

Systematic Review

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Civilian Population Victimization: A Systematic Review Comparing Humanitarian and Health Outcomes in Conventional and Hybrid Warfare

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Abstract

Objective: The main objective of this study was to summarize the Hybrid War's core characteristics and humanitarian and medical impacts.

Method: A Systematic Literature Review according to PRISMA guidelines, using the following keywords, 'Hybrid War,' 'Humanitarian Law,' 'Human Rights,' 'Lawfare,' and search engines PubMed, Scopus, Web of Science, and Gothenburg University's database to collect literature from 2000 to 2022 in English was conducted. The eligibility of qualified articles was assessed, an inductive qualitative thematic analysis was applied, and the scientific evidence of each selected piece was evaluated.

Results: The objectives of a Hybrid War are to achieve the tactical and strategic goals in a battle rather than to save civilian lives. It involves networks of state and non-state actors with various means of military and militia influences and strategies, creating difficulties in implementing, controlling, and evaluating the International Humanitarian Law's "A State responsibility" principle, to gain insight into an armed conflict. It targets populated civilian areas and raises ethical and moral concerns by using Lawfare.

Conclusions: Hybrid War's multi-domain action should be met with multi-dimensional approaches and a doctrine of 'acceptable losses.' Its characteristics and consequences should be learned and taught. Several measures need to be implemented to counteract its impacts, and a flexible surge capacity should be designed, planned, and executed.

Throughout the ages, wars have taken place in countries and between nations. Although there is no single reason why conflict should occur, 1 or several of the following reasons may constitute the cause of war: economic or territorial gain, religion, nationalism, revenge, internal disagreement (civil war), ideological diversities (revolutions), and finally, as part of a defensive plan.^{1,2} Theoretically, the causes of war can be divided into 3 groups. First, power vs. sovereignty illustrates the sovereign states' systematic, rational, and sometimes unintentional aim to strengthen their security, power, and wealth at the expense of other nations by regulating minor conflicts or enforcing agreements. These actions, even defensively motivated, are often perceived as threats, resulting in armed conflicts. The second group encompasses societal reasons, displayed by a distinction between democratic and non-democratic governments and their relationship with their citizens. Finally, a war can be caused by individual decision-makers who express their understandings of threat assessment, national interests, and the ways they achieve their goals and make decisions based on the information they receive, their personalities, and emotional states.^{2–4}

Whatever the cause, the culture of warfighting has always been conventional or irregular, displaying 2 different mindsets and 2 different approaches to warfare. Conventional warfighting occurs between states' regulated militaries or alliances. It intends to defeat the enemy's armed forces, destroy its war-making capacity, or seize/retain its territory, forcing a change in the enemy's government or policies. On the other hand, irregular warfare is defined as either guerrilla warfare (rebels, freedom fighters, and non-traditional warfighters vs. traditional armies) or terrorism, and is aimed at avoiding strength, striking weaknesses, and being unpredictable. Asymmetric warfare occurs when these 2 warfighting cultures collide.^{5–7} The current characteristics of warfare are the result of advancement in both warfighting cultures. Conventional warfare has advanced from the linear tactics employed on the battlefields of the 17th century to the early 20th century's massed firepower and speed, and the surprise and dislocation strategies used in the late 20th and early 21st centuries. On the other hand, the diverse irregular warfare has

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progressed from evasiveness, exhaustion strategies, and urban guerrilla warfare, and resulted, among others, in terrorism. These dynamic changes have altered the nature of conflicts from interstates to wars amongst the people and resulted in asymmetrical wars.^{5–8}

In 2005, Mattis and Hoffman predicted that a combination of conventional and non-conventional strategies would be the main feature of future wars (Hybrid War = HW). Such warfare would consist of methods and tactics that, besides causing medical injuries, would also enhance other aspects of war, such as psychological and information-related methods that aim to paralyze the ordinary functions, organization, and structures of society.⁷ This prediction was further approved by Western military theorists in 2008, following “Operation Desert Storm in 1991,” emphasizing that the Western military’s conventional battlefield power and technological dominance would be challenged by their adversaries using diverse and multimodal tactics to increase the complexity of battle. The ultimate danger was the use of religious groups, or ‘non-Trinitarian’ adversaries and non-state actors, who could target Western vulnerabilities without fear, knowing they cannot be defeated through a conventional military campaign in a battle.^{5,7,9,10}

Although the Soviet Union’s involvement with the Tuvan Army in 1944 is an early example of HW in Europe, most of the younger generation may recall a change in the paradigm of the war from the traditional conventional war to modern warfare in the 1970s with the Vietnam War, the battle between Israel and Arab countries on the Golan Heights, and in the Sinai desert.^{5–7,10} With an increasing number of minor conflicts, social and public health emergencies, global poverty, natural resource scarcity, climate change, migration, and an apparent rise in the number of refugees, there is a need for revisiting the roots of causes to minimize the risk for their occurrence. The ongoing war in Ukraine justifies a review of the concept of HW, comparing its outcomes to conventional warfare, and its impacts on the victims’ humanitarian law and medical management.

This systematic review summarizes the core characteristics of the HW and its humanitarian and medical impact, differentiating between conventional wars and HWs, and revealing the disturbing face of HW’s components in today’s war in Ukraine and elsewhere.

Methods and material

Systematic review

A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.¹¹ The searching process resulted in many articles based on the selected keywords in the first step. In the next step, duplicates and non-relevant articles were removed, and the authors independently studied the remaining studies’ abstracts to ensure eligibility and relevance.

A qualitative thematic analysis of the included literature based on an inductive approach was applied, aiming to study all included articles, and focusing on similarities and differences in the findings to present the tentative results.¹² Finally, each eligible study was thoroughly reviewed, and the data, including the year of publication, author’s name(s), the title of the study, and its scope, were registered. Additional articles on the reference list of included studies with relevancy for this study were added at the final stage.

The scientific evidence of each selected article was assessed using the Health Evidence Quality Assessment Tool (Appendix 1) as Strong, Medium, or Weak.¹³ The initially designed electronic search model used PubMed, Scopus, Web of Science, and Gothenburg University’s search engines to create a list of available literature in English, using the following search string: Hybrid War; Humanitarian Law; Human Rights; and Lawfare; alone or in combination.

Inclusion and exclusion criteria

Inclusion criteria: Original studies in English, based on the search keywords above, from 2000 to 2022.

Exclusion criteria: Conference papers, only abstracts, unofficial reports, non-scientific publications, and publications dealing with other topics than the main aim of this study.

Study ethics

The material used in this paper was collected online from available publications.

Statistics

No statistical analysis was conducted.

Results

Literature review

Using Hybrid War, many hits were obtained in all databases. Adding new keywords reduced the number of hits stepwise to achieve a manageable number of studies (Table 1). Figure 1 shows the process of search according to PRISMA.

A sum of 351 papers was included in the initial stage (88 from the university search engine, 169 from PubMed, 55 from Scopus, and 39 from Web of Science) (Table 1), of which 179 were found to be ineligible, and 42 papers were duplicate records. Out of the remaining 130 papers screened, 35 studies were irrelevant and excluded. From the final 95 studies, 10 studies were repetitive or incomplete. The remaining selected studies were all included.

At the final stage, 74 studies were included, of which 18 were official internet pages, and 5 were book chapters. A total of 51 papers were thoroughly reviewed for this paper and were included in Table 2. Content analysis resulted in several keywords grouped into 2 main topics: humanitarian (legal and policy) and medical impacts of conventional and hybrid warfare (Table 2).

Findings

In contrast to conventional wars, modern warfighting strategy utilizes multi-domain operations, asymmetry, and a hybrid approach to create difficulties in predicting the means and processes associated with an armed conflict.^{14–18} This process spreads the war to the masses, using conventional assaulting methods, riots, disinformation, and infected social media. It also targets military staff, resources, civilians, and civilian infrastructure to create political instability.^{17,18} Consequently, it may result in more civilian casualties than conventional wars, making estimation difficult for resource assessment and planning before the conflict, and creating clear concerns regarding the respect for International Human Law (IHL) and Geneva Convention (GC).¹⁷

Table 1. Searching strategies and outcomes of the search in scientific databases

	Gothenburg University	PubMed	Scopus	Web of Science
Hybrid War	100654	169	55	39
Int. Human. Law	10346	0	2	0
Human Rights	8769	0	0	0
Lawfare	88	0	0	0
Medical outcomes	12	0	0	2

Note: The search in Gothenburg University search engine could be refined by adding new keywords and 88 papers were included. The term 'Medical outcomes' did not add any new literature. Other search engines returned 169, 55, and 39 papers, which were included. Additional keywords did not add any further study. The bold numbers indicate the number of included studies in this paper.

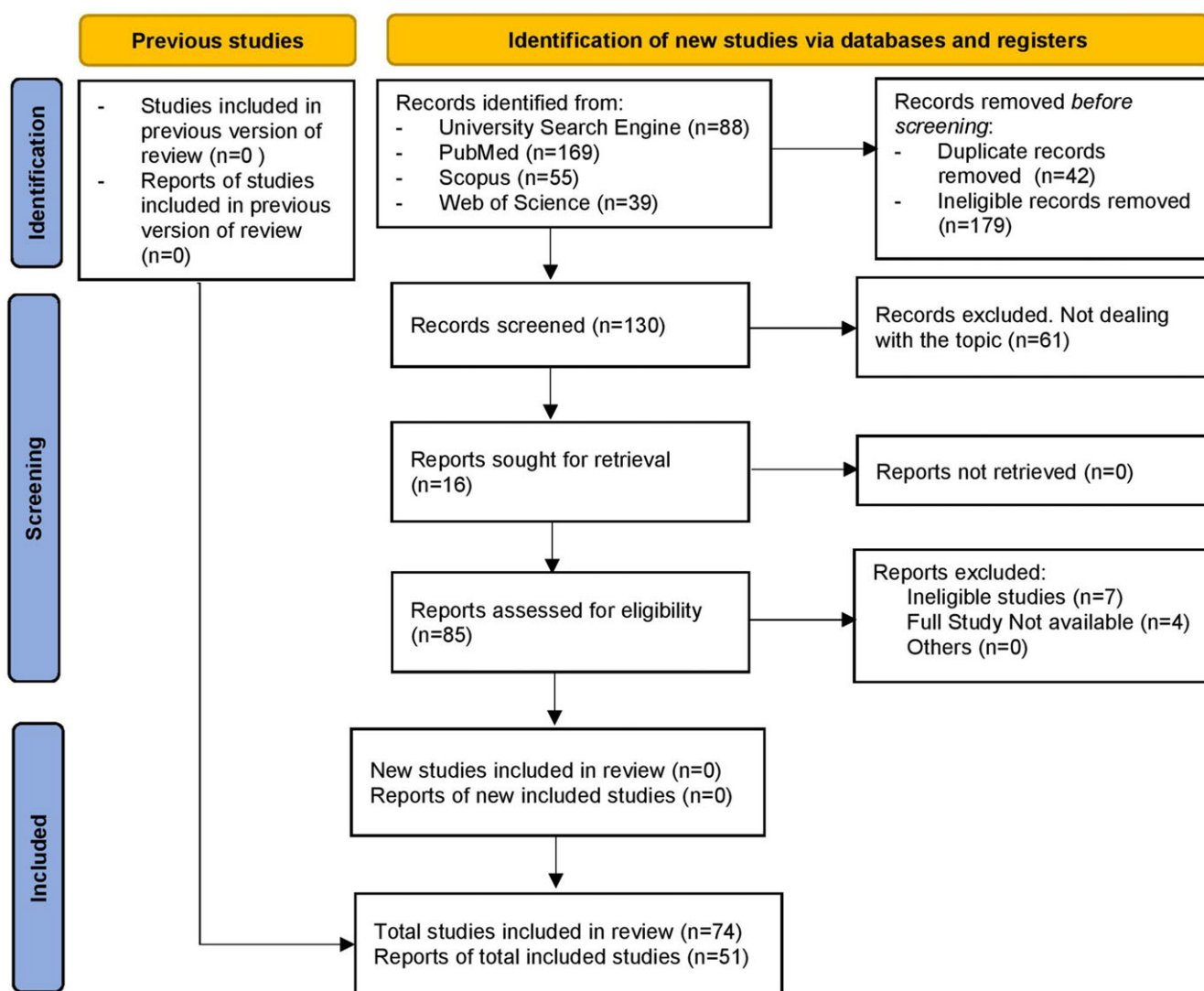


Figure 1 Illustration of the searching process according to PRISMA.

Humanitarian and medical consequences of HW

1. Humanitarian impacts of conventional and hybrid wars: Lawfare - International Humanitarian Law, Human Rights, and Geneva Convention

Traditional wars symbolize an armed conflict between 2 or several countries. However, they usually follow the IHL and GC. IHL is a

(*cf.*) “set of rules, which seek humanitarian reasons, to limit the suffering, losses, and other effects of armed conflict by restricting the means and methods of warfare to protect individuals who are not or are no longer participating in the hostilities.” The Geneva Convention is a (*cf.*) “series of treaties on the treatment of civilians, prisoners of war, and soldiers who are otherwise rendered outside the fight or incapable of fighting.”¹⁷⁻²¹ According to IHL, “A State” is responsible for all attributable violations of IHL committed by its

Table 2. The outcomes of the literature review according to PRISMA

No.	Title	First Author & Year	Main findings	Keywords	Quality
1	Command of the commons: the military foundation of US hegemony	Posen, 2003, <i>Int Secur.</i>	The military power, technology, and foreign policy	Military	M
2	Understanding fourth generation war	Lind, 2004, <i>Mil Rev.</i>	Describes future hybrid wars	Policy, Military	M
3	Future warfare: the rise of hybrid wars	Mattis <i>et al.</i> , 2005, US National Institute	Describes future wars and the use of hybrid and multi-domain warfare	Policy, Military	M
4	11 March 2004: the terrorist bomb explosions in Madrid, Spain—an analysis of the logistics, injuries sustained, and clinical management of casualties treated at the closest hospital	de Ceballos <i>et al.</i> , 2005, <i>Crit Care.</i>	Describes the outcomes of the Madrid terror attack on the chain of medical management	Medical, Policy	M
5	Asymmetrical warfare from the perspective of humanitarian law and humanitarian action	Pfanner, 2005, <i>Int Rev Red Cross.</i>	Discusses hybrid warfare concerning its impacts on the law and regulations of war	Policy, Humanitarian	M
6	Medical response to the 2005 terrorist bombings in London	Turégano, 2006, <i>Lancet.</i>	Describes the outcomes of the London bombing on the chain of medical management	Medical	M
7	Desperate times, desperate measures: the causes of civilian victimization in war	Downes, 2006, <i>Int Secur.</i>	Describes the use of various tools to create chaos and victimize civilians in war	Policy, Humanitarian	M
8	Fifty years of violent war deaths from Vietnam to Bosnia: analysis of data from the world health survey program	Obermeyer, 2008, <i>BMJ</i>	Historical overview of several wars and analysis of medical outcomes	Medical, Military	M
9	Lawfare today: a perspective	Dunlap, 2008, <i>Yale J Int Affairs.</i>	Describes how the law can be used or misused	Lawfare	M
10	Estimating war deaths: an arena of contestation	Spagat, 2009, <i>JCR.</i>	Describes the medical outcomes of wars and the lack of appropriate tools for their assessment	Policy, Medical	M
11	Military operations in urban areas	Vautravers, 2010, <i>Int Rev Red Cross.</i>	Describes the risks and danger imposed on the civilians in war	Humanitarian, Medical	M
12	Fourth-generation warfare and its challenges for the military and society	Phelan, 2011, <i>Defense Stud.</i>	Describes future warfare and its stepwise development and impacts	Policy, Military	M
13	The security demographic: population and civil conflict after the cold war	Cincotta <i>et al.</i> , 2012, <i>Pop Action Int.</i>	Describes the risks and danger imposed on the civilians in war	Humanitarian, Medical	M
14	The initial response to the Boston Marathon bombing: lessons learned to prepare for the next disaster	Gates <i>et al.</i> , 2014, <i>Ann Surg.</i>	The medical management of the terror attack in Boston	Medical	M
15	The definition of civilians in non-international armed conflicts. The perspective of armed groups	Bissonnette, 2016, <i>J Int Human Legal Stud.</i>	Describes how the definition of civilians may vary in diverse wars	Legal, Policy, Humanitarian	M
16	The 2016 World Humanitarian Summit Report Card: both failing marks and substantive gains for an increasingly globalized humanitarian landscape	Canyon <i>et al.</i> , 2016, <i>PLoS Curr.</i>	Discusses the role of international organizations in controlling a conflict	Policy, Humanitarian	M
17	Russia's hybrid war and its implications for defense and security in the United Kingdom	Bachmann <i>et al.</i> , 2016, <i>Scientia Militaria.</i>	Discusses the current security and global political situation, the impact of hybrid war, and its impact on democratic countries	Policy, Legal, Humanitarian	M
18	Europe on fire; medical management of terror attacks—new era and new considerations	Khorram-Manesh, 2016, <i>Bull Emerg Trauma.</i>	Describes the medical outcomes of modern war and its multi-domain impacts on healthcare	Medical, Military	M
19	Media, medical intelligence, and hybrid war	Ciobanu, 2017, <i>Rom J Mil Med.</i>	The role of media and medical intelligence as part of the fight against hybrid war	Policy	M
20	The transformation of targeted killing and international order	Senn <i>et al.</i> , 2017, <i>Contemp Secur Policy.</i>	Describes the possible scenarios of targeting the population in future warfare	Military, Policy	M
21	The evolution of targeted killing practices: Autonomous weapons, future conflict, and the international order	Haas <i>et al.</i> , 2017, <i>Contemp Secur Policy.</i>	Describes the possible scenarios of targeting the population in future warfare	Military, Policy	M
22	Indications and warnings in Belgium. Brussels is not Delphi	Lasoen <i>et al.</i> 2017, <i>J Strateq Stud.</i>	This study looks at threat analysis in Belgium as conducted through her intelligence fusion center	Medical, Policy	M
23	Crisis in the laws of war. Beyond compliance and effectiveness	Clark <i>et al.</i> , 2018, <i>Eur J Int Relat.</i>	Exemplifying how the laws of war can be neglected despite international efforts	Lawfare	M

Table 2. (Continued)

24	CBRN considerations in a major incident	Calder, 2018, <i>Surgery</i> .	The impact of CBRN	Medical	M
25	Hybrid war and its countermeasures: a critique of the literature	Johnson, 2018, <i>Small Wars Insurg.</i>	An overview of consequences of hybrid war and measures which might be used to counteract it	Military, Policy	M
26	Unifying the study of the causes and duration of wars	Reiter, 2018, <i>Polity</i>	The causes of war and the long-term impacts of war	Military, Policy	M
27	Chemical, biological, and nuclear threats in the hybrid war context	Padarev, 2019, <i>Int Sci J.</i>	The impact of CBRN in hybrid wars	Medical, Humanitarian	M
28	United Nations Charter, chapter vii, article 43: now or never	Burkle, 2019, <i>Disaster Med Public Health Prep.</i>	Discusses respect to the international humanitarian law	Policy	M
29	Revisiting the battle of Solferino: the worsening plight of civilian casualties in war and conflict	Burkle, 2019, <i>Disaster Med Public Health Prep.</i>	Describes hybrid war's impact on the civilian population and respect for the laws	Policy, Medical	M
30	The Las Vegas mass shooting: an analysis of blood component administration and blood bank donations	Lozada et al., 2019, <i>J Trauma Acute Care Surg.</i>	The medical management of the terror attack in Las Vegas	Medical	M
31	Countering hybrid warfare: so what for the future joint force?	Monaghan, 2019, <i>PRISM</i> .	Describes the characteristics of hybrid war and measures needed to counteract its impacts	Policy, Law	M
32	Attacks on healthcare facilities as an indicator of violence against civilians in Syria: an exploratory analysis of open-source data	Ri et al., 2019, <i>PLoS One</i> .	Explains how hybrid war may use medical facilities to impose civilians to death and injuries	Humanitarian, Medical	S
33	British operations among the people and civilian risk	Friesendorf, 2019, <i>Small Wars Insurg.</i>	Describes civilian engagement in the war	Humanitarian, Military	M
34	The future of urban warfare in the age of megacities	Konaev, 2019, <i>Focus Strateg.</i>	This study's main points are the relationship between population, conflict, and hybrid war	Humanitarian, military	M
35	A modern warfare paradigm: a reconsideration of combat power concept	Razma, 2019, <i>J Secure Sustain</i> .	Describes the modality of warfare and encounters in hybrid war and its consequences	Policy, Military	M
36	Dreaming of Tannu-Tuva: Soviet precursors to Russia's hybrid warfare	Kamusella et al., 2020, <i>New East Eur.</i>	Describes hybrid war from the Russian perspective	Policy, Law	W
37	Animus toward Muslims and its association with public support for punitive counter-terrorism policies: did the Christchurch terrorist attack mitigate this association?	Williamson et al., 2020, <i>J Exp Criminol</i> .	Looks at the potential factors that may influence a society, creating chaos and unrest	Policy, Medical	M
38	Prohibited means and methods of armed conflicts	Arakelian et al. 2020, <i>Amazonia Investiga</i> .	Describes the use of various means and methods in arm conflicts	Policy, Military	M
39	Declining public health protections within autocratic regimes: impact on global health security, infectious disease outbreaks, epidemics, and pandemics	Burkle, 2020, <i>Prehosp Disaster Med</i> .	Describes the relationship between various governments and their respect for the law and global health	Medical, Policy	M
40	The battle of Aleppo: external patrons and the victimization of civilians in civil war	Grant et al., 2020, <i>Small Wars Insurg.</i>	Describes the impacts of civil war and its possible outcomes	Policy, Medical	M
41	A War on two fronts: cancer care in the time of COVID-19	Kutikov, 2020, <i>Ann Internal Med</i> .	The impacts of war and public health emergencies on ordinary care	Medical	M
42	Disasters and public health emergencies—current perspectives in preparedness and response	Khorram-Manesh et al., 2020, <i>Sustainability</i> .	Describes a future scenario of the impacts of public health emergencies and wars on preparedness	Policy, Medical	M
43	Starvation as siege tactics: urban warfare in Syria	Hägerdahl, 2020, <i>Stud Conflict Terrorism</i> .	Describes how wars can influence health and how medical conditions can be used as tools to win a conflict	Military, Medical	M
44	Military conflict in Ukraine: Ukraine's and world's challenges	Pankevych et al., 2020, <i>Balkan Soc Sci Rev</i> .	Describes the current hybrid war in Ukraine and its global impact	Policy, Legal	M
45	Flexible surge capacity - public health, public education, and disaster management	Khorram-Manesh, 2020, <i>Health Promo Perspect</i> .	Describes how community resources can be used in an unexpected conflict or emergency	Medical, Policy	M

(Continued)

Table 2. (Continued)

No.	Title	First Author & Year	Main findings	Keywords	Quality
46	Review of military casualties in modern conflicts—the re-emergence of casualties from armored warfare	Khorram-Manesh et al., 2021, <i>Mil Med.</i>	Discusses military casualties type and its medical management in a future hybrid war	Medical, Humanitarian	M
47	Estimating the number of civilian casualties in modern armed conflicts	Khorram-Manesh et al., 2021, <i>Front Public Health.</i>	Describes the medical impacts of hybrid wars and the lack of tools for future preparedness	Policy, Medical	S
48	EU law against hybrid threats: a first assessment.	Lonardo, 2021, <i>Eur Papers.</i>	The first indication of international law to counteract lawfare	Legal	M
49	The development of Swedish military healthcare system: part II	Khorram-Manesh et al., 2021, <i>Mil Med.</i>	Discusses the military impact in hybrid war and the expected medical consequences	Medical, Humanitarian	M
50	Democratic state-legal regime: twenty-first century threats	Rudiyi et al., 2021, <i>Amazonia Investiga.</i>	Describes the impacts of democracy in future warfare	Policy	M
51	Hybrid warfare from a historical perspective	Marcuzzi, 2022, NATO Foundation Defense College	Describes the history, characteristics, and outcomes of hybrid wars	Policy, Law	M

organs (including its armed forces) and persons or entities it empowered to exercise elements of governmental authority.^{21,22} It is also responsible for the deeds of those acting in fact on its instructions, or under its direction or control, and by private persons or groups, which it acknowledges and adopts as its conduct.^{20–22} In contrast to conventional wars, there is constant negligence of IHL and GC implementation in modern armed conflicts since the objectives of the wars have changed, and it is more critical to achieve the tactical and strategic goals in a battle than to save civilian lives.^{15,21}

The responsibility for implementing the principles of IHL lies on the International Federation of Red Cross and Red Crescent Movement (IFRC) and the International Institute of Humanitarian Law (IIHL). The International Committee of Red Cross (ICRC) is the operational institution responsible for protecting victims of conflicts within a country and across boundaries.^{21,22} According to IHL, ICRC has the mandate to gain insights into an ongoing battle and, as an impartial, neutral, and independent organization, protect the lives and dignity of victims of war and internal violence by assisting the affected population directly, coordinating the international relief activities, promoting the importance of IHL, and drawing attention to universal humanitarian principles.^{22,23} Additionally, they also have mandates to visit prisons, organize relief operations, reunite separated families, meet the needs of internally displaced persons, raise public awareness of the dangers of mines and explosive remnants of war, and trace people who have gone missing in conflicts.²³ These tasks allow ICRC to track war activities and present an accurate picture of casualties and deaths. In contrast to conventional wars, modern armed conflicts involve networks of state and non-state actors with various means of military and militia influences and strategies, which creates difficulties in implementing, controlling, and evaluating IHL's "A State responsibility" principle and does not allow international organizations to gain insight into an armed conflict.^{14,15,20}

Of significance in both the current Ukrainian war and similar HWs is the emergence of Lawfare, which according to Dunlap, is 'the strategy of using (or misusing) law as a substitute for traditional military means to achieve an operational objective.'^{24–26} An immediate outcome of Lawfare is its impact on the international law and judicial processes, weakening the International Humanitarian Law and Human Rights Law, which may become entirely inapplicable.^{17,27,28} From an HW perspective, there is an increase in war crimes, social chaos, and internal criminality in the invaded nation by unconventional actors who can operate beyond the control of states by bypassing interstate and international borders' norms and agreements. The clash and confrontation with these actors, whether they belong to global terrorist networks or criminal elements, aims to destabilize society and would lead to a collision beyond the physical aspects of the conflict in which media manipulation, the use of the internet, and the integration of information operations with strategic communication programs are as necessary as weapon systems on the battlefield.²⁹

During conventional wars, soldiers were always the primary target, and civilians were always allowed to leave the conflict area to protect themselves from deaths and injuries.¹⁵ On the other hand, hybrid wars bring the battlefields into the civilians' backyards, making them vulnerable and involved in fights.¹⁴ The outcomes have been many; however, the increase in civilian fatalities from 5% at the turn of the 19th century to 15% during World War I (WWI), 65% by the end of World War II (WWII), and to more

than 90% in the wars during the 1990s, is without a doubt 1 of the most significant outcomes of HWs,¹⁷ stating the clear objective of HW, focusing on local populations, infrastructure, and communities, where civilians can be found.^{8,15,16} The aim justifies the means and becomes the background and the motto for each intervention. The goal is to influence the achievement of significant geostrategic goals which promote their impact and ideology and increase their reputation globally.²⁹

HWs generate millions of displaced persons, which overwhelms healthcare and relief organizations' working capacity.³⁰⁻³⁴ It increases the vulnerability of protective authorities, consumes legal and healthcare systems, paralyzes the national government, and finally may dissolve national unity.^{8,17,34-43} A state of 'no authority and no legal forces,' enhances the violation of IHL, HR (human rights), and equality with no punishment. These scenarios endanger the mandated work of international organizations to supervise and regulate the rules of the war. It also disables receiving the correct information and enhances the possibility of belligerents and terrorists hampering a democracy. New military strategies, remote warfare, drones, proxy fighters, and hybrid warfare present the face of modern and unconventional war, which threatens and takes civilian lives and raises new ethical and moral concerns when violating IHL and GC.^{15,17,20}

2. Medical consequences of HW

The medical consequences of HW depend on several factors, such as the duration of the war, the place it occurs, and the population density. HW aims at attacking the infrastructure of a community by using several tools. Healthcare usually needs a capacity surge, which relies on the 4 vital elements of the surge capacity, i.e., 'staff, stuff, space, and systems' (guidelines and instructions). There are apparent differences between conventional wars and HW in their medical outcomes regarding the 4 elements of surge capacity and 3 decisive factors in conflict, i.e., war duration, combat field, and population involvement.^{27,44,45}

a. Duration of the war

The duration of a conflict is a very significant factor in the medical management of victims. Short wars may result in a high number of casualties, but in the long term, the healthcare system may be able to recover quicker than in a long and devastating conflict.⁴⁴ More extended conflicts are associated with a lack of staff, stuff, and spaces to facilitate medical care. Conventional wars consume military service members in different positions with little impact on the civilian population who are usually not involved on the battlefield.⁴⁵ HW involves military and civilian populations, targeting both sides' resources, including medical facilities and staff. Therefore, in contrast to conventional war, HW impacts the entire list of diseases and emergencies. Whereas war creates emergency cases of trauma and combat-like injuries, the longer duration of HW conflicts normally consumes all medical resources leading to the population's difficulty to obtain equal and available care. Overwhelmed hospitals may not assess and treat people with chronic diseases, worsening people's medical conditions while waiting to access healthcare.^{27,41-45}

b. Field of combat

Conventional wars occur in militarized areas, with no involvement of civilians. HW, however, happens everywhere and destroys infrastructures that provide care, energy, logistics, and coordination. The most severe damages and injuries can be obtained when the

invaders attack chemical, biological, radiological, and nuclear (CBRN) facilities.^{46,47} The outcome will undoubtedly be disastrous, involving the affected countries and even millions of people living around the conflict area. There is a high risk for the latter in an HW compared to a conventional war, requiring immediate medical response and practical support such as protective items, unaffected ambulances, and many others.⁴⁷ The damage inflicted to the infrastructure, as 1 of the main goals of HW, would also prevent the ordinary population from receiving appropriate healthcare for their diseases, meaning that benign and malignant cases, such as cardiovascular diseases and various types of cancers, will not receive the treatments they need.⁴⁸

c. Population density

HW, intentionally or unintentionally, focuses on the populated areas within the invaded country. Therefore, it is logical to assume that the casualties would be much higher, and would consist of predominantly civilian populations. Earlier casualty estimation tools used in conventional war are incompatible with the current HWs and cannot be used. Consequently, the lack of knowledge and tools to assess the number and types of injuries creates particular difficulties for healthcare, whose tasks cannot be conducted without necessary resources.^{15,17,35,37,38} Previous publications have indicated that casualties and deaths are likely too high to plan properly. Therefore, the only measure for any contingency plan is to focus on what they may be able to do. In such a situation, other medical tools such as triage, must properly categorize victims that can be saved. This, in turn, calls for discussions regarding the moral and ethical perspectives of medicine and triage under extreme conditions.^{17,41,49}

Inflicted injuries and deaths in HW

The transformation of regular warfighting to HW indicates that injuries inflicted in HW might be a mix and match of the multi-domain characteristics of HW. That, in turn, means a variety of injuries should be considered depending on the occasions and specific domain used. In this perspective, injuries and deaths may occur during riots, demonstrations, and minor armed conflicts in various unplanned places. Criminal gangs may also conduct their part by using lighter and heavier weapons. Additional injuries and deaths may also occur due to disruption in Internet Technology (IT), loss of electricity, and the damage inflicted to this infrastructure. The target of these attacks is the local communities and civilians. Explosives and suicide bombings have been the primary means of terror in previous HW terror attacks, with a variation of mortality ranging from 3 to as high as 2996, injuries ranging from 49 to 6000, and a ratio of deaths/ total casualties of 8 to 51%.^{17,50-57} An important denominator of these attacks is the chaos and overwhelming pressure they create for emergency services, particularly healthcare. A high number of injuries require both a multiagency approach and availability of healthcare in several hospitals and healthcare facilities, along with local preparedness at the community level for both adult and pediatric conditions and military-like injuries. The multi-level confrontations and assaults in HW result in resource scarcity, particularly within the healthcare systems over a more extended period, causing deaths and a need for critical non-traditional medical decision-making.^{58,59}

Discussion

Although the etiology of wars may vary, every country and group may define international laws and conflict rules differently. Clark

et al. discuss the respect for laws of war in 3 different cases of ISIL (the Islamic State of Iraq and the Levant) in the USA and Russia.⁶⁰ ISIL has openly challenged all laws, order, and war regulations (rejectionist).⁶¹ In contrast, despite its efforts to implement the laws and rules into each layer of its military, the USA has, since the 9/11 terror attack, questioned the meanings and categories central to the body of law and has not achieved its goals (revisionist).⁶² Russia, on the other hand, first presents itself as the guardian of international law, ready to be and to make other states accountable, but later, despite evidence to the contrary, has systematically denied the violations of those laws and invented a new reality about the conflict by employing a sophisticated public relations strategy (denialist).⁶³ With a decreasing number of conventional wars in favor of hybrid and asymmetric wars, civilian deaths have increased continuously from the turn of the 19th century to the World Wars and the conflicts in the 1990s.¹⁵ During this period, there has also been a continuous blunder for the IHL and the GC in favor of: 1) tactical and strategical harvesting, 2) religious and political hatreds, 3) the collapse of State structures, 4) mastering the scarcity of natural resources, and 5) the vast availability of weapons, increased acts of terrorism and the spread of asymmetric conflicts.^{15,33,64}

Interstate conflicts are costly interventions that consume thousands of military service members, new technologically advanced weaponry, and military capabilities such as jets, helicopters, and tanks. Countries like Russia need to develop unconventional capabilities, a complex of activities with military and non-military means that will have the advantage over conventional means used by the USA and its alliances to achieve their political goals.^{65–67} The term HW was initiated in Russia and first used by Western theorists during the Crimea conflict in 2014. For the Russians with a tendency to bypass and deny international rules and law, HW seems to be the preferred warfare course now and in the future, including the use of UAVs (Unmanned Aerial Vehicles).⁶⁷ Other nations closely associated with Russia seem to have adopted a similar strategy, which indicates the use of lawfare for misleading, exploitation of legal systems, and the use of technologically advanced techniques and devices. Some researchers believe that future conventional and hybrid scenarios may seek targeted killings to limit or escalate control, together with deniability of air operations.^{68,69} The recent Russian experience in Georgia, Ukraine, and Syria is undeniable evidence of Russia's continuous plan to develop unmanned combat capabilities.⁷⁰

Having an in-depth analysis of the global conflicts, such as the 1 in the Middle East and the South China Sea, the immediate danger to worldwide peace is the capability of HW for implementation in populated conflict zones, with the participation of the civilians, under the eyes of the international community.^{67,68} Such an environment has no issue in incorporating HW's concept into extremist groups and their ideology, fueled by poverty and significant economic and social problems, strives for a change. The idea, together with its actors, creates a system that could be structured on several levels such as political, diplomatic, social, economic, informational, military, psychological, and cultural levels of dissatisfaction and discontent, and result in various actions on the causes, effects, phenomenon, value systems, critical areas, vulnerable sites, and on the leaders. The outcome would be no human rights, no international humanitarian laws, and no respect for GC.^{6–10,67–70} The 90% increase in the global urban population in developing countries over the next 2 decades increases these

nations' vulnerability to political and social unrest, violent crimes, terrorism, disasters, and armed conflicts, and increases the opportunities for HWs.^{39,71} There is a need for flexibility and an increase in the implementation capacity of the IHL regulations to maximize the opportunity to observe and better control casualties and deaths, and minimize the number of deaths and injuries. It is necessary for the IHL to continuously keep up with the pace of new developments in modern wars and simultaneously be prepared for the unexpected and the unknown.

Although conventional wars seem to be 'good' in comparison to the 'bad' HW, new military strategies, remote warfare, the use of drones, and proxy fighters among others, present the 'Ugly' face of modern and unconventional warfare, which not only threatens and takes civilian lives, but also raises new ethical and moral concerns when violating IHL and GC.^{15,20,71} It is not a secret that qualified healthcare in harmony with equality and safety can only be offered when the society allows critical evaluation and follows democratic values.²⁵ There are clear signs of how scientific and technological progress, political, social, economic, environmental, and military factors, may influence the transformation of liberal-democratic regimes and the global order.⁷² In order to guarantee social liberty, human rights, and the right to enjoy proper healthcare in peace and war, there is a need to preserve a liberal-democratic state-legal regime as the most successful of all administrations offered to the public and future generations. This might be the only way to let nations invest more in education and healthcare than investing in military capacity to invade other countries.

Several reasons may have caused the current Ukrainian conflicts. A major reason is the desire for natural, human, territorial, financial, economic, information, humanitarian, and other Ukraine resources. Another reason is the ideological split. Undoubtedly, the ideological differences between people have been used by covert military operations and adversarial informational methods to achieve the current situation.⁷³ However, for the Ukrainian nation, the outcomes of this war are destroyed infrastructure, economy, and a large number of deaths and casualties that the unprepared healthcare cannot manage. Preparedness is a continuous process built upon a functional ordinary healthcare system. Such preparedness requires planning and the ability to observe the unforeseen future. Although many authors emphasize the nations' vulnerability in economic, IT, and energy sectors,⁷⁴ there is little, if any, said regarding nations' healthcare systems as a bottleneck in an HW. Violence disrupts trade and agricultural activities, forces people to migrate, and interrupts health and other social services. Such interruption necessitates extra measures, especially in countries where the healthcare system in war is not independent and requires collaboration between agencies, such as civilian and military collaboration.^{75,76}

Overall, to minimize the risks associated with HW, there is a need for a multi-dimensional approach to its multi-domain characteristics. The supra-national dimension of HW requires legal and social measures which necessitate international collaboration. A single piece of legislation is neither feasible enough nor desirable. Another possibility is the integration of the 2 mindsets, creating a mixed leadership and a hybrid, agile organization, which can be very effective in an uncertain, complex context. Such integration will not happen without facing extreme challenges and struggles.^{77–79} Nevertheless, it can be impossible for healthcare to estimate the number of casualties. The only way might be to accept an acceptable loss (acceptable damage or casualties), which refers to

casualties or destruction inflicted by the enemy that is considered minor or tolerable.^{17,80}

Limitations

Inductive data analysis is often time-consuming, requiring in-depth reading and rereading of material with a certain number of assumptions, which takes skill and practice to effectively analyze without bringing in personal biases while producing valuable data that can lead to a hypothesis about the phenomenon. Furthermore, the studies included in this paper were all in English, possibly missing critical information in other languages.

Conclusion

There is little understanding of hybrid wars evident with the onset of the current war in Ukraine. The ideology of those conducting asymmetric and hybrid warfare overwrites the interests of individual nations and our universal values. The threats imposed by multi-domain actions should be met with multi-dimensional approaches and the “acceptable losses” doctrine. The current geopolitical security risk and their potential impacts on the security systems require a continuous adjustment of the operational and strategic goals to the security threats. Such adaptability to the changing security environment requires fast and well-founded decisions. Making decisive and difficult decisions requires timely and accurate information and constant strategic analysis, assessment, research, and new perspectives by competent leadership.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/dmp.2022.96>

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