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Regarding the modernisation of medical care system for victims of armed conflicts (Ukrainian experience)

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Abstract

This article focuseS on "Regarding the modernisation of medical care system for victims of armed conflicts (Ukrainian experience)".

Aims: The purpose of the study concerning the modernisation of medical treatment system for victims of armed conflicts is to examine the existing status, challenges and barriers for an effective medical care system, to explore innovative approaches and technologies, policy and regulatory frameworks as well as to propose strategies and highlight the ethical implications of modernising medical care for victims of armed conflict in Ukraine.

Study design: Descriptive cross-sectional study.

Place and Duration of Study: Most of the studies were conducted on patients, professionals' healthcare establishment and policy maker stakeholders.

Methodology: In order to collect secondary data from literature a questionnaire was used.

Results: 4,094 assaults and threats against the health care system were found. Harmed 1,524 healthcare personnel. 681 health professionals died. 401 health professionals were abducted. 978 occurrences involved destroyed or damaged medical facilities. The results showed the limitations and needs of the health system, obstacles in providing and obtaining health care, collaboration with neighbouring states, sustainability and development transitions conflict related policy and its implementation. Statistics show that no communicable illnesses have replaced communicable diseases as the main causes of sickness and death. Cardiovascular disease, diabetes, cancer, chronic respiratory illnesses, and mental disorders account for up to 84% of all morbidity. Antibiotic resistance has also increased as a result of the fight. They developed telemedicine, developed mobile medical facilities, and provided counselling and rehabilitation services. Academic s may help improve data quality and analysis alongside governmental and humanitarian players in Ukraine.

Conclusion: To protect healthcare in places afflicted by violence, coordinated actions across states, international organisations, and humanitarian groups are essential. The accessibility guarantee and security of health services for everyone, proactive measures, respect to international law, and ongoing healthcare expenditures are required.

Keywords: modernization, system, medical care, victims, armed conflicts, Ukrainian experience.

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Introduction

Whether they are internal or external, armed conflicts have a terrible effect on the health and happiness of people and communities and conflict victims often have wounds, trauma, and other health issues, need immediate and specialised medical attention. But there are several obstacles that often make it difficult to provide quality healthcare in conflict-affected communities, including a broken healthcare infrastructure, a lack of resources, poor legislative frameworks, and ethical issues. Reducing the frequency and intensity of armed conflicts is one of the explicit aims and recurring themes of the 2030 Sustainable Development aims. The destructive character of armed warfare creates persistent barriers to the development and prosperity of human civilisation [1-2].

Armed warfare may cause serious bodily and psychological harm, including wounds from gunshots, explosions, shelling, and other violent acts. There have been a big amount of fatalities in Ukraine as a consequence of the battle in the east, which started in 2014. These casualties have included civilians, soldiers, and fighters. The country's healthcare system has been faced with serious difficulties as a result, demanding the modernisation of the system of medical treatment for war casualties [3].

The challenges encountered in obtaining high-quality medical care differ according to the circumstance, the kind of battle, the participants, the healthcare system in place, and the humanitarian resources available. The challenges may be related to health system, including infrastructure breakdown, shortages of medicines and medical supplies or it may be related to Insecurity and Instability, legal, administrative, and other barriers. There may be issues such as collaboration with neighbouring states, sustainability and development transitions, conflict related policy and its Implementation [4–6].

Priorities for health system restoration in Ukraine discovered new ways to improve war victim medical care. This study showed that infrastructure damage, staff loss, security concerns, mass population displacement, greater health care input costs, and lower population capacity to pay for health care disrupted health services. Emergency medical services, trauma, and burns (with a 12-fold increase in the number of patients treated for similar conditions in normal circumstances), rehabilitation (with a 1.6-fold increase), and mental health conditions have all seen increased health needs because of the war, though the extent of these increases varies depending on the context. Service delivery ranks top among the four key areas, followed by capital investment, finance for health care, and institutional development [7].

At the national and international levels, legislative and regulatory frameworks are required to properly update medical care for war casualties. One such institution is international humanitarian law, sometimes known as the law of war or the law of armed conflict. A set of laws known as international humanitarian law (IHL) tries to mitigate the effects of armed conflict for humanitarian reasons. While safeguarding individuals who choose not to participate in the fights, it restricts the weapons and tactics of warfare [8]. According to the WHO, peace is necessary for a healthy, productive global population. The solution to the issue of attacks on health systems and personnel during times of conflict is necessary for the achievement of SDGs 3 and 16 [9].

A guidance document for medical teams narrated the purpose of a patient-centred mission statement for medical teams responding to health emergencies in armed conflicts and other unstable environments is to save lives, relieve suffering, safeguard vulnerable populations, and lessen the effects of war and violence in highly unstable, austere, resource-constrained environments, frequently spanning a continuum of care. Teams must take extra effort to ensure that their activities uphold fundamental humanitarian ideals, fundamental clinical standards of care, and ethical behaviour while adhering to IHL [10].

The ethical repercussions of using cutting-edge methods and technology in the context of giving medical care to battle victims are a major concern. Ethical standards lay a heavy focus on providing healthcare to everyone without distinction and making sure that international humanitarian law is effectively followed in times of armed conflict and disasters. Giving everyone equitable access to current methods and technology is crucial to preventing aggravated inequality and maintaining moral standards. This calls for providing accurate information, obtaining informed consent, preserving data security, doing in-depth research, and accounting for local cultural contexts [11].

Within the first month of the war, an armed conflict prompted many people to escape their homes, sparking a significant refugee crisis that had ramifications far beyond the Ukrainian border. People from the nearby nations have generously sent food, clothing, medicines, money, and other necessities, demonstrating their immense solidarity. Governments and other regional players have also helped by lowering rules and making accommodations for the entering migrants. These further highlight possible difficulties that might arise in Ukraine and the host nations, as well as appropriate remedies to these difficulties [12-13].

Over the last several years, an increasing number of fatal assaults have targeted hospitals and medical professionals worldwide. Practical steps military may take to better prevent unintentional assaults on medical institutions include a full, life-cycle strategy to safeguarding people in armed conflict, stronger deconfliction techniques, and more alternatives for identifying medical facilities. The essential requirement right now is to keep working on the bigger problem of raising knowledge of where medical services in conflict are located [14].

Health professionals must never be targeted since they risk their lives to help others who need medical attention. Additionally, individuals lose hope when they are unable to seek out and get medical treatment; either because the facilities have been destroyed or out of concern that they could become a target. It is impossible to understate the impact of the conflict on mental health, which affects both the general public and the medical community [15].

To increase access, quality, and efficacy of healthcare delivery, there has been a growing understanding of the need to modernise the system of medical treatment for victims of armed conflict. The goal of modernisation initiatives is to remove obstacles that prevent people from receiving medical treatment in war zones and to take advantage of chances for novel techniques to enhance healthcare for armed conflict victims. The scope of this study's research will be established by the research questions. The research will look at the difficulties that victims have while trying to receive high-quality medical care.

Research Problem

1. Limited access to quality medical care.
2. Inadequate integration of innovative technologies.
3. Inadequate policy and regulatory frameworks.
4. Ethical implications of using innovative approaches and technologies.
5. Lack of coordination and collaboration among stakeholders.

Research Focus

The research focus could be multi-dimensional, encompassing different aspects such as assessing the current state of the system, exploring innovative approaches and technologies, analysing policy and regulatory frameworks, addressing ethical considerations, enhancing coordination and collaboration among stakeholders, and learning from other settings to propose strategies for modernising the system of medical care for victims of armed conflict.

Research Aim and Research Questions

The objectives of the research article on the modernisation of medical care system for victims of armed conflict are:

1. Assess the current state, challenges, and barriers to effective medical care system for victims of armed conflict in Ukraine.
2. Explore innovative approaches and technologies for modernising medical care.
3. Analyse policy and regulatory frameworks and proposing strategies for improving medical care.
4. Highlight the ethical implications of modernising medical care for victims of armed conflict

Research Questions

1. What is the status, challenges and barriers to provide timely and effective medical care for victims of armed conflict, and how can these be addressed through modernisation efforts?
2. What policy and regulatory frameworks are currently in place for medical care for victims of armed conflict, and how effective are they in meeting the needs of the affected population?

Research Methodology

General Background

To minimise morbidity, death, and suffering among soldiers, civilians, and non-combatants via better medical treatment in war zones; to solve such problems as burns, starvation, infectious diseases, mental health issues, and lack of access to medical care in battle zones as well as gunshots and bomb injuries; to modernise medical systems for war victims by researching emergency treatment, trauma care, surgery, rehabilitation, psychological support, and public health initiatives [16]. It requires new techniques, technologies, and research-backed plans, regulations, and policies. This research includes stakeholders including governments, international organisations, academic institutions, and healthcare providers. Modernising medical therapy for war victims must include psychological help and mental health treatments. This study seeks to understand the psychological repercussions of armed conflict, such as, depression, and anxiety, and develop effective therapies, such as trauma-focused cognitive-behavioural therapy [17].

In conclusion, modernising the healthcare system for war victims is a complex and evolving field that considers clinical, technological, public health, and ethical challenges. This project aims to improve medical delivery, accessibility, and effectiveness in conflict zones to reduce war victims' morbidity, mortality, and suffering.

Sample / Participants / Group

The following sample/participants/groups will be involved in the research “Regarding the modernisation of the system of medical care for victims of armed conflicts (Ukrainian experience)”:

1. Healthcare workers and Healthcare institutions.
2. War victims.

3. Key stakeholders.

Instrument and Procedures

A questionnaire was utilised to collect the necessary data. Secondary data was acquired for the questionnaire from public and government sources using both online and offline methods. Both quantitative and qualitative procedures may be used in data analysis techniques. The study's findings may be shown as a table or graph.

Data Analysis

To summarise and define the information gleaned through surveys, quantitative data analysis may make use of descriptive statistics including frequency tables, mean, median, mode, standard deviation, and range. In the discussion section, there was just a data comparison and no data analysis.

Research Results

Health care facilities and workers Status

Results (Table 1) showed that 4,094 assaults and threats were made against the medical system. In the battle, 1,524 healthcare professionals suffered injuries. 681 health professionals died. 401 health professionals were abducted. Despite the United States Security Council's historic decision promising states to avoid assaults on healthcare institutions and hold criminals responsible, there were 978 occurrences involving health facilities that were destroyed or damaged [18].

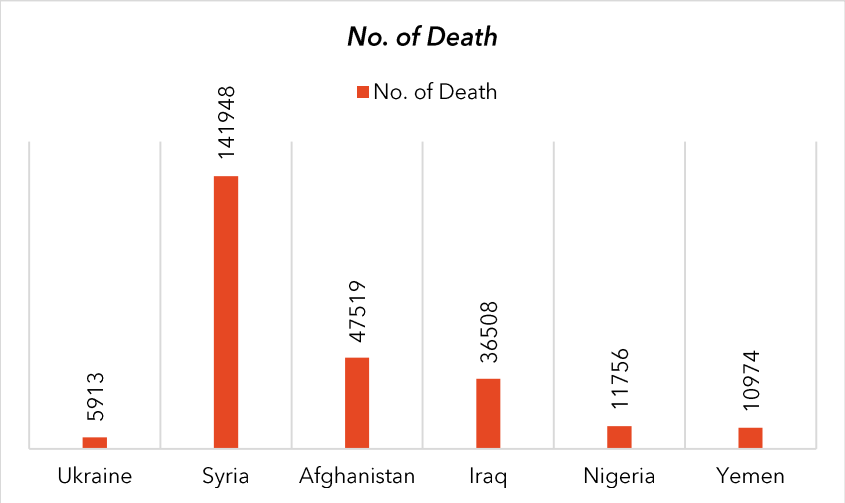
Table 1. Health care facilities and workers Attacks worldwide status

Variable	Frequency
Attacks and threats against health care in conflict	4,094
Health workers injured	1,524
Health workers killed	681
Health workers kidnapped	401
Incidents where health facilities were destroyed or damaged	978

Source: Authors' development based on ReliefWeb n.d.

The global mortality statistics (figure 1) showed 5913 in Ukraine, 141948 in Syria, and 47519 in Afghanistan because of armed conflicts [19].

Figure 1. A Number of deaths during arm conflict from 2014 - 2016



Source: Authors' development based on Uppsala Conflict Data Program n.d.

Physicians for Human Rights recorded assaults on 315 institutions in Syria over a seven-year period, while the Monitoring Violence against Health Care tool, Turkey Health Cluster, documented attacks on 135 facilities (9.64 per month) during a fourteen-month period. Yemen saw 93 assaults (4.65 per month), Iraq experienced 12, Chechnya experienced 24, Kosovo experienced 100, and Bosnia experienced 21 attacks (0.41 per month) [20-21].

The World Health Organisation has been monitoring the increasing situation in Sudan with considerable worry. Since November 2021, there have been 15 reported assaults on healthcare personnel and institutions in Khartoum and other locations, 11 of which have been substantiated [22]. One of the most prominent instances of healthcare facilities being specifically attacked as part of a

military plan is the current Syrian Civil War. Local field surveillance teams and NGOs have thoroughly recorded data on assaults on healthcare facilities in Syria thanks to technical improvements including satellite technology and social media [23–25].

The study's results highlight the grave humanitarian concern by highlighting the urgent issue of assaults on medical personnel, infrastructure, and transportation in war zones. It is important to address the problem and take precautions to avoid such assaults, which emphasises the necessity for action to safeguard healthcare in war zones. The research, however, lacks particular information on the type and context of the assaults, which may impede a thorough knowledge of the problem and make it more difficult to find workable remedies. To fully comprehend the issue and create effective measures for countering assaults on healthcare in war zones, further investigation and analysis are required.

Current state, challenges and limitations

Results (Table 2) show the current status, challenges and limitations of the system of medical care in the conflict. The first group concentrated on the limitations and needs of the health system, including infrastructure breakdown, shortages of medicines and medical supplies. The second group focused on obstacles to providing and obtaining health care, including Insecurity and Instability, legal, administrative, and other barriers. The third group focused on issues such as collaboration with neighbouring states, sustainability and development transitions conflict related policy and its implementation [26].

Table 2. Current state, challenges and limitations of the system of medical care in the conflict

Category	Focused on	Description
First group	Concentrated on the limitations and needs of the health system	• Infrastructure breakdown • Shortages of medicines and medical supplies • Shortages of health (and other) • Gaps in health data, • Lack of financial resources, • Unchecked private sector involvement, • Increase in the burden of disease, • Insecurity and instability, and • Lack of human resources
Second group	Focused on obstacles to providing and obtaining health care, including	• Insecurity and Instability • Legal, Administrative, and Other Barriers. • Healthcare becoming militarized and politicized, • Bad governance • Population movements • Increased vulnerabilities. • Gaining public access to health services and gaining access for health personnel to communities in need continue to be major obstacles.
Third group	The focused-on issues such as collaboration with neighbouring states, sustainability and development transitions, context-specificity and localization, accountability involvement, and providing Inadequate	• Short-Term International Funding, • Aid Allocation, • Healthcare Securitization, and • Clauses in Donor Contracts Related to Counterterrorism • Gaps in International Health: Conflict-Related Policy and its Implementation

Source: Authors' development based on Providing Healthcare in Armed Conflict n.d.

Results of other study showed that among the challenges attack on healthcare and health care workers are all over the globe. HCWs have been forced to leave conflict zones because of these attacks because of direct assaults and security issues. For instance, since 2011, 50% of the country's medical personnel and 95% of Aleppo's physicians have departed Syria. Since 2014, over half of the medical staff in Iraq has escaped. Since 2012, almost all the medical staff in Nigeria has left the Boko Haram-controlled areas, leading to the shutdown of 450 medical facilities. Poor health outcomes are often caused by the lack of HCWs and the instability of health systems in post-conflict settings. Another challenge is to satisfy health requirements and create a resilient [27-28]. According to research done in Syria, there was little access to healthcare throughout the conflict in the country's afflicted regions. The research offers proof that the use of common medical services, such prenatal care and outpatient visits, was adversely affected by war situations [29-30].

The above results of the study conclude to three significant issues and limitations with the medical care system in areas impacted by armed conflict. Inadequacies in the healthcare system, such as deteriorating physical settings, a shortage of treatments and supplies, and a lack of financial resources, fall under the first group. The second group of obstacles to providing and obtaining healthcare includes industry policy control, administrative and legal limitations, and insecurity. Concerns with accountability, teamwork, sustainability, context-specificity, and a lack of adequate international finance and donor contracts are the main topics of the third group. These problems need a holistic approach, taking into account the social-political determinants of health in war zones as well as the design of the health system.

Health problems and armed conflicts

Statistics show that no communicable illnesses have replaced communicable diseases as the main causes of sickness and death in Ukraine, despite the fact that the number of fatalities and injuries resulting from military operations is rising. Cardiovascular disease, diabetes, cancer, chronic respiratory illnesses, and mental disorders account for up to 84% of all morbidity. Ukraine has the highest incidence of chronic infectious diseases including HIV and TB in Europe. Due to disturbances in infrastructure and sanitation, respiratory and diarrheal illness outbreaks are very frequent in regions experiencing war. The danger of COVID-19 and illnesses that may be prevented by vaccination, such measles and polio, has increased due to low vaccination uptake, particularly in vulnerable people, and disruptions in testing and treatment. The conflict has also led to a rise in antimicrobial resistance. Malnutrition is a problem especially in new-borns and young children. Although there is a lack of evidence, it is anticipated that battle trauma will have a significant psychological effect on Ukrainians [31].

During Russia's invasion of Ukraine in 2014, internally displaced Ukrainians were more likely to report having experienced considerable combat trauma and to show signs of post-traumatic stress disorder than Ukrainians who had not been forced to flee. With underlying factors like trauma, family dissolution, loss of employment and education, forced relocation, and witnessing atrocities contributing to the psychological impacts of war, it is expected that the need for mental health and psychosocial support will be great and keep growing [32-33].

The results show that no communicable illnesses have supplanted communicable diseases as the main causes of illness and death in Ukraine, and that the negative health impacts of military operations are also becoming worse. The conflict has resulted in a number of health problems, such as heart disease, diabetes, cancer, mental health problems, and infectious diseases including HIV and TB. The dangers for respiratory and diarrheal epidemics, antibiotic resistance, and malnutrition have been made much worse by the interruptions in the healthcare infrastructure, sanitation, and immunisation programs. It is also expected that the psychological effects of the conflict, like as trauma, relocation, and witnessing crimes, would have a substantial influence on Ukrainians' mental health. To address these complicated health issues and provide the afflicted population the necessary mental health and psychological assistance, comprehensive efforts are required.

Measures and strategies undertaken by the Ukrainian government and humanitarian organizations

Officials from the Ukrainian government and humanitarian groups (Table 3) take action to reform the system of medical treatment for armed war casualties. They created mobile medical facilities, advanced telemedicine, and offered counselling and rehabilitation services.

Solutions that may be used to safeguard and preserve health systems increasing national and international adherence to international humanitarian law improving data collection to detect threats and prepare a worldwide reaction alongside governmental and humanitarian actors, academics have a role to play in enhancing data quality and analysis. Giving of humanitarian aid: In conflict-hit regions, the Ukrainian government and humanitarian groups have offered impacted communities immediate relief assistance, including food, water, shelter, and medical services. To help vulnerable groups, such internally displaced people and impacted communities, who have urgent needs; this has been done via government agencies, foreign organisations, and local NGOs.

Table 3. **Measures and strategies undertaken by the Ukrainian government and humanitarian organizations in Ukraine Armed conflicts**

Variable
Provision of humanitarian assistance (Strengthening international humanitarian law compliance)
Protection of civilians (Detecting and responding to attacks)
Health care provision (Mobile medical units, and development of telemedicine capabilities)
Displacement management and shelter support:
Humanitarian coordination and advocacy (Training, education, research and development.)
Mine action and risk education:
Psychosocial support and protection:
Peacebuilding and conflict resolution

Source: Authors' development based on american sociological association n.d..

Among the measures are Protection of people, sustain and restore health care services for impacted communities, management of displacement and assistance with sheltering, humanitarian coordination and advocacy, mine action and risk

education, providing impacted communities with psychological assistance and safety, particularly for those who have suffered trauma and loss as a result of the fighting and efforts have also been made to advance peacebuilding and conflict resolution in Ukraine. This includes diplomatic initiatives, talks, and mediation to settle the dispute amicably and deal with its underlying issues [34].

Analyses of collaboration and coordination among various stakeholders

The critical role of governmental organisations, humanitarian organisations, healthcare providers, and local communities in treating violent conflict casualties is revealed by the analysis of collaboration and coordination among various stakeholders in providing medical care to victims of armed conflicts in Ukraine. Due to divergent goals, procedures, and resources, it may be difficult for humanitarian organisations to coordinate, which might hinder the delivery of medical treatment. Hospitals, clinics, and medical professionals are busy treating Ukrainian combat victims, providing trauma care, urgent surgery, and life-saving techniques. The provision of mental health treatment also requires the collaboration of therapists. However, security risks, a lack of medical supplies and equipment, and restricted access to afflicted patients may make it difficult for healthcare workers who have been affected by a war to give adequate treatment. To satisfy the medical needs of Ukraine's war victims, good coordination between the government, humanitarian organisations, healthcare providers, and local communities is essential. However, this coordination may be challenging due to the many factors that must be taken into account for successful and meaningful healthcare delivery [35].

Discussion

Health care facilities and workers Status

According to the findings (Table 1), there were 4,094 assaults and threats made against health care. During the war, 1, 524 medical personnel sustained injuries. 681 people who worked in health care were slain. 401 health care professionals were taken hostage. 978 cases concerned health institutions that were destroyed or damaged, despite the historic resolution passed by the United States Security Council that committed states to preventing assaults on healthcare and holding criminals responsible for their actions [18]. Because of armed conflicts, the worldwide mortality data (figure 1) indicated that there were 5913 deaths in Ukraine, 141948 deaths in Syria, and 47519 deaths in Afghanistan [19]. All this shows that during war no one tried to save healthcare settings and healthcare staff. All healthcare staff has to work at the cost of their lives.

Similar results were reported by another research. In 49 conflict-affected nations in 2021, medical facilities and staff were exposed to severe and pervasive violence and obstruction of treatment. Based on information gathered by coalition member Insecurity Insight, the Safeguarding Health in Conflict Coalition's report this year lists 1,335 instances of violence or obstruction against health treatment that occurred in 2021.According to the research, assaults on healthcare facilities resulted in 161 deaths and 320 injuries among health personnel in 2021. While 713 people were apprehended, 170 healthcare personnel were abducted. In 188 occurrences, medical facilities were damaged or destroyed, and 82 of those events included military occupation. 64 health transports were taken or kidnapped, compared to 111 health transports that were destroyed or damaged [36]. The recommendations highlight the detrimental consequences of armed conflict on healthcare and the urgent need to ensure the security of medical workers and institutions in such settings.

Syria's civil conflict has killed over 250,000 people and displaced 4.8 million, according to the WHO. Syria's conflict has caused our largest humanitarian and refugee crises. Medical institutions and staff were intentionally attacked during the crisis. Physicians for Human Rights estimated that 782 medical workers were murdered and an indeterminate number were intimidated and arrested from the start of the war until September 2016. In 2012, Syria criminalised providing health treatment to opposition soldiers or sympathisers. This violated international humanitarian law, which states that no one may be penalised for ethical medical practices, regardless of who benefits [37].

Health practitioners in war zones try to treat both sides and civilians equally. Despite the Geneva Conventions and other international rules, they are increasingly attacked for their activity. Sniper fire, kidnapping, and infrastructure damage may be purposeful or accidental attacks against health professionals and institutions. The APHA suggests enhancing the tracking, investigation, and reporting of targeted violence against health professionals, enhancing compliance with international law through education and legal reform, and holding offenders accountable while removing financial and political support for their actions. The APHA requests that the WHO keep track of assaults on medical professionals and that the UN and its member states look into politically motivated attacks [38].

In conclusion, the data from several studies provide a gloomy picture of the continuous violence against health personnel, institutions, and transportation in war zones. Despite the historic decision by the United Nations Security Council to prohibit attacks on healthcare and bring perpetrators responsible. The continuous and extensive nature of these assaults highlights the critical need for action to defend health care in conflict-affected communities. It is vital for countries, international organisations, and humanitarian agencies to take proactive efforts to guarantee the safety and security of health workers, fulfil the pledges made by the United Nations, and limit the destructive effect of armed conflict on healthcare. Efforts must be strengthened to prevent assaults, hold criminals responsible, and guarantee that healthcare remains available and secure for everyone, even in the midst of crisis.

Current state, challenges and limitations

Results (Table 2) demonstrated the conflict's medical care system's status, problems, and limits, which were grouped into three categories. The first group focused on health system limitations and needs, including infrastructure breakdown, shortages of medicines and medical supplies, shortages of health and other health-related services, gaps in health data, a lack of financial resources, unchecked private sector involvement, an increase in disease burden, insecurity and instability, and a lack of human and financial resources. The second group addressed Insecurity and Instability, Legal, Administrative, and Other Barriers to health treatment: healthcare militarisation, inadequate governance, population migrations, and increasing vulnerability. Public and health worker access to populations in need is a key challenge in most violent conflicts. The third group discussed collaboration with neighbouring states, sustainability and development transitions, context-specificity and localization, accountability involvement, and providing Inadequate, Short-Term International Funding, Aid Allocation, Healthcare Securitization, and Clauses in Donor Contracts Related to Counterterrorism Gaps in International Health: Conflict-Related Policy and its Implementation.

While Four goals for the health sector are identified by another study: restoring critical health services as soon as possible while accelerating the Government of Ukraine's plan to restructure the health care system; Identifying critical choices and trade-offs that the government and its partners should take into account when undertaking sizeable recovery and reconstruction investments that will have long-term repercussions on the health system is the second capital investment. Thirdly, health financing—establishing financing priorities to maintain essential services despite severe budgetary constraints and accomplish more with the funds at hand; fourth, institutional strengthening—supporting central and local government institutions that are in charge of policy, planning, stewardship, and governance in the health sector. It also underlines that other vital investment sectors are not fully covered but will continue to be important and need to be adequately managed in national plans, most notably public health and disaster preparedness [7].

According to research on obstacles in Afghanistan, IDP health was strongly influenced by environmental variables, inadequate housing infrastructure, lack of economic opportunities, and access to water. The closure of clinics within the camps severely restricted access to healthcare services. Cost, distance, prejudice, and restricted availability to medicines and immunisations, especially for children, were barriers to using the current health care system. The distribution of vaccinations and healthcare financing were highlighted as the two top issues in key informant interviews. A strong and trustworthy patient-provider connection seemed to exist across all focus groups and key informant interviews [39].

The results conclude three kinds of existing problems and restrictions with the medical care system in conflict-affected regions. The first group focuses on the shortcomings and requirements of the healthcare system, such as the deterioration of the physical environment, a lack of medications and supplies, and a lack of financial resources while the second category focuses on impediments to delivering and accessing healthcare, including as insecurity, administrative and legal restrictions, militarisation and politicisation of the healthcare industry, the third category focuses on problems with responsibility, cooperation, sustainability, context-specificity, and insufficient international finance and donor contracts. A comprehensive strategy is needed to address these issues, one that takes into account the architecture of the health system as well as the social and political determinants of health.

Health problems and Arm conflics

In Ukraine, no communicable illnesses are the main cause of sickness and death. Since 84% of morbidity is caused by chronic conditions, such as cardiovascular disease, diabetes, cancer, chronic respiratory diseases, and mental illnesses, chronic care is required. Wartime healthcare shortages are dangerous. The lack of medical supplies and pauses in preventive, diagnostic, and treatment services are increasing unfavourable disease outcomes, placing vulnerable people at risk of severe illness and death. Cancer-stricken According to accounts, Ukrainian children have been forced to leave their homes and hospitals and travel dangerously to other countries for safety and treatment. War zones often see frequent respiratory and diarrheal outbreaks, compromising public health. Ukraine faces a deadly COVID-19 outbreak. Ukraine suffers from measles and polio outbreaks that may be averted through vaccine and antimicrobial resistance. Malnutrition, particularly in babies and toddlers, is another key worry. Nutritional deficits slow physical and cognitive development and increase the risk of subsequent health problems. Despite a paucity of data, battle trauma is expected to have significant psychological and physical impacts on Ukrainians. Trauma, family breakdown, loved ones' deaths, career and educational losses, forced migration, and witnessing atrocities. Demographic shifts due to male loss, female relocation, and one-person households may aggravate vulnerable communities' wartime situations. After ten years of the Syrian crisis, a literature assessment on the public health effects looked at mental health, maternity and child health, dental health, non-communicable illnesses, infectious diseases, occupational health, and the COVID-19 pandemic's impact on the Syrian healthcare system. The evaluation concluded with recommendations for restructuring the healthcare system in light of the present and foreseeable issues it faces [40-41].

Another research found that individuals who congregate in bunkers, live in destroyed homes and temporary shelters, or get stranded on clogged roadways, are unable to maintain excellent hygiene. Critical infrastructure damage worsens the sanitary situation by robbing populations of clean water and electricity. Infectious illnesses like typhus and cholera may become more prevalent as a result of this. Inadequate treatment for resistant infections creates a vicious cycle that increases mortality. Poor sanitary conditions combined with insufficient access to medical services in war-torn Ukraine may have the same effect. A further worry is the possibility for the spread of new zoonotic diseases, or illnesses that may be acquired from animals and spread to

people. Therefore, a series of viral outbreaks after the war might complicate epidemiological monitoring efforts in Europe and endanger the region's financial and social stability [42].

Measures and strategies undertaken by the Ukrainian government and humanitarian organizations

The establishment of mobile medical units, and development of telemedicine capabilities, are established as innovative strategies that may be used in armed conflicts. Literature showed that the number of US telemedicine physicians increased from 20% in 2020 to 40% in 2021. After COVID-19 telehealth is spreading worldwide [43], and more than 50% of doctors used computers, mobile phones, and social media to engage with patients and stay updated on medical procedures literary assessments [44]. A Saudi Arabian study indicated that younger physicians utilise telemedicine more than those with 5–10 years of experience. As younger doctors are more tech-savvy, they may practise more and use the internet to benefit patients [34].

Similarly other studies have found that up to 25% of patient-physician exchanges of information occur over the phone in settings like US internal medicine and UK primary care healthcare. This study agreed with the findings that phone consultations are the most common alternative to in-person consultations and may broaden access, convenience, and choice. The research comparing the two methods of consultation show those patients are satisfied with both equally [45–47].

In certain brutal armed situations, armed organisations may take children away from their homes and communities. These "child soldiers" may witness murders or take part in them, in addition to going through other terrible experiences. After the conflict, many former child soldiers experience rejection from their families and communities in addition to the psychological anguish and physical wounds [48].

Increasing adherence to international humanitarian law The ICRC ran two significant consultation procedures between 2012 and 2015 about enhancing the legal protection for victims of armed conflict. In accordance with Resolutions 1 and 2 of the 32nd International Conference of the Red Cross and Red Crescent, these two procedures have subsequently entered a new phase. The first's main goal is to improve legal protection for those who are deprived of their liberty due to armed conflict. The second is to enhance IHL by making IHL compliance methods more effective [49].

Better data is needed for a worldwide response to assaults that will improve the protection of people in armed conflict and other violent circumstances [50-51]. Through instruction, teaching, research, and development, academics may help state and humanitarian actors by improving the quality of data and analysis.

Investing in neighbourhood networks to bring peace Long-term implications result from failing to safeguard citizens. Doctors, teachers, and other people leave out of fear of the violence, which has an impact on refugees' inclination to return. IHL violations undermine public confidence in a functional society, which jeopardizes the restoration effort. According to Dr. Kaade, maintaining and rebuilding health systems also has a longer-term benefit of encouraging recovery and reviving hope for the survivors. Early action in war zones is increasingly required of development players for peace and development [52].

Analyses of collaboration and coordination

Among various stakeholders in delivering medical care to victims of armed conflicts in Ukraine (Table 3), including Ukraine's governmental, humanitarian, healthcare and local communities must collaborate to treat violent conflict casualties. Government agencies – national and local – coordinate and manage medical treatment in disaster zones. They organise healthcare providers and humanitarian groups, develop rules, norms, and laws, and offer resources. These organisations may provide emergency medical supplies, equipment, and labour to impacted areas. They safeguard medical staff and assure impartial, unbiased care. Humanitarian group coordination is difficult due to competing missions, processes, and resources. These may impair medical care. Hospitals, clinics, and physicians are treating Ukrainian battle wounded. They treat trauma, do emergency surgery, and save lives. Therapists must collaborate to offer treatment. However, security hazards, a shortage of medical supplies and equipment, and restricted access to afflicted persons may prevent conflict-affected healthcare personnel from delivering adequate treatment. Government, humanitarian, healthcare, and local communities must collaborate to cure Ukraine's war casualties. To offer effective and efficient medical treatment to Ukraine's war casualties, prioritising these stakeholders' engagement is tough [35, 53, 54].

Conflict zones typically have infrastructural breakdown, medication and medical supply shortages, gaps in health services, lack of health data, financial resources, and human resources. Unchecked private sector engagement may raise disease burden. Insecurity and instability hinder the health system. Healthcare militarisation, poor governance, population movements, and increased vulnerability hinder public and health worker access to health services. Conflict zones may face legal and administrative obstacles to healthcare. Conflict zones may complicate international cooperation. Health services, alleviation to development, context-specific and regional methods, and stakeholder accountability may be restricted. Short-term and insufficient foreign finance, assistance distribution, and counterterrorism terms in donor contracts may hinder healthcare supply. In conclusion, the medical care system in war zones suffers infrastructural collapse, resource shortages, insecurity and instability, legal and administrative hurdles, limited financing, and lack of coordination. These issues must be addressed to provide health care to people in need and assure stakeholder responsibility and sustainability. Countries, international organisations, and humanitarian agencies must work together to reduce the harm armed conflict causes healthcare and safeguard health professionals.

Conclusions and Implications

The results of a number of studies bring to light the precarious state of health care facilities and the personnel who work in them in regions that are experiencing violence. According to these results, health care workers and institutions are purposefully targeted and assaulted during armed conflicts, which leads to injuries, fatalities, kidnappings, and the destruction of health facilities and transportation. The violation of international humanitarian law that occurs when violence is used against health care facilities in war zones presents substantial problems and constraints to the system of medical treatment in circumstances of armed conflict. In conflict-affected regions, health care professionals and facilities are subject to serious risks, such as hostage-taking, assaults, threats, injuries, and deaths.

1. Attacks on healthcare facilities persist despite international agreements and resolutions to safeguard medical treatment in war areas, having catastrophic effects on medical personnel, medical facilities, and the people they serve.
2. Health care providers in war zones often put their lives in danger while attempting to treat both combatants and civilians, while also dealing with deliberate or unintentional assaults, sniper fire, abduction, and infrastructure damage.
3. Infrastructure breakdown, lack of medicines and medical supplies, gaps in health data, a lack of financial resources, insecurity and instability, militarisation of healthcare, insufficient governance, population migrations, and rising vulnerability are just a few of the medical care system's drawbacks and difficulties in conflict-affected areas.
4. Priorities for the health sector in conflict-affected regions include the restoration of essential healthcare services, making wise capital investments, establishing funding priorities, and bolstering organizations that are in charge of policy, planning, stewardship, and governance.

Implications:

1. Action must be taken immediately to safeguard the safety and security of healthcare professionals, uphold international agreements, and lessen the negative effects of armed conflict on the delivery of healthcare.
2. It is important to step up efforts to stop attacks on medical institutions and staff, prosecute offenders, and guarantee that everyone has access to safe medical treatment even during times of emergency.
3. Improved training and legislative changes should be made to increase conformity with international law, as well as better monitoring, tracking, investigation, and reporting of targeted violence against health professionals.
4. In order to solve the shortcomings and difficulties of the medical care system in conflict-affected regions, cooperation among surrounding governments, sustainability and development transitions, context-specificity, localization, and accountable engagement should be taken into consideration.
5. Prioritizing the requirements of the health sector in conflict-affected regions calls for adequate financing, assistance distribution, healthcare securitization, and donor contracts connected to counterterrorism to be examined and modified.
6. National plans should give top priority to disaster preparedness and public health in order to overcome the shortcomings and difficulties of the healthcare system in conflict-affected regions.

In conclusion, coordinated efforts by nations, international organizations, humanitarian agencies, and other stakeholders are needed to safeguard the medical care system in conflict-affected regions and solve its shortcomings and problems. To make sure that health services remain available and secure for everyone, even in the middle of armed conflicts, proactive measures, adherence to international law, and ongoing investments in healthcare are required.

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