

COMPETENCE DEVELOPMENT OF LABOUR PROTECTION SPECIALISTS IN CIVIL PROTECTION STUDIES

Dace Brizga, Olga Miežite, Kristīne Andrejeva, Linards Sisenis

Latvia University of Life Sciences and Technologies, Latvia

dacebrizga@inbox.lv, olga.miežite@lbtu.lv, andrejevakristine@gmail.com, linards.sisenis@lbtu.lv

Abstract. Nowadays, in the context of civil protection, under the influence of globalization, there are more and more potential threats, which raises the question - how quickly and effectively the national civil protection system is able to adapt to the specifics and dynamics of new threats, as well as to what degree Latvian specialists and society are competent to act in an emergency situation. To search for solutions, a study was conducted during the internship of the professional higher education master study program "Labour protection and safety", with the aim to improve the competence of labour protection specialists in the context of civil protection for action in emergencies. During the study practice, a survey questionnaire was developed for the residents of Latvian municipalities and civil servants involved in the civil protection of municipalities. Structured interview questions were prepared for experts involved in municipal civil protection. Competent specialists must understand what competences they need to develop in order to be able to improve society level of knowledge. The non-parametric method - Mann-Whitney test - was chosen for the comparison of the average levels of civil servants and population groups. The obtained data show the results of calculations for the positions where statistically significant differences were observed. The Shapiro-Wolf test was used for the civil servants group, and the Kolmogorov-Smirnov test for the population group. It was concluded that the differences in the average levels of personal disaster preparedness for groups are statistically significant with reliability 95% ($U(N_{citiz} = 30, N_{serv} = 58) = 500.50, z = -3.26, p < 0.01$). The citizens' rate of disaster preparedness is lower than specialists' preparedness. Therefore, labour protection specialists need to improve their competence by improving communication and digital skills.

Keywords: civil protection, competence, emergency, labour protection specialists, skills.

Introduction

In the study [1], it is indicated that with the 21st century a new era begins with incredible, unimaginable and incomprehensible events in risk and crisis management. He predicted that this crisis trend has begun a rapid acceleration, which will manifest itself as increasingly global, interconnected and "outside the textbook" events.

In the context of civil protection, in the sociological approach, an emergency situation is explained as a situation with unpredictable, rapid changes, and unexpected turns. Within this approach, it is stated that an emergency situation is declared to be such circumstances that require rapid, time-limited action to prevent, stop or otherwise affect undesirable future. Thus, in such situations, the central feeling is that something of value (life, health, and safety) is at risk, and that there is a very restricted time in which to address and limit irreversible damage to these important things [2].

In February 2024, BBK (Germany Federal Office of Civil Protection and Disaster Assistance) President Ralph Tiesler [3] stated that the new EU Competence Center at BBK is being created with the aim of establishing cooperation in the context of civil protection both in Germany and for the European Union as a whole. The civil protection system should be a unified mechanism. The Competence Center should have an advisory and coordinating function based on basic scientific research in the context of civil protection.

Today, under the influence of globalization, there are more and more potential threats (terrorism, wars, refugee crises, cyber security, climate change), which raises the question - how quickly and effectively is the national civil protection system able to adapt to the specifics and dynamics of new threats, as well as how competent Latvian specialists and society are for action in an emergency situation. In the last two years alone, the biggest global challenges both for the world as a whole and for its individual regions, including Latvia, have arisen - the Covid pandemic, Russia's invasion of Ukraine, the potential energy crisis, the food crisis due to the Russian war, the weather, wild fires and many others.

One of the psychological theories that explains people behaviour in emergency situations is the Protection Motivation theory created in the 1970s. According to this, four elements of human protection motivation are distinguished.

1. The perceived seriousness of the threat;
2. Likelihood of the threat occurring;
3. What mitigation measures are possible?
4. The individual's ability to successfully implement these measures (perceived self-efficacy) [4].

In the context of civil protection, research has been carried out in psychology on various aspects of human evacuation. Emergency evacuation is the process of moving people from a place where there is an imminent or potential threat to their safety or life to a safer place - it is one of the protection strategies in the event of disasters [5]. A similar study [6] indicates that mitigating the consequences of forest fires requires a well-coordinated evacuation strategy (for example: on-site shelter in situations where evacuation is impractical), which can be provided through improved coordination, education and strategic planning.

The study [7] states that regional disaster risk management depends on three subjects – international and local organizations, governments and households.

The citizens of Latvia have many questions about what should be done in the event of a disaster. The State Fire and Rescue Service emphasizes that in the event of an emergency, residents should follow the instructions given by the responsible services, as well as perform some preparatory work - arrange an emergency bag, secure water, necessary medications and food, and also refresh their knowledge of first aid. Preparedness is critical to maintaining calm in any crisis, whether natural or man-made.

In order to search for solutions, a study was conducted during the internship of the professional higher education master study program “Occupational safety and security”, with the aim of improving the competence of occupational safety specialists in the context of civil protection for actions in emergency situations in Latvia.

Materials and methods

In Latvia, in accordance with Article 23 of the Law on Civil Protection and Disaster Management [8], education of the population is carried out by the Education Institution for students in higher, general and professional education, but the minimum requirements regarding the content of the mandatory civil protection course are determined by the Cabinet of Ministers. However, uniform requirements for course provision are not offered. The same is the case with employee training, which is organized by the employer. Educating citizens on civil protection issues, using mass and electronic media as well as distributing informative materials, is carried out by state and local government institutions, as well as legal and natural persons, in accordance with their scope of activity.

In order to understand how prepared the municipality and residents are in matters of civil protection, a study was conducted, involving future senior labour protection specialists during the civil protection study course in the mandatory part of the part-time studies of the higher education master study program “Labour protection and safety”. During the study practice, a survey questionnaire was developed within the framework of the study for civil servants involved in the civil protection of municipalities. The questionnaires were distributed through the e-net survey creation platform alldata.lv. Members of the municipal civil protection commission were approached by telephone and e-mail with a request to participate in this study, guaranteeing anonymity. Invitations were sent out to municipalities to participate in the study. Structured interview questions have been prepared for experts involved in municipal civil protection, civil protection experts of the highest level (Table 1).

Table 1

List of experts

Experts	Experience		Gender	Age, years	Education, qualifications
	Position	Length of service, years			
A	Emergency medical service	22 Related to civil protection 5	Female	41-50	Level 1 higher
B	State Fire and Rescue Service, unit commander	20 Related to civil protection 15	Male	41-50	Bachelor Degree, Received education related to civil protection training

Table 1 (continued)

Experts	Experience		Gender	Age, years	Education, qualifications
	Position	Length of service, years			
C	State Fire and Rescue Service, unit commander Member of the municipal civil protection commission	30 Related to civil protection 11	Male	51-60	Bachelor Degree, Received education related to civil protection training

Competent specialists must understand what competences need to be improved in order to be able to improve the level of knowledge of society. To ensure confidentiality, the data obtained should be considered a sample from a larger population. The non-parametric method – Mann-Whitney test – was chosen to compare the average levels of civil servants and population groups. A normality test was performed for all 35 scales in both civil servants and citizens. The Shapiro-Wilk test was used for the group of civil servants (because $N < 50$), and the Kolmogorov-Smirnov test was used for the group of citizens, because ($N > 50$).

As part of the survey, answers were obtained from 174 residents (21 men and 153 women. The average age of the respondents – 42.3 years); 90 civil servants involved in municipal civil protection. The respondents represented different regions, however, respondents from 4 regional municipalities together made up 74% of the sample (129 respondents) - they were Gulbene and Gulbene region (26% of all respondents), Riga and Pieriga region (22% of all respondents), Jelgava and Jelgava region (19%) and Liepaja and Liepaja region (7% of all respondents).

Data processing of the questionnaires for rank correlation was done using Likert scale ratings from 1-7, then calculating the average number of points (multiplying percentages by points and summing these multiples). Responding to a Likert item, respondents indicated their level of agreement or disagreement using symmetrical agree/disagree scales for a series of statements. Thus, the range reflected of their answers about the particular item/statement. The method of descriptive and inferential statistical analysis was used to analyse the obtained calculations. Despite the guaranteed confidentiality and anonymity, it was found during the survey (questionnaire) that not everyone wanted to participate in the research as respondents nor were ready to answer all the questions completely. In order to use the data, to clarify regularities and to make decisions, the obtained data should be considered as a sample from a wider general set. This means that the units of the object under study in the general set form a normal distribution, or close to it, according to the characteristic of interest [9].

Results and discussion

Each member state of the European Union bases the emergency situations caused by natural disasters on its national legislation [10]. Since the current national civil protection plan was adopted and approved in mid-2020, it does not fully correspond to the current conditions of the Covid and, especially, Russian threats, so changes are currently underway, the aim of which is to increase the preparedness of local governments for such threats.

Summarizing the answers of the respondents to whether they have received education in courses/training programs/special training related to civil protection, 26% of respondents answered affirmatively that training has been carried out, while the majority of respondents – 74% – have not received education related to civil protection. Only a quarter of the respondents have received training. Since these data were obtained with the help of an open question, it should be noted that out of this 26% of those who received civil protection training, approximately 10% received it during the Soviet era. Thus, it can be concluded that the dominant trend in the population sample is a lack of civil protection training.

A normality test was performed for all 35 scales in both civil servants and citizens. The Shapiro-Wilk test was used for the group of civil servants (because $N < 50$), and the Kolmogorov-Smirnov test was used for the group of citizens, because ($N > 50$). It has been found that no scale has certain correspondence to a normal distribution for both groups with a confidence of 95% (Table 2).

Table 2

Respondent opinion on the threat of natural climatological disasters to local governments

Civil servants ($N = 30$)		Citizens ($N = 58$)		Z (p -value)
<i>Me</i>	<i>Mean Rank</i>	<i>Me</i>	<i>Mean Rank</i>	
5.00	53.27	4.00	39.97	-2.38 (0.02)

The study found that the differences in the average levels of the groups are statistically significant with a confidence of 95% ($U(N_{serv.} = 30, N_{citiz.} = 58) = 607.00, z = -2.38, p = 0.02$). Citizens, on average, rate the probability of natural climatological threats lower than officials do.

For comparison of the average levels of civil servants and population groups, a non-parametric method was chosen – the Mann-Whitney test (Fig. 1).

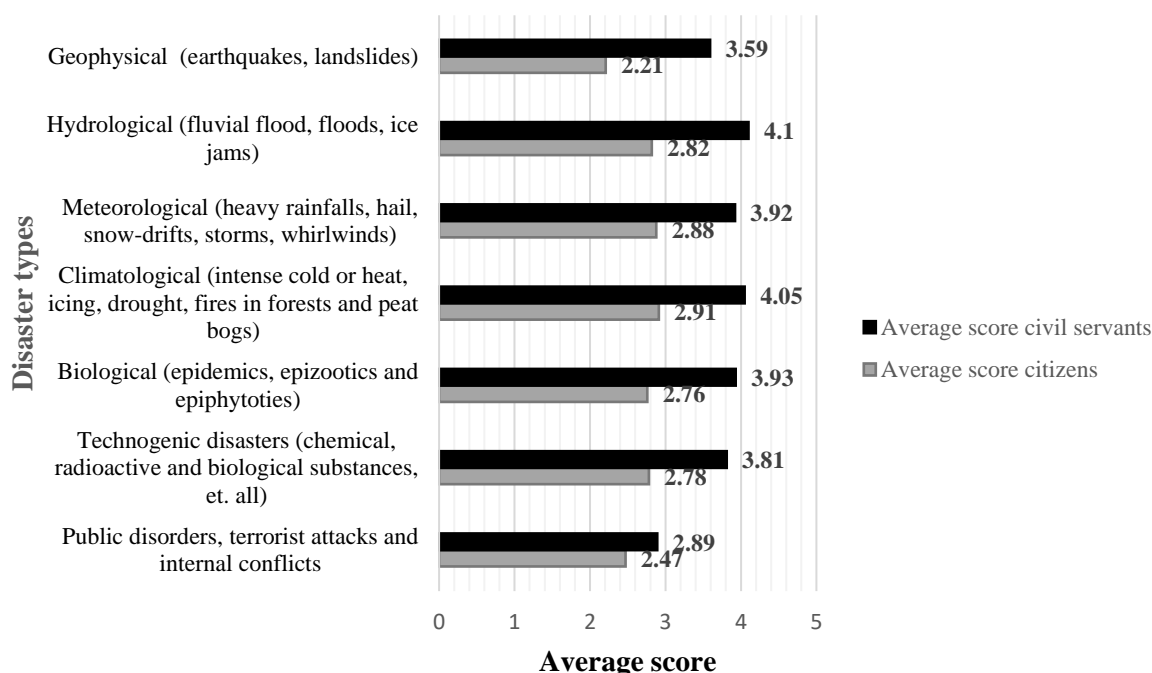


Fig. 1. Comparison of the assessment of citizens and civil servants involved in civil protection on preparedness of their municipalities for various disasters

Officials rate the readiness of local governments the highest – mostly in the interval from ~3.8 - 4.1 points, while residents – significantly lower, in the interval between 2.75-2.91 points. Only with regard to military invasion, the difference is relatively the smallest – both samples evaluate the readiness of municipalities for this as rather negative/low.

As part of the research, the normality test was performed for both obtained scales in the group of civil servants and citizens (Table 3). The Shapiro-Wilk test was used for the group of officials, since $N < 50$, and the Kolmogorov-Smirnov test was used for the population group, since $N > 50$.

Table 3

Testing the normality of respondent response scales

Scale	Civil servants ($N = 30$)			Citizens ($N = 58$)		
	<i>M</i>	<i>SD</i>	Shapiro-Wilk <i>W</i>	<i>M</i>	<i>SD</i>	<i>K-S</i>
Citizen preparedness for disasters	3.60	1.26	0.97	2.62	1.40	0.91*
Civil servant preparedness for disasters	3.75	1.18	0.98	2.68	1.39	0.93*

* $p < 0.05$

It was found that neither readiness scale corresponds to a normal distribution in the population group with a confidence of 95%. Therefore, the non-parametric method - the Mann-Whitney test - was chosen for the comparison of the average levels of civil servants and population groups (Table 4).

Table 4

**Descriptive and inferential statistical indicators of readiness scales
for civil servant and citizen groups**

Scale	Civil servants ($N = 30$)		Citizens ($N = 58$)		Z (p -value)
	Me	Mean Rank	Me	Mean Rank	
Citizen preparedness for disasters	3.57	56.82	2.36	38.13	-3.26 (<0.01)
Civil servant preparedness for disasters	3.79	58.35	2.43	37.34	-3.66 (<0.001)

The obtained data show the calculation results for positions where statistically significant differences are observed. It was concluded that the differences in the average levels of individual disaster preparedness for groups are statistically significant with a confidence of 95% ($U(N_{serv.} = 30, N_{citi.} = 58) = 500.50, z = -3.26, p < 0.01$). Citizens rate individual disaster preparedness lower than officials.

In Latvia, there are no studies in the context of civil protection on preparedness for various types of disasters. There are almost no such studies in the European Union, too. A similar study was conducted in Greece. The study [6] uncovered a misalignment between perceived and actual preparedness levels, gaps in educational initiatives, as 64.1% of municipalities do not provide evacuation training for residents, 82.1% of municipalities do not conduct evacuation exercises.

Expert opinion.

Experts assess the existing civil protection plans in Latvia as poorly communicated in society, more theoretical, with very weak practical justification or instructions, because local governments perceive it more as a task that they have to deal with each according to their own understanding. Experts believe that the plans developed by the municipalities are more focused on solving the problems that the municipalities have already faced, less focused on the predictive aspect.

Experts point out that scientific studies are not taken into account in the development of municipal civil protection plans. The reasons for this are both the lack of interaction between municipalities and scientists, as well as the opinion on the part of municipalities that there is no need for the involvement of scientists in this process.

According to experts, the preparedness of municipalities for disasters is, in reality, low. It is the lowest for larger-scale disasters, such as pandemics, war, terrorism, but higher for local ones, especially those that municipalities face from time to time. The reasons include the lack of a reserve of technical means, the disbelief of municipalities in the possibility of larger disasters, as well as the lack of resources and finances (for example, the representative of the municipality states about his municipality: "We are ready for small disasters and threats, for accommodating and feeding up to 100 people (municipality of 16,000 inhabitants), there are no more resources and finances.") Civil protection training for citizens in Latvia is at a low level, because there is no training program, no funding, no safe place of refuge, insufficient involvement of knowledgeable specialists in training citizens in the context of civil protection.

Citizens lack knowledge and skills in matters of civil protection in Latvia. It is necessary to provide knowledge to citizens, improving skills and creating a positive attitude in the context of civil protection, similar to occupational safety in the work environment. The competence of labour protection specialists must be improved, improving also their communication and digital skills, by developing a training course, taking into account the Cabinet of Ministers regulations of December 5, 2017 No. 716 "Minimum requirements for the content of the compulsory civil protection course and the content of civil protection training for employees" [11] requirements.

In the Czech Republic, the civil protection training course is renewed in both primary and secondary schools [12].

This is indicated by a study [13] carried out in an international cooperation network (France, Spain and Portugal) involving researchers, first responders and civil protection authorities, while crisis exercises were held in Mallorca and Ibiza (Balearic Islands, Spain) in which more than 70 people participated, including researchers, civil protection, civil security, representatives of municipalities, autonomous region representatives, local and regional crisis management managers. This provided an opportunity to conclude what needs to be improved to support decisions during disaster risk crises. A similar study was also carried out in Norway [14], where it was indicated that although municipalities had experience in preparing for extreme climate events and providing infrastructure, limited attention was paid to health in climate change adaptation work due to lack of resources and knowledge of what to do, as well as lack of cooperation between municipal sectors.

Conclusions

1. The study found that the differences in the average levels of individual disaster preparedness for groups are statistically significant with a confidence of 95% ($U(N_{serv.} = 30, N_{citiz.} = 58) = 500.50$, $z = -3.26$, $p < 0.01$). Citizens rate individual preparedness for disasters lower than civil servants.
2. The expert interview revealed that it is necessary to improve the knowledge and skills of citizens (especially digital skills), as well as communication and digital skills of civil servants in the context of civil protection.
3. A training course should be developed, taking into account the regulations of the Cabinet of Ministers of December 5, 2017 No. 716 “Minimum requirements for the content of the mandatory civil protection course and the content of civil protection training for employees” requirements, so that, by improving the competence of labour protection specialists, civil protection training for citizens can be provided.

Author contributions

All authors have contributed equally to the study and preparation of this publication. All authors have read and agreed to the published version of the manuscript.

References

- [1] Lagadec P. Crisis Management in the Twenty-First Century: “Unthinkable” Events in “Inconceivable” Contexts. In: Handbook of Disaster Research, 2007, pp. 489-507.
- [2] Anderson B. Emergency futures: Exception, urgency, interval, hope. The Sociological Review, vol. 65(3), 2017, pp. 463-477.
- [3] EU Competence Center at the BBK, [online] [23.02.2024]. Available at: <https://dkkv.org/en/eu-competence-center-at-the-bbk/>
- [4] Westcott R., Ronan K., Bambrick H., Taylor M. Expanding protection motivation theory: Investigating an application to animal owners and emergency responders in bushfire emergencies. BMC Psychology 5, 13, 2017. <https://doi.org/10.1186/s40359-017-0182-3>
- [5] Wang Y., Kyriakidis M., Dang V. N. Incorporating human factors in emergency evacuation – An overview of behavioral factors and models. International Journal of Disaster Risk Reduction, 2021, vol.60, article number 102254.
- [6] Zikeloglou I., Lekkas E., Lozios S., Stavropoulou M. Community’s evacuation planning and response for the 2021-2022 fire seasons in Greece. Journal Safety Science, 2024, vol.172, article number 106434
- [7] Shi P., Ye T., Wang Y., Zhou T., Xu W., Du J., ... Okada N. Disaster Risk Science: A Geographical Perspective and a Research Framework. International Journal of Disaster Risk Science, 2020, vol. 11(4), pp. 426–440.
- [8] Civil Protection and Disaster Management Law. [online] [20.02.2024]. Available at: <https://likumi.lv/ta/en/en/id/282333>
- [9] Paura L., Arhipova I. Neparimetriskās metodes. SPSS datorprogramma. (Non-parametric methods. SPSS computer program.), 2002, 84.p., LLKC, Jelgava: LLU. (In Latvian)

- [10] Sanchez I., De Stefano L., Montesinos S., Erena M., Garcia P., Gonzalez S. Testing a European emergency management methodology in a simulated flood event. 3rd International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation, 2002RISK ANALYSIS III 5, pp. 327-336.
- [11] The Cabinet of Ministers regulations of December 5, 2017 No. 716 “ Minimum Requirements for the Content of the Mandatory Course in Civil Protection and the Content of Training of Employees in Civil Protection”. [online] [20.02.2024]. Available at: <https://likumi.lv/ta/en/en/id/295896>
- [12] Miler T., Marinic P. Advances and barriers to education for civil protection in the early 21st Century. Conference: 9th International Conference on Education and New Learning Technologies (EDULEARN), Barcelona, Spain, 2017, pp. 6102-6106.
- [13] Gasc-Barbier M. Mateos, R. M., Iasio, C., Chanal, A., Villatte, A., Bernardie, S., Reyes-Carmona, C., Sarro, R., Martínez-Corbella, M., Luque, J. A., López V. J., Monserrat, O. Crisis exercise in the framework of coastal geohazards: Experience in the Balearic islands (Spain,). International Journal of Disaster Risk Reduction, vol. 10215 February 2024 Article number 104270
- [14] Budin-Ljøsne I., Nordeng Z., Schwarze P.E., Rao-Skirbekk S. Linking climate change adaptation and public health: perspectives of Norwegian policymakers. Scandinavian Journal of Public Health, 2024, ISSN 14034948 DOI 10.1177/14034948241229486