IDENTIFYING RISKS IN SELECTED SOCIAL FACILITIES WHEN EMERGENCIES ARISE

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Abstract. This paper focuses on identifying risks in selected social facilities in relation to the possible occurrence of an emergency. Risks are dealt with for residential social facilities that provide meals all day long in the territorial scope of the city of České Budějovice. Via the application of the KARS method, selected risks are assessed using their correlations. In this way, the risks are divided into those that primarily threaten the examined social facilities, as well as risks that represent hierarchically-lower risks, or those that were assessed as relatively safe. The research investigated risks in relation to emergencies that occur when social services are provided within the cadastral territory of the České Budějovice. The KARS method was used to identify the risks that are most dangerous for social facilities. In the first stage of the analysis, group risks were ascertained that occur during the operations of individual facilities. The risks were divided into those that primarily threaten the social facilities, and to those which hierarchically represent lesser risks, or were assessed as relatively safe.

Keywords: Emergency; Social Facilities; Risks; Preventive Measures; Social Services; Security

1. Introduction

The dynamic development of human civilization brings, in addition to several positive phenomena, a number of negatives, which in the conditions of deepening global problems manifest themselves in the form of various dangers and threats (Ivančík, 2012; Razif et al., 2020; Akeel, Khoj, 2020; Oliński, Szamrowski, 2020; Tvaronavičienė et al., 2020; Genys, Krikštolaitis, 2020).

Thus, the human society must deal with emergencies that arrive unexpectedly and endanger the lives and health of the population. They cause extensive damage to property and the environment, and they may arise from the damaging effects of forces and phenomena caused by human activity, natural causes or a combination thereof. Such events include floods, hurricanes, and technological accidents with spilling of hazardous substances, large traffic accidents, extensive fires or acts of terrorism. Likely and frequent consequences of various disasters are injuries or damage to human health (Malerova, Pokorny, 2017; Dominelli, 2020; Dong et al., 2020; Besenyő, Kármán, 2020).

Being able to protect one's own health and life and that of others is a question of preparedness and having the necessary knowledge. The ability to provide proper and rapid assistance in such a case is then not only a moral, but also a legal obligation of every person. Although the course of most emergencies may not be fully under the control of a person, devastating consequences can be minimized through effective measures and the prepared-

ness of emergency services and citizens. Special emphasis should be placed on the preparedness and prevention of any emergencies, as any subsequent aid brings with it additional risks that are not negligible after an event. (Princová, 2014; Dušek, 2015). Emergencies do not choose the time and place where they will originate, and social facilities that provide social services relating to accommodation are also not an exception to this rule.

The basic activities in the provision of social services are assistance in managing the usual tasks of personal care, assistance in personal hygiene or providing conditions for personal hygiene, providing food or assistance in providing food, providing accommodation or assistance in securing housing, assistance in ensuring the running of the household, educational, training and activation activities, counseling, mediation of contact with the social environment, social therapeutic activities and assistance in the exercise of rights and legitimate interests (Ricciardelli et al, 2020; Jeon, 2020)). The provision of social services in the Czech Republic is defined by Act No. 108/2006 Coll. on social services. This Act regulates the conditions for providing assistance and support to natural persons in an unfavorable social situation through social services and care allowance, conditions for issuing authorizations for the provision of social services, public administration in the field of social services, inspection of social services and prerequisites for social activities (Act No. 108/2006 Coll.).

The goal of social services is:
– preserve the human dignity of clients,
– be based on the individually determined needs of clients,
– actively develop clients' abilities,
– improve or at least maintain the self-sufficiency of clients,
– provide services in the interest of clients and in appropriate quality.

The social services can be "bought" by their recipient on the basis of the granted care allowance, resp. he can order them from the organization providing social services and pay for the provided services according to the agreement, some services are free (Ortega-Galán, 2020). Social services are provided by organizations or individuals who are authorized to do so, issued by the locally competent regional authority, as well as by close relatives or social care assistants.

Social services facilities can be characterized in individual areas:
– day care centers, day hospitals, weekly hospitals,
– homes for the disabled, homes for the elderly,
– homes for people with chronic mental illness or substance abuse,
– sheltered housing, shelters, halfway houses, crisis management facilities,
– low-threshold day centers, low-threshold facilities for children and young people, dormitories, therapeutic communities,
– social counseling centers, social therapy workshops, centers of social rehabilitation services,
– early care facilities, intervention centers,
– aftercare facilities.

These social services facilities are further divided into residential, outpatient, or field. Residential services are associated with accommodation in social services facilities, eg retirement homes, weekly hospitals, etc. (Weil, 2020) Outpatient services are those for which a person comes or is accompanied or is transported to social services facilities - these services do not include accommodation, eg day centers. Field services are provided to needy people in their natural social environment.

Social workers perform a wide range of work tasks and encounter many different types of environments and people at work. They work in community health facilities, hospitals, residential treatment centers, addiction treatment facilities, schools, family service agencies, foster care agencies, day care facilities and public and private childcare organizations. Social workers often visit clients' homes to check or talk about household condi-

tions. Increasingly, social work is becoming a policy issue. A social worker is a profession that seeks to improve social functioning by providing practical and psychological help to people in need (Kováčová, Vacková, 2014).

Because social workers can work in so many different environments, they are exposed to many types of occupational hazards. Among others, it should be mentioned that they very often move in areas with poor circulation or air quality, in so-called sick buildings (Lošonczi et al, 2016). They are also at risk of infection from the environment, especially hospital workers and outpatient medical care are prone to exposure to the infection. Social workers are at risk of contracting diseases such as hepatitis, tuberculosis and other highly contagious diseases, as well as human immunodeficiency virus (HIV) from patients. In response to this risk, all healthcare professionals need training and infection control measures.

The paper focuses on a risk analysis of social facilities in České Budějovice in the Czech Republic. For social services users, these institutions provide a sense of home where everyone should feel safe and be welcomed and respected. Their mission is to provide quality residential social services with provided all day and 24-hour care for persons who can no longer stay in their home environment due to their age or health condition. The main objective is to create conditions to meet the natural needs of people in the form of support and help in caring for themselves, help with self-sufficiency that is essential for a full life and with life situations that may prevent someone from living an ordinary life.

2. Basic characteristics of the research sample

The sample set that the research is based on are social service providers within the cadastral territory of České Budějovice. České Budějovice is the statutory city and the largest city in the South Bohemian Region and its economic, administrative and cultural center. It is located at the confluence of the Vltava and Malše rivers. They are the seat of several universities, important public institutions and offices. The basic framework for ensuring social assistance and support is set out by Act No. 108/2006 Coll., on Social Services, as amended (Act 108/2006 Coll.). This means the provision of the activities that are necessary for the social integration of people, and decent living conditions. These conditions are based on the current level of development of our society. The legal regulation regulates the conditions for providing assistance and support to individuals in difficult social situations (weakening or loss of ability due to age, poor health, for crisis social situations, living habits and a way of life leading to conflict with society, a socially-disadvantaged environment, endangering the rights and interests via the criminal activity of another individual, or due to other serious reasons, and dealing with such a situation in such a way that these solutions support social inclusion and protection against social exclusion) through social services and care allowances (Brehovská, Líbal, 2014; Malerova, 2016; Yuliastuti et al, 2020; Plèta et al., 2020).

Endangered persons are those who live in collective facilities at the time of an emergency and are limited in terms of their movement and are dependent on care provided by another person. Users of social services in social living institutions associated with accommodation have various health disabilities often combined with limited mobility or mental disabilities, and these are also people in the terminal stage of life who are totally dependent on the help of another person (Suhanda et al, 2019; Knoop et al, 2020). If an emergency at a social institution that provides accommodation occurs, the evacuation and rescue of persons by an integrated rescue system unit would be difficult and demanding.

In České Budějovice, which has approximately one hundred thousand inhabitants, the following facilities provide social services with accommodation (České Budějovice City Hall, 2020):
– Nursing homes - five facilities providing social care to citizens who are retired or receive full-disability pension. Classic home care services are provided, and after a specified period of time, the permanent presence of caregiver is ensured. Nursing homes are intended for the elderly and disabled persons with reduced self-sufficiency due to their state of health or advanced age, and who thus consequently have special housing needs.
– Retirement homes - three homes for people over 65 who are permanently dependent on the care of another

person due to illness or chronic disability; or who do not have the physical or mental strength to be able to stay at home alone with the help of family members or the available field services; or who have partially or completely reduced mobility.

– Specialised homes - residential social services provided to people who cannot live in their natural environment due to their handicap. The homes support their self-sufficiency with respect to individual needs and create a home atmosphere. Social services are provided to persons with reduced self-sufficiency due to chronic mental illness or dementia.

– Homes for people with disabilities - residential services provided to persons with reduced self-sufficiency due to disability, whose situation requires the regular assistance of another person.

– Sheltered housing – the mission of sheltered housing is to provide active support to people with mental or multiple disabilities at a younger and working-age while they become independent and integrate into society.

– Shelters – the mission of the three shelters is to support people who have no place to live and are without jobs to find their own housing and a job. The basic activities are assistance in providing food, providing accommodation and assistance in exercising rights, legitimate interests and assistance in dealing with personal matters.

The increased tendency to care for people with disabilities and the overall aging population, as well as a changing demographic curve, can be characterized in both the administrative territory of České Budějovice, and in general. In order to prepare the staff and clients in social facilities, it is necessary to characterize the basic risks, and, on the basis of the findings therefrom, to organize subsequent correct response training and training of behaviour principles during emergencies.

3. Research methodology

Via the application of the KARS method (Qualitative Risk Analysis using Correlations thereof), it can be determined which risks are most dangerous for the system, i.e. for the examined social facilities, and they must be addressed as a priority. When using the KARS method, the first step consists of the processing a list of risks that threaten most social facilities. This analytical method utilizes the interdependence of risks. On the basis of an investigation of social workers and managers of social facilities, it has been established that there are ten risks R_i in the system which are reported in the table in rows and columns. The table of risk correlation are filled-in for R_i risks; R_i is not evaluated in diagonal positions because the R_i risk cannot invoke itself.

Table 1: Identification of risks

	Risks	R_a										
	R_b	1	2	3	4	5	6	7	8	9	10	ΣK_{ar}
1	Fire	x	0	1	0	1	1	1	1	1	1	7
2	Communication	0	x	1	0	0	1	0	0	0	0	2
3	Preparedness	1	1	x	1	1	1	1	1	1	1	9
4	Flood	1	1	1	x	1	1	1	1	1	1	9
5	Blackout	1	1	1	0	x	1	1	1	1	1	8
6	Kitchens	1	1	1	1	1	x	1	1	1	1	9
7	Electronic appliances	1	1	1	0	1	1	x	1	1	1	8
8	Heating	1	1	1	0	1	1	1	x	1	1	8
9	HAZMAT	1	1	1	1	1	1	1	1	x	1	9
10	Gas	1	1	1	0	1	1	1	1	1	x	8
	ΣK_{rb}	8	8	9	3	8	9	8	8	8	8	

Source: Own research

Overview of individual risks:

1 Fire.

2 Difficult communication with disabled persons.

3 Lack of evacuation preparedness of a social institution.

4 Flood.

5 Power outage.

6 Kitchen – impossibility of preparing daily meals.

7 The impossibility of using electrical appliances, wiring malfunction.

8 Heating - emergency situation when heating buildings.

9 HAZMAT - Hazardous materials and items, leakage of hazardous substances.

10 Gas – gas leak and explosion.

The following is a calculation of coefficients of activity and passivity in order to transform the final shape of the correlations table into a mathematically and graphically usable format. The K_{ar} activity coefficient is a percentage of the number of selected consecutive risks for risk Ri, which may be triggered in the event that this risk occurs. The Kar activity coefficient is calculated according to the following formula:

K_{ar} *(percentage of consecutive risks R_b, which can be triggered by risk R_a)*

$K_{ar} = [\Sigma K_{ar}/(x - 1)] \cdot 100$ x … number of evaluated risks (x = 10)

The K_{pr} passivity coefficient is a percentage of the number of all identified risks that may subsequently trigger risk Ri.

K_{pr} *(percentage of the number of triggered risks)*

$K_{pr} = [\Sigma K_{rb}/(x - 1)] \cdot 100$ x … number of evaluated risks (x = 10)

	individual values K_{ar}		*individual values K_{pr}*
1	$K_{ar} = [7/(10 - 1)] \cdot 100 = 78\ \%$	1	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
2	$K_{ar} = [2/(10 - 1)] \cdot 100 = 22\ \%$	2	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
3	$K_{ar} = [9/(10 - 1)] \cdot 100 = 100\ \%$	3	$K_{pr} = [9/(10 - 1)] \cdot 100 = 100\ \%$
4	$K_{ar} = [9/(10 - 1)] \cdot 100 = 100\ \%$	4	$K_{pr} = [3/(10 - 1)] \cdot 100 = 33\ \%$
5	$K_{ar} = [8/(10 - 1)] \cdot 100 = 89\ \%$	5	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
6	$K_{ar} = [9/(10 - 1)] \cdot 100 = 100\ \%$	6	$K_{pr} = [9/(10 - 1)] \cdot 100 = 100\ \%$
7	$K_{ar} = [8/(10 - 1)] \cdot 100 = 89\ \%$	7	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
8	$K_{ar} = [8/(10 - 1)] \cdot 100 = 89\ \%$	8	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
9	$K_{ar} = [9/(10 - 1)] \cdot 100 = 100\ \%$	9	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$
10	$K_{ar} = [8/(10 - 1)] \cdot 100 = 89\ \%$	10	$K_{pr} = [8/(10 - 1)] \cdot 100 = 89\ \%$

Each risk R_i will be characterized by a pair of coefficients, i.e. K_{ar} a K_{pr}. For orientation and applicability of the results of calculations, a table of K_{ar} and K_{pr} coefficients will be compiled and expressed graphically. The aim of the evaluation of the correlation graph is to determine the danger of individual risks based on their correlation with other risks in the system. This can be determined by dividing the graph into four basic areas using axes O_1 and O_2. These areas will then determine how important the risks found in them are. The areas are divided as follows: I - primary hazardous risks; II - secondary hazardous Risks; III - tertiary hazardous risks; IV - relatively safe.

Table 2: Determining coefficients

Risks	1		2	3	4	5	6	7	8	9	10
K_{ar} [%]	78		22	100	100	89	100	89	89	100	89
K_{pr} [%]	89		89	100	33	89	100	89	89	89	89

Source: Own research

The graph area is divided into quadrants so that 80% of all analysed risks are in the 1st quadrant. This quadrant is labelled as region of primary and secondary hazardous risks.

Determining the position of axes, values used from tab. 2:

$K_{ar\,max} = 100\%$ $K_{ar\,min} = 22\%$ $K_{pr\,max} = 100\%$ $K_{pr\,min} = 33\%$

optimal level 80% s ... *reliability (0 – 100)*

axis O_1 $O_1 = 100 - [(K_{ar\,max} - K_{ar\,min}) : 100] . s\,(\%)$
        $O_1 = 100 - [(100 - 22) : 100] . 80 = 38\%$

axis O_2 $O_2 = 100 - [(K_{pr\,max} - K_{pr\,min}) : 100] . s\,(\%)$
        $O_2 = 100 - [(100 - 33) : 100] . 80 = 46\%$

$K_{ar\,max}$ is the maximum interval relating to activity coefficients;
$K_{ar\,min}$ is the minimum interval relating to activity coefficients;
$K_{pr\,max}$ is the maximum interval relating to passivity coefficients;
$K_{pr\,min}$ is the minimum interval relating to passivity coefficients

Each risk R_i is characterized by coefficients K_{ar} and K_{pr}. For orientation and in order to be able to interpret the results, a table of coefficients K_{ar} and K_{pr} was compiled which is expressed graphically.

Table 3: Resulting graph of correlation analysis
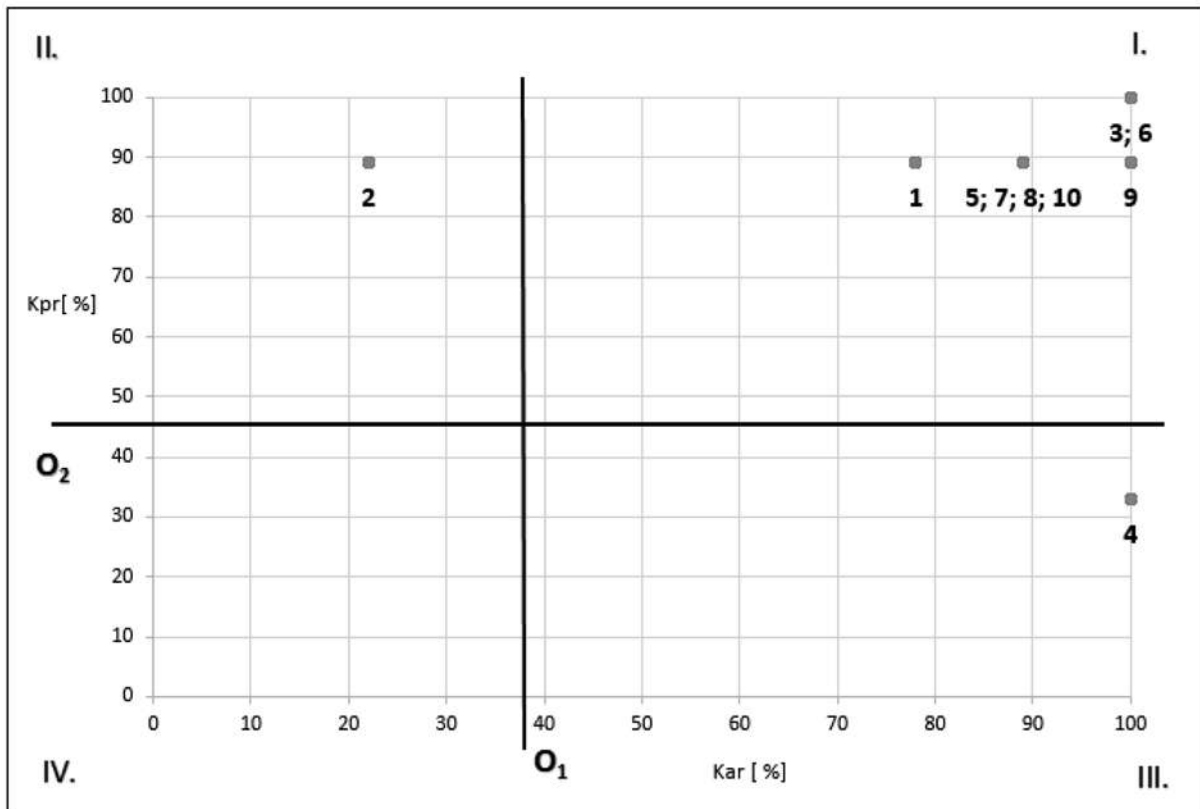
Source: Own research

4. Discussion about the used KARS method

The KARS method has a clear predicative ability. Based on the results of the analysis, the risks found in the researched facilities were qualitatively layered. This procedure helped to determine the ranking of individual risks. The method provided a guide to determining priorities in social facilities for preparing measures for deal with emergencies that can be triggered by the risks listed in Table 1. In the first area of primary and secondary hazardous risks, the weakest points of mutual relations of the system being evaluated were identified.

The investigated social facilities should focus on risks in the following order:
Area I – primary and secondary hazardous risks. This area has a total of 8 risks:
1 Fire.
3 Lack of evacuation preparedness of a social institution.
5 Power outage.
6 Kitchen – impossibility of preparing daily meals.
7 The impossibility of using electrical appliances, wiring malfunction.
8 Heating – emergency situation when heating buildings.
9 HAZMAT - Hazardous materials and items, leakage of hazardous substances.
10 Gas – gas leak and explosion.

Area II – secondary hazardous risks, only one risk in this area: 2 Difficult communication with disabled persons.

Area III – no primary hazardous risks, only one risk in this area: 4 Flood.

Area IV – relative safety, no risks in this area

The research investigated risks in relation to emergencies that occur when social services are provided within the cadastral territory of the České Budějovice. The KARS method was used to identify the risks that are most dangerous for social facilities. In the first stage of the analysis, group risks were ascertained that occur during the operations of individual facilities. The risks were divided into those that primarily threaten the social facilities, and to those which hierarchically represent lesser risks, or were assessed as relatively safe.

Conclusions

The identification of risks in social facilities is important in terms of preventative safety measures, particularly in the professional training of staff. During emergencies, the staff are always under increased pressure to ensure the normal operation of the facility and provide social and health services to the extent necessary. Clients of social facilities may be injured or their health can deteriorate.

The current perception of risks, health and safety of clients and social workers is asymmetric and requires better methodological and legal regulation. The issue affects workers of all forms of social services (residential, outpatient, field), so in all forms of social services must be defined and implemented certain mechanisms to protect the health and safety of both workers and service users.

In modern social services, the goal is to leave a situation where a person is "safe but unhappy" in order to mitigate risks and improve the quality of life. This is a reasonable risk that is acceptable. If clients of social services are to live a normal way of life, they also face common risks. The social service then provides such support that the client can manage the risky situation in a safe way.

Based on the perception of the need to increase safety, as of October 2010, dozens of nursing services throughout the Czech Republic have joined in the Bezpečná domácnost (Safe Household) educational programme. In

cooperation with the Ministry of Interior - General Directorate of Fire Rescue Service and the Police Presidium of the Czech Republic, the programme is implemented by charity organization PRO RESCUE. It is a great asset to both users of social services and the homes of caregiver that after being trained they can understand fire risks outside and inside buildings, and are able to identify which appliances represent fire risks in their home, and in the homes of users.

Course participants also appreciate the fact that it was easily explained to them which acts lead to saving life, and adversely, which could complicate a rescue and in what time sequence these operations must be carried out in a burning building (Prorescue, 2020; Reuter, 2020). In terms of a multidisciplinary approach to social facilities, within safety training in this area, it is necessary to prepare clients and group of experts for managing institutions of various sizes and various degrees of complexity (Kavan, 2015).

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