure 3)

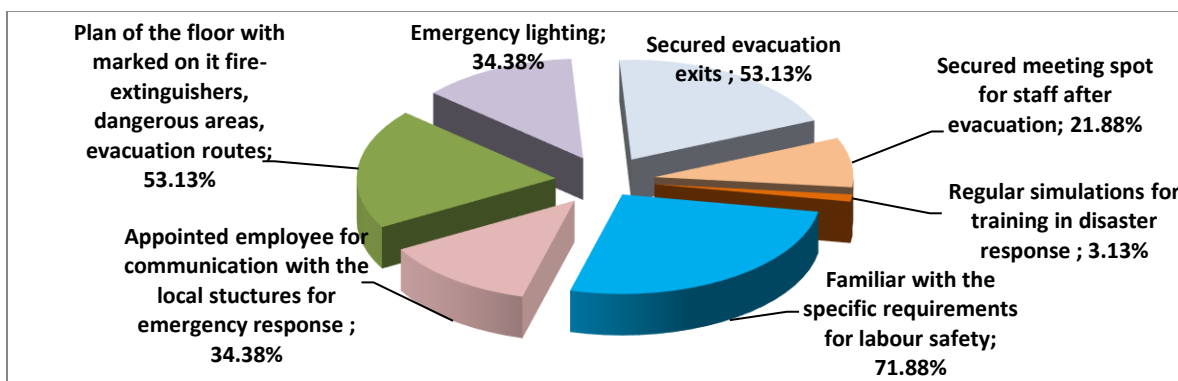


Figure 3. Aspects for ensuring safety of staff within the veterinary practices during disasters

Only one-third of respondents had secured their practices with emergency lighting (34.38%, n=11) and had appointed an employee to communicate with the local structures for emergency response and civil protection (again 34.38 % of respondents, n=11).

Significantly smaller share get the veterinarians who had arranged and secured in advance a meeting place for staff after evacuation – 21.88 % (n=7) of respondents. Such a place could be any location inside or outside the disaster area where employees would be able to gather, assess the situation, discuss the damages, allocate the

available resources and plan the reorganization of their activities.

Whether the respondents were really prepared for disaster situations could be determined after the analysis of the available resources for maintenance continuity of their professional activities. The results showed that the highest

share of 75% (n=24) get the veterinary practitioners who had secured the continuity of communications in any crisis situation. However, it appeared that they were less likely to prepare in advance a distant meeting place for the employees after evacuation – there was a negative correlation –  $r = -0.46$  ( $p < 0.05$ ). (Figure 4)

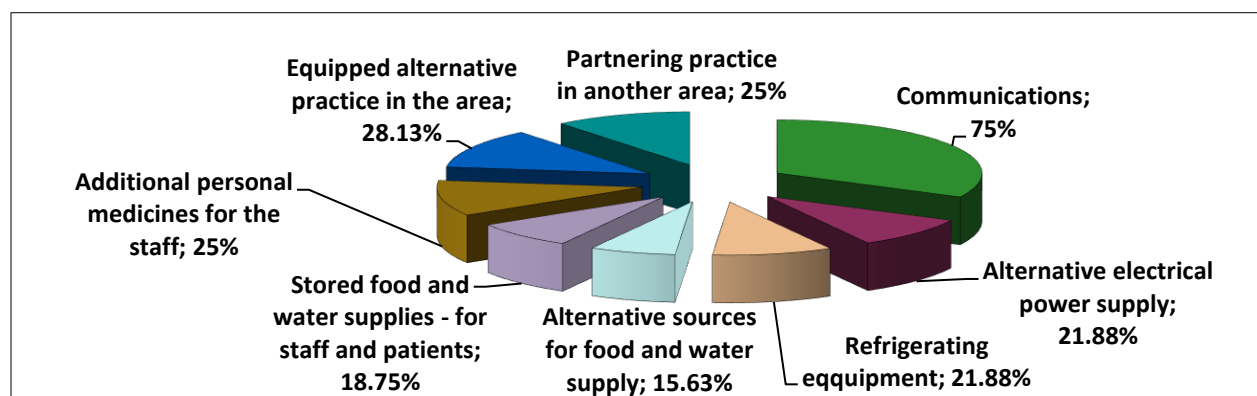


Figure 4. Ability to maintain business continuity of the veterinary practices during disaster

In case of severe events when the practices would have to be closed 28.13% (n=9) of the veterinarians shared they had provided reorganization and relocation of their business through the equipment of an alternative site within the same residence. An additional option to this relocation appeared to be the signing of a contract with a partnering veterinary practice situated in another village - preferred by 25% (n=8) of the respondents. The decision for equipment of an alternative practice was statistically dependent on the ownership of the practice, as there was a positive correlation –  $r = 0.46$  ( $p < 0.05$ ), between this indicator and the position of the respondents as business owners.

The survey showed that ensuring the continuity of all manipulations and operations within the clinic during a disaster was dependent on the availability of certain facilities and supplies. In regard to this, veterinary practices should have the following equipment:

- Alternative electric power supply within the practice and the staff should be familiar with the terms of its exploitation and maintenance. Veterinarians who had equipped their practices with a generator were 21.88% (n=7) of the respondents;

- Reserve refrigerating equipment at the clinic (for bioproducts, etc.) - available at 21.88% (n=7) of the practices;
- Stored personal medications for 3-5 days for the veterinarians and the other staff at the clinic, regarding their personal health status - 25% (n=8) of respondents;
- Stored food and water supplies for staff and patients for 3-5 days - provided by 18.75% (n=6) of the respondents;
- Alternative sources of food and water for the staff and the patients in case of contamination of the existing ones – provided by 15.63% (n=5) of the respondents.

## DISCUSSION

In Bulgaria, under the current legal framework for disaster risk reduction (10) had been developed and implemented a National Strategy for reducing the risk of disasters 2018-2030 (11), which had to identify strategic priorities for action and to support the implementation of measures for their execution at national, regional, municipal and establishment level. The cited documents set out general parameters for operation within which professional competencies of veterinarians were of significance in case of a risk of biological contamination, for assessment of safety of livestock production in order to be used for food

and feed, for ensuring the supply of foodstuffs for shelters in disaster areas, in all activities for prevention of contamination of the environment. In fact, the veterinarians from the private sector were not legally engaged in the prevention and management of disasters. This statement found indirect confirmation by the *Law on Disaster Protection*, that regulated the structure of the established and operating in the country Integrated Rescue System (12).

The absence of legal texts that clearly determined the regular participation of veterinary practitioners in the disaster risk reduction activities, did not allow the society to effectively benefit from their professional skills to increase the sustainability of the entire community. Similarly, Wittnich & Belanger (13) pointed out the lack of adequate procedures in the Canadian Federal Emergency Response Plan for the evacuation of animals together with their owners, thus addressing the formation of the Canadian Veterinary Reserve for response to disasters of all types. Leyland *et al.* (14) also identified gaps in policy and strategy on the role of public and private veterinary sectors. On the other hand, a wide range of examples on the vital role of the veterinary practices were presented in studies on evacuation activities among the population from disaster areas, who while saving their own lives sought opportunities for evacuation and care for their pets, incl. horses (15-17).

In order to provide professional support to the community and at the same time to protect their lives, property and business, veterinarians had to be prepared to act effectively during crisis situations. Such preparedness in advance declared 62.50% of our respondents, who had developed a comprehensive action plan for disasters and emergencies, but, on the other hand, more than half of them – 53.13% claimed they did not need to be prepared for emergencies. This "contradiction" might find its explanation in the fact that the development of an evacuation plan was a prerequisite for operation, legally regulated by the *Law on Health and Safety at Work* (18) and valid for all professional spheres of activity in the public and private sectors. A similar study on the level of consistency between the regulatory requirements for disaster preparedness and their actual application had made Dunnick *et al.* (6), who focused on medical health centres in the

United States. Their results showed that 27% of these centres had implemented a plan for disaster management which also included other communities in the residence.

The level of disaster preparedness of veterinary practitioners in Bulgaria regarding safety at the workplace, could be described as relatively good as 71.88% of the respondents were familiar with the legal requirements for work safety, and 53.13% of them had an evacuation plan of the practice with secured evacuation routes and exits in case of emergency. The importance of staff well-being was addressed also in the study of Whitman *et al.* (19) as one of the major concerns for organisations recovering after an earthquake. Regarding the business continuity in the private veterinary sector, 75% of our respondents stated they had secured the continuity of communications in any crisis situation. In this case, communication flowed between the employees of the practice, between the staff and the clients/animal owners, as well as communication with local structures for emergency response and other stakeholders participating in the disaster management chain. However, the declared communication continuity had not been tested in a real crisis situation, thus could not be accepted as an absolute statement. Sood *et al.* (20) had made similar conclusions based on a study of 46 health care centres before and after Hurricane Sandy in 2014. The authors reported that less than a quarter of the respondents had developed a plan for business continuity before the hurricane, while during the disaster all respondents had registered electrical power problems causing a disruption in land communications, fax and Internet.

Analysing the preparedness of veterinary clinics and dispensaries for work during a disaster, it became clear by our survey that only 28.13% of the colleagues had provided reorganization and relocation of their business through the equipment of an alternative site within the same area. This initiative logically could be completed by large reputable veterinary practices with established permanent client flow from big cities or regional administrative centres, practices that have financial resources for equipment of another branch of the clinic. The owners of such veterinary clinics had an additional professional interest in such an initiative, as in terms of

disaster they could take patients and clients of other practices which had to close. Subsequently, it could be expected from some of the assisted clients to become their regular customers, and prefer the services of the clinic as more reliable than the rest in the city.

An alternative to the launch of a second enterprise was the signing of a contract with a partnering veterinary practice located in another residence, preferred by 25% of our respondents. Such a choice was an indicator of smart strategic planning and management of the practice as: it did not lead to additional financial expenses for the clinic / dispensary; it gave an opportunity in future, in circumstances of loyal partnership, the business to be expanded through opening a branch or affiliate company in another town; the partnering practice was located in another area, which was supposed to be unaffected by the disaster and would be in operation to provide adequate and effective veterinary services. For comparison, Sood *et al.* (20) argued that in 2014 during the Hurricane Sandy 95% of the surveyed health care centres in the area had to suspend or relocate their activities.

Our opinion was consistent with that of Whitman *et al.* (19) who found that after an earthquake for the affected organizations the most helpful factors in mitigating the disastrous effects appeared to be their relationship with staff members, the design and type of buildings, and critical service continuity or swift reinstatement of services.

The indicator that appeared to be of a great significance for the preparedness of veterinary practices for disaster response was the regular training conducted in simulated crisis situations independently or jointly with other structures. A similar example of a project developed for joint cooperation for disaster risk reduction gave Sim *et al.* (21) who analyzed the implementation of a first aid training programme of health and social workers, including 22 local professional and business organizations. Although only 3.13% of the respondents in our survey had conducted simulated evacuations in an arranged training situation, this segment of veterinarians seemed to be most prepared for managing and recovery of business activities after the event. In support to our opinion appeared to be the study of Lai *et al.*

(22) who analysed the level of knowledge of 39 residents before and after a simulated crisis situation. The authors stated that crisis management competences of the participants had improved after the simulation. Arguments towards raising knowledge and skills in civil protection and first aid in emergency situations were given also by Slavova (23) who recommended specialized training and simulation exercises in various hazards affecting significant sites from the public infrastructure.

## CONCLUSION

The study of the private veterinary sector showed that veterinarians as a part of the civil population in a disaster situation should first of all take care for the safety of their own lives, staff and property, which reaction is largely influenced by their level of awareness, preparedness for evacuation and communication capabilities. On the other hand, as health professionals veterinary practitioners appeared to be an important link in the chain for providing resources to the community in order to overcome and recover from the disastrous event, giving assistance in evacuation and rescue works, providing healthcare and advice to animal owners.

Regarding the implemented and functioning legislative regulations for disaster management, and the analyzed state of preparedness for disaster response of the veterinary practitioners in Bulgaria, it could logically be assumed that professional veterinary competences might successfully be implemented as components of the Unified rescue system for disaster prevention, management and recovery from disastrous events. This would help the whole community to raise its sustainability to crisis situations by utilizing its own resources optimally, as veterinary practices appeared to be part of these material and non-material resources. For this purpose, the role of the veterinarians for disaster risk reduction should be legally determined and regulated. On this basis various information and teaching materials could be prepared for professional training, enhancing the veterinary practitioners to perform more effectively in emergencies.

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