
The Role of Polish Armed Forces in the Fight Against Epidemiological Threats (SARS-Cov-2)

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Abstract:

First, the authors will refer to the general tasks that the armed forces are faced with in connection with the epidemiological threat. Then, the tasks and areas of Polish soldiers' involvement during the fight against the pandemic will be presented. Further, the impact of the existing threat on the functioning of the armed forces will be analyzed. Finally, based on the analyses carried out, conclusions will be drawn to boost the readiness for epidemiological threats, allowing the appropriate state security level to be achieved more effectively.

The appearance of SARS-Cov-2 coronavirus, causing the COVID-19 disease in Poland, was a new and unprecedented threat posing an enormous challenge to the state security management system. Therefore, the armed forces have been involved in the fight to stop the pandemic quickly and efficiently. Primarily, the services of territorial defense forces, operational forces, and cadets were relied upon. Soldiers support the health service, carry out preventive measures, and monitor and control national borders. They participate in mitigating the effects of the crisis and in strengthening the resilience of local communities. They support the activities of local government and sanitary institutions.

The evolving pandemic has become a test of military units' effectiveness and readiness taking part in the fight. military units' effectiveness and readiness taking part in the fight. This allows us to draw conclusions that are significant for the armed forces' on-going operations and define future directions concerning modernization and development.

Keywords: *Involvement of soldiers in the fight against the pandemic, strategic management, SARS-Cov-2, state security, crisis situations, pandemic.*

JEL codes: *I10, I18, I19.*

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1. Introduction

The sudden outbreak and severe consequences of the SARS-CoV-2 coronavirus pandemic make it a widely discussed topic in the literature. The presented research covers many aspects of this issue. It is focused primarily on the medical side of the disease [37, 41] and the possibilities of curing it [38, 29]. Also popular are models forecasting the development of the phenomenon over time [40, 1] and analyses assessing its effects, especially economic ones [33, 3]. Counteracting the threat, which takes many lives every day, requires all possible means, including the military. The publications assess the significance and role in the fight against coronavirus of the armed forces of various countries, e.g., Iran [39], France [35], Russia [2], or South Korea [30] and the involvement of soldiers in supporting activities. The pandemic's impact on such military powers as the USA [36] and NATO [32] is also estimated. For example, in some countries, Brazil [5], the problem of COVID-19 is almost exclusively identified with defense rather than public health and referred to as an extraterritorial threat [5].

Also, in Poland, all Polish security system units, including the armed forces, participate in activities related to reducing the spread of coronavirus. The Polish Army has been involved from the very beginning, carrying out tasks to stop the epidemic and mitigate its effects. For several months now, every day, several thousand soldiers and army workers have been taking part in the fight against the coronavirus, and their current activities are widely presented in the media. The article summarizes the operations, indicating the areas in which the soldiers' activity was particularly significant and presenting how individual groups participated in the fight against an unusual opponent. The article also shows the ability of the Polish Armed Forces to adapt to new circumstances, which turned out to be a test for the whole army, but above all for the newly formed (in 2017) Territorial Defense Forces, established, among others, to carry out crisis management tasks.

2. Specificity of the Coronavirus Pandemic

On 17 November 2019, a pandemic of COVID-19 infectious disease, caused by SARS-CoV-2 coronavirus, began in Wuhan's Chinese town. The name "COVID-19" is derived from abbreviations: "CO" from the word "corona", "VI" – virus and "D" for the disease. The number 19 indicates the year in which the threat occurred. Coronaviruses are nothing new, and they have been around for an exceptionally long time. At present, seven species are known to attack the human body [8]: human coronavirus 229E – alpha-coronavirus;

- human coronavirus OC43 (HCoV OC43) – beta coronavirus;
- human SARS virus (SARS CoV Urbani) – beta-coronavirus;
- human coronavirus NL63 (HCoV NL63, originally known as New Haven virus) – alpha-coronavirus;
- human coronavirus HKU1 (HCoV HKU1) – beta coronavirus;

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- human coronavirus of the Middle East Respiratory Syndrome – MERS virus (MERS-CoV, also: HCoV-EMC/2012, human beta-coronavirus 2c EMC/2012) – beta-coronavirus;
 - human coronavirus SARS-CoV-2 (initially 2019-nCoV, identified in Wuhan) [0].

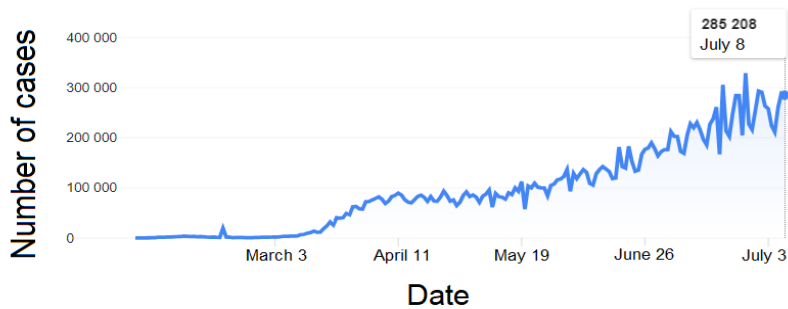
The COVID-19 virus prototype – SARS – was identified in 2003 [27], and the first human infection with it is dated to 2002. As a result of scientists' cooperation from 10 countries, including China, Great Britain, Hong Kong, and the United States [28], the coronavirus was tested and identified. At that time, scientists from the World Health Organization announced that a new pathogen from the coronavirus family had appeared, unprecedented among humans. The name SARS itself means Severe Acute Respiratory Syndrome, which fully reflects the characteristics of the disease.

After the appearance of the first cases of infection with an unidentified disease in Wuhan City in 2019, several epidemiological studies were first carried out that ruled out previous coronaviruses' appearance, causing diseases such as SARS and MERS as well as other infectious respiratory diseases. On 7 January 2020, it was confirmed that a new coronavirus causes infections, temporarily named 2019-nCov [26]. On 11 March 2020, the WHO declared the pandemic of COVID-19 infectious disease [26]. Such a state is announced in special cases and only when several conditions are met. First, the virus must cover a wide territorial range – it must occur simultaneously in various places in the world.

Additionally, a pandemic is characterized by a specific disease spread rate and a long period of infectivity, considering the time when people show no symptoms [14]. There are four phases of the pandemic, initially at the community level and spreading locally; then, the virus appears in several countries. The next phase is the appearance of outbreaks in different parts of the world, while in the final phase, it spreads to more than one continent. A state of the pandemic, due to its global incidence, is very rarely announced. The last one was in 2011 and concerned about the A/H1N1 swine flu virus. As a result of difficulties in estimating the number of deaths, it is reported that between 151,000 and 575,000 people died worldwide then [14].

According to data as of 08.08.2020, 19.5 million cases of COVID-19 infection have already been confirmed worldwide, and the number of recoveries is 11.7 million. The global mortality rate is 726,000, or 3.76% of the population. The highest number of infections occurs in the United States (4.95 million cases, 161,000 deaths), Brazil (2.97 million cases, 100,000 deaths), and India (2.09 million cases, 42,000 deaths). The number of infections appearing every day is constantly increasing, as shown in Figure 1.

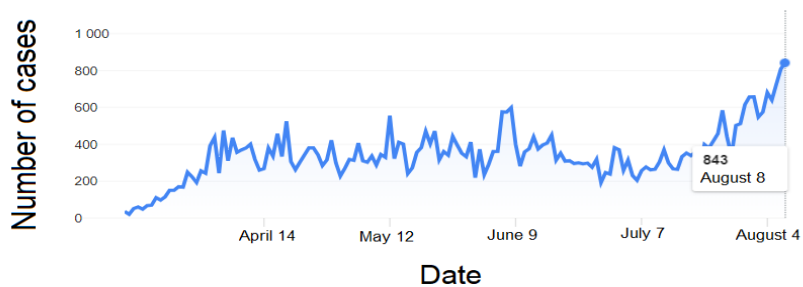
Figure 1. *Change in the number of COVID-19 cases per day in the world*



Source: Wikipedia, https://en.wikipedia.org/wiki/Template:COVID-19_pandemic_data.

In Poland, according to data as of 08.08.2020, there are 50,000 confirmed infections and 1,800 deaths. Since the beginning of August, there has been a daily increase in cases [12], presented in Figure 2.

Figure 2. Change in the number of COVID-19 cases per day in Poland



Source: Wikipedia, https://en.wikipedia.org/wiki/Template:COVID-19_pandemic_data

After infection, the COVID-19 virus initially develops in the body, called the "incubation period," and lasts about 5 days on average, but can be as long as two weeks [17]. Typical symptoms are fever or chills, coughing, breathlessness or difficulty in breathing, fatigue, muscle or body pain, headache, loss of taste or smell, sore throat, congested nose, rhinitis, nausea, vomiting, diarrhea. This list does not include all possible symptoms. It is constantly updated with new information about COVID-19.

Airborne droplets transmit the coronavirus. Hence many restrictions to mitigate and reduce its spread. They mainly concern limiting contact with other people and maintaining a physical distance of 1-1.5 m from others, especially those who cough, sneeze, or have a fever. An important aspect is regular washing of hands with soap for at least 30 seconds, which reduces the number of bacteria on hands by as much as 90% [23] and disinfecting hands each time when entering and leaving buildings

and rooms, e.g., shops or educational centers. One should also avoid touching the face, especially the eyes, mouth, and nose, as the hands come into contact with different surfaces, causing transmission of the virus to the body. To protect oneself and the people around them, one needs to control well-being and check for illness signs. If they are noticed, one should be particularly cautious and urgently call the district sanitary and epidemiological station or report directly to the infectious diseases ward or observation and infection ward [24].

The coronavirus pandemic continues to develop, and the key factor in the fight against COVID-19 is the introduction of restrictions and ongoing research on vaccine development. It will be tested and then distributed around the world. According to the WHO chief scientist Soumya Swaminathan, it may take even 5 years [25]. No one can tell if and when the disease will disappear. It is also premature to give up restrictions too early. The percentage of infected people is constantly changing. With no vaccine that can eliminate the disease, it will continue to spread.

3. The Impact of the Pandemic on the Functioning of the Polish Armed Forces

In Poland, the first confirmed case of COVID-19 was reported on 4 March 2020, and just a few days later, the World Health Organization (WHO) announced a new coronavirus pandemic. As it soon turned out, contrary to the original assumptions, this virus poses a great threat not only to the elderly and sick people but also to the young and fit ones. From the perspective of the Armed Forces, an epidemiological emergency is hazardous. Performing tasks in different locations, staying in variable environments, starting from exercises at the testing ground, through performing official activities inside and outside the unit, makes soldiers particularly vulnerable to illness. An eloquent example is a situation after the conference of NATO ground unit commanders, which took place in Wiesbaden, where the Commander General of the Kind of the Armed Forces – General Jarosław Mika – was infected [21]. Also, putting up soldiers in barracks in large groups increases this risk. Confirmed infections require the immediate isolation of infected soldiers as well as potential contact persons. All of this may limit the army's ability to maintain combat readiness.

The coronavirus pandemic affects the functioning of the Armed Forces both in the short and long term. In a short period of time, it results from the ongoing possibility of infection among soldiers; it favors the current restrictions on the performance of official tasks, movement, or interpersonal contacts. This makes it difficult to carry out training, also on a large scale, such as all reservist exercises planned between March and the end of May 2020, canceled by the Chief of General Staff of the Polish Army's decision. They included training 50,000 reserve soldiers in a new, more intensive, and extended (5-12 days) mode, replacing the previous one-day meetings [18].

The pandemic also affected international training and the transfer of troops. The limited or banned movement between countries necessitated a modification of the original assumptions in implementing such important exercises as "Defender-Europe 20" or "Cold Response 20". The first is an international exercise organized by the United States Army Europe – USAREUR, which was to take place in April and May 2020. The main task was to transfer 20,000 American soldiers with the equipment. These exercises were also intended to raise the level of strategic readiness and increase the defense of the eastern flank by developing procedures for responding to the emerging challenges of the modern battlefield and deter a potential aggressor. The number of soldiers involved was to be 37,000 from 18 countries. However, because of the coronavirus, only 9,000 soldiers and 3,000 military equipment arrived in Europe.

The "Cold Response 20" exercise, which is carried out cyclically (every two years) in Norway, is to shape the tactical capabilities of the subunits. In the Arctic polar climate, soldiers perform tasks in difficult terrain, subjected to shallow temperatures. Norway is the host country in the "Cold response," and in the exercises planned for 2-18 March, 16,000 soldiers from Norway, Belgium, Denmark, Finland, France, Germany, the Netherlands, France, Sweden, the UK, and the USA were to be hosted. Due to the coronavirus incidence in Norway, a decision was made to discontinue the exercises [7].

In the long term, the most important problem caused by the SARS-CoV-2 virus is the slowdown of the national economy. The introduction of significant restrictions and the necessity of suspending many companies' activity results in a decrease in GDP, which is a determinant of the level of defense spending (in Poland it is, 2% of GDP). Additionally, the total aid provided for mitigating the pandemic's economic effects is expected to amount to PLN 212 million, which constitutes as much as 9.2% of the Polish GDP [20]. Meanwhile, the ambitious Technical Modernization Plan, implemented in 2021-2035, assumed a project with a budget of PLN 524 million [19], but they were calculated assuming favorable GDP dynamics.

Given the current economic growth situation, stable regression, plans involving large military investments will certainly be postponed. Not all modernization assumptions will come to fruition, so it is important to choose the most important and cost-effective army modernization programs that will not leave Poland in a backward position concerning other countries. The coronavirus pandemic can significantly delay key programs such as anti-aircraft defense, anti-tank weapons, helicopters, and command systems. The modernization of the army is an essential aspect of the Polish Army's development, determined the primatial army's development. Having a modern army implies having the latest and modernized equipment. Decisions taken nowadays will impact the subsequent, multi-annual program at strengthening and improving the country's defense. Therefore, it is important to choose the elements of an army development strategy that will ensure a balance between financial

possibilities and the expected effect and the cost to the state. If insufficient or inappropriate decisions are taken, this will have subsequent consequences in the process of repairing delays in development, e worst case results in a reduction in the armed forces' defense capabilities.

4. Tasks of the Army in Crises

The Polish Army plays an important role also during non-military state crises. Soldier personnel resources, equipment, and organizational capacity constitute an important link in managing such situations. According to the "National Security Strategy of the Republic of Poland," the Armed Forces of the Republic of Poland are to take an active part in crisis management, deepen and improve their ability to assist public authorities as well as to the society [31]. These are terrorist threats, natural disasters, as well as human-made catastrophes. The specific tasks of the army in crises are regulated by basic legal acts, which include, among others:

- National Security Strategy of the Republic of Poland 2007;
- Act of 21 November 1967 on the Universal Obligation to Defend the Republic of Poland;
- Act of 18 April 2002 on the State of Natural Disaster;
- Act of 21 June 2002 on the State of Emergency;
- Act of 26 April 2007 on Crisis Management.

These also act concerning the functioning of the Police, the State Fire Service, the State Medical Rescue Service, which stipulate that in the case of insufficient forces and resources allocated from the above-mentioned structures, the Polish Armed Forces may provide support using their units and subunits. These documents define the functioning of the armed forces during a crisis, primarily in terms of cooperation at the departmental level.

Within the framework of a crisis situation, soldiers can carry out tasks concerning mainly [31]:

- counteracting natural disasters and their effects;
- supporting counter-terrorism activities of the Police;
- support in risk monitoring activities;
- organizing and performing rescue and search operations;
- assessing the consequences of events occurring in the specific area regarding the presence of the threat;
- evacuating endangered people and property;
- adapting the conditions for the temporary presence of the population at risk in designated places;
- support in the protection and defense of property left behind during the threat;
- assistance in isolating emergency or rescue locations;
- conducting activities consisting in providing medical assistance and implementing

- sanitary and anti-epidemic actions;
- assistance in repairing and rebuilding the technical infrastructure;
- eliminating the contamination;
- carrying out activities with the use of specialist equipment as well as explosives, which are in the possession of the Armed Forces of the Republic of Poland.

An important aspect are also the tasks of logistical support for the victims and other subunits that perform activities in the area of emergency. The logistic support includes, among others [34]:

- supporting civilian forces in the supply of water and food;
- supporting and organizing transport services;
- preparing accommodation for temporary stays;
- other activities resulting from the current needs of the population as well as organizations involved in the coordination of crisis resolution.

These tasks are carried out by the main executive formations of the Polish Armed Forces, designated to support actions in counteracting the effects of crisis situations, including [34]:

- Biological Reconnaissance Teams;
- Engineering Rescue Battalions;
- Air Rescue Group;
- Chemical and Radiological Emergency Teams;
- Ground Search Groups;
- Explosive Ordnance Disposal Patrols;
- Territorial Defense Forces.

The participation of the Polish Armed Forces in crises is significant and multidimensional. Both current and emerging dangers and problems make it important to train soldiers permanently and comprehensively so that their coordination is the best possible and their potential is fully exploited.

5. Areas of Polish Soldiers' Involvement in the Fight Against SARS-Cov-2

The Sars-Cov-2 virus threat situation caused the emergence of new priorities within the framework of the Polish Army's tasks. The Ministry of National Defense has been involved in preventing the spread of the virus and mitigating its effects since the beginning of the pandemic. The main tasks are border protection, patrolling the streets – with particular attention to people in quarantine – delivering food and personal protection products, support for health professionals, care for residents as well as combatants. The air force, using its aircraft and helicopters, carries out the medical evacuation. Soldiers of the Polish Army are strongly involved in the crisis, fulfilling the role that the Minister of National Defense, Mariusz Błaszczak,

described as follows: "This is how I see the role of the Polish Armed Forces – assisting in the face of the threat to the life and health of the compatriots" [6].

There are 14 military hospitals available to help fight against the virus and 5 centers of preventive medicine. Additionally, the Center for Diagnostics and Control of Biological Hazards in Puławy and the Military Institute of Hygiene and Epidemiology, among others, perform laboratory tests for the presence of coronavirus. In total, there are 7 such military laboratories in Poland, 2 of which are mobile ones. The Military Sanitary Inspection also plays an important role. Its main tasks include planning, organizing, and coordinating preventive and ongoing sanitary supervision, sanitary and epidemic protection, sanitary and epidemiological reconnaissance, and coordinating and supervising epidemiological investigations [22]. The Ministry of Health is also supported by task forces operating in each voivodeship. They have at their disposal qualified medical personnel and equipment to support their activities. These include sanitary vehicles, minibusses, disinfection equipment, and facilities (e.g., a field hospital) for quarantine.

Most of the new responsibilities resulting from the pandemic have been assigned to the Territorial Defense Forces (WOT). WOT soldiers were directed to preventative actions already in Poland's first days of the virus's appearance. They support the Border Guard by controlling border crossing points, setting up patrols and services at control points. Their responsibilities also include assistance within 14 airports – in the measurement of travelers' temperature, collecting and segregating documentation concerning people arriving in Poland, etc.

WOT soldiers provide support for veterans and combatants, helping older adults who, being at high risk of infection, should limit contact with others and not leave home unless necessary. Soldiers deliver supplies, food, and medicine. The same care is given to those in quarantine. On the order of the Minister of National Defense, a special free hotline has been set up, operating 24 hours a day, which provides psychological support for people in isolation, quarantine, and those who have undergone COVID-19 treatment. Military psychologists provide specialist psychological assistance from WOT.

Chemical troops make a significant contribution to countering the coronavirus. Already in mid-April, 300 soldiers were involved, working in 13 teams. They carried out disinfectant tasks concerning flat surfaces, means of transport (including airplanes and motor vehicles with cargo), and people. Their main role is to disinfect soldiers and military workers and service spaces and equipment used by the soldiers, especially those returning from foreign missions, thus ensuring their safe return to home, without fear of infecting the household members. Also, chemical troops support the Health Service activities by disinfecting hospitals, care and treatment centers, and nursing homes. Also, public use places such as bus stops, buildings of the Police Headquarters, City Offices, etc., are prophylactically disinfected.

Cadets of military universities are an important element of the armed forces, supporting activities to prevent the virus's spread and mitigate its effects. Both students and employees of military schools are involved in preventive measures. The Academy's Commanders have delegated cadets from the Military University of Land Forces (AWL), the Military University of Aviation (LAW), the Military University of Technology (WAT), as well as the Polish Naval Academy (AMW) to support operations, especially of the Territorial Defense Forces. AWL soldiers operating in Wrocław and its surroundings performed tasks, including assistance to combatants and military veterans, delivering supplies to those in need. Support was also provided to health centers, where cadets took over simple tasks related to keeping medical records and performing basic measurements (e.g., temperature) of patients and employees.

The students of the AMW participated in the action "Computers for Kids in the Fight against COVID-19" (original name: Komputery dla Dzieciaków w walce z COVID-19), which consisted of the collection of second-hand equipment, which was then renewed and restored by cadets. Once the small faults have been removed, the computers that were fit for use were handed over to the poorest families to allow children to participate in online lessons conducted remotely by schools. WAT cadets, in cooperation with the National Center for Cyber-Security (Narodowe Centrum Bezpieczeństwa Cyberprzestrzeni), developed a H.E.L.P. application to detect virus outbreaks. This application won second place in the HackYeah competition and was also entered into the "#BuildforCOVID19 Global online Hackathon" global competition, where about 1,500 projects from around the world were submitted [4]. Cadets from the WAT Cybernetics Faculty have also been deployed to help soldiers of the Territorial Defense Forces Command, where they create applications supporting quick reaching and helping people in quarantine and home isolation. LAW students carry out tasks related to supporting education at the General Aviation High School and the Air Force Non-Commissioned Officer School by running an e-learning platform and offering ICT support.

It is worth noting that the students at all military universities have been assigned to different units to help them carry out their duties of caring for residents. In addition to these areas, cadets – using access to the latest techniques – print protective visors for medical personnel on 3D printers, produce disinfectants used in universities, sew masks, and carry out internal control within the premises of units, canteens, and dormitories. The cadets' support also includes systematic blood donations under daily visits to the Regional Blood Donation and Blood Care Centers. These centers also send blood donation buses to military units, which ensures increased safety of such procedures. This is invaluable support due to the huge demand for blood units during the pandemic, ensuring that the desired supplies are maintained, as they are used up very quickly because of the number of people being treated. Blood donation campaigns are organized, blood donation is promoted, and soldiers, in addition to physical assistance, donate part of themselves to save other people's health, thus becoming a role model for other citizens.

Also, WOT soldiers were involved in the first-ever nationwide "Odporna wiosna" (Resilient Spring) operation, launched on 6 March 2020, and lasting until 22 June 2020. It was a way to meet the newly emerging tasks related to the spread of coronavirus. The main objective was to reduce the consequences of the crisis and increase the local community's resilience to the pandemic. Soldiers of the Territorial Defense Forces, in cooperation with institutions such as Caritas, as well as local social welfare centers, provided basic foodstuffs, personal hygiene products, and medicines. They supported, among others, combatants and the elderly and lonely, medical staff and their families, as well as people in quarantine. It was huge support for the Medical Service, the Police, and the Border Guard.

Thanks to a large number of WOT soldiers, which amounts to 25,000, it was possible to carry out such tasks on a nationwide scale. Territoriality is a key element – the soldiers help the local community in the region they live in. This increases their effectiveness due to their knowledge of the area, the local community's needs, the specificity of the area, and their ability to react quickly. WOT soldiers have been perfectly suited to their assigned tasks, characterized by their full professionalism and determination to help. At the most important moment of the operation, 50% of the WOT soldiers were involved in the tasks. At that time, they took part in 70,623 joint patrols with police officers to monitor the quarantine and in 25,317 prevention patrols [16].

The pandemic enabled WOT soldiers to act as they are intended to, i.e., to help in the event of threats to life and health, to combat natural disasters and their crisis management consequences. It was an excellent opportunity to gain further experience and build strong mutual relations between the soldiers themselves and between WOT troops and other services. Police tasks' scope was consistent with the "Resilient Spring" mission, hence the inherent need for mutual support and cooperation in duties' performance. Surely, this operation has laid a strong foundation for the further performance of tasks related to the coronavirus pandemic, where the next step is to start the operation under the code name "Trwała Odporność" (Permanent Resilience). It consists of tasks adequate to the "Resilient Spring" operation, but the operating model is changing. The most important aspects are primarily the prevention, identification, and isolation of the threat posed by COVID-19. This action will continue until the coronavirus epidemic is completely suppressed [11].

Due to the continuous emergence of new COVID-19 cases and many new outbreaks, the need to provide additional assistance to those in need is constant, supporting relevant state structures. In addition to conducting crisis operations, the soldiers resume their current duties. Recruitment to the WOT, which was suspended during the pandemic, and courses, organized by sanitary requirements, have been reinstated. It is also worth mentioning that numerous training on people's disinfection, equipment, and infrastructure are held for WAT soldiers. Instructor & methodology training courses are held with the participation of, for example, the State and

Voluntary Fire Service firefighters. This results in increased competence of the soldiers, as well as improved efficiency. After such courses, they will perform many tasks without additional support provided by the Fire Service or the Police [10].

6. Final Thoughts

Crises, despite their tragic consequences, are also an excellent test for units designated to counteract their effects and help those in need. They make it possible to verify the skills and effectiveness of the exercises in real-life threatening conditions. The COVID-19 pandemic has become such a test, especially for the soldiers of the Territorial Defense Forces. This young formation, reporting directly to the Minister of National Defense of the Republic of Poland, was established, among other things, for crisis management project implementation. According to their name, territoriality, and the provision of assistance in their region, the main idea behind creating these forces was to the local community, which they know well. Territoriality, according to the mission of these forces, means readiness to defend and support families, relatives, and neighbors [15].

That is why WOT soldiers and cadets of military universities subject to these structures could have been met everywhere from the beginning of the COVID-19 threat. Several months of the fight against an unexpected and unusual opponent showed that the contribution of WOT soldiers to shaping the safe future of the country is unquestionable.

The tasks performed by the soldiers, their scale and scope are detailed in this article. It also discusses the functioning of the entire armed forces in this difficult period, characterizing the pandemic's impact on their activities and the associated threats, especially those related to the army's modernization and professionalization. It was emphasized that current decisions on implementing multi-annual programs to strengthen and improve the country's defense would impact subsequent development in this area. Therefore, it is crucial to select and implement elements of the army's development strategy, which will not decrease the armed forces' defensive capabilities.

References:

- ABC Zdrowie. 2020. Retrieved from: <https://portal.abczdrowie.pl/co-to-jest-pandemia-czy-koronawirus-to-juz-pandemia>.
- Bostok.pl. 2020. Retrieved from: <https://www.bstok.pl/podsumowanie-wspolnych-dzialan-wot-i-policji-w-ramach-operacji-odporna-wiosna/>.
- Braula. A. 2020. <https://www.o2.pl/informacje/kiedy-koniec-pandemii-koronawirusa-niepokojaca-prognoza-ekspertow-who-6510317154481793a>.
- Chatterjee, K., Chatterjee, K., Kumar, A., Shankar, S. 2020. Healthcare impact of COVID-19 epidemic in India: A stochastic mathematical model. Medical Journal Armed Forces India.

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- Defence24.pl. 2020. Retrieved from: <https://www.defence24.pl/cwiczenia-rezerwistow-odlozone-powodem-koronawirus>.
- Defence24.pl. 2020. Retrieved from: <https://www.defence24.pl/plan-modernizacji-technicznej-2021-2035-zatwierdzony>.
- Dla pacientov. 2020. Retrieved from: <https://www.mp.pl/pacjent/choroby-zakazne/koronawirus/koronawirus-warto-wiedziec/225767,koronawirus-z-wuhan-podstawowe-zasady-ochrony>.
- Dyner, A.M. 2020. Działania rosyjskich sił zbrojnych w czasie pandemii COVID-19.
- Fernandes, N. 2020. Economic effects of coronavirus outbreak (COVID-19) on the world economy. Available at SSRN 3557504.
- Forbes.pl. 2020. Retrieved from: <https://www.forbes.pl/gospodarka/koronawirus-w-polsce-tarcza-antykryzysowa-pakiet-gospodarczy-212-mld-zl-zlozony-z-5/x3mz1tn>.
- Fosvaret. 2020. Retrieved from: <https://forsvaret.no/en/coldresponse>.
- Gazetaprawna.pl. 2020. Retrieved from: <https://www.gazetaprawna.pl/artykuly/1458727,koronawirus-general-jaroslaw-mika.html>.
- Głos akademicki pismo pracowników i studentów. 2020. Wojskowa Akademia Techniczna, 3-4, 6.
- Gov.pl. 2020. Retrieved from: <https://www.gov.pl/web/obrona-narodowa/wojskowi-medycy-podczas-pandemii-pomagali-wszystkim-ktorzy-pomocy-potrzebowali>.
- Hoffmann Pfrimer, M., Barbosa, Jr, R. 2020. Brazil's war on COVID-19: Crisis, not conflict- Doctors, not generals. *Dialogues in Human Geography*, 2043820620924880. https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fabout%2Fsymptoms.html, [08.08.2020, 16:50]
- Huang, M., Tang, T., Pang, P., Li, M., Ma, R., Lu, J., Hong, Z. 2020. Treating COVID-19 with chloroquine. *Journal of molecular cell biology*, 12(4), 322-325.
- Kim, J.G. 2020. Role of Military Medical Personnel as Part of the Public Sector During the COVID-19 Outbreak in Korea: A Personal Experience. *Military Medicine*.
- Kuśmerek, Z. 2014. Udział wojska w sytuacjach kryzysowych. *Zeszyty Naukowe Państwowej Wyższej Szkoły Zawodowej im. Witelona w Legnicy*, 10(1), 18-19.
- Lorenz, W. 2020. Pandemia COVID-19–konsekwencje dla NATO.
- McKibbin, W.J., Fernando, R. 2020. The global macroeconomic impacts of COVID-19: Seven scenarios.
- Medicover. 2020. Retrieved from: <https://www.medicover.pl/o-zdrowiu/koronawirus-czym-charakteryzuje-sie-obecna-pandemia,6789,n,168>.
- Nowak, E. 2009. *Logistyka w sytuacjach kryzysowych*. AON, Warszawa.
- Opillard, F., Palle, A., Michelis, L. 2020. Discourse and Strategic Use of the Military in France and Europe in the COVID-19 Crisis. *Tijdschrift voor economische en sociale geografie*, 111(3), 239-259.
- Piotrowski, M. 2020. Konsekwencje pandemii COVID-19 dla sił zbrojnych USA.
- Polska Zbrojna. 2020. Retrieved from: <http://polska-zbrojna.pl/home/articleshow/30823?t=Nieoczekiwany-test-z-gotowosci>.
- Raubo, J. 2020. Retrieved from: <https://defence24.pl/koronawirus-zatrzymal-cwiczenia-cold-response-20>.
- Rothan, H.A., Byrareddy, S.N. 2020. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *Journal of autoimmunity*, 102433.

- Sanders, J.M., Monogue, M.L., Jodlowski, T.Z., Cutrell, J.B. 2020. Pharmacologic treatments for coronavirus disease 2019 (COVID-19): a review. *Jama*, 323(18), 1824-1836.
- Shirzad, H., Abbasi Farajzadeh, M., Hosseini Zijoud, S.R., Farnoosh, G. 2020. The Role of Military and Police Forces in Crisis Management due to the COVID-19 Outbreak in Iran and the World. *Journal of Police Medicine*, 9(2), 63-70.
- Szczepaniak, A. 2020. Retrieved from: <https://infowire.pl/generic/release/534536/wot-i-ppw-wspolnie-w-dzialaniach-przeciwkryzysowych>.
- TVP3. 2020. <https://kielce.tvp.pl/48520899/trwala-odpornosc-terytorialsi-przygotowuja-sie-do-nowej-operacji>.
- WHO. 2020. Retrieved from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
- WHO. 2020. Retrieved from: <https://www.who.int/ith/diseases/sars/en/>.
- WHO. 2020. Retrieved from: <https://www.who.int/mediacentre/news/releases/2003/pr31/en/>.
- Wikipedia. 2020. Retrieved from: https://en.wikipedia.org/wiki/Human_coronavirus.
- Wikipedia. 2020. Retrieved from: https://pl.wikipedia.org/wiki/Koronawirusy#Koronawirusy_ludzkie.
- Wojska Obrony. 2020. Retrieved from: <https://terytorialsi.wp.mil.pl/>
- Wu, K., Darcet, D., Wang, Q., Sornette, D. 2020. Generalized logistic growth modeling of the COVID-19 outbreak in 29 provinces in China and in the rest of the world. arXiv preprint arXiv:2003.05681.
- Zu, Z.Y., Jiang, M.D., Xu, P.P., Chen, W., Ni, Q.Q., Lu, G.M., Zhang, L.J. 2020. Coronavirus disease 2019 (COVID-19): a perspective from China. *Radiology*, 200490.