



Review Article Global Health Outreach

## Escalation of war and conflicts among the COVID-19 pandemic, natural disasters, and economic crises: A global health concern

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### ABSTRACT

Healthcare, religion, governance, politics, and economics have historically caused many of the world's most significant conflicts, and they continue to do so because these issues are often the most fundamental in the structure of a society. To gain a military advantage, parties to armed conflicts have polluted water, burned crops, cut down forests, poisoned soils, and killed animals over the years. A variety of context factors, particularly socioeconomic conditions, governance, and political factors, interact and play a key role in translating climate change into conflict risks. Unrest all over the world risks putting more than half of the countries into a crisis of health, economy, and social safety, which remains the most constant threat to human civilization. The security and safety of healthcare facilities, workers, and supply lines remain of paramount concern, along with access to health services, technology, and innovation. This seminal work correlates the effects of infection pandemics, conflict, healthcare, and climate issues on the world economy. It interconnects them with victims and future public health for sustainable security in the world ecosystem. Healthcare issues, when focused on the highest platform, could compel global leaders to forego conflicts and work together.

**Keywords:** Catastrophes, COVID-19, Public health, Ukraine conflict, Middle-East crises

### INTRODUCTION

Global health has grown in popularity as a concept and academic discipline in recent years. The Coronavirus Disease of 2019 (COVID-19) pandemic emphasized the world's interconnectedness and how public health threats are no longer the sole concern of single nation – states, regions, or discrete sectors. War and conflict between pandemics and climate change have resulted in a humanitarian crisis affecting millions of people worldwide. A joint study by the World Health Organization (WHO) and World Bank says that health-care costs pushed more than 500 million people to extreme poverty just before the COVID-19 outbreak and the pandemic made the situation even worse [Figure 1].<sup>[1]</sup> Already 25% of the world's population lacks access to essential medicines<sup>[2]</sup> and 50% of them are deprived of essential health services, according to the WHO [Figure 1].<sup>[3]</sup> The planet earth is probably seeing its worst days after civilization has started as climate<sup>[4]</sup> and economic crisis,<sup>[5]</sup> along with global conflicts<sup>[6]</sup> are reaching their top. When viewed from the perspective of humanity, wars, and invasions are always disastrous for both combatants and war victims – especially women, the injured, children of all ages, the elderly, the functionally

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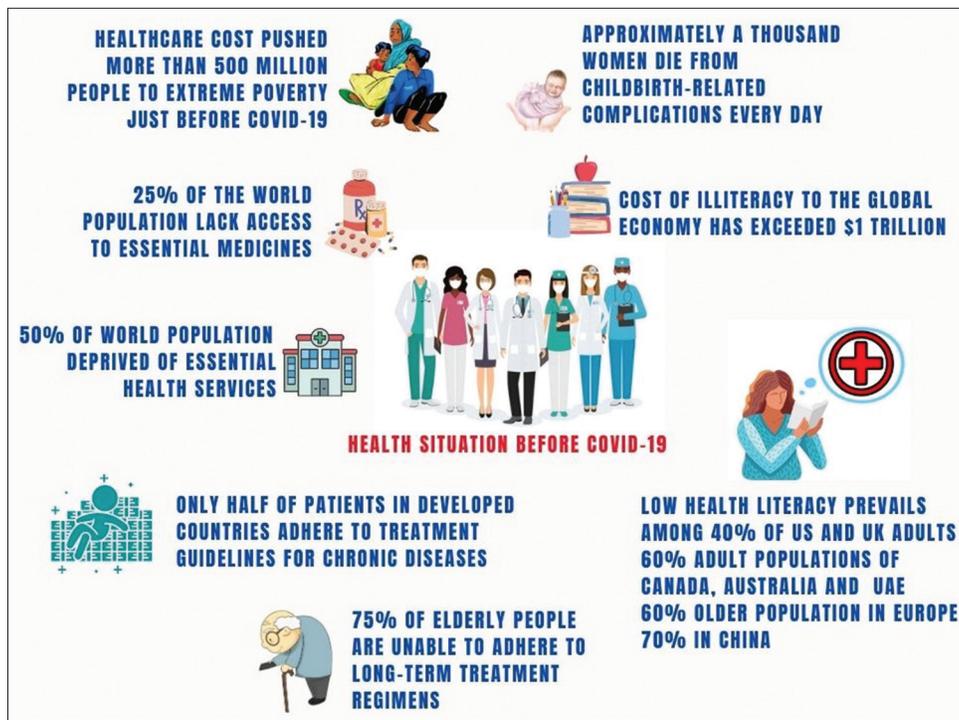


Figure 1: Even before the pandemic, the global health and economy were not in good shape.

disabled, and the refugees. The present study aims to bring and correlate the effects of pandemics, conflict, and climate issues on the world economy and interconnect them with victims and future public health [Figure 2].

### KEY OBJECTIVES OF THE STUDY AND SOCIAL IMPLICATIONS

Several platforms have candidly discussed the global health impacts of climate change, economic crises, pandemics, and humanitarian crises, but they have been found to be inadequate because they rarely brought out the overall global situation. The current study's ultimate goal is to cover them all and assuredly bring them together on a single platform through a descriptive review. Students, journalists, health-care providers, and even the mediocre can boost their knowledge, and of course, economists and policymakers may get a direction for forward projections and strategic tools to get rid of this unique condition.

### METHODOLOGY

Relevant papers were extensively reviewed, mostly from online resources (Google was the only search engine), published in 2022, focusing on climate, conflict, and pandemic issues over public health. Many articles, press releases, and media broadcasts have covered the present global conflicts among pandemics and climate change. Since journal publications lag behind many updates, popular online

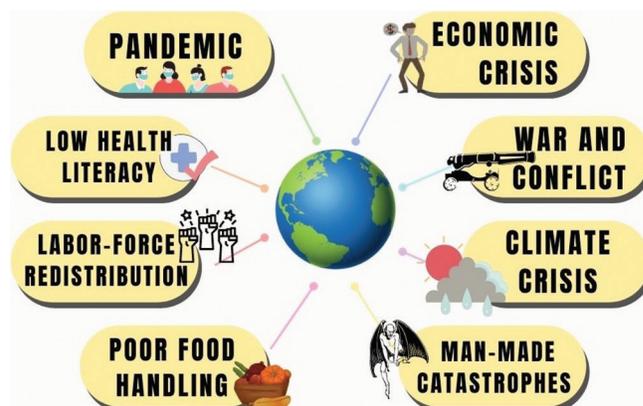


Figure 2: The modern world is plagued by major issues.

news platforms such as the Financial Times, Washington Post, The Wall Street Journal, The Guardian, The Daily Star, British Broadcasting Corporation (BBC), Cable News Network (CNN), Consumer News and Business Channel, The New York Times, Business Standard, Bloomberg, Washington Post, Forbes, and Reuters were carefully added to the keywords “global warming and public health,” “war and conflicts among climate crises,” and “war and conflicts among pandemics” during an online search and more than hundred articles were searched against each keyword. War, conflicts, the global economy, war-weary economies with concurrent health issues, pandemic and climate-related economic losses, and changes in health system access during war and

pandemic were all evaluated. Daily reports of aggression and violence were omitted, along with complex mathematical analysis and data projections, to keep this review more understandable to common readers. Media propaganda is common in conflict situations. Strenuous efforts have been made to correlate pandemic, climate, economic, and conflict issues with public health. PubMed, ALTAVISTA, Embase, Scopus, Web of Science, and the Cochrane Central Registers were prioritized to collect public health issues. Journals from Elsevier, Springer, Wiley Online Library, and Wolters Kluwer were extensively searched.

## A BRIEF REVIEW OF PRESENT GLOBAL SITUATION

### Climate issues over public health

About 7.6 billion people or 96% of humanity have experienced a global warming effect on temperature in the past 12 months. The World Bank says more than 1 billion people could be displaced globally by 2050 due to climate change and natural disasters [Figure 3].<sup>[7]</sup> Moreover, more than 5 million extra deaths a year can be attributed to the disease burden associated with climate change, which is at least 30 times higher compared to 20 years ago [Figure 3].<sup>[8]</sup> In those years, the lion's share (more than 96%) of disaster-related deaths had taken place mainly in developing countries,<sup>[9]</sup> which has greatly shifted across 19 countries in North America, Europe, and the Asia-Pacific region that labels global climate change as a major threat.<sup>[10]</sup> Global warming is influencing weather patterns, causing heat waves, heavy rainfall, droughts, cyclones, and wildfires.<sup>[11]</sup> According to the Centre for Research on the Epidemiology of Disasters (CREDE), floods, storms, and droughts caused losses to the global economy of more than \$224 billion in 2021 and could cost \$5.6 trillion by 2050 [Figure 3].<sup>[12]</sup> Less

than 3% of the earth's water is fresh water that can be used for daily necessities or agricultural use, and less than half of it can be used for drinking.<sup>[13,14]</sup> Disastrous shrinking of rivers has been reported in the US, Europe, Asia, and the Middle East,<sup>[15-18]</sup> while nearly a quarter of the world's population is at risk of flooding, 10 times more rain in Sindh province<sup>[19]</sup> and 10 times faster melting of Himalayan glaciers are reported by the European Space Agency and Scientific Reports journal, respectively.<sup>[20]</sup> Temperature extremes can deteriorate chronic illnesses such as malnutrition,<sup>[21]</sup> auto-immune diseases such as arthritis<sup>[22]</sup> and diabetes,<sup>[23]</sup> cardiorespiratory symptoms,<sup>[24]</sup> certain cancer types,<sup>[25,26]</sup> as well as spread contagious diseases such as mosquito-borne illnesses, COVID-19,<sup>[27]</sup> and fungal or bacterial infections [Figure 4].<sup>[28,29]</sup> For instance, a 1°C increase in global temperature may result in more than 100,000 new cases of diabetes each year in the USA alone<sup>[30]</sup> and 6 times more premature deaths among respiratory patients compared to the general population [Figure 3].<sup>[31]</sup> Furthermore, occupational heat-related mortality is 35 times higher among agricultural workers compared to workers from other industries [Figure 3].<sup>[32]</sup>

### The global economy and public health are being impacted by a pandemic

The US government issued a new alert in May 2022, stating that the upcoming fall and winter could potentially see 100 million COVID-19 infections in the US.<sup>[33]</sup> According to Worldometer data, during the course of the manuscript's writing, globally more than 655 million people were already affected, and 66 million had already died, as of December 14, 2022 [Figure 1]. As the world becomes more interconnected, the economic impacts of the COVID-19 pandemic become more serious. The pandemic has the potential to spark and intensify armed conflict due to its negative economic consequences

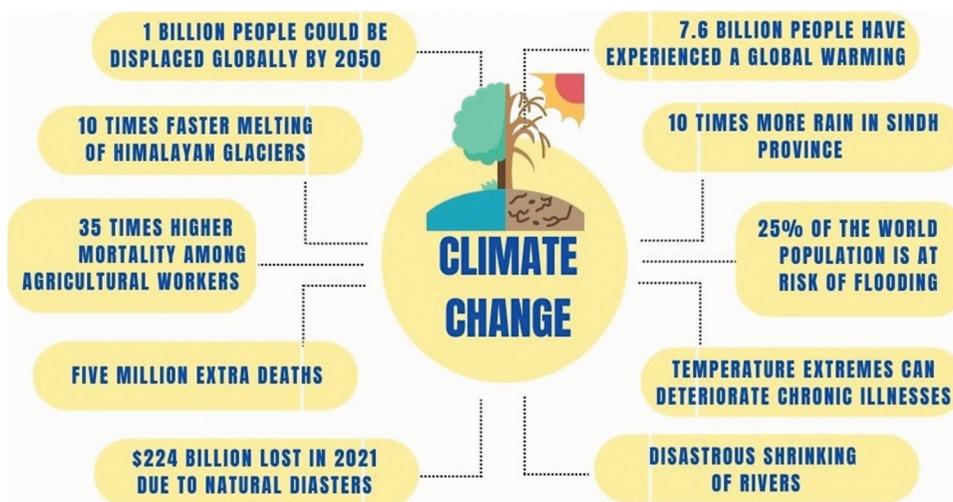


Figure 3: The present climate issues are of great concern.

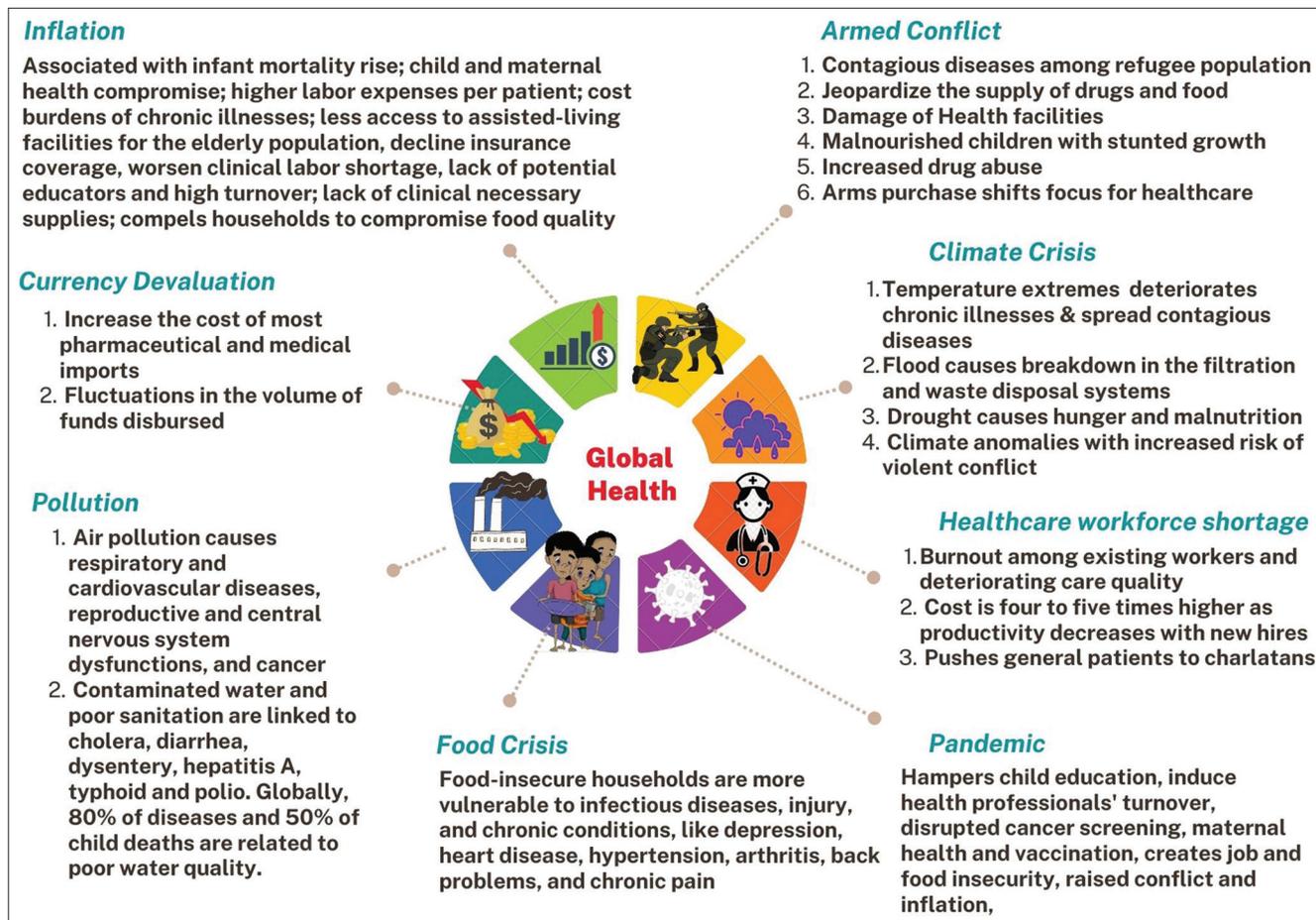


Figure 4: The present multiple crises over global health.

or, at the very least, worsen already precarious situations by escalating grievances, increasing mistrust, discrimination, and perceptions of injustice among vulnerable populations in war or conflict zones.<sup>[34-42]</sup> However, the fuel crisis induced by Russian aggression in Ukraine, supply chain disruptions, climate disaster, and the continued economic fallout of the COVID-19 pandemic is pushing approximately 345 million people around the globe into food insecurity.<sup>[43]</sup> “Hunger leads to one death every 4 s” – more than 200 NGOs from 75 countries were calling on global statesmen gathering at the 77<sup>th</sup> UN General Assembly to take decisive action.<sup>[44]</sup> According to the UN, a record \$51.5 billion is required in 2023 to assist 230 million of the world’s most vulnerable people in nearly 70 countries [Figure 5].<sup>[45]</sup> Already, the cost of illiteracy to the global economy has exceeded \$1 trillion, and the United Nations Educational, Scientific and Cultural Organization (UNESCO) estimates that close to 900 million learners have been affected by the closure of educational institutions, and 100 million children would fall below the minimum reading proficiency level [Figure 5].<sup>[46]</sup> Globally, 3.3 billion people, which constitutes 81% of the world’s workforce, were affected by the lockdown, and the world incurred a loss of 9% of global working hours,

followed by 4.4% of the global gross domestic product (GDP) in lost labor incomes.<sup>[47]</sup> Economically and socially disadvantaged populations were twice as likely to present with COVID-19 symptoms to the emergency department and were more likely to require re-hospitalization within 30 days of discharge.<sup>[48]</sup> During the pandemic, child marriage, gender-based, or domestic violence increased, routine health services were jeopardized; and routine vaccinations were halted for 80 million children in 70 countries [Figure 5].<sup>[49]</sup>

### Man-made catastrophes

The massive amount of greenhouse gases emitted by major oil companies’ oil fields is closed: BP, Eni, ExxonMobil, Chevron, and Shell emit millions of tons of gas from their oil fields.<sup>[50]</sup> According to the World Wildlife Fund (WWF), as a result of deforestation and ocean pollution, the world’s wildlife populations have decreased by more than two-thirds since 1970.<sup>[51]</sup> Man-made catastrophes such as mountain destruction, deforestation, and pollution not only hamper food, fuel, and habitat but also cause the spread of acute infections,<sup>[52,53]</sup> chronic conditions,<sup>[54]</sup> and communicable

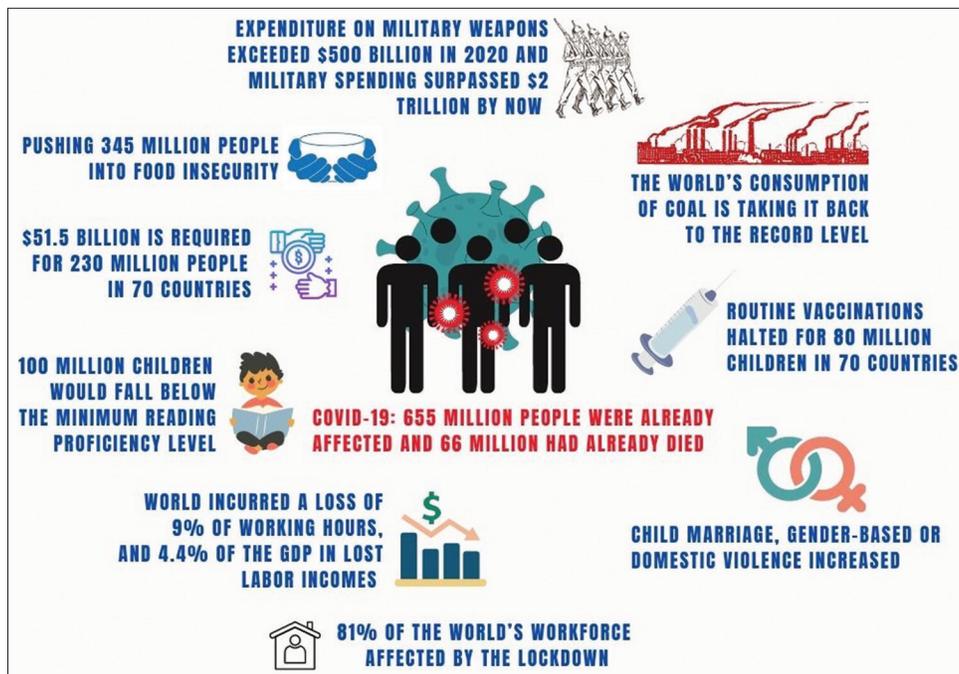


Figure 5: The pandemic pushed the world into a deep mess.

diseases.<sup>[55]</sup> For example, cardiovascular disease accounts for more than 60% of pollution-related disease and death,<sup>[56]</sup> each kilometer square of Brazilian Amazon deforestation results in 27 new malaria cases.<sup>[57]</sup> This is particularly important as, from California to Germany and China, droughts have shrunk the rivers that drive huge hydroelectric plants.<sup>[58]</sup> As global energy supplies tightened last year, India,<sup>[59]</sup> China,<sup>[60]</sup> Australia,<sup>[61]</sup> and many European Union (EU) countries<sup>[62]</sup> increased their reliance on coal-fired power – along with the Russia-Ukraine conflict [Figure 5]. The world's consumption of coal is taking it back to a record level; it reached nearly a decade ago, says an International Energy Agency (IEA) press release.<sup>[63]</sup> In its recent publication, the *Nature Food* journal says, “We estimate more than 2 billion people could die from a nuclear war between India and Pakistan, and more than 5 billion could die from a war between the United States and Russia – underscoring the importance of global cooperation in preventing nuclear war.”<sup>[6]</sup>

### Present global economic crisis: Fact is stranger than fiction

The three largest economies in the world, namely, the US, Eurozone, and China, are facing impediments due to higher-than-expected inflation or lockdown.<sup>[64]</sup> For example, the UK economy is being battered by rising energy costs, rising interest rates, tax increases, and Brexit.<sup>[65]</sup> Global central banks continued to raise interest rates in response to the Federal Reserve of America's decision to prevent the fastest rate of inflation in decades but have so far failed.<sup>[64-69]</sup> Inflation reaches 40-year highs in the United States, the United Kingdom,<sup>[70-72]</sup>

Japan,<sup>[73]</sup> and Germany;<sup>[74]</sup> 37-year highs in France<sup>[75]</sup> and Italy;<sup>[76]</sup> and 20-year highs in Russia<sup>[77]</sup> and Turkey,<sup>[78]</sup> owing primarily to the fuel crisis, food crisis, currency devaluation, and a drop in business confidence over panic. China's factory inflation hit 25% in 2021,<sup>[79]</sup> the economy is slowing down due to the adoption of the “zero-COVID strategy,”<sup>[80,81]</sup> and there is a risk of 1 million deaths in the “winter wave.”<sup>[82]</sup> Eurozone inflation averaged 2.12% from 1991 until 2022 and climbed close to 11% in October 2022.<sup>[83,84]</sup> Nearly half of the countries of the EU, 40% of the countries of Africa, and 30% of the countries of Asia declared bankruptcy during the previous two centuries.<sup>[85,86]</sup> However, according to a UN official at the November 2022 climate change conference, the 27<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27), held in Egypt, 54 countries with the poorest development are currently in danger of bankruptcy [Figure 6].<sup>[87]</sup> Lebanon, Sri Lanka, Russia, Suriname, and Zambia are already in default.<sup>[88]</sup> In addition to increased employer health-care insurance costs,<sup>[89]</sup> currency depreciation,<sup>[90]</sup> a reduced labor force or a lack of skilled labor,<sup>[91]</sup> a fuel-power crisis,<sup>[92]</sup> and transportation freight costs,<sup>[93-95]</sup> these factors have wreaked havoc on the supply and demand chain, causing manufacturers to layoff workers or postpone economic activities to avoid further losses.

### Global conflicts over health economics: Adding insult to grave injury

The conflict was responsible for more than 10 million deaths of children under the age of five between 1995

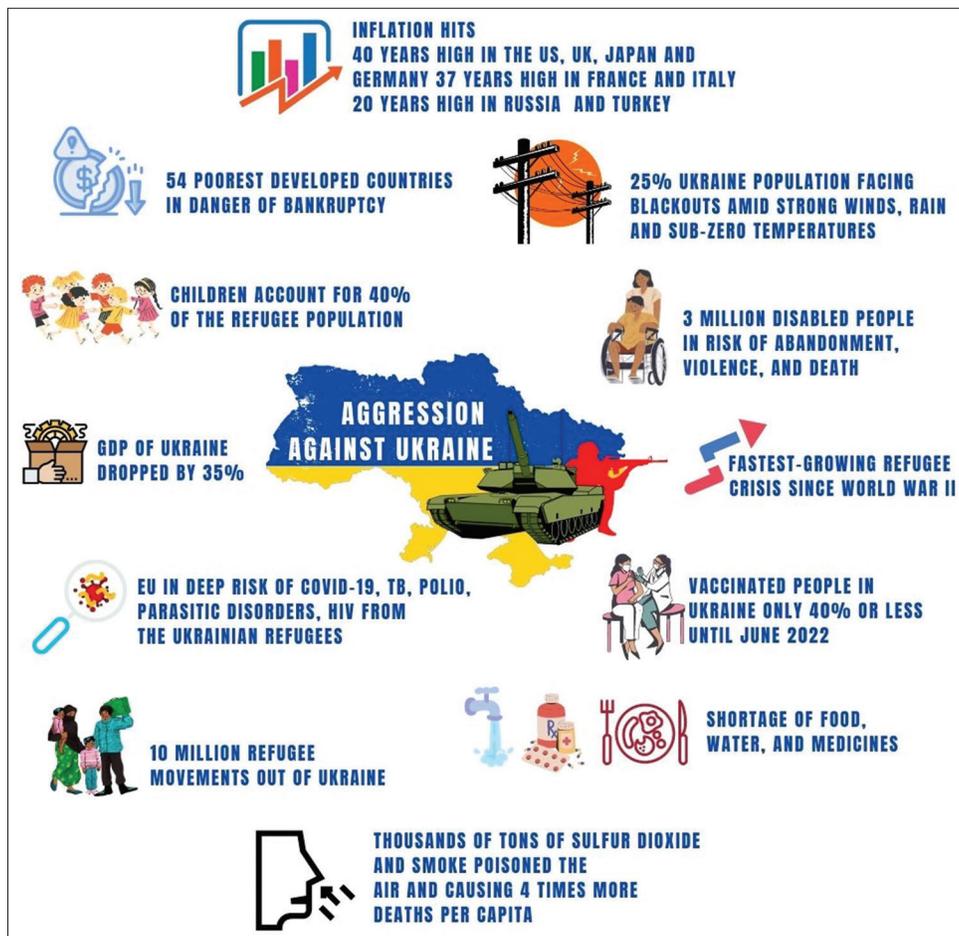


Figure 6: The Ukraine's aggression is making an impact elsewhere, too.

and 2015 worldwide.<sup>[96]</sup> From 2021 to 2022, more than 100 million people will have been driven from their homes by war, violence, persecution, and human rights abuse, according to the UN Refugee Agency, United Nations High Commissioner for Refugees (UNHCR).<sup>[97]</sup> Ukraine, Afghanistan, the Democratic Republic of the Congo, Ethiopia, Sudan, the Syrian Arab Republic, and Yemen are the countries with the highest numbers of internally displaced persons.<sup>[96,98]</sup> Since 2017, more than one in every six children has lived in a conflict zone (they were <50 km from the actual fighting);<sup>[99,100]</sup> the highest number of women and children living in conflict zones has occurred twice since 2000.<sup>[96]</sup> Armed conflict, in its various forms and manifestations, is prevalent throughout the world and often results in forced migration, an energy crisis, capital flight, and the destruction of societies' infrastructure, which includes a lack of access to food, health care, housing, employment, clean water, and sanitation, as well as a loss of community and homes. Moreover, the resulting stress or unrest has been shown to fuel violent extremism, perpetuating conflict cycles. Global expenditure on military weapons exceeded \$500 billion in

2020, and military spending had already surpassed \$2 trillion by now [Figure 5].<sup>[101]</sup> After seeing 50–100 million deaths in the 1918–1919 flu pandemic and more than 34 million deaths in World War II, the incorrigible world is thirsty for another great war amid the COVID-19 pandemic.<sup>[102-106]</sup> Whoever wins the war, humanity loses.

#### *Russian aggression against Ukraine*

The present cold winter distress in Europe and the power-fuel crisis, price volatility, inflationary pressure, and recession around the globe are a consequence of this war. The GDP of Ukraine could decrease by up to 35–40% if the war lasts longer.<sup>[107]</sup> As of August 4, 2022, more than 7 million people remain, and around 10 million refugee movements have been recorded out of Ukraine [Figure 6], making this the fastest-growing refugee crisis since World War II.<sup>[108]</sup> Over 90% of the fleeing population were women and children, including unaccompanied minors. Children account for 40% of the refugee population [Figure 6]. Hundreds of thousands of people are still trapped and faced with a shortage of food, water, and medicines.<sup>[109]</sup> Depression,

social withdrawal, and anxiety are just a few of the long-term psychological and physical health repercussions that will afflict subsequent civilizations.<sup>[110]</sup> In Ukraine, close to 3 million people with disabilities are registered, facing a greater risk of abandonment, violence, and death, while their access to safety and recovery support is limited [Figure 6].<sup>[111,112]</sup> The correlation between low vaccination and Russian aggression is still a question, as Ukraine was the second lowest (15%) vaccinated country after Armenia in Europe until the end of October 2021.<sup>[113]</sup> With a population of 42 million people, Ukraine has reported more than 10% cases of COVID-19 and over 0.1 million deaths from March 2020 to February 2022.<sup>[114]</sup> Among deaths from COVID-19, close to 60% were teenagers aged 10–19 years, and more than 40% were children aged 0–9 years.<sup>[115]</sup> However, the number of vaccinated people in Ukraine will not surpass 40% until June 2022. It has one of the lowest rates of vaccination among middle-income countries.<sup>[116,117]</sup> Ukraine has among the highest global burdens of non-communicable diseases and chronic infectious diseases, such as drug-resistant tuberculosis, measles, human immunodeficiency virus (HIV)/acquired immune deficiency syndrome, and hepatitis B and C.<sup>[118]</sup> The age-adjusted death rate from ischemic heart disease in Ukraine is more than 6 times greater than that in EU countries, and it has among the highest suicide rates in the world.<sup>[119]</sup> Linguistic problems during hospitalization, including lack of continuity of medical care and lack of retained medical records, have been reported among refugees in Poland, Romania, Moldova, and Slovakia.<sup>[120,121]</sup> Thousands of tons of sulfur dioxide and smoke poisoned the air, driving up respiratory illnesses, damaging crops, and causing 4 times more deaths per capita than the five cleanest countries altogether.<sup>[122]</sup> Moreover, most of the energy used for agricultural production, including fuels, electricity, fertilizers, pesticides, and lubricants, is reallocated for military use.<sup>[123]</sup> The occupiers have so far attacked more than 800 health-care facilities; at least hundreds of them were completely damaged [Figure 7].<sup>[124]</sup> At least three major oxygen plants in Ukraine have been damaged, making treatment uncertain for approximately 2,000 people requiring high oxygen flow [Figure 7].<sup>[125]</sup> Until the 1<sup>st</sup> week of December 2022, a quarter of its population was facing power shortages and blackouts amid strong winds, rain, and sub-zero temperatures, along with half of its capital Kyiv, for days.<sup>[126-128]</sup> Europe is facing a new challenge that could lead to a new wave of COVID-19 and an increase in the number of cases of TB, polio, parasitic stomach disorders, and HIV from the Ukrainian refugees; the EU is already home to 12.5% of HIV patients, according to the WHO.<sup>[129,130]</sup>

### ***China's multiple disputes including trade war***

China's growing control over one-third of the world's shipping lanes in the South China Sea poses an imminent threat to the

US and Europe.<sup>[131]</sup> In the past, China has frequently been involved in border disputes with its neighbors. Southeast Asian countries such as China, Vietnam, the Philippines, Brunei, Malaysia, and Taiwan have disagreements about the disputed South China Sea.<sup>[132]</sup>

U.S. goods and services trade with China will total an estimated \$615.2 billion in 2020.<sup>[133]</sup> Amid an economic slowdown, China's 4-year "trade war" with the US has resulted in a total loss of USD 550 billion in import tariffs, the majority of which are aimed at Beijing.<sup>[134]</sup> China's vaccine diplomacy is believed to be based on the country's holistic approach to national security as well as the importance China places on the "Belt and Road" Initiative.<sup>[135]</sup> China is a major manufacturer of medical products, including many vaccines, drugs, medical devices, and diagnostics. India and China are the two most important players in the global pharmaceutical raw materials and excipients market. Moreover, China accounted for 28% of the \$236.7 billion global active pharmaceutical ingredient (API) market in 2018.<sup>[136]</sup> Close to 40% of antibiotic APIs used in the US are sourced from China, where they are typically 35–40% less expensive than competitors.<sup>[137]</sup>

In the present years, China has increased economic, military, and political competition with the US, as depicted in numerous official documents and statements.<sup>[138]</sup> The trade war and escalating tariffs could raise manufacturing costs for generics and biosimilars in the US.<sup>[139]</sup> However, the trade war has opened up India's opportunity to export APIs. At present, more than half of the 342 manufacturing facilities worldwide with more than ten active US-approved API products are located in India.<sup>[140]</sup> Moreover, very recently, a bill, "H.R. 7121 (IH)-Protecting Our Pharmaceutical Supply Chain from China Act of 2022," was introduced in the US.<sup>[141]</sup>

The 2,100-mile-long India–China border has long been a source of contention between New Delhi and Beijing.<sup>[142]</sup> Border tensions and the pandemic have jeopardized the supply of drugs and food between these two countries.<sup>[143-145]</sup> However, to reduce Chinese API dependency, India launched a government-backed production-linked incentive, as India's \$42 billion pharmaceutical sector is heavily dependent on China for API.<sup>[146]</sup>

A military confrontation between China and Japan has come into being for the 1<sup>st</sup> time since the end of World War II. After the Diaoyu Islands crises of 2010 and 2012, Japan began to regard China as its main security threat.<sup>[147]</sup> They have economic relations and cultural exchange, but Japan was a pioneer in creating the concepts of both the quadrilateral security dialog and the Indo-Pacific area.<sup>[148]</sup> The volume of trade between Japan and China shrank in 2019 due to China–US trade frictions.<sup>[149]</sup> Japan, the largest pharmaceutical importer in the world, obtains the majority of its supplies from India, the United Kingdom, and Italy.



Figure 7: Humanitarian crisis over global health.

In light of growing concerns about dependence on China around the world, the Japanese government plans to increase domestic pharmaceutical production.<sup>[150]</sup>

Taiwan, missiles, and spies remain China's top priorities in the new Xi administration, as reported in many US news media.<sup>[151]</sup> Despite this, President Xi has stated that China is looking for ways to "get along" with America, even as tensions rise.<sup>[152]</sup> However, Taiwanese tensions have raised concerns about the safety of undersea cables around the world,<sup>[153]</sup> as well as the semiconductor industry. In the midst of the US tech war, Taiwan Semiconductor Manufacturing Company Limited (the largest chip foundry with some big clients such as Apple, Intel, Qualcomm, Advanced Micro Devices, Inc., and Nvidia, based in Hsinchu Science Park, Taiwan) is under increasing threat from China.<sup>[154]</sup> Furthermore, Taiwan is home to more than 90% of the world's advanced semiconductor manufacturing capacity.<sup>[155]</sup> Semiconductors are widely used in high-performance computer chips, medical equipment, drug delivery systems (implants), and *in vitro* diagnostic devices, among other things.<sup>[156]</sup> Therefore, China has blocked imports of citrus, fish, and other foods

from Taiwan but avoided disrupting important technology and manufacturing relationships.<sup>[157]</sup>

#### Civil unrest in Asian or Eurasian countries

*The Nagorno-Karabakh conflict (between Armenia and Azerbaijan)*

Heat waves, droughts, and war left Nagorno-Karabakh losing over 80% of its access to water during the war last year.<sup>[158]</sup> The conflict became even more relevant for Azerbaijan in terms of its drinking water, irrigation, and hydropower. Between 20,000 and 30,000 people were killed in military operations during the Armenia–Azerbaijan clashes.<sup>[159]</sup> Ballistic missiles, drones, and other heavy artillery have been used, including the use of internationally banned cluster bombs.<sup>[160]</sup> During the series of clashes, 50,000 people were injured or disabled, 700 medical institutions were destroyed, and the damage to the health-care system was estimated to be \$1.2 billion [Figure 7].<sup>[161]</sup> Only 15% of the Armenian population was found to be doubly vaccinated until October 2021. They were found to have the lowest vaccination rates in the Caucasus region as the pandemic has

been politicized.<sup>[162]</sup> Vaccine skepticism and being seriously hit by the COVID-19 pandemic have also been reported. Both Azerbaijan and Armenia faced a GDP shrinkage of nearly 5% due to the pandemic outbreak.<sup>[163,164]</sup> Azerbaijan's Caspian Sea, the world's largest landlocked body of water, is already rising, threatening the country's major urban centers and industrial resources along the coast.<sup>[165]</sup> With an increase in the frequency of extreme weather events, worsening desertification, and worsening land degradation, climate change is making Armenia more vulnerable. Agriculture, human health, water resources, forestry, transportation and energy infrastructure, and human health are the most at risk.<sup>[166]</sup>

#### *Kyrgyzstan–Tajikistan border conflicts*

Kyrgyzstan–Tajikistan border tensions erupted into a brief open conflict in September 2022, and there have been more than 230 border clashes over the past 20 years between the two countries.<sup>[167]</sup> The two landlocked countries share an approximately 1000-km long border, a third of which is disputed.<sup>[168]</sup> As a result of the COVID-19 pandemic, both of these countries have seen a precipitous drop in migrant laborer remittances from Russia.<sup>[169]</sup> Both of these countries' progress in Western-style public health education and science is slow.<sup>[170]</sup>

#### *Sanctions and anti-regime protests in Iran*

The current anti-regime protest in Iran is a perpetuation of the previous one, sparked by the government's subsidy cut decision that caused price hikes by as much as 300% for a variety of staples.<sup>[171]</sup> Almost half of Iran's 82 million population is now below the poverty line.<sup>[172]</sup> The annual rainfall is less than one-third of the global average,<sup>[173]</sup> and climate changes have severe consequences for food and health.<sup>[174]</sup> Iran's economic woes have sparked several waves of protests in recent years. The UN Human Rights chief has urged Iranian authorities to stop the "disproportionate use of violence" that has reportedly killed over 50 children and injured many more during Iran's public unrest.<sup>[175]</sup> Many Iranians injured by security forces during the protests are afraid to seek medical attention because some protesters seeking medical assistance have been detained. Iran has long been subject to severe international economic sanctions, which have limited their access to health care and are thought to be a contributing factor to their suffering.<sup>[176]</sup> Iran's ability to import drugs and medical equipment has been constrained by the majority of pharmaceutical companies being wary of getting into trouble due to US sanctions.<sup>[177]</sup> Patients with thalassemia, hemophilia, cancer, epilepsy, and multiple sclerosis who need medical care have been severely hampered by sanctions.<sup>[178]</sup> According to the 2018 statistics, among those who inject drugs in the Middle East and North Africa (MENA) region, more than 45% of them were from Iran.<sup>[179]</sup>

#### *The war-weary Afghanistan*

The US Armed Forces completed their withdrawal from Afghanistan on December 31, 2021, ending 20 years of war and leaving 13 million children facing malnutrition<sup>[180]</sup> and one-third of the people's food unsecured.<sup>[181]</sup> The International Monetary Fund (IMF) says the long-run war in Afghanistan lowered yearly national income by roughly 50% in 2016.<sup>[182]</sup> Inflation began to rise in early 2021 as strengthening oil prices increased food transportation costs by as much as 50% in some areas.<sup>[181]</sup> Since the USA's withdrawal, the World Bank, one of the project's main funders, has stopped funding the country's largest health project, which constituted nearly 80% of the country's total health expenditure.<sup>[183]</sup> This has created ripple effects for the health-care system, as hospitals operate with minimum resources.<sup>[184]</sup> The country has gone through four waves of COVID-19, and trading economics data show that the vaccination rate has just touched 30% as of December 3, 2022.<sup>[185]</sup> According to the WHO, deaths due to environmental risks and pollution constitute 26% of overall mortality in Afghanistan. Over 30% of children under the age of five suffer from malnutrition, while 60% of all children experience malnutrition.<sup>[186]</sup> Drug abuse prevalence is close to 13% among those who are 15 years and older, and the country is known as the world's largest producer of opium, with an estimated 85% share of the total global supply in 2020.<sup>[187]</sup>

#### *Arab and Middle East unrest*

Several Arab countries are in a humanitarian crisis as a result of armed conflict. Syria, Iraq, Lebanon, Sudan, Yemen, Libya, and the occupied Palestinian territory are among these countries.<sup>[188]</sup> Between 1970 and 2019, there were 41,837 attacks in the Middle East, making up almost 25% of all terrorist attacks worldwide<sup>[189]</sup> [Figure 8]. Since the beginning of 2022, thousands of children have been killed in conflict or violence in several Middle Eastern and North African countries.<sup>[190]</sup> Nearly 6.5 million COVID-19 cases and over 100,000 fatalities had been documented in the MENA region as of July 1, 2020. The highest number of cases has been reported in Iraq, Jordan, and the United Arab Emirates, while the highest number of fatalities has been reported in Egypt, Tunisia, Jordan, and Morocco [Figure 8].<sup>[191]</sup>

(a) The Syrian Arab Republic has remained a civil warzone for over a decade. Killing, sexual offenses, multiple health-care crises followed by daily life struggles, a cholera outbreak among refugees, and damage to 42% of hospitals are the consequences of this war.<sup>[192]</sup> Physicians for human rights' June 2022 report shows that violence caused the deaths of more than 90% of medical personnel in the Assad regime, and a severe fear of a health-care worker shortage occurred when 70% of them fled.<sup>[193,194]</sup>



Figure 8: The never-ending Middle East conflict.

Syrian refugees have affected Jordan's economy, labor market, and society in different ways. According to the Ministry of Planning and International Cooperation (MOPIC), the direct and indirect costs of hosting Syrian refugees reached approximately \$8 billion<sup>[195]</sup> [Figure 8], and each refugee cost the Jordanian government almost \$3,750.<sup>[196]</sup>

- (b) Yemen has been dealing with the worst humanitarian crisis for 7 years, and more than 80% of the population require aid.<sup>[197]</sup> According to the UN report of July 2022, more than four million Yemenis have been internally displaced since the crisis began, making up nearly 6 million people who have been forced from their homes.<sup>[198]</sup> A World Bank, United Nations Children's Fund (UNICEF), and the WHO partnership study reveal that almost 40% of the population lives more than 2 h from comprehensive emergency obstetric and surgical care.<sup>[199]</sup> In 2021, more than half of Yemen's population will face hunger.<sup>[200]</sup> Around 90% of foods are imported, and according to the Norwegian Refugee Council, more than 90% of families blame COVID-19 for food and other necessities inflation.<sup>[201]</sup> Nearly 70% of additional deaths between 2015 and 2019 were related to violence in

armed conflict [Figure 8].<sup>[202]</sup> Nearly 2,50,000 people have died as a direct or indirect result of the conflict during this time, including over 12,000 civilians who were killed in targeted attacks. In addition, 60% of the deceased were children under the age of five.<sup>[203]</sup> Early in 2020, the WHO reported that <50% of Yemen's medical facilities were fully operational due to the country's ongoing civil war, which was accompanied by seasonal outbreaks of cholera, dengue fever, malaria, chikungunya, and diphtheria.<sup>[204]</sup> Around 65% of diphtheria patients were under the age of 15, and nearly 50% of those cases had never received the diphtheria vaccine.<sup>[205]</sup>

- (c) Lebanon has been without a president for over a month,<sup>[206]</sup> and banks have remained closed for clients.<sup>[207]</sup> After decades of war, Lebanon and Israel/Occupied Palestinian Territory agreed to resolve conflicts over the maritime boundary.<sup>[208]</sup> With a population estimated at around 6 million, Lebanon is home to the largest number of refugees per capita in the world. Around 30% of its population is made up of Syrian refugees [Figure 8]. Being hit by a long-running economic and financial crisis, a pandemic, and a Beirut food grain store blast in 2020, more than

50% of the population in the country live below the poverty line.<sup>[209,210]</sup> According to the World Bank's recent data, Lebanon was one of the top four countries with the highest food inflation in 2012.<sup>[211]</sup> In real terms, it had experienced 122% food inflation year-over-year [Figure 8].<sup>[212]</sup> As the outbreak in Syria has grown, cholera has spread to neighboring Lebanon.<sup>[213]</sup>

- (d) Afro-Arab Sudan faces “generational catastrophes” – floods, militia raids, and hunger mean a third of children are not in school at all.<sup>[214]</sup> Among the most internally displaced people on the African continent, Sudan is home to over 1.1 million refugees, the majority of whom are fleeing South Sudan [Figure 8].<sup>[215]</sup> The country has been in the midst of a political crisis ever since long-time leader Omar al-Bashir was overthrown in April.<sup>[216]</sup> In addition, Sudan has endured several humanitarian and economic crises, including a 22-year civil war and the Darfur genocide in 2003, which caused over two million deaths, 4 million displacements, food shortages, and famine, and for which an estimated 7 million people urgently require life-saving assistance.<sup>[217,218]</sup> In addition, the COVID-19 pandemic, severe health risks, malnutrition, poor transport infrastructure, and a severe lack of funding for essential services all plague South Sudan.<sup>[219]</sup> In addition, the country has <30% health-care access and <50% vaccination coverage.<sup>[220]</sup> The climate crisis and malaria cases in Sudan nearly doubled between 2015 and 2019.<sup>[221]</sup> More than 70% of people use mobile phones, but the country's telemedicine coverage is still facing challenges.<sup>[222]</sup>
- (e) Libya has experienced decades of armed conflict and political instability. During the Gaddafi regimen, oil-rich Libya enjoyed free education, electricity, and health facilities.<sup>[223]</sup> Libya's health-care infrastructure continues to deteriorate due to the civil war, inadequate human and financial support, and inadequate health facilities. More than 37 attacks were reported on health facilities and medical personnel after the violence began in April 2019.<sup>[224]</sup> Libya's health system is on the verge of collapse, with three-quarters of primary health-care facilities closed due to a lack of medical personnel, supplies, medication, and equipment.<sup>[225]</sup> Only 40% of hospitals' inpatient beds are adequately functioning, with an overall bed capacity of 15/10,000.<sup>[226]</sup> According to data from Trading Economics, food inflation in Libya averaged 9.87% from 2005 to 2022 and peaked at 52.64% in December 2017. Over 80% of all deaths and 78% of years with a disability-adjusted life expectancy in Libya are due to non-communicable diseases, which are particularly susceptible to long-term breakdowns in health services and policymaking processes.<sup>[227]</sup>
- (f) The conflict between Palestine and its occupiers/Israel is a century-old issue. The occupiers have also experienced

grievous displacement as a result of persecution in Europe during World War II's Holocaust.<sup>[228]</sup> They have launched over a thousand airstrikes in Syria and dropped 5,500 bombs in Arab countries since 2017 and are facing new threats on various fronts [Figure 8].<sup>[229,230]</sup> It is a perfect example of “fostering recurring cycles of conflict,” as depicted earlier. However, for a noble cause, two governments agreed in June 2021 to transfer vaccines for COVID-19-infected people, despite the fact that the vaccination rate among Palestinians was <10%.<sup>[231]</sup> Afterward, the donor withheld vaccines for the Palestinian population due to the escalation of conflicts and violence, which increased the risk of COVID-19 transmission and damage to health facilities including COVID-19 diagnostic testing facilities. Close to 40% of patients admitted to intensive care units during the escalations had complications related to COVID-19.<sup>[232]</sup> In the West Bank and Gaza Strip in 2018, there were an unprecedented 432 attacks on health-care facilities [Figure 7].<sup>[233]</sup> In just 13 days in May 2021 alone, the WHO reported 117 attacks on health-care facilities in Gaza and the West Bank.<sup>[234]</sup>

### ***War and conflicts in African countries***

Deserts, grasslands, tropical forests, and semiarid lands are the four major climate zones in Africa.<sup>[235]</sup> The three most important security concerns in Africa to watch in 2022 are intra-state conflict, terrorism, and unconstitutional changes in government.<sup>[236]</sup> Droughts in Sub-Saharan Africa more than tripled between 1970 and 2009. According to the African Development Bank, climate change is costing Africa up to 15% of GDP growth.<sup>[237]</sup> Another recent study commissioned by Christian Aid claims that unless significant investments in climate adaptation are made, global warming will reduce Africa's economic growth by two-thirds by the end of the century.<sup>[238]</sup> In 2018, 2.2 million people were affected by devastating cyclones in Malawi, Mozambique, and Zimbabwe. Malaria, dengue fever, Lassa fever, Rift Valley fever, Lyme disease, Ebola virus, West Nile virus, and other infections have been linked to natural disasters.<sup>[239]</sup> Furthermore, due to the central role, agriculture plays in African economies, malnutrition has increased by nearly 50% since 2012.<sup>[240]</sup> African nations, which have contributed the least to the global climate crisis, could see a 64% decline in their GDP growth rate by the end of the century.<sup>[241]</sup> However, the UN and Red Cross blame the Ukraine crisis for contributing to nearly 25% of Africans' food insecurity.<sup>[242,243]</sup> In addition, until December 2, 2022, only one-third of the population will have received at least one dose of a vaccine, making it the continent with the lowest vaccination rate.<sup>[244]</sup> The pandemic delayed the first dose of Diphtheria, Pertussis, Tetanus, Hepatitis B, and Haemophilus influenzae B vaccines for 8 million African children in 2020.<sup>[245]</sup> Furthermore, over

95% of malaria cases are reported in African countries.<sup>[246]</sup> Since 1989, 75% of non-state armed conflicts have been in Africa.<sup>[247]</sup> Many authors have argued that the climate crisis has a strong association with conflicts in Africa.<sup>[247-251]</sup> Sub-Saharan Africa has the highest number of conflicts in the world, with at least a thousand people killed each year on average over the past two decades.<sup>[252]</sup> Half of the Hepatitis E outbreaks in sub-Saharan Africa have occurred among refugees and displaced persons living in humanitarian crisis settings.<sup>[253]</sup>

#### *Ethiopia's Tigray conflict*

Ethiopia, a landlocked country in the Horn of Africa, is a federal democratic republic. In Ethiopia, the pooled level of poor COVID-19 prevention practice was 51.60%. Inadequate COVID-19 knowledge, a negative attitude toward COVID-19 management, low educational attainment, living in a rural area, and being female were all significantly associated with poor COVID-19 prevention practices.<sup>[254]</sup> The Ethiopian military and the Tigrayan Defense Force engaged in armed conflict in northern Ethiopia on November 4, 2020,<sup>[255]</sup> displacing over 3 million people and killing approximately 500,000 in the past 2 years.<sup>[256]</sup> Armed militants destroyed crops, killed people, looted and vandalized hospitals, clinics, health posts, and ambulances, as well as ransacked and destroyed schools.<sup>[257]</sup> Rape, gang rape, sexual enslavement, torture, beatings and killings of friends and family, and derogatory ethnic slurs have all been reported.<sup>[255]</sup> According to the United Nations World Food Programme (WFP), nearly half of Tigray's six million residents are classified as "heavily food insecure," with nearly 90% lacking regular access to food. According to the UN, nearly one in every three children under the age of five is malnourished.<sup>[258]</sup> Among patients with severe illnesses, the COVID-19-related mortality rate went up to 40.3%.<sup>[259]</sup> Fistula is raging in Tigray as a result of obstructed labor, limited or absent maternal care services, under-nutrition growth, birth difficulties, trauma, and sexually transmitted diseases (STDs) caused by conflict-related sexual violence.<sup>[260]</sup> According to Médecins Sans Frontières' (MSF) assessment of 106 health facilities in the Tigray region between mid-December 2020 and early March 2021, "nearly 70% had been robbed, and more than 30% had been disrupted; only 13% were operating normally."<sup>[261]</sup> The ongoing conflict resulted in the destruction or damage of more than 1500 health facilities in Ethiopia in 2021, according to the country's health ministry [Figure 7].<sup>[262]</sup> However, a surprise deal has been reached in the Ethiopian civil war, with both sides agreeing to halt their 2-year conflict.<sup>[263]</sup>

#### *Democratic republic of the Congo-Rwanda conflict*

On April 23, 2022, the Democratic Republic of the Congo's Ministry of Health declared an Ebola virus outbreak

(mortality rate of 30–90%), which was declared in West Africa in 2016 and claimed over 11,000 lives.<sup>[264,265]</sup> It witnesses 45% of the deaths of children fewer than 5 years old due to malnutrition.<sup>[266]</sup> According to the United Nations, the most recent fighting with Rwanda, which started in October 2022, has forced nearly 300,000 people to flee their homes.<sup>[267]</sup> On multiple occasions, Rwandan forces have been seen fighting alongside Congolese rebels while crossing into the Congo. The same number of individuals was displaced by ethnic conflict in the Ituri province in 2019 during a second Ebola outbreak. Six years of conflict in the DR Congo resulted in a total death toll of six million people. The majority of deaths were caused by illness and malnutrition.<sup>[268]</sup>

#### *Myanmar military versus Arakan army*

Clashes between the Arakan army and the military junta in 2019 displaced more than 20% of the population across Rakhine state, one of Myanmar's poorest.<sup>[269]</sup> However, millions of Rohingya refugees fled from Myanmar in the past 50 years, and an estimated 1.4 million refugees are seeking asylum in Bangladesh, India, Indonesia, Nepal, Thailand, and Malaysia.<sup>[270-272]</sup> Pneumonia, liver diseases, breathing difficulties,<sup>[273]</sup> diphtheria, HIV, STDs, COVID-19,<sup>[274]</sup> and hepatitis B and C<sup>[275]</sup> have so far been reported among refugees. The forced migration has created anxiety, depression, emotional distress, and post-traumatic stress disorder among more than 60% of them.<sup>[276]</sup> Approximately 80% of humanitarian aid providers were denied entry into refugee camps during lockdowns.<sup>[277]</sup> Furthermore, the host country was due to receive 12 million doses in early 2021 through the COVID-19 Vaccines Global Access initiative, but by May 2021, the country had not received a single dose.<sup>[278]</sup> According to the UN, Rohingya aid represents only half of the funds raised this year.<sup>[279]</sup> In addition to limited access to voluntary contraception, 50% of refugee settlement areas lack basic skills for general sexual, reproductive, and post-rape care (including emergency contraception and safe abortions), and more than 75% of births are attended by unskilled personnel.<sup>[280]</sup> Also reported in other studies are discrimination, violence, a lack of safe drinking water, poor sanitation, and health violence. Forging national identity cards or passports through bribery or possible fraud, traveling abroad illegally without a passport, illegal weapons, drug trafficking, smuggling, quarrels, fights, kidnappings, and murders are common with them.<sup>[281-283]</sup>

## RESULTS AND DISCUSSION

Collectively, the pandemic, climate change, rising inflation, economic stagflation, and global conflicts pushed human civilization into a unique situation that the world had never experienced before. The following other issues are taken into consideration:

### Poor food handling and a lack of population control threaten public health and safety

Globally, close to one-third of agricultural produce is lost annually due to insect pests, diseases, weeds, and rodents.<sup>[284,285]</sup> The US Centers for Disease Control and Prevention (CDC) confirmed more than 11,000 foodborne infections caused by only few types of bacteria.<sup>[286]</sup> According to the WHO, 600 million cases of foodborne diseases are recorded each year, affecting nearly 10% of the world's population,<sup>[287]</sup> and food safety is associated with 7.5% of deaths annually.<sup>[288]</sup> Furthermore, adulterated and contaminated foods cause 60% of all foodborne illnesses.<sup>[289]</sup> Food adulteration affects almost all food commodities, and the main enticing factors are high population demand and the desire for fraudulent gain.<sup>[290,291]</sup> Only 11 years after passing seven billion, the United Nations declared that the world population had surpassed eight billion.<sup>[292]</sup> Climate change is making the Egyptian government ask parents to have fewer children.<sup>[293]</sup> Uncontrolled population growth not only creates food insecurity but also threatens health safety. High population density appears to be associated with cancer, cardiovascular, and respiratory diseases,<sup>[294]</sup> a higher risk of transmission of COVID-19, particularly the Delta variant,<sup>[295,296]</sup> and poor living conditions, such as insufficient access to healthy food and drinking water, and poverty-related diseases with limited access to health care. Furthermore, food vulnerability and price volatility are an explosive combination for certain types of conflicts.<sup>[297]</sup>

### Malnutrition is still a world health crisis

Global acute malnutrition increased dramatically and staggeringly from 10% in 2019 to 28% in 2019, and household food security significantly decreased from 59% in 2019 to 15%.<sup>[297]</sup> According to the 2018 World Innovation Summit for Health, 60% of chronically food insecure and malnourished people globally, including 75% of all children with stunted growth, live in conflict-affected countries [Figure 7].<sup>[298]</sup>

### Poor health literacy still prevails in wealthy and dominant countries

Unfortunately, many European citizens lack health literacy, limiting their ability to make decisions about their own, their families', and their communities' health and well-being.<sup>[299]</sup> Even low health literacy [Figure 1] is reported in nearly 40% of US<sup>[300]</sup> and UK adults,<sup>[301]</sup> 60% of the older population in the EU,<sup>[302]</sup> 60% of the adult populations in Canada,<sup>[303]</sup> Australia,<sup>[304]</sup> the United Arab Emirates,<sup>[305]</sup> and more than 70% in China.<sup>[306]</sup> Despite long-term improvements in health indicators such as mortality and morbidity, there are still problems with the provision of health care in many low- and

middle-income countries. Poor health literacy is a sign that health promotion techniques are not being used properly, and it is linked to the population's deteriorating health status and low compliance with disease prevention initiatives.<sup>[307,308]</sup>

### “Net-Zero Carbon” delayed by decades due to ‘collaboration gap’

Approximately 80% of global carbon emissions are attributed to energy, according to the IEA.<sup>[309]</sup> The current trends in global food systems would prevent the 1.5°C target from being met and put the 2°C target by the end of the century in jeopardy, even if fossil fuel emissions stopped now.<sup>[310]</sup> According to an Oxford University study, decarbonizing the energy system by 2050 could result in enormous cost savings, but it will require a massive increase in private investment in renewable energy and sustainable infrastructure around the world. Estimated annual private investment in these sectors until 2050 ranges from US\$4.4 trillion to \$9.2 trillion.<sup>[311,312]</sup> Not surprisingly, America and China, two major polluters (40% of total CO<sub>2</sub> emissions), were hesitant and non-committal on the issue at COP27.<sup>[313]</sup> The IEA estimates that global nuclear capacity will need to double by 2050 to meet net-zero targets,<sup>[314]</sup> but obstacles remain. In the aftermath of the Fukushima disaster in Japan, Germany, for example, was required to close its nuclear power plants by 2022.<sup>[315-317]</sup>

### Pandemic hits on health-care system

The pandemic's longest and most deadly surge has posed risks to the quality of care and left medical professionals exhausted. Various studies on health professionals show work-related stress, sleep disturbances, and burnouts in 60%<sup>[318-320]</sup> and hospitalization within 6 months of the pandemic starting at 15%.<sup>[261]</sup> Furthermore, the WHO assumes that more than 1,15,000 health professionals may have died in the period between January 2020 and May 2021 and that illnesses kept at least 500,000 health workers out of the US labor force alone.<sup>[321,322]</sup> Nearly 20% of the 1,000 American allied health workers (nurses, assistants, etc.) who responded to the survey stated that the pandemic was one of the main reasons they quit their jobs.<sup>[323]</sup> According to a cross-sectional study conducted by the US Bureau of Labor Statistics and the University of Minnesota Data Service, pandemic-induced physician turnover was 4 times that of allied professionals.<sup>[324]</sup> Lack of personal protective equipment, medical supplies, and adequate compensation have been reported in several studies.

### Humanitarian crisis over treatment guideline adherence and drug misuse

Migration and displacement are social determinants of health problems for refugees and other migrants.<sup>[325]</sup> Healthcare may

be low on the list of priorities for children and adolescents who face severe pressures ranging from overcrowded camps or asylums to deep anxiety about their future.<sup>[326]</sup> Humanitarian crises are associated with increased short- and long-term cardiac morbidity and mortality, as well as elevated blood pressure.<sup>[327]</sup> Hypertensive patients with diabetes mellitus were twice as likely to exhibit poor BP control, as found in war-torn Palestine.<sup>[328]</sup> Furthermore, a US-based survey of re-settled Rohingya refugees from Myanmar shows a higher trend of chronic diseases such as diabetes, hypertension, and obesity.<sup>[329]</sup> A huge increase in benzodiazepine (sedative) dispensing is reported in Canada, and abuse of similar drugs doubled in Italy among people suffering from anxiety and stress caused by COVID-19 between the years 2020 and 2021 [Figure 7].<sup>[330]</sup> An announcement from authorities on “simple possession of cannabis” to thousands of convicted citizens before the US midterm elections exploded recreational drug abuse in both the US and the EU.<sup>[331,332]</sup>

### War and terrorism hits on health-care system

A terrorist attack on a hospital is not uncommon. In just 2017, there were at least 188 hospitals and clinics that were destroyed or damaged [Figure 4]. More than 60 people were kidnapped, and 64 health-care workers were killed; 203 patients died and 141 were injured. Health facilities have been forced to close in Afghanistan, Burkina Faso, the Central African Republic, Egypt, and Turkey.<sup>[333]</sup> Research finds that 454 terrorist attacks against hospitals were identified in 61 different countries over 50 years by the global terrorism database, where more than 50% of the attacks took place in the Middle East, Northern Africa, and South Asia [Figure 7]. Moreover, in more than 50% of cases, attacks targeted medical personnel.<sup>[334]</sup> Two other similar studies show that close to 70% of those attacks involved bomb explosions<sup>[335]</sup> and that close to 60% of those attacks took place after 2001.<sup>[336]</sup> Attacks on hospitals may have long-term consequences: hospital units may be unavailable for an extended period of time, and replacing staff may take several months, further complicating hospital operations. In addition, hospitals are houses of resources (drugs, toxins, radioactive elements, and biological cultures) and information that could be used for nefarious purposes, making them a tempting target for terrorist groups. A full-fledged war and siege can have devastating consequences for patients who require constant care and well-functioning health infrastructure, especially in resource-limited settings where providing optimal care is already difficult.<sup>[337]</sup>

### Global transition or a massive work-force redistribution

The pandemic has accelerated job redistribution across sectors, with an estimated 25% of workers worldwide choosing or being forced to change occupations by 2030.<sup>[338]</sup>

Interestingly, the SMEs seeking to recover are now confronted with skilled labor shortages,<sup>[339-341]</sup> whereas big tech giants (Apple, Alphabet, Microsoft, Netflix, Meta, Twitter, Hewlett-Packard, and Stripe),<sup>[342,343]</sup> media giants (the Guardian, BBC, CNN, Bloomberg),<sup>[344,345]</sup> finance giants (JPMorgan Chase & Co, Goldman Sachs, Morgan Stanley, Citigroup, Barclays, Hongkong, and Shanghai Banking Corporation),<sup>[346-348]</sup> retail giants (Amazon, Tesco, Walmart),<sup>[349,350]</sup> and fashion chain giants (Gucci, Nike, Hennes & Mauritz AB)<sup>[351,352]</sup> have seen mass layoffs in recent years, mostly in 2022.

### Health-care workforce shortage and transition

The redistribution of the workforce and the shortage of workers could lead to a unique situation in health-care systems around the world. The Eurozone is dealing with severe health-care shortages [Figure 7]. There are fewer doctors in France today than there were in 2012. In Germany, there were 35,000 unfilled positions in the care industry last year, a 40% increase from 10 years prior. More than 700,000 people in Spain were awaiting surgery. By 2030, Finland will require 200,000 additional workers. At least 40% of doctors in one-third of the Eurozone's nations were close to retirement age.<sup>[353-358]</sup> Because of the physician shortage in general practice (GP), clinical pharmacists are working in GPs across England.<sup>[359,360]</sup> According to a recent Lancet study, the Middle East and North Africa are lacking 636,000 doctors, with South Asia having the biggest gaps.<sup>[361]</sup> Furthermore, turnover intentions have been reported for close to 50% of physicians in emergency departments, resident physicians, and village doctors in China;<sup>[362-364]</sup> more than 50% of health professionals in Ethiopia;<sup>[365]</sup> more than 55% of doctors in Iraq; and 30% of doctors in South Korea.<sup>[366]</sup> Burnout among health-care workers and deteriorating care quality are the immediate effects.<sup>[367]</sup> Furthermore, globally, more than 20% of health professionals are located in areas where there are many care gaps, which is a major determinant of job dissatisfaction.<sup>[368]</sup> Some 30–60% of nurses leave their first job in less than a year due to work-related stress, job satisfaction, and better opportunities elsewhere.<sup>[369,370]</sup> Moreover, it is estimated that the cost is 4–5 times higher as productivity decreases with new hires.<sup>[371]</sup> Altogether, the motivation of health workers toward their professions has declined at a time when it is already projected that the world will face an 18 million health-care workforce shortage by 2030. Moreover, the WHO says more than 40% of them, or 7.6 million, will have nursing shortages.<sup>[369]</sup> Moreover, there is a 6.5-fold difference between high-income and low-income countries.<sup>[372,373]</sup>

### Fears of nuclear war or biological weapons are not entirely false

Invaders from Ukraine launched projectiles at the Chernobyl nuclear facility and the active Zaporizhzhia complex,

causing international concern and raising fears of an Eastern European nuclear disaster.<sup>[374]</sup> The pandemic, hunger, discrimination or racism, climate change, rising inflation or an economic crisis, imperialism, political turmoil, and nuclear war share a common thing – conflict. In the past 100 years, human civilization has experienced multiple acts of bioterrorism, chemical warfare, and nuclear explosions that have targeted civilians;<sup>[375]</sup> all of them were borne out of conflicts. Despite the fact that the Geneva Protocol, signed in 1925 and still in effect today, forbids the development, production, and use of biological weapons in armed conflict.<sup>[376]</sup> However, already Switzerland, Sweden, Finland, Germany, the US, Russia, Italy, Belgium, the UK, Japan, and Israel/Occupied Palestinian Territory have spent billions for nuclear shelters [Figure 7].<sup>[377-381]</sup> Moreover, no nuclear-armed state is currently disarming or engaged in nuclear disarmament negotiations.<sup>[382]</sup> Furthermore, SARS-CoV-2 has already demonstrated its ability to start a pandemic, and, in spite of efforts made around the world, it still poses a serious threat to use as a bioweapon [Figure 7].<sup>[383]</sup>

#### PRESENT HEALTH SYSTEM SUSTAINABILITY CHALLENGES IN CONFLICT ZONES AND IN REST OF THE WORLD

1. Food crises, malnutrition, lack of health facility access, attacks on health facility structures or medicinal personnel, being harder hit by pandemics, violent extremism, violence against women and children, displacements, discrimination, and many other nefarious things are common among war or conflict zone.<sup>[384-387]</sup>
2. Climate-related challenges have escalated 30 times compared to 20 years ago, which will cost the global economy \$224 billion in 2021 alone, accompanied by a precipitation of both chronic and contagious disease burdens. The non-cooperation of two major polluters at COP27 may be associated with trade war-related privations, an economic crisis due to the pandemic, and fuel and power crises. Rather, the pandemic and the fuel crisis forced major polluters to return to fossil fuel energy production.
3. Climate disasters are not under human control but are not completely beyond human reach. Much less of the money spent on war could have been spent on innovation, food, and the health system.<sup>[388]</sup> The world's medical system is still lacking,<sup>[389,390]</sup> facing newer types of diseases and challenges, and will face more in the coming days.<sup>[391-393]</sup> Many cancer types, HIV, autoimmune diseases, genetic disorders, and antibiotic resistance – solutions to many vexing problems remain to be found.
4. Russia's invasion of Ukraine threatens to exacerbate the global inflationary surge, unbalancing oil demand and

investment. The triple whammy of pandemic, fuel price shock, and currency depreciation causes economic and financial turmoil in low- and middle-income countries. Medical care and health spending generally increase faster than general inflation.<sup>[394]</sup> Furthermore, rising inflation is associated with infant mortality rise;<sup>[395]</sup> child and maternal health compromise;<sup>[396]</sup> hospital labor expenses per patient;<sup>[397]</sup> depression, anxiety, frustration, and stress;<sup>[398]</sup> cost burdens of chronic illnesses;<sup>[399]</sup> less access to assisted-living and independent-living facilities for the elderly population;<sup>[400]</sup> low-income households to compromise food quality;<sup>[401]</sup> decline insurance coverage;<sup>[402]</sup> worsening clinical labor shortage, lack of potential educators, and high turnover;<sup>[403]</sup> lack of clinically necessary pharmaceuticals and supplies, as well as the accessibility of insecticides necessary to control vector-borne disease,<sup>[404]</sup> are just a few examples of such problems [Figure 4].

5. Both conflict and climate crises cause displacements, which bring not only food and health crises but also unhealthy competition and newer conflicts. Pandemics, climate crises, and economic downturns pose major threats during and/or after a major conflict. Environmental pollution would not cause 26% of mortality in Afghanistan if it had not been a war zone for the last 20 years. The Vietnam War lasted some 30 years and killed three million people or more.<sup>[405]</sup> Following the war, Vietnam was completely dedicated to an economic revolution and did not engage in any significant conflict. The violence was much lower after the Taliban took over, but it is now increasing as the Taliban fights two insurgencies. Azerbaijan and Armenia could resist more against a pandemic induced 5% GDP drop and \$1.2 billion in health-care damage. A noticeable fact is that 700 medical institutions were destroyed at the cost of the Nagorno-Karabakh conflict, and the water crisis in Azerbaijan was a key factor, driven by the climate crisis.<sup>[406,407]</sup> Medical advances in Iran have boosted the country both domestically and internationally; the country was once known for producing 80% of the world's medicinal herbs.<sup>[408]</sup> Conspicuous sanctions and spiraling unrest worsen their health situation, make life-saving drugs unavailable, and make it home to nearly half of the MENA region's injecting drug addicts.
6. About 80% of all humanitarian needs are also influenced by conflicts. Up to two-thirds of the world's extreme poor will reside in unstable and conflict-affected areas by 2030.<sup>[409,410]</sup> If the food crisis, inflation, and economic stagflation prevail, health care will be less focused. And above all, people below the poverty line, facing any sort of discrimination or crisis can easily be engaged in crime, conflict, and chaos by shrewd opportunists. It will exacerbate the decline of public health facilities. The European race to

conquer Africa was fueled by commercial greed, territorial ambition, and political rivalry.<sup>[228]</sup> They encouraged Africans to fight each other to gain power.<sup>[411,412]</sup> Gutiérrez-Romero, 2022, stated that a 10% increase in the local price index is associated with a 0.7 percentage point increase in violence against civilians in Africa. According to the UN and Red Cross, the Ukraine crisis accounts for 25% of their food insecurity.<sup>[297]</sup> Furthermore, Christian Aid claims severe economic stagflation will multiply conflicts in the future.<sup>[238]</sup> Their health system is also a terrible mess. They may never get rid of this position unless there is a solution to their conflict.

7. Approximately 450 terrorist attacks on health-care facilities, mostly by bomb explosion, have been registered in more than 60 countries over the past five decades. It also raises the question of the credibility of these data, given that over 430 attacks on health-care facilities in Palestine<sup>[233]</sup> and more than 800 attacks on medical facilities in Ukraine have already been reported.<sup>[124,413-415]</sup> Furthermore, it is of great concern that victims of oppression are not even safe in hospitals, as are the caregivers and health providers.
8. For whatever reason, the total number of displaced persons exceeded 100 million, and there were 32.5 million refugees worldwide as of mid-2022, according to the UNHCR's refugee data finder. They are posing a health care and economic burden to the already stressed host countries. Like Sub-Saharan Africa, which is facing multiple viral disease outbreaks due to the climate crisis, an intolerable food crisis partially due to the Ukraine war and triple drought, and vaccine discontinuation due to the COVID-19 outbreak, it is now hosting refugees who have become half of its hepatitis E population. Furthermore, the EU is home to one in every eight HIV patients in the world – more than 25% of Ukraine's population has been displaced and taken refuge in EU countries, where they are already among the highest rankers of HIV, drug-resistant tuberculosis, measles, and hepatitis B and C. Although close to 50% of the Ukrainian war refugees had returned by June 2022 (12.6 million vs. 6 million), their vulnerabilities remained high.<sup>[416,417]</sup>
9. Transition in healthcare is not unusual; the same is happening in other sectors as well. Without sustainable economic growth, skilled workforce development is a myth. A peaceful, independent nation can meet this challenge more easily than a conflicted community.<sup>[418-420]</sup> In response to an expected Russian attack, the Eurozone increased its arms purchases by nearly 20%, despite the fact that spending on health care would be more necessary given the region's severe health-care shortages, which may cause the region's health system to collapse in the near future [Figure 7].<sup>[421]</sup> This was the case despite the fact that the global trade in major arms fell by 4.6%.<sup>[422]</sup>

10. It is impossible to shelter the population from biological weapons, but possible antidotes or vaccines may have been developed in secret. However, they will not be given away for free, and there will be an option to purchase them at a bargain price. Opportunistic gain is at the heart of all types of mischief. If that is the case, the potential for a nuclear attack becomes almost non-existent because there will be no opportunity for dirty instincts to be satisfied if civilization does not exist. However, risk arises when terrorists capture a nuclear weapon through hijacking or, in some cases, misconceptions.<sup>[375,423]</sup>

### Limitation of the study

Control and propaganda in the media always put a strain on broadcast information, especially when it comes to war and conflict. Therefore, data collection from media sources becomes a limitation for any researcher. However, the present analysis mostly uses statements from Asian Development Bank, CDC (US), CRED, IMF, IEA, MOPIC, MSF, The Organization for Economic Co-operation and Development, UNESCO, UNHCR, WFP, WWF, WHO, UNICEF, and the World Bank, collected from their websites or from the media.

### CONCLUSION

The world is going through a massive equilibrium shift which is reflected in the form of climate, food, economy, and pandemic crises. Before going to a new stage of equilibrium, conflicts were inevitable. These conflicts further worsen the catastrophic situation and global health is one of the major victims of these conflicts, violence, or war. The health and well-being of humanity are consistently jeopardized in any conflict, regardless of the nation, community, or context. Any health system facility development takes years to expand and flourish with socioeconomic developments. The system is highly sensitive and jeopardized by many types of crisis situations, which the world is going through. The present study signifies both direct and indirect effects of armed conflicts over global health system sustainability amid other perceived or hidden damages created by pandemics, climate, and economic disasters. Interestingly, each of these issues is interconnected to each other, which is also presented.

### Summary

Religion, governance, and politics – as well as related topics such as human rights, justice, and so on – have historically caused many of the world's most significant conflicts, and they continue to do so because these issues are often the most fundamental in the structure of a society. To gain a military advantage, parties to armed conflicts have polluted water, burned crops, cut down forests, poisoned soils, and killed animals over the years. A variety of context factors, particularly socioeconomic conditions, governance, and political

factors, interacts and plays a key role in translating climate change into conflict risks. Shockwaves have been felt all over the world as a result of war, inflation, food shortages, and the COVID-19 pandemic's long tail. Financial markets have been extremely volatile since the start of the conflict, and commodity markets are in disarray. In the EU, the United States, and many other nations, inflation has reached its highest level in decades, with the global conflicts adding to the upward pressure on food and energy prices. However, the global economic slowdown, sharp decline in financial asset values, decline in imports and exports, contraction of industrial production, rise in inflation, decrease in wages, rise in unemployment, collapse of social security, and numerous natural calamities tear down not only the economic sector but also the health sector, which has already been grossly mistreated by the pandemic. The present unrest all over the world risks putting more than half of the countries into a crisis of health, economy, and social safety, which remains the most constant threat to human civilization. The security and safety of health-care facilities, workers, and supply lines remain paramount concerns, along with access to health services, technology, and innovation. War, conflicts, climate change, and pandemics are all contributing to the crisis's escalation, both directly and indirectly. All of these issues may endanger civilization by resulting in the loss of many basic health-care facilities such as health system access, vaccination, poison control, coverage health insurance or co-payment policies, health vigilances and surveillances, monitoring of adverse drug reactions, telemedicine support, patient education or awareness programs, newer drug inventions, and allied technological advances and innovations. In a stable sociopolitical environment and sound economy, any of these facilities in countries or localities would take longer to develop and necessitate government and other allied authority support, IT innovation and protocol advancements, and public adherence to the health system.

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### Author contributions

The corresponding author is the sole contributor and the only author.

### Ethical approval

Not applicable.

### Declaration

The present study was conducted solely for the purpose of examining global sustainability challenges and future health system projections.

### Declaration of the patient consent

Patient's consent not required as there are no patients in this study.

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### Conflicts of interest

There are no conflicts of interest.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The author confirms that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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