



Organizing Treatment in Emergency Health Care Facilities during COVID-19 Pandemic Conditions in Eastern European Countries



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Manuscript submitted: 3 September 2021, Manuscript revised: 7 November 2021, Accepted for publication: 2 January 2022

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Abstract

The purpose of the academic paper lies in identifying the practice of organizing treatment in emergency health care facilities in the conditions of the COVID-19 pandemic on the example of Poland and the Czech Republic. The qualitative content analysis of the organization of emergency medical care in the conditions of a pandemic in Poland and the Czech Republic has been used in the research. The COVID-19 Health System Response Monitor (HSRM) database and the Health Systems and Policy Monitor (HSPM) database have been used for conducting the analysis. In the course of the research, the following features of changes in the organization of treatment in emergency health care facilities in the context of the COVID-19 pandemic have been revealed, namely: postponement of scheduled examinations, non-urgent treatment, gradual reduction in the number of hospitalizations, especially for planned surgical interventions; limiting the availability of medical care; prohibition of regular vacations of medical workers; redeployment of personnel in case of deterioration of the condition of patients with COVID-19 and the need for the provision of emergency medical care; daily monitoring of intensive care beds and their filling status to predict the possible need for emergency care.

Keywords

emergency healthcare;
emergency medicine;
healthcare facility;
healthcare system;
health insurance;
health services;
pandemic;

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Contents

Abstract	149
1 Introduction	150
2 Materials and Methods	152
3 Results and Discussions	152
3.1 Urgent and emergency care of Poland	152

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3.2 Urgent and emergency care of the Czech Republic.....	154
3.3 The principal elements of the organization of emergency medical care in the conditions of the pandemic: the experience of Poland and the Czech Republic	154
4 Conclusion	156
Acknowledgments.....	156
References	157
Biography of Authors	159

1 Introduction

In European countries, in 2000-2011, the organization of treatment in emergency health care facilities has been changed, which is generally characterized by centralized management and financing from public funds or health insurance funds. During the period of spreading the pandemic due to the COVID-19 disease, the government had to minimize the risk of disease transmission and reduce the burden on emergency health care facilities (Dubberke et al., 2007; Kaye et al., 2021). To ensure this, some organizational changes have been approved at the national level and algorithms have been formed for patients' actions in case of infection, telemedicine services have been developed, medical personnel has been redeployed, etc. The changes outlined require investigation to identify the features of the organization of treatment in emergency health care facilities in the conditions of the COVID-19 pandemic in the countries of Eastern Europe. The purpose of the academic paper lies in identifying the practice of organizing treatment in emergency health care facilities in the conditions of the COVID-19 pandemic on the example of Poland and the Czech Republic.

Literature review

In the scientific literature, there are no comprehensive studies on the organization of treatment in emergency health care facilities during the crisis. The investigations are focused on reforming this link in the medical field, issues that need to be addressed. Particular problematic aspects of emergency medicine are described in the scientific works of Major et al. (2020), Demczyszak et al. (2021); however, they do not describe the practical features of the effective organization of this health care subsystem, which during the spread of the pandemic has been under extreme pressure and stress. Along with this, in a crisis period, emergency medical care is extremely important for ensuring a reduction in morbidity and mortality from serious diseases (Kironji et al., 2018; Tušer & Navrátil, 2020).

Sagan et al. (2016), examining the reform of Polish emergency medicine due to legislative changes in 2015-2016, argue that the changes do not meet the key requirements of all the stakeholders. The legal framework for regulating the profession has not been implemented in the country, as well as a professional organization has not been created to represent the interests of workers in this link of the medical sphere. As a result, conflicts and tensions can arise between nurses and rescuers. Szwamel & KurpaS (2019), have revealed an annual increase in the number of hospitalizations in hospital emergency departments (EDs) in the Polish Voivodeship (13 815 - 2012, 14 192 - 2013, 15 123 - 2014) and the number of medical procedures performed in departments (mostly I - III categories), as well as a low level of admission from intensive care units (Department of Anaesthesiology and Intensive Care). The total number of consultations of primary care physicians and the total number of medical services provided at night and on holidays has also increased. Leszczynski et al. (2019), estimated the level of burnout at work among professional workers of Emergency Medical Services (EMS) in Poland, whose average score was 131,0 points out of 252 with a standard deviation of 31,47. That is, a significant difference in burnout has been found among the groups of emergency medical workers, the highest level of which is in the groups of helicopter emergency medical service (HEMS), compared to other services (ground emergency medical service, emergency department, etc.). Demczyszak et al. (2021), have investigated the difference between the use of medical and non-medical services before the planned or emergency hospitalization of the elderly population of Poland during strict quarantine due to the SARS-CoV-2 pandemic (Behnam et al., 2011; Widgren & Jourak, 2011; Widana et al., 2021). Scientists have found that elderly people in the period of emergency hospitalization are more likely to seek outpatient care for specialists in various fields covered by insurance. Major et al. (2020), assessed the impact of the SARS-CoV-

2 pandemic on bariatric care in Poland, identifying restrictions on access to bariatric care and redirection to telemedicine. Polish surgeons have noted their readiness to resume bariatric surgery immediately after the pandemic (Zhang et al., 2020; Clase et al., 2020), which, in their opinion, will not affect the safety of bariatric surgery in the future. After all, the expectations of citizens and finances will be the main problems of postponed medical care (Major et al., 2020; Tilyakov et al., 2021).

Švarcová et al. (2016), have identified the basic problems of crisis management in emergency medical services in the Czech Republic in case of emergencies with massive health disorders, problems connected with training of crisis management workers. The legislation of the Czech Republic on EMS does not define a specific professional profile to ensure staff preparedness for emergencies and crisis management.

The ambulance subsystem of the Czech Republic has been partially described in the scientific work of Bos et al. (2015), in particular, the organization and staff, legislation, quality of services and safety, patients' views on the quality of ambulance. In the Czech Republic, emergency medical care is regulated at the national level, which is common in European countries, including cooperation with other medical institutions, police, rescue services, the response time of 5-15 minutes, funding from the budget, etc. Alexa et al. (2015), describe the health care system of the Czech Republic, including changes in the organization and management, financing, health care delivery, reforms, and overall efficiency of the health care system. It should be noted that mortality from respiratory diseases is lower than the EU average. However, mortality rates from diseases of the circulatory system and malignant neoplasms, rates of use of medical services (outpatient contacts and the average length of stay in emergency health care facilities) are much higher than the EU average.

In the study of Tušer & Navrátil (2020), an assessment of the significance of the criteria for the preparedness of personnel in emergency departments in medicine on a 10-point scale has been proposed (1 - the least important criterion, 10 - the most significant one). Estimates of employees of crisis preparedness departments indicate that the most significant factor for contingency/emergency management in the Czech Republic are cooperation with the RIS and coordinated preparedness, the readiness of the deployed personnel of the State Emergency Service, and the means of communication, which fall under the responsibility of the emergency preparedness units.

Table 1

The significance of the criteria for the preparedness of emergency medical personnel in the Czech Republic for emergencies

Criterion	Average assessment of readiness (estimated by personnel)	Significance rating
Planning (emergency) documentation	6,71	7
Preparedness of the emergency staff preparedness units (management of human resources)	6,86	6
Preparedness for effective coordination using the IRS elements	8,86	1
Means of communication during emergency events/emergencies	8,14	3
Preparedness for practice due to exercises realization	7,14	5
The working group is deployed during emergencies	8,28	2
The readiness of facilities for emergencies	7,43	4
Funding	6,43	8

Source: Tušer & Navrátil (2020).

Thus, the subsystem of emergency medical care in Poland and the Czech Republic, reforms, organizational shortcomings, and approaches to solving problems have been sufficiently described in the scientific literature. However, there are no comparative studies of the organization of treatment in emergency health care facilities in the conditions of the COVID-19 pandemic.

2 Materials and Methods

The qualitative content analysis of the organization of emergency medical care in the conditions of a pandemic in Eastern European countries has been used in the research. The COVID-19 Health System Response Monitor (HSRM) database and the Health Systems and Policy Monitor (HSPM) database have been used for conducting the analysis. HSPM is an innovative platform with a detailed description of health care systems, reforms, and changes in service management policies, in particular on the Urgent and Emergency care subsystem. The HSRM database contains the sections of information as follows: 1. Preventing transmission. 2. Ensuring sufficient physical infrastructure and workforce capacity. 3. Providing health services effectively: 3.1. Planning services. 3.2. Managing cases. 3.3. Maintaining essential services. 4. Paying for services. 5. Governance. 6. Measures in other sectors. The following Eastern European countries with a similar level of social-economic development were selected for analysis, namely: Poland and the Czech Republic.

3 Results and Discussions

3.1 Urgent and emergency care of Poland

The operation, organization, and emergency care funding in Poland are regulated by the Law on State Medical Care as of 2006. According to the law, emergency care is mean medical care that provide by staff for patients with a life-threatening condition, provided by emergency personnel in an outpatient setting or a hospital emergency ward, or by a worker at the unit of emergency care. Emergency care is available without a referral. Emergency pre-hospital care is free of charge for all patients in the territory of Poland, regardless of insurance or any other medical conditions to pay ([Capuzzi et al., 2020](#); [Brown, 2021](#); [Fattakhov et al., 2021](#)).

The structure of the State Medical Rescue System (SMRS) of Poland includes emergency departments of hospitals, ambulance teams that include aviation teams for rescue. In Poland, 14 centers of trauma and 46 hospitals or department specialize in emergencies, which cooperate with the State Medical Rescue System. The state medical system of rescue cooperates with different services of emergencies, for example, fire department and police. In 2018, in Poland was 229 departments of hospital emergencies and 1453 teams of an ambulance. 23 of the teams were aviation teams for rescue.

Traumatology centers and other specialized medical institutions, which are included in the plans of the voivodships, cooperate with the SMRS. In the voivodship action plans of the SMRS, the voivodes determine the level of potential threats to the life and health of the population. The specifics of each voivodship taking into account: the number and location of the SMRS structural units on the voivodship territory, the financing, the work coordinating; volumes of activities and areas within the subordination of each SMRS structural unit in the voivodship; information channels necessary for reporting possible threats, coordinating the activities of rescue services, localizing various institutions operating as part of the voivodship medical rescue service; ways of interaction between public administration and local self-government bodies, SMRS structural elements, and other voivodships. The coordinated work of the voivodship medical services and their coordination is necessary so that in the event of large-scale rescue work and operations, the activities of the voivodship services are not limited to the framework of their voivodships, but operational cooperation and mutual provision of human and material resources is possible.

The aviation rescue service is subordinate to the Health Ministry and financed from the republican budget. The hospital emergency department's role is patient diagnostic and stabilization and transfer within 24 hours to the hospital or register for discharge. Inpatient emergency care can be organized in hospitals with the following premises, namely: a general surgery department with a trauma department (or a pediatric surgery department in case of medical services for children), an internal medicine department (children's department, if it is a hospital providing medical services to children), department of anesthesiology and resuscitation and diagnostic laboratory. In addition, the hospital emergency department should have 24/7 access to diagnostic, CT, and endoscopic examinations, as well as bedside examination equipment (vital signs, bedside X-ray kit, and mobile ultrasound scanner).

Since January 2021, hospital emergency wards in Poland must provide around-the-clock landings located on-site or nearby (a patient can be transported from the landing field for a maximum of 5 minutes). In early

2018, 181 hospital emergency wards were provided with a landing base. Polish emergency medical staff are divided into basic and specialized ones. The basic staff consists of a medical rescuer and a nurse (the basic ambulance car is designated "P"); the specialized emergency staff additionally includes a doctor (the specialized ambulance car is designated "S"). Ambulance cars are kept in hospitals or other designated departure points to evenly cover the voivodeship's territory. In 2017, there were 1 519 ambulance cars in operation in Poland, of which 68% were of type "P". Ambulance cars can usually transmit patients' data (such as electrocardiogram information) automatically to a specialized department of the hospital, and location monitored due to a medical dispatcher using GPS. In Poland, 17 voivodship emergency centers receive calls to 112 (emergency number within the EU), as well as "old" lines of medical workers (999 (medical service), 998 (fire service), and 997). After getting basic patient information, the operator in a semi-automatic way redirects the subscriber to the appropriate dispatcher (dispatchers) (fire, police, medical) together with data that was got (and information provided by geo- and cellular / telephone systems). Subsequently, ambulance crews were sent to the emergency site.

Table 2
Comparison of the main elements of Urgent and emergency care of Poland and the Czech Republic

Element of Urgent and Emergency care	Poland	The Czech Republic
Network of emergency health care facilities	Emergency medical teams, including air rescue teams, hospital emergency wards (or emergency departments in the hospitals), trauma centers, specialized hospitals, or hospital wards	Command centers, units of the operational and rescue service, the rendezvous system, and the air emergency medical service. The institutions are a component of the Integrated Rescue System, which also includes fire brigades, police.
Number of departments	229 hospital emergency wards, 1543 emergency medical teams, including 23 medical aviation rescue teams, 14 trauma centers, 46 specialized hospitals	225 command centers at hospitals
Number of staff	No data available	1026 doctors, 3087 nurses
Financing	State, completely free of charge	State, health insurance funds
Subordination	To Voivodeships	To Local authorities
Availability of private emergency service providers	Not available	Available

Source: Compiled by the author based on Health Systems and Policy Monitor (HSPM).

In general, a high level of availability and quality of emergency care is observed in Poland. In 2016, the average response time to a patient's call was 8 minutes in cities with a population of more than 10 000 and 15 minutes in other areas. The indicator was the same in almost all voivodships.

3.2 Urgent and emergency care of the Czech Republic

According to the legislation of the Czech Republic, emergency care is emergency care in case of sudden threatening situations. Since the last reform in 2011, the patient must receive emergency care within 20 minutes of calling an ambulance. Previously, the goal was to receive emergency assistance within 15 minutes, which in practice has become impossible to implement in some remote geographical areas. The Czech emergency network includes command posts, emergency rescue units, rendezvous points, and other emergency services. The system is included in the integrated nationwide rescue system along with the police

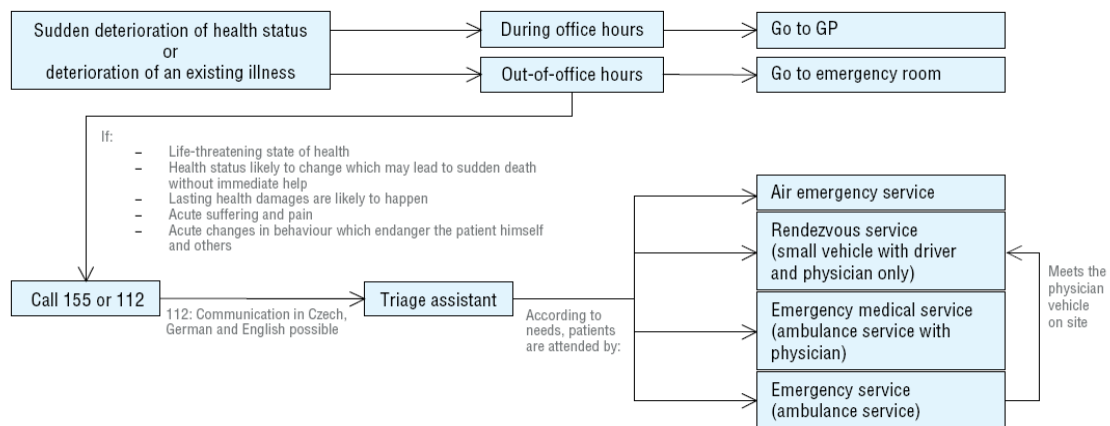
Knigavko, O., Baranova, N., Bausov, I., Dolzhenko, M., & Lantukhova, N. (2022). Organizing treatment in emergency health care facilities during COVID-19 pandemic conditions in Eastern European countries. International Journal of Health Sciences, 6(1), 149-159. <https://doi.org/10.53730/ijhs.v6n1.3582>

and fire services. As of 2021, there were 225 emergency rooms, 1026 doctors, and 3087 nurses in the country (Aidukaite et al., 2021; Azarpazhoooh et al., 2020; Azoulay et al., 2020).

The provision of emergency medical care is state-guaranteed and financing from the state budget and health insurance funds. Emergency service providers are mostly directly subordinated to regional authorities. There are several private emergency services in the Czech Republic. They operate based on contracts with individual regional emergency care providers, with the rules as state service providers. The country has a standard emergency number for the Czech Republic (155) and an emergency number as in all Europe (112), which connects subscribers with the assistant to refer the patient to the appropriate medical institution.

There is a fee of 90 kroons (€3.60) to visit the emergency room. However, most regions offer an exemption from fees for the use of their facilities. With emergency care on the decline, there are regional initiatives to ease the pressure on the emergency department by setting up a 24/7 hotline for patients to discuss their health and needs, with a doctor advising on what to do next. Typical paths for patients in emergency departments are shown in Figure 1.

Patient pathway for emergency services



Source: Authors' compilation.

Figure 1. Patient pathway for emergency services
Source: Health Systems and Policy Monitor (HSPM).

3.3 The principal elements of the organization of emergency medical care in the conditions of the pandemic: the experience of Poland and the Czech Republic

The spread of COVID-19 has necessitated a re-profiling of hospitals and a reorganization of their work, increasing pressure on emergency medical workers. In the Czech Republic, the organization and planning of medical services were characterized by changes as follows:

- Postponement of scheduled examinations, non-urgent treatment due to the possible need for emergency care for patients with COVID-19 during peak periods of morbidity. Subsequent restrictions on the availability of medical care were accompanied by a mandatory call of outpatient specialists (except for first-contact physicians); although most regions of the Czech Republic have preferred to reach mutual agreements with outpatient specialists on care provision;
- Prohibition of regular vacations of medical workers;
- Redeployment of staff in case of deterioration;
- Daily monitoring of intensive care beds and the state of their filling;
- Plans on hospitalizing patients with COVID-19 in large regional hospitals;
- Increasing the capacity of the wards for patients with COVID-19;

- Triage of patients with different forms of severity.

In the Czech Republic, primary care providers and/or regional health authorities were the first contact persons with patients suspected of COVID-19 disease. Citizens were able to use special hotlines for obtaining information, including through chatbots, which also reduced the burden on emergency medical teams. Transportation of patients from overcrowded hospitals to other regions of the Czech Republic was organized almost daily by emergency services, in some cases, involving army helicopters, emergency services, which also participated in the organization of emergency medical care for patients.

In Poland, to reduce the burden on emergency medical teams, it is recommended to use medical services via the Internet or by telephone (telemedicine). In each province, medical care was provided in at least one hospital specialized in the treatment of COVID-19 disease, significantly reducing patient transportation time. Along with this, many hospitals have special wards for patients with confirmed or suspected cases, which have been specially separated from other parts of the hospital, where, for example, scheduled procedures are carried out. Special telephone lines and an application have been introduced to provide medical care to the population. Voivodeships have received instructions from the central government authorities on coordinating the interaction of the police, fire brigade, and city guards with social assistance institutions and sanitary and epidemiological stations, especially in cases of providing information to patients suspected of COVID-19 among homeless people, to prepare them for admission ([Gualano et al., 2021](#); [Paul, 2020](#); [Rezniket al., 2021](#)).

In Poland, a special 24-hour hotline (800 190 590) has been established for patients with suspected coronavirus infection or other health problems. In addition, citizens are allowed to directly apply to the district (county) sanitary units. Each unit has a 24-hour emergency telephone available on its website. A new 24-hour hotline (+48) 22 125 66 00 was set up on March, 27 for patients outside Poland. For patients with symptoms such as shortness of breath, fever, and cough, it is recommended to get to the hospital with the infectious disease unit by own transport (not by public transport or taxi), if it is impossible, they should call an ambulance.

At the beginning of the pandemic in Poland, the National Health Fund recommended gradually reducing the number of hospitalizations, especially for scheduled surgical interventions, postponing the list of procedures to a later date if possible. All procedures in inpatient hospitals, including orthopedic, ophthalmic, cardiological, and neurological procedures, have been canceled in the past two months due to the COVID-19 pandemic, leading to large queues and patients' expectations ([Nataliia et al., 2021](#)). Appropriate services were provided to patients in need of surgery, especially to save lives. To minimize the risk of transmitting the virus to patients and healthcare professionals, citizens are encouraged to receive pieces of advice through ICT systems or other means of communication (for instance, telephone medical consultations).

In the literature review on the provision of emergency medical care in low- and lower-middle-income countries, [Kironji et al. \(2018\)](#), have identified key barriers, including as follows: culture/community, infrastructure, communication/coordination, transport, equipment, and personnel. Lack of transport was a common problem: 55% (17/31) of the persons have identified this problem as the most common. Ambulances are the most common (71%, 22/31) vehicles transporting patients. 61% (19/31) of studies state that the lack of qualified staff is a key obstacle. In the framework of the present research, it has been revealed how the problem of transport shortages was solved during the pandemic at the national level through the development of algorithms for emergency medical care. By the way, the sorting mechanism of patients has been developed in Poland and the Czech Republic. First of all, patients with a suspicion of COVID-19 disease have been provided with a piece of advice on isolation and their actions to maintain health due to hotlines ([Sukismanto et al., 2021](#)). The symptoms, with which patients should be admitted to the therapy department, have been also determined. Thus, the potential level of pressure on staff has been reduced. The second problem, that is, the lack of qualified staff, was solved through the redistribution of medical resources, which affected patients with other complex and life-threatening diseases. Attracting volunteers - students of medical specialties of the senior courses of study - was the second way to address staff shortages. During the pandemic and restriction of access to practical classes, students received practical training. The total limited number of medical staff (Figure 2), has significantly helped solve the problem of insufficient human resources. In Poland, there were 23 doctors per 10 000 population as of 2017, and in the Czech Republic, there were 41 doctors per 10 000 population as of 2019 ([WHO, 2022b](#)).

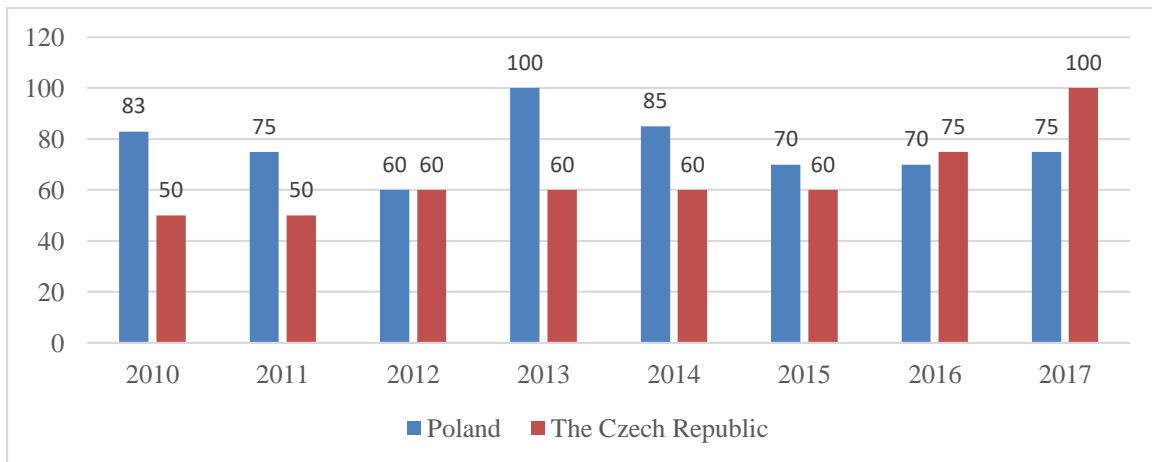


Figure 2. Human resources in medicine Index in Poland and the Czech Republic in 2010-2017
Source: WHO (2022a)

Lack of professionalism is also a significant problem: 32% (10/31) of out-of-hospital emergency care (OHEC) is provided by non-professionals without formal training. 41% (12/31) of emergency care systems provide one access telephone number to activate the emergency medical service (Kironji et al., 2018). The period of the pandemic spreading became a crisis, which provided an opportunity to expand the subsystem of digitalization of emergency medicine through the development of new lines of communication with patients. In Poland, new systems of communication with patients have been introduced and separate communication lines have been set up (Urinov et al., 2021).

In the Czech Republic, the emergency preparedness at the regional level is insufficient, which is manifested in the personal equipment of EMS emergency preparedness workstations in each region. The crisis management system is often faced with a lack of insufficiently trained and experienced staff (Švarcová, et al., 2016). Heads of the departments are well prepared for crises in the Czech Republic thanks to training and knowledge obtained, however, training in the field of crisis management is not always present or insufficient, forasmuch as it only includes the implementation of methodological test exercises, preparation of a crisis document (Švarcová, et al., 2016). Successful management of emergency cases depends on the level and the quality of training of units for emergency preparedness (Tušer & Navrátil, 2020).

4 Conclusion

In the course of the research, the following features of changes in the organization of treatment in emergency health care facilities in the context of the COVID-19 pandemic have been revealed, namely: postponement of scheduled examinations, non-urgent treatment, gradual reduction in the number of hospitalizations, especially for planned surgical interventions; limiting the availability of medical care; prohibition of regular vacations of medical workers; redeployment of personnel in case of deterioration of the condition of patients with COVID-19 and the need for the provision of emergency medical care; daily monitoring of intensive care beds and their filling status to predict the possible need for emergency care; implementation of plans on hospitalizing patients with COVID-19 in large regional hospitals; increase the capacity of wards for patients with COVID-19; triage of patients with different forms of severity. At the same time, in the Czech Republic, these features were manifested to a greater extent, while in Poland attention was focused on self-help algorithms in case of illness and the provision of telemedicine services through the creation of telephone consultation lines. Cooperation between different subsystems of emergency medical care has been strengthened in these countries.

Acknowledgments






We are grateful to two anonymous reviewers for their valuable comments on the earlier version of this paper.

References

- Aidukaite, J., Saxonberg, S., Szelewa, D., & Szikra, D. (2021). Social policy in the face of a global pandemic: Policy responses to the COVID-19 crisis in Central and Eastern Europe. *Social Policy & Administration*, 55(2), 358-373.
- Alexa, J., Rečka, L., Votápková, J., van Ginneken, E., Spranger, A., Wittenbecher, F., & World Health Organization. (2015). Czech Republic: health system review.
- Azarpazhooh, M. R., Morovatdar, N., Avan, A., Phan, T. G., Divani, A. A., Yassi, N., ... & Di Napoli, M. (2020). COVID-19 pandemic and burden of non-communicable diseases: an ecological study on data of 185 countries. *Journal of Stroke and Cerebrovascular Diseases*, 29(9), 105089. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105089>
- Azoulay, E., De Waele, J., Ferrer, R., Staudinger, T., Borkowska, M., Povoas, P., ... & Cecconi, M. (2020). Symptoms of burnout in intensive care unit specialists facing the COVID-19 outbreak. *Annals of intensive care*, 10(1), 1-8.
- Behnam, M., Tillotson, R. D., Davis, S. M., & Hobbs, G. R. (2011). Violence in the emergency department: a national survey of emergency medicine residents and attending physicians. *The Journal of emergency medicine*, 40(5), 565-579. <https://doi.org/10.1016/j.jemermed.2009.11.007>
- Bos, N., Krol, M., Veenvliet, C., & Plass, A. M. (2015). Ambulance care in Europe: organization and practices of ambulance services in 14 European countries.
- Brown, H. L. (2021). Emergency care EMTALA alterations during the COVID-19 pandemic in the United States. *Journal of Emergency Nursing*, 47(2), 321-325. <https://doi.org/10.1016/j.jen.2020.11.009>
- Capuzzi, E., Di Brita, C., Caldiroli, A., Colmegna, F., Nava, R., Buoli, M., & Clerici, M. (2020). Psychiatric emergency care during Coronavirus 2019 (COVID 19) pandemic lockdown: results from a Department of Mental Health and Addiction of northern Italy. *Psychiatry research*, 293, 113463. <https://doi.org/10.1016/j.psychres.2020.113463>
- Clase, C. M., Fu, E. L., Ashur, A., Beale, R. C., Clase, I. A., Dolovich, M. B., ... & Carrero, J. J. (2020, July). Forgotten technology in the COVID-19 pandemic. Filtration properties of cloth and cloth masks: a narrative review. In *Mayo Clinic Proceedings*. Elsevier. <https://doi.org/10.1016/j.mayocp.2020.07.020>
- Demczyszak, I., Mazurek, J., Marciniak, D. M., Hap, K., Kuciel, N., Biernat, K., & Sutkowska, E. (2021, November). The Use of Medical and Non-Medical Services by Older Inpatients from Emergency vs. Chronic Departments, during the SARS-CoV-2 Pandemic in Poland. In *Healthcare* (Vol. 9, No. 11, p. 1547). Multidisciplinary Digital Publishing Institute.
- Dubberke, E. R., Reske, K. A., Noble-Wang, J., Thompson, A., Killgore, G., Mayfield, J., ... & Fraser, V. J. (2007). Prevalence of *Clostridium difficile* environmental contamination and strain variability in multiple health care facilities. *American journal of infection control*, 35(5), 315-318. <https://doi.org/10.1016/j.ajic.2006.12.006>
- Fattakhov, N., Normatova, S., Madaminov, S., Tilyakhodzhaeva, G., & Abdulkhakimov, A. (2021). Hirudotherapy as an effective method for treatment of migraine - a disease of unknown etiology. *International Journal of Health & Medical Sciences*, 4(2), 232-237.
- Gualano, M. R., Sinigaglia, T., Lo Moro, G., Rousset, S., Cremona, A., Bert, F., & Siliquini, R. (2021). The burden of burnout among healthcare professionals of intensive care units and emergency departments during the COVID-19 pandemic: A systematic review. *International journal of environmental research and public health*, 18(15), 8172.
- Kaye, A. D., Okeagu, C. N., Pham, A. D., Silva, R. A., Hurley, J. J., Arron, B. L., ... & Cornett, E. M. (2021). Economic impact of COVID-19 pandemic on healthcare facilities and systems: International perspectives. *Best Practice & Research Clinical Anaesthesiology*, 35(3), 293-306. <https://doi.org/10.1016/j.bpa.2020.11.009>
- Kironji, A. G., Hodkinson, P., De Ramirez, S. S., Anest, T., Wallis, L., Razzak, J., ... & Hansoti, B. (2018). Identifying barriers for out of hospital emergency care in low and low-middle income countries: a systematic review. *BMC health services research*, 18(1), 1-20.
- Leszczyński, P., Panczyk, M., Podgórski, M., Owczarek, K., Gałązkowski, R., Mikos, M., ... & Gotlib, J. (2019). Determinants of occupational burnout among employees of the Emergency Medical Services in Poland. *Annals of Agricultural and Environmental Medicine*, 26(1), 114-119.

- Major, P., Stefura, T., Wysocki, M., Małczak, P., Rzepa, A., Proczko-Stepaniak, M., ... & Pędziwiatr, M. (2020). Impact of SARS-CoV-2 pandemic on bariatric care in Poland: results of national survey. *BMC surgery*, 20(1), 1-7.
- Nataliia, V., Barzylovych, A., Zabolotna, A., Boiko, M., & Rybchych, I. (2021). Healthcare facilities management in digitalization context. *International Journal of Health Sciences*, 5(3), 429-440. <https://doi.org/10.53730/ijhs.v5n3.1773>
- Nyström, M., Dahlberg, K., & Carlsson, G. (2003). Non-caring encounters at an emergency care unit—a life-world hermeneutic analysis of an efficiency-driven organization. *International journal of nursing studies*, 40(7), 761-769. [https://doi.org/10.1016/S0020-7489\(03\)00053-1](https://doi.org/10.1016/S0020-7489(03)00053-1)
- Paul, R. (2020). Europe's essential workers: Migration and pandemic politics in Central and Eastern Europe during COVID-19. *European Policy Analysis*, 6(2), 238-263.
- Reznik, A., Gritsenko, V., Konstantinov, V., Khamenka, N., & Isralowitz, R. (2021). COVID-19 fear in Eastern Europe: validation of the fear of COVID-19 scale. *International journal of mental health and addiction*, 19(5), 1903-1908.
- Sagan, A., Kowalska-Bobko, I., & Mokrzycka, A. (2016). The 2015 emergency care reform in Poland: Some improvements, some unmet demands and some looming conflicts. *Health policy*, 120(11), 1220-1225. <https://doi.org/10.1016/j.healthpol.2016.09.009>
- Sukismanto, S., Hartono, H., Sumardiyono, S., & Andayani, T. R. (2021). Social support role of occupational safety and health implementation in informal sector during COVID-19 pandemic. *International Journal of Health Sciences*, 5(3), 416-428. <https://doi.org/10.53730/ijhs.v5n3.1746>
- Švarcová, I., Hošková-Mayerová, S., & Navrátil, J. (2016). Crisis management and education in health. In *Proceedings of the 7th ICEEPSY International Conference on Education and Educational Psychology, Rhodes, Greece* (pp. 11-15).
- Szwamel, K., & KurpaS, D. (2019). Assessment of the health care system functioning in Poland in light of the analysis of the indicators of the hospital emergency department (ED) and primary health care (PHC)—proposals for systemic solutions. *Family Medicine & Primary Care Review*, (2), 164-173.
- Tilyakov, H. A., Valiyev, E. Y., Tilyakov, A. B., & Tilyakov, A. B. (2021). A new approach to surgical treatment of victims with pelvic and femoral fracture injuries, taking into account the severity of the condition and the severity of the injury. *International Journal of Health & Medical Sciences*, 4(3), 338-346.
- Tušer, I., & Navrátil, J. (2020). Evaluation criteria of preparedness for emergency events within the emergency medical services. In *Qualitative and Quantitative Models in Socio-Economic Systems and Social Work* (pp. 463-472). Springer, Cham.
- Urinov, M., Alikulova, N., Zukhritdinova, D., Usmonov, M., & Urinov, R. (2021). Clinical, laboratory and instrumental indicators in patients who have undergone COVID-19. *International Journal of Health Sciences*, 5(3), 403-415. <https://doi.org/10.53730/ijhs.v5n3.1719>
- WHO (2022a). Human resources (IHR 2010-2017).
- WHO (2022b). Medical doctors (per 10 000 population).
- Widana, I.K., Sumetri, N.W., Sutapa, I.K., Suryasa, W. (2021). Anthropometric measures for better cardiovascular and musculoskeletal health. *Computer Applications in Engineering Education*, 29(3), 550-561. <https://doi.org/10.1002/cae.22202>
- Widgren, B. R., & Jourak, M. (2011). Medical Emergency Triage and Treatment System (METTS): a new protocol in primary triage and secondary priority decision in emergency medicine. *The Journal of emergency medicine*, 40(6), 623-628. <https://doi.org/10.1016/j.jemermed.2008.04.003>
- Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance Research Letters*, 36, 101528. <https://doi.org/10.1016/j.frl.2020.101528>

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