**Title: Escalation of war and conflicts among the COVID-19 pandemic, natural disasters, food and economic crises: a global health concern**

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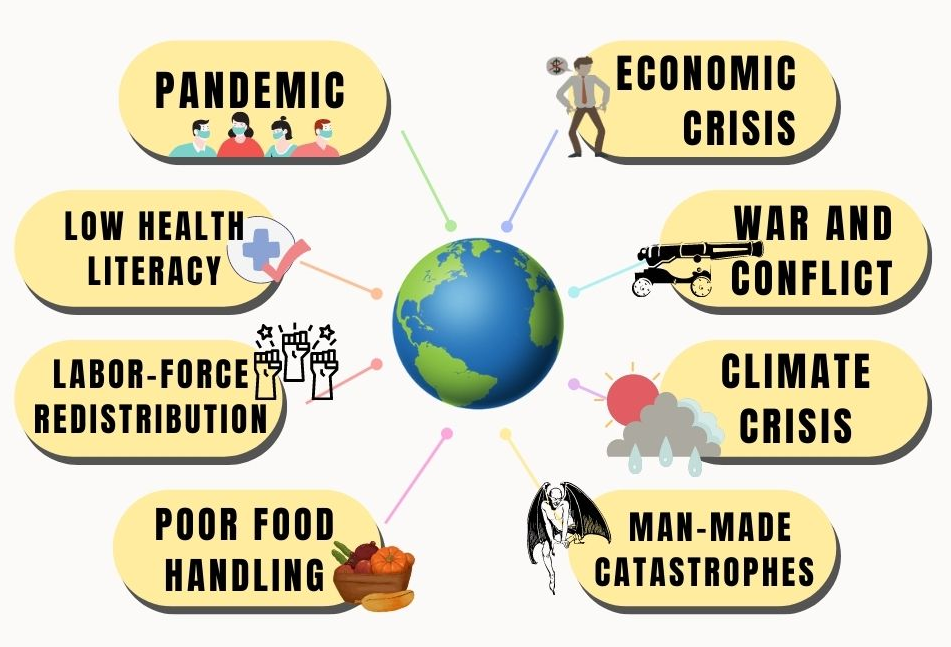
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**Abstract**

Religion, governance, and politics —as well as related topics like 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, interact and play a key role in translating climate change into conflict risks. 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 healthcare facilities, workers, and supply lines remain paramount concerns, along with access to health services, technology, and innovation.

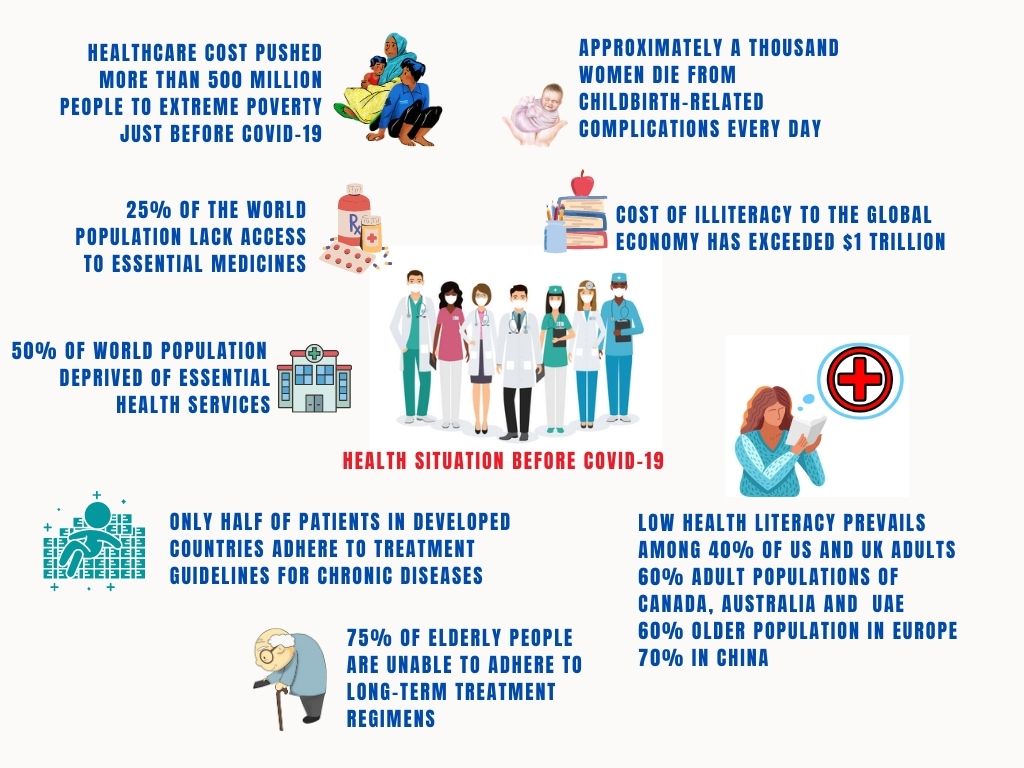
**Keywords**: catastrophes, COVID-19, civil unrests, inflation, public health, Ukraine conflict, Middle-East crises

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**Figure 1. The modern world is plagued by major issues.**

**Introduction**

Global health has grown in popularity as a concept and academic discipline in recent years. The COVID-19 conference 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 WHO and World Bank says that healthcare 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 2) [1]. Already 25% of the world's population lack access to essential medicines [2] and 50% of them are deprived of essential health services, according to WHO (Figure 2) [3]. The planet earth is probably seeing its worst days after civilization has started as climate [4] and economic crisis [5], along with global conflicts [6] 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 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 1).



**Figure 2. Even before the pandemic, the global health and economy were not in good shape.**

**Key Objectives of the Study and Social Implications**

Several platforms have candidly discussed the global health impacts of climate change, economic crisis, 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, healthcare 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.

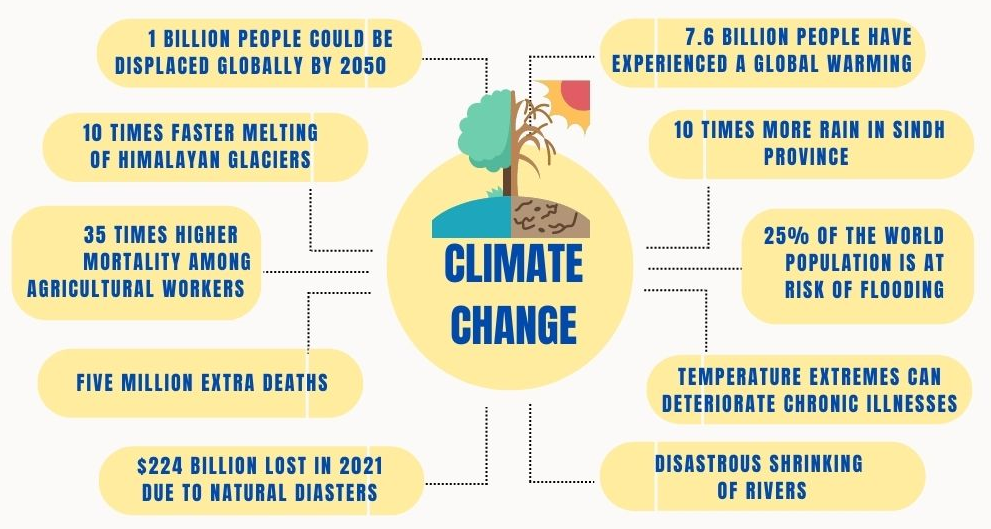
**Methodology**

Relevant papers were extensively reviewed, mostly from online resources 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 changes. Since journal publications lag behind many updates, popular online news platforms such as the Financial Times, Washington Post, The Wall Street Journal, The Guardian, The Daily Star, BBC, CNN, CNBC, 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 online search. 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. Therefore, news from online portals was carefully judged, and statistical data were correlated with journal articles where possible. 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, Willey Online Library, and Wolters Kluwer were extensively searched.

**A Brief Review of Present Global Situation**

1. **Climate Issues over Public Health**

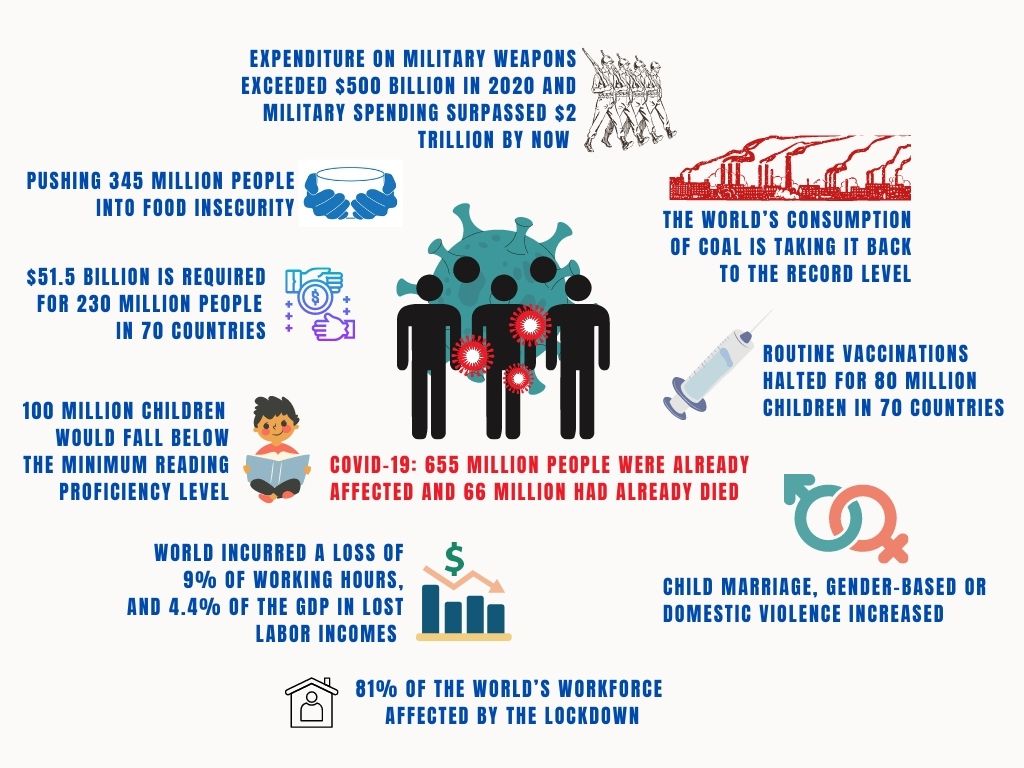
About 7.6 billion people—or 96% of humanity have experienced a global warming effect on temperature in the past 12 months. The World Bank says more than 1 billion people could be displaced globally by 2050 due to climate change and natural disasters (Figure 3) [7]. And more than five million extra deaths 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) [8]. In those years, the lion's share (more than 96%) of disaster-related deaths had taken place mainly in developing countries [9], which has greatly shifted across 19 countries in North America, Europe, and the Asia-Pacific region that label global climate change as a major threat [10]. Global warming is influencing weather patterns, causing heat waves, heavy rainfall, droughts, cyclones, and wildfires [11]. According to the Centre for Research on the Epidemiology of Disasters (CRED), floods, storms, and draughts caused losses to the global economy of more than $224 billion in 2021 and could cost $5.6 trillion by 2050 (Figure 3) [12]. 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 [13, 14]. Disastrous shrinking of rivers has been reported in the US, Europe, Asia, and the Middle East [15–18], while nearly a quarter of the world's population is at risk of flooding—10 times more rain in Sindh province [19] and 10 times faster melting of Himalayan glaciers are reported by the European Space Agency and Scientific Reports journal, respectively [20]. Temperature extremes can deteriorate chronic illnesses like malnutrition [21], auto-immune diseases like arthritis [22] and diabetes [23], cardio-respiratory symptoms [24], certain cancer types [25, 26], as well as spread contagious diseases like mosquito-borne illnesses, COVID-19 [27], and fungal or bacterial infections [28, 29]. For instance, a 1-degree Celsius increase in global temperature may result in more than 100,000 new cases of diabetes each year in the USA alone [30] and six times more premature deaths among respiratory patients compared to the general population (Figure 3) [31]. Also, occupational heat-related mortality is 35 times higher among agricultural workers compared to workers from other industries (Figure 3) [32].

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

1. **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 [33]. 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 2). 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 [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 [37-42]. 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 are pushing approximately 345 million people around the globe into food insecurity [43]. "Hunger leads to one death every four seconds"—more than 200 NGOs from 75 countries were calling on global statesmen gathering at the 77th UN General Assembly to take decisive action [44]. 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 4) [45]. Already, the cost of illiteracy to the global economy has exceeded $1 trillion, and 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 4) [46]. 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 GDP in lost labor incomes [47]. 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 [48]. 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 4) [49].



**Figure 4. The pandemic pushed the world into a deep mess.**

1. **Man-Made Catastrophes**

The massive amount of greenhouse gases emitted by major oil companies' oil fields is not disclosed: BP, Eni, ExxonMobil, Chevron, and Shell emit millions of tons of gas from their oil fields [50]. 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 [51]. Man-made catastrophes like mountain destruction, deforestation, and pollution not only hamper food, fuel, and habitat but also cause the spread of acute infections [52, 53], chronic conditions [54], and communicable diseases [55]. For example, cardiovascular disease accounts for more than 60% of pollution-related disease and death [56]; each kilometer square of Brazilian Amazon deforestation results in 27 new malaria cases [57]. This is particularly important as, from California to Germany and China, droughts have shrunk the rivers that drive huge hydroelectric plants [58]. As global energy supplies tightened last year, India [59], China [60], Australia [61], and many European Union countries [62] increased their reliance on coal-fired power—along with the Russia-Ukraine conflict (Figure 4). The world’s consumption of coal is taking it back to the record level it reached nearly a decade ago, says an International Energy Agency press release [63]. 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" [6].

1. **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 [64]. For example, the UK economy is being battered by rising energy costs, rising interest rates, tax increases, and Brexit [65]. 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 [64–69]. Inflation reaches 40-year highs in the United States, the United Kingdom [70–72], Japan [73], and Germany [74]; 37-year highs in France [75] and Italy [76]; and 20-year highs in Russia [77] and Turkey [78], owing primarily to the fuel crisis, food crisis, currency devaluation, and a drop in business confidence over panic. China’s factory inflation hits 25% in 2021 [79], the economy is slowing down due to the adoption of the "zero-covid strategy" [80, 81], and there is a risk of 1 million deaths in the "winter wave" [82]. Eurozone inflation averaged 2.12% from 1991 until 2022 and climbed close to 11% in October 2022 [83, 84]. 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 [85, 86]. However, according to a UN official at the November 2022 climate change conference, COP27, held in Egypt, 54 countries with the poorest development are currently in danger of bankruptcy (Figure 5) [87]. Lebanon, Sri Lanka, Russia, Suriname, and Zambia are already in default [88]. In addition to increased employer healthcare insurance costs [89], currency depreciation [90], a reduced labor force or a lack of skilled labor [91], a fuel-power crisis [92], and transportation freight costs [93–95], these factors have wreaked havoc on the supply and demand chain, causing manufacturers to lay off workers or postpone economic activities to avoid further losses.

1. **Global Conflicts over Health Economics: Adding Insult to Grave Injury**

Conflict was responsible for more than 10 million deaths of children under the age of five between 1995 and 2015 worldwide [96]. 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 (UNHCR) [97]. 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 [96, 98]. Since 2017, more than one in every six children has lived in a conflict zone (they were less than 50 kilometers from the actual fighting [99, 100]; the highest number of women and children living in conflict zones has occurred twice since 2000 [96]. 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. And 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 4) [101]. 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 in the midst of the COVID–19 pandemic [102–106]. Whoever wins the war, humanity loses.

1. **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 to 40% if the war lasts longer [107]. As of August 4, 2022, more than 7 million people remain, and around 10 million refugee movements have been recorded out of Ukraine (Figure 5), making this the fastest-growing refugee crisis since World War II [108]. Over 90% of the fleeing population were women and children, including unaccompanied minors. Children account for 40% of the refugee population (Figure 5). Hundreds of thousands of people are still trapped and faced with a shortage of food, water, and medicines [109]. Depression, social withdrawal, and anxiety are just a few of the long-term psychological and physical health repercussions that will afflict subsequent civilizations [110]. 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 5) [111, 112]. 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 [113]. 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 through February 2022 [114]. Among deaths from COVID-19, close to 60% were teenagers aged 10–19 years, and more than 40% were children aged 0–9 years [115]. 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 [116, 117]. Ukraine has among the highest global burdens of non-communicable diseases and chronic infectious diseases, such as drug resistant tuberculosis, measles, HIV/AIDS, and hepatitis B and C [118]. The age-adjusted death rate from ischemic heart disease in Ukraine is more than six times greater than that in European Union countries, and it has among the highest suicide rates in the world [119]. 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 [120, 121]. Thousands of tons of sulfur dioxide and smoke poisoned the air, driving up respiratory illnesses, damaging crops, and causing four times more deaths per capita than the five cleanest countries altogether [122]. Moreover, most of the energy used for agricultural production, including fuels, electricity, fertilizers, pesticides, and lubricants, is reallocated for military use [123]. The occupiers have so far attacked more than 800 health care facilities; at least hundreds of them were completely damaged (Figure 7 [124]). 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) [125]. Until the 1st 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 [126–128]. 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 [129, 130].



**Figure 5. The Ukraine's aggression is making an impact elsewhere, too.**

1. **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 [131]. 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 [132].

U.S. goods and services trade with China will total an estimated $615.2 billion in 2020 [133]. Amid an economic slowdown, China's four-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 [134]. 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 [135]. 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. And China accounted for 28% of the $236.7 billion global API market in 2018 [136]. Close to 40% of antibiotic APIs used in the US are sourced from China, where they are typically 35%–40% less expensive than competitors [137].

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

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

A military confrontation between China and Japan has come into being for the first 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 [147]. They have economic relations and cultural exchange, but Japan was a pioneer in creating the concepts of both the QUAD and the Indo-Pacific area [148]. The volume of trade between Japan and China shrank in 2019 due to China–US trade frictions [149]. Japan, the largest pharmaceutical importer in the world, obtains the majority of its supplies from India, the United Kingdom, and Italy. In light of growing concerns about dependence on China around the world, the Japanese government plans to increase domestic pharmaceutical production [150].

Taiwan, missiles, and spies remain China's top priorities in the new Xi administration, as reported in many US news media [151]. Despite this, President Xi has stated that China is looking for ways to "get along" with America, even as tensions rise [152]. However, Taiwanese tensions have raised concerns about the safety of undersea cables around the world [153], as well as the semiconductor industry. In the midst of the US tech war, TSMC (the largest chip foundry with some big clients like Apple, Intel, Qualcomm, AMD, and Nvidea, based in Hsinchu Science Park, Taiwan) is under increasing threat from China [154]. Furthermore, Taiwan is home to more than 90% of the world's advanced semiconductor manufacturing capacity [155]. Semiconductors are widely used in high-performance computer chips, medical equipment, drug delivery systems (implants), and in-vitro diagnostic devices, among other things [156]. Therefore, China has blocked imports of citrus, fish, and other foods from Taiwan but avoided disrupting important technology and manufacturing relationships [157].

1. **Civil unrest in Asian or Eurasian countries**
2. *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 [158]. 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 [159]. Ballistic missiles, drones, and other heavy artillery have been used, including the use of internationally banned cluster bombs [160]. Among the series of clashes, 50,000 people were injured or disabled, 700 medical institutions were destroyed, and the damage to the healthcare system was estimated to be $1.2 billion (Figure 7) [161]. 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 [162]. 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 [163, 164]. 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 [165]. 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 [166].

1. *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 last 20 years between the two countries [167]. The two landlocked countries share an approximately 1,000-km long border, a third of which is disputed [168]. As a result of the COVID-19 pandemic, both of these countries have seen a precipitous drop in migrant laborer remittances from Russia [169]. Both of these countries' progress in Western-style public health education and science has been found to be slow [170].

1. *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 [171]. Almost half of Iran's 82 million population is now below the poverty line [172]. The annual rainfall is less than one-third of the global average [173], and climate changes have severe consequences for food and health [174]. 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 [175]. 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 healthcare and are thought to be a contributing factor to their suffering [176]. 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 [177]. Patients with thalassemia, hemophilia, cancer, epilepsy, and multiple sclerosis who need medical care have been severely hampered by sanctions [178]. 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 [179].

1. *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 [180] and one-third of the people's food unsecured [181]. The IMF says the long-run war in Afghanistan lowered yearly national income by roughly 50% in 2016 [182]. Inflation began to rise in early 2021 as strengthening oil prices increased food transportation costs by as much as 50% in some areas [181]. 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 [183]. This has created ripple effects for the healthcare system, as hospitals operate with minimum resources [184]. The country has gone through four waves of the COVID-19, and trading economics data shows that the vaccination rate has just touched 30% as of December 3, 2022 [185]. According to the WHO, deaths due to environmental risks and pollution constitute 26% of overall mortality in Afghanistan. More than 30% of children under the age of five are malnourished, and 60% of children are malnourished [186]. 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 [187].

1. **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 [188]. Between 1970 and 2019, there were 41,837 attacks in the Middle East, making up almost 25% of all terrorist attacks worldwide [189] (Figure 6). Since the beginning of 2022, thousands of children have been killed in conflict or violence in several Middle Eastern and North African countries [190]. 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 have been reported in Iraq, Jordan, and the United Arab Emirates, while the highest number of fatalities have been reported in Egypt, Tunisia, Jordan, and Morocco (Figure 6).

1. The Syrian Arab Republic has remained a civil warzone for over a decade. Killing, sexual offenses, multiple healthcare crises followed by daily life struggles, a cholera outbreak among refugees, and damage to 42% of hospitals are the consequences of this war [192]. Physicians for Human Rights' (PHR) 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 healthcare worker shortage occurred when 70% of them fled [193, 194]. 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 [195] (Figure 6), and each refugee cost the Jordanian government almost $3,750 [196].
2. Yemen has been dealing with the worst humanitarian crisis for seven years, and more than 80% of the population requires aid [197]. According to the UN report of July 2022, more than four million Yemenis have been internally displaced since the crisis began, making up nearly six million people who have been forced from their homes [198]. A World Bank, UNICEF, and WHO partnership study reveals that almost 40% of the population lives more than two hours from comprehensive emergency obstetric and surgical care [199]. In 2021, more than half of Yemen's population would face hunger [200]. 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 necessity inflation [201]. Nearly 70% of additional deaths between 2015 and 2019 were related to violence in armed conflict (Figure 6) [202]. 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. Additionally, 60% of the deceased were children under the age of five [203]. Early in 2020, the WHO reported that less than 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 [204]. Around 65% of diphtheria patients were under the age of 15, and nearly 50% of those cases had never received the diphtheria vaccine [205].
3. Lebanon has been without a president for over a month [206], and banks have remained closed for clients [207]. After decades of war, Lebanon and Israel/Occupied Palestinian Territory agreed to resolve conflicts over the maritime boundary [208]. 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 6). 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 lives below the poverty line [209, 210]. According to the World Bank's recent data, Lebanon was one of the top four countries with the highest food inflation in 2012 [211]. In real terms, it had experienced 122% food inflation YOY (Figure 6) [212]. As the outbreak in Syria has grown, cholera has spread to neighboring Lebanon [213].
4. Afro-Arab Sudan faces "generational catastrophes"—floods, militia raids, and hunger mean a third of children are not in school at all [214]. 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 6 [215]). The country has been in the midst of a political crisis ever since long-time leader Omar al-Bashir was overthrown in April [216]. In addition, Sudan has endured a number of humanitarian and economic crises, including a 22-year civil war and the Darfur genocide in 2003, which caused over two million deaths, four million displacements, food shortages, and famine, and for which an estimated 7 million people urgently require life-saving assistance [217, 218]. Additionally, the COVID-19 pandemic, severe health risks, malnutrition, poor transport infrastructure, and a severe lack of funding for essential services all plague South Sudan [219]. In addition, the country has less than 30% healthcare access and less than 50% vaccination coverage [220]. The climate crisis and malaria cases in Sudan nearly doubled between 2015 and 2019 [221]. More than 70% of people use mobile phones, but the country’s telemedicine coverage is still facing challenges [222].
5. Libya has experienced decades of armed conflict and political instability. During the Gaddafi regime, oil-rich Libya enjoyed free education, electricity, and health facilities [223]. 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 violence began in April 2019 [224]. 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 [225]. Only 40% of hospitals’ inpatient beds are adequately functioning, with an overall bed capacity of 15 per 10,000 [226]. According to data from Trading Economics, food inflation in Libya averaged 9.87% from 2005 to 2022 and peaked at 52.64% in December of 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 [227].



**Figure 6: The never-ending Middle East conflict**

1. 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 [228]. 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 6; [229, 230]). 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 less than 10% [231]. Afterwards, 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 ICUs during the escalations had complications related to COVID-19 [232]. In the West Bank and Gaza Strip in 2018, there were an unprecedented 432 attacks on healthcare facilities (Figure 7) [233]. In just 13 days in May 2021 alone, the WHO reported 117 attacks on healthcare facilities in Gaza and the West Bank [234].
2. **War and Conflicts in African Countries**

Deserts, grasslands, tropical forests, and semiarid lands are the four major climate zones in Africa [235]. The three most important security concerns in Africa to watch in 2022 are intra-state conflict, terrorism, and unconstitutional changes in government [236]. 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 [237]. 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 [238]. 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 [239]. Furthermore, due to the central role agriculture plays in African economies, malnutrition has increased by nearly 50% since 2012 [240]. 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 [241]. However, the UN and Red Cross blame the Ukraine crisis for contributing to nearly 25% of Africans' food insecurity [242, 243]. Additionally, 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 [244]. The pandemic delayed the first dose of Diphtheria, Pertussis, Tetanus, Hepatitis B, and Hemophilus influenzae B vaccines for 8 million African children in 2020 [245]. Furthermore, over 95% of malaria cases are reported in African countries [246]. Since 1989, 75% of non-state armed conflicts have been in Africa [247]. Many authors have argued the climate crisis has a strong association with conflicts in Africa [247–251]. 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 last two decades [252]. Half of the Hepatitis E outbreaks in sub-Saharan Africa have occurred among refugees and displaced persons living in humanitarian crisis settings [253]..

1. *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 [254]. The Ethiopian military and the Tigrayan Defense Force (TDF) engaged in armed conflict in northern Ethiopia on November 4, 2020 [255], displacing over 3 million people and killing approximately 500,000 in the last two years [256]. Armed militants destroyed crops, killed people, looted and vandalized hospitals, clinics, health posts, and ambulances, as well as ransacked and destroyed schools [257]. Rape, gang rape, sexual enslavement, torture, beatings and killings of friends and family, and derogatory ethnic slurs have all been reported [255]. 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 [258]. Among patients with severe illnesses, the COVID-19-related mortality rate went up to 40.3% [259]. 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 [260]. 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" [261]. 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) [262]. However, a surprise deal has been reached in the Ethiopian civil war, with both sides agreeing to halt their two-year conflict [263].

1. *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 over in West Africa by 2016 and claimed over 11,000 lives [264, 265]. It witnesses 45% of the deaths of children fewer than 5 years old due to malnutrition [266]. 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 [267]. On multiple occasions, Rwandan forces have been seen fighting alongside Congolese rebels while crossing into the Congo. The same number of individuals were 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 [268].

1. **Myanmar Military Vs Arakan Army**

Clashes between the Arakan army and the military junta in 2019 displaced more than 20% of the population across Rakhaine state, one of Myanmar's poorest [269]. However, millions of Rohingya refugees fled from Myanmar in the last 50 years, and an estimated 1.4 million refugees are seeking asylum in Bangladesh, India, Indonesia, Nepal, Thailand, and Malaysia [272–272]. Pneumonia, liver diseases, breathing difficulties [273]; diphtheria, HIV, sexually transmitted diseases, COVID-19 [274]; and hepatitis B and C [275] have so far been reported among refugees. The forced migration has created anxiety, depression, emotional distress, and PTSD among more than 60% of them [276]. Approximately 80% of humanitarian aid providers were denied entry into refugee camps during lockdowns [277]. Also, the host country was due to receive 12 million doses in early 2021 through the COVAX initiative, but by May 2021, the country had not received a single dose [278]. According to the UN, Rohingya aid represents only half of the funds raised this year [279]. 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 [280]. 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 [281-283].

**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:

1. *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 [284, 285]. The US Centers for Disease Control and Prevention (CDC) confirmed more than 11,000 food-borne infections caused by only a few types of bacteria [286]. According to the WHO, 600 million cases of foodborne diseases are recorded each year, affecting nearly 10% of the world's population [287], and food safety is associated with 7.5% of deaths annually [288]. Furthermore, adulterated and contaminated foods cause 60% of all foodborne illnesses [289]. Food adulteration affects almost all food commodities, and the main enticing factors are high population demand and the desire for fraudulent gain [290, 291]. Only 11 years after passing seven billion, the United Nations declared that the world population had surpassed eight billion [292]. Climate change is making the Egyptian government ask parents to have fewer children [293]. 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 [294], a higher risk of transmission of COVID-19, particularly the Delta variant [295, 296], and poor living conditions, such as insufficient access to healthy food and drinking water, and poverty-related diseases with limited access to healthcare. Also, food vulnerability and price volatility are an explosive combination for certain types of conflicts [297].

1. *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% [297]. 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) [298].

1. *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 [299]. Even low health literacy (Figure 2) is reported in nearly 40% of US [300] and UK adults [301], 60% of the older population in the EU [302], 60% of the adult populations in Canada [303], Australia [304], the UAE [305], and more than 70% in China [306]. Despite long-term improvements in health indicators like mortality and morbidity, there are still problems with the provision of healthcare 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 [307, 308].

1. *“Net-Zero Carbon” delayed by decades due to 'collaboration gap'*

Approximately 80% of global carbon emissions are attributed to energy, according to the International Energy Agency (IEA) [309]. 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 [310]. 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 [311, 312]. Not surprisingly, America and China, two major polluters (40% of total CO2 emissions), were hesitant and noncommittal on the issue at COP27 [313]. The IEA estimates that global nuclear capacity will need to double by 2050 to meet net-zero targets [314], 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 [315-317].

1. *Pandemic hits on healthcare 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% [318-320]; and hospitalization within 6 months of the pandemic starting at 15% [261]. Also, 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 [321, 322]. 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 [323]. 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 four times that of allied professionals [324]. Lack of PPE, medical supplies, and adequate compensation have been reported in several studies.

1. *Humanitarian crisis over treatment guideline adherence and drug misuse*

Migration and displacement are social determinants of health problems for refugees and other migrants [325]. Health care 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 [326]. Humanitarian crises are associated with increased short- and long-term cardiac morbidity and mortality, as well as elevated blood pressure [327]. Hypertensive patients with diabetes mellitus were twice as likely to exhibit poor BP control, as found in war-torn Palestine [328]. Also, a US-based survey of re-settled Rohingya refugees from Myanmar shows a higher trend of chronic diseases like diabetes, hypertension, and obesity [329]. 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) [330]. An announcement from authorities on "simple possession of cannabis" to thousands of convicted citizens prior to the US midterm elections exploded recreational drug abuse in both the US and the EU [331, 332].

1. *War and terrorism hits on healthcare 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. More than 60 people were kidnapped, and 64 healthcare 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 [333]. Research finds 454 terrorist attacks against hospitals were identified in 61 different countries over a 50-year period by the Global Terrorism Database (GTD), where more than 50% of the attacks took place in the Middle East, Northern Africa, and South Asia (Figure 7). And in more than 50% of cases, attacks targeted medical personnel [334]. Two other similar studies show that close to 70% of those attacks involved bomb explosions [335] and that close to 60% of those attacks took place after 2001 [336]. 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 [337].

1. *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 [338]. Interestingly, the SMEs seeking to recover are now confronted with skilled labor shortages [339-341], whereas big tech giants (Apple, Alphabet, Microsoft, Netflix, Meta, Twitter, HP, Stripe) [342, 343], media giants (The Guardian, BBC, CNN, Bloomberg) [344, 345], finance giants (JPMorgan Chase, Goldman Sachs, Morgan Stanley, Citigroup, Barclays, HSBC) [346-348], retail giants (Amazon, Tesco, Walmart) [349, 350] and fashion chain giants (Gucci, Nike, H&M) [351, 352] have seen mass layoffs in recent years, mostly in 2022.

1. *Healthcare workforce shortage and transition*

The redistribution of the workforce and the shortage of workers could lead to a unique situation in healthcare systems around the world. The Eurozone is dealing with severe healthcare 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 ten 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 [353-358]. Because of the physician shortage in general practice (GP), clinical pharmacists are working in GPs across England [359, 360]. According to a recent Lancet study, the Middle East and North Africa are lacking 636,000 doctors, with South Asia having the biggest gaps [361]. Also, turnover intentions have been reported for close to 50% of physicians in emergency departments, resident physicians, and village doctors in China [362-364]; more than 50% of health professionals in Ethiopia [365]; more than 55% of doctors in Iraq; and 30% of doctors in South Korea [366]. Burnout among healthcare workers and deteriorating care quality are the immediate effects [367]. Also, 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 [368]. 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 [369, 370]. And it is estimated that the cost is four to five times higher as productivity decreases with new hires [371]. Altogether, the motivation of health workers towards their professions has declined at a time when it is already projected that the world will face an 18 million healthcare workforce shortage by 2030. And the WHO says more than 40% of them, or 7.6 million, will have nursing shortages [369]. Moreover, there is a 6.5-fold difference between high-income and low-income countries [372, 373].

1. *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 [374].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 last 100 years, human civilization has experienced multiple acts of bioterrorism, chemical warfare, and nuclear explosions that have targeted civilians [375]; 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 [376].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) [377-381]. And no nuclear-armed state is currently disarming or engaged in nuclear disarmament negotiations [382]. Also, 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) [383].



**Figure 7. Humanitarian crisis over global health.**

**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 [384-387].
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 COP-27 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 [388]. The world's medical system is still lacking [389, 390], facing newer types of diseases and challenges, and will face more in the coming days [391-393]. Many cancer types, HIV, autoimmune diseases, genetic disorders, and antibiotic resistance—solutions of 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 [394]. Also, rising inflation is associated with infant mortality rise [395]; child and maternal health compromise [396]; hospital labor expenses per patient [397]; depression, anxiety, frustration and stress [398]; cost burdens of chronic illnesses [399]; less access to assisted-living and independent-living facilities for the elderly population [400]; low-income households to compromise food quality [401]; decline insurance coverage [402]; worsening clinical labor shortage, lack of potential educators and high turnover [403]; lack of clinically necessary pharmaceuticals and supplies, as well as the accessibility of insecticides necessary to control vector-borne disease [404], are just a few examples of such problems.
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 [405]. 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 healthcare 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 [406, 407]. 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 [408]. 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. 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 [409, 410]. If the food crisis, inflation, and economic stagflation prevail, healthcare 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 [228]. They encouraged Africans to fight each other in order to gain power [411, 412]. 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 [297]. Furthermore, Christian Aid claims severe economic stagflation will multiply conflicts in the future [238]. 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 healthcare facilities, mostly by bomb explosion, have been registered in more than 60 countries over the last five decades. It also raises the question of the credibility of these data, given that over 430 attacks on healthcare facilities in Palestine [233] and more than 800 attacks on medical facilities in Ukraine have already been reported [124], [413-415]. Also, 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 healthcare 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 [417, 417].
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 [418-420].In response to an expected Russian attack, the Eurozone increased its arms purchases by nearly 20%, despite the fact that spending on healthcare would be more necessary given the region's severe healthcare shortages, which may cause the region's health system to collapse in the near future (Figure 7) [421]. This was the case despite the fact that the global trade in major arms fell by 4.6% [422].
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. But risk arises when terrorists capture a nuclear weapon through hijacking or, in some cases, misconceptions [375], [423].

**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 ADB, CDC (US), CRED, IMF, IEA, MOPIC, MSF, OECD, UNESCO, UNHCR, WFP, WWF, WHO, UNICEF, and the World Bank, collected from their websites or from the media.

**Conclusion**

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 healthcare 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 socio-political 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.

**Abbreviations**

ADB: Asian Development Bank

AFP: Agence France-Presse

AIDS: Acquired Immune Deficiency Syndrome

AMD: Advanced Micro Devices, Inc.

AP: Associated Press

API: Active Pharmaceutical Ingredient

BBC: British Broadcasting Corporation

CDC: US Centers for Disease Control and Prevention

COVID-19: Coronavirus disease of 2019

COVAX: COVID-19 Vaccines Global Access

CNN: Cable News Network

COP27: 27th Conference of the Parties to the United Nations Framework Convention on Climate Change

CRED: Centre for Research on the Epidemiology of Disasters, Brussels

CNBC: Consumer News and Business Channel

EU: The European Union

GDP: Gross Domestic Product

GP: General Practitioner

GTD: Global Terrorism Database

HIV: Human Immunodeficiency Virus

HP: Hewlett-Packard

H&M: Hennes & Mauritz AB

HSBC: Hongkong and Shanghai Banking Corporation

ICU: Intensive Care Units

IEA: International Energy Agency

IMF: International Monetary Fund

JPMorgan Chase: JPMorgan Chase & Co.

MENA: Middle East and North Africa

MSF: Médecins Sans Frontières

MOPIC: Ministry of Planning and International Cooperation

OECD: The Organization for Economic Co-operation and Development

MOPIC: Physicians for Human Rights'

PLI: Production Linked Incentive

PPE: Personal Protective Equipment

PTSD: Post-Traumatic Stress Disorder

QUAD: Quadrilateral Security Dialogue

SMEs: Small and Medium-sized Enterprises

STDs: Sexually Transmitted Diseases

TBS: The Business Standard

TDF: Tigrayan Defense Force

TSMC: Taiwan Semiconductor Manufacturing Company Limited

UAE: United Arab Emirates

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNHCR: United Nations High Commissioner for Refugees

UNICEF: United Nations Children's Fund

WFP: World Food Programme

WHO: World Health Organization

WWF: World Wildlife Fund

YOY: Year-over-year

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**Reference**

1. Sabet-Parry R, Guo J. More than half a billion people pushed or pushed further into extreme poverty due to health care costs. World Health Organization. https://www.who.int/news/item/12-12-2021-more-than-half-a-billion-people-pushed-or-pushed-further-into-extreme-poverty-due-to-health-care-costs. Published September 12, 2021. Accessed December 19, 2022.
2. Ozawa S, Shankar R, Leopold C, Orubu S. Access to medicines through health systems in low- and middle-income countries. *Health Policy and Planning*. 2019;34(Supplement\_3):iii1-iii3. doi:10.1093/heapol/czz119
3. Yoshizu M. World Bank and WHO: Half the world lacks access to essential health services, 100 million still pushed into extreme poverty because of health expenses. World Health Organization. https://www.who.int/news/item/13-12-2017-world-bank-and-who-half-the-world-lacks-access-to-essential-health-services-100-million-still-pushed-into-extreme-poverty-because-of-health-expenses. Published December 13, 2017. Accessed December 7, 2022.
4. Carrington D. Climate crisis: Past eight years were the eight hottest ever, says UN. *The Guardian*. https://www.theguardian.com/environment/2022/nov/06/climate-crisis-past-eight-years-were-the-eight-hottest-ever-says-un. Published November 6, 2022. Accessed December 7, 2022.
5. Georgieva K. Facing crisis upon crisis: How the world can respond. IMF. https://www.imf.org/en/News/Articles/2022/04/14/sp041422-curtain-raiser-sm2022. Published April 14, 2022. Accessed December 7, 2022.
6. Xia L, Robock A, Scherrer K, et al. Global food insecurity and famine from reduced crop, marine fishery and livestock production due to climate disruption from nuclear war soot injection. *Nature Food*. 2022;3(8):586-596. doi:10.1038/s43016-022-00573-0
7. Henley J. Climate crisis could displace 1.2bn people by 2050, report warns. *The Guardian*. https://www.theguardian.com/environment/2020/sep/09/climate-crisis-could-displace-12bn-people-by-2050-report-warns. Published September 9, 2020. Accessed December 4, 2022.
8. Zhao Q, Guo Y, Ye T, et al. Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study. *Lancet Planet Health*. 2021;5(7):e415-e425. doi:10.1016/S2542-5196(21)00081-4
9. Kirigia JM, Sambo LG, Aldis W, Mwabu GM. Impact of disaster-related mortality on gross domestic product in the WHO African Region. *BMC Emergency Medicine*. 2004;4(1):1. Published 2004 Mar 15. doi:10.1186/1471-227X-4-1
10. Smart T. Climate change seen as top global threat: Poll | best countries | U.S. news. U.S.News. https://www.usnews.com/news/best-countries/articles/2022-08-31/climate-change-seen-as-top-global-threat-poll. Published August 31, 2022. Accessed December 4, 2022.
11. Zamir M. Climate Change: Are we heading towards extinction? *The Financial Express*. https://thefinancialexpress.com.bd/views/views/climate-change-are-we-heading-towards-extinction-1661096512. Published August 21, 2021. Accessed December 1, 2022.
12. Dickie, G. (2022, August 29). Floods, other water-related disasters could cost global economy $5.6 trillion by 2050 -report. Reuters. Retrieved December 19, 2022, from <https://www.reuters.com/business/environment/floods-other-water-related-disasters-could-cost-economy-56-trillion-by-2050-2022-08-29/>
13. Albert JS, Destouni G, Duke-Sylvester SM, et al. Scientists' warning to humanity on the freshwater biodiversity crisis. *Ambio*. 2021;50(1):85-94. doi:10.1007/s13280-020-01318-8
14. National Geographic-Education. Earth’s Freshwater A Guide for Teaching Freshwater in Grades 3 to 8. *National Geographic Society*. https://media.nationalgeographic.org/assets/file/freshwater-full-teacher-guide.pdf. Accessed December 12, 2022.
15. Sullivan BK. Why are rivers drying up? Global droughts are turning waterways to Dust. Bloomberg.com. https://www.bloomberg.com/news/features/2022-08-26/why-are-rivers-drying-up-climate-change-turns-waterways-into-dust. Published August 26, 2022. Accessed December 4, 2022.
16. Henley J. Europe's rivers run dry as scientists warn drought could be worst in 500 Years. *The Guardian*. https://www.theguardian.com/environment/2022/aug/13/europes-rivers-run-dry-as-scientists-warn-drought-could-be-worst-in-500-years. Published August 13, 2022. Accessed December 4, 2022.
17. Croker N, Rigdon R, Jones J, Dotto C, Dewan A. The world's rivers are drying up from extreme weather. see how 6 look from space. CNN. https://edition.cnn.com/2022/08/20/world/rivers-lakes-drying-up-drought-climate-cmd-intl/index.html. Published August 20, 2022. Accessed December 4, 2022.
18. Bradsher K, Dong J. China's record drought is drying rivers and feeding its coal habit. *The New York Times*. https://www.nytimes.com/2022/08/26/business/economy/china-drought-economy-climate.html. Published August 26, 2022. Accessed December 4, 2022.
19. AFP. 10 times normal rainfall drives Pakistan flooding: ESA. *New Age*. https://www.newagebd.net/article/179973/articlelist/323/Cartoon. Published September 2, 2022. Accessed December 4, 2022.
20. Lee E, Carrivick JL, Quincey DJ, Cook SJ, James WH, Brown LE. Accelerated mass loss of Himalayan glaciers since the Little Ice Age. *Scientific Reports*. 2021;11(1). doi:10.1038/s41598-021-03805-8
21. Dietz WH. Climate change and malnutrition: we need to act now. *The Journal of Clinical Investigation*. 2020;130(2):556-558. doi:10.1172/JCI135004
22. Levine B. Autoimmune disease incidence increase linked to climate change. EverydayHealth.com. https://www.everydayhealth.com/immune-disorders/autoimmune-disease-the-environment-and-you/. Published August 15, 2022. Accessed December 4, 2022.
23. Natur S, Damri O, Agam G. The Effect of Global Warming on Complex Disorders (Mental Disorders, Primary Hypertension, and Type 2 Diabetes). *International Journal of Environmental Research and Public Health*. 2022; 19(15):9398. <https://doi.org/10.3390/ijerph19159398>
24. Bell JE, Brown CL, Conlon K, et al. Changes in extreme events and the potential impacts on human health. *Journal of the Air & Waste Management Association*. 2018;68(4):265-287. doi:10.1080/10962247.2017.1401017
25. Nogueira LM, Yabroff KR, Bernstein A. Climate change and cancer. *CA: A Cancer Journal for Clinicians*. 2020;70(4):239-244. doi:10.3322/caac.21610
26. UN News. Climate change much deadlier than cancer in some places, UNDP data shows | UN news. United Nations. https://news.un.org/en/story/2022/11/1130202. Published November 4, 2022. Accessed December 21, 2022.
27. Khojasteh D, Davani E, Shamsipour A, Haghani M, Glamore W. Climate change and COVID-19: Interdisciplinary perspectives from two global crises. *Science of The Total Environment*. 2022;844:157142. doi:10.1016/j.scitotenv.2022.157142
28. Hauser N, Conlon KC, Desai A, Kobziar LN. Climate Change and Infections on the Move in North America. *Infection and Drug Resistance*. 2021;14:5711-5723. Published 2021 Dec 30. doi:10.2147/IDR.S305077
29. Nnadi NE, Carter DA. Climate change and the emergence of fungal pathogens. *PLoS pathogens*. 2021;17(4):e1009503. Published 2021 Apr 29. doi:10.1371/journal.ppat.1009503
30. Mohiuddin AK. TRACK Implementation: a Bangladesh Scenario. *Central Asian Journal of Global Health*. 2020;9(1):e416. Published 2020 May 26. doi:10.5195/cajgh.2020.416
31. D'Amato G, Vitale C, De Martino A, et al. Effects on asthma and respiratory allergy of Climate change and air pollution. *Multidisciplinary Respiratory Medicine*. 2015;10:39. Published 2015 Dec 22. doi:10.1186/s40248-015-0036-x
32. El Khayat M, Halwani DA, Hneiny L, Alameddine I, Haidar MA, Habib RR. Impacts of Climate Change and Heat Stress on Farmworkers' Health: A Scoping Review. *Frontiers in Public Health*. 2022;10:782811. Published 2022 Feb 8. doi:10.3389/fpubh.2022.782811
33. Abutaleb Y, Achenbach J. Coronavirus wave this fall could infect 100 million, Administration warns. *The Washington Post*. https://www.washingtonpost.com/health/2022/05/06/fall-winter-coronavirus-wave/. Published May 6, 2022. Accessed December 14, 2022.
34. Mehrl M, Thurner PW. The Effect of the Covid-19 Pandemic on Global Armed Conflict: Early Evidence. *Political Studies Review*. 2021;19(2):286-293. doi:10.1177/1478929920940648
35. Ossai EC. COVID-19 and Peace in Conflict-Affected Areas. *Encyclopedia*. 2022; 2(4):1678-1687. <https://doi.org/10.3390/encyclopedia2040114>
36. Ide T. COVID-19 and armed conflict. *World Development*. 2021;140:105355. doi:10.1016/j.worlddev.2020.105355
37. Rubinson E, Hitman G. The effects of covid-19 emergency aid on UN reputation—evidence from Syria, Yemen, and Sudan. *Journal of Asian and African Studies*. November 2022:1-20. doi:10.1177/00219096221137651
38. McKay B, Marcus AD, Khan N, Page J. How this pandemic has left us less prepared for the next one. *The Wall Street Journal*. https://www.wsj.com/articles/how-this-pandemic-has-left-us-less-prepared-for-the-next-one-11640982760. Published December 31, 2021. Accessed December 5, 2022.
39. Crow D. Coronavirus fuels Black America's sense of injustice: Free to read. *Financial Times*. https://www.ft.com/content/7f679362-0084-47d0-a67f-661da639e78c. Published June 8, 2020. Accessed December 5, 2022.
40. Chen JA, Zhang E, Liu CH. Potential Impact of COVID-19-Related Racial Discrimination on the Health of Asian Americans. *American Journal of Public Health*. 2020;110(11):1624-1627. doi:10.2105/AJPH.2020.305858
41. Gover AR, Harper SB, Langton L. Anti-Asian Hate Crime During the COVID-19 Pandemic: Exploring the Reproduction of Inequality. *American Journal of Criminal Justice*. 2020;45(4):647-667. doi:10.1007/s12103-020-09545-1
42. ILO. From Crisis to Opportunity for Sustainable Peace – A joint perspective on responding to the health, employment and peacebuilding challenges in times of COVID-19. International Labour Organization. November 2020. https://www.ilo.org/wcmsp5/groups/public/---ed\_emp/documents/publication/wcms\_761809.pdf. Accessed December 5, 2022.
43. Georgieva K, Sosa S, Rother B. Global food crisis demands support for people, open trade, bigger local harvests. *The Daily Star*. https://www.thedailystar.net/business/news/global-food-crisis-demands-support-people-open-trade-bigger-local-harvests-3132481. Accessed December 1, 2022.
44. Agencies. 1 person dying of hunger every four seconds/Warn 238 NGOs from 75 countries, urge decisive int’l action to ‘end spiraling global crisis.’ *The Daily Star*. https://www.thedailystar.net/news/world/news/1-person-dying-hunger-every-four-seconds-3124501. Published September 21, 2022. Accessed December 2, 2022.
45. UN News. Un appeals for record $51.5 billion to help 230 million on the Brink in 2023 | UN news. United Nations. https://news.un.org/en/story/2022/12/1131222. Published December 1, 2022. Accessed December 5, 2022.
46. Nicola M, Alsafi Z, Sohrabi C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *International Journal of Surgery*. 2020;78:185-193. doi:10.1016/j.ijsu.2020.04.018
47. Moyer JD, Verhagen W, Mapes B, et al. How many people is the COVID-19 pandemic pushing into poverty? A long-term forecast to 2050 with alternative scenarios. *PLoS One*. 2022;17(7):e0270846. Published 2022 Jul 8. doi:10.1371/journal.pone.0270846
48. Tuczyńska M, Staszewski R, Matthews-Kozanecka M, Baum E. Impact of Socioeconomic Status on the Perception of Accessibility to and Quality of Healthcare Services during the COVID-19 Pandemic among Poles-Pilot Study. *International Journal of Environmental Research and Public Health*. 2022;19(9):5734. Published 2022 May 8. doi:10.3390/ijerph19095734
49. Dhaliwal M, Small R, Webb D, et al. Covid-19 as a long multiwave event: implications for responses to safeguard younger generations. *British medical journal*. 2022;376:e068123. Published 2022 Jan 27. doi:10.1136/bmj-2021-068123
50. Stallard E, Pinnell O, Kelly J. Revealed: Huge gas flaring emissions never reported. BBC News. https://www.bbc.com/news/science-environment-62917498. Published September 29, 2022. Accessed December 19, 2022.
51. Dickie G. Global wildlife populations have sunk 69% since 1970 - WWF report. Reuters. https://www.reuters.com/business/environment/global-wildlife-populations-have-sunk-69. Published October 12, 2022. Accessed December 2, 2022.
52. Reddington CL, Conibear L, Robinson S, Knote C, Arnold SR, Spracklen DV. Air Pollution From Forest and Vegetation Fires in Southeast Asia Disproportionately Impacts the Poor. *Global Environmental and Occupational Health*. 2021;5(9):e2021GH000418. Published 2021 Sep 1. doi:10.1029/2021GH000418
53. Zimmer K. Deforestation is leading to more infectious diseases in humans. Science. https://www.nationalgeographic.com/science/article/deforestation-leading-to-more-infectious-diseases-in-humans. Published November 22, 2019. Accessed December 5, 2022.
54. Beyer A. Biden environmental push doesn't include Key Mountaintop Removal Study. Mountain State Spotlight. https://mountainstatespotlight.org/2022/10/11/biden-environmental-justice-mountaintop-removal-cancer/. Published October 11, 2022. Accessed December 5, 2022.
55. Rainforest Foundation Norway. The disease of deforestation. The Rainforest Foundation. https://www.regnskog.no/en/news/the-disease-of-deforestation. Accessed December 5, 2022.
56. Münzel T, Hahad O, Daiber A, Landrigan PJ. Soil and water pollution and human health: What should cardiologists worry about? *Cardiovascular Research*. 2022. doi:10.1093/cvr/cvac082
57. Chaves LSM, Conn JE, López RVM, Sallum MAM. Abundance of impacted forest patches less than 5 km2 is a key driver of the incidence of malaria in Amazonian Brazil. *Scientific Reports*. 2018;8(1):7077. Published 2018 May 4. doi:10.1038/s41598-018-25344-5
58. Bloomberg News. Hydropower production falls as dams from China to US hit by sweeping drought. Bloomberg.com. https://www.bloomberg.com/news/features/2022-10-26/drought-from-china-to-us-hits-hydro-dams-slashing-the-top-clean-energy-source. Published October 25, 2022. Accessed December 4, 2022.
59. Varadhan S. Analysis: India Power Binges on coal, outpaces Asia. Reuters. https://www.reuters.com/business/cop/india-power-binges-coal-outpaces-asia-2022-11-18/. Published November 17, 2022. Accessed December 4, 2022.
60. Chen Y. Breaking views - Ukraine War helps China's coal addiction stack up. Reuters. https://www.reuters.com/breakingviews/ukraine-war-helps-chinas-coal-addiction-stack-up-2022-06-02/. Published June 2, 2022. Accessed December 19, 2022.
61. Mandavia M. Climate change could be double-edged sword for Australian coal. *The Wall Street Journal*. https://www.wsj.com/articles/climate-change-could-be-double-edged-sword-for-australian-coal-11663681703. Published September 20, 2022. Accessed December 4, 2022.
62. Dvorak P, Hirtenstein A. Europe's energy crisis threatens to slow green transition. *The Wall Street Journal*. https://www.wsj.com/articles/europes-energy-crisis-threatens-to-slow-green-transition-11659346200. Published August 1, 2022. Accessed December 4, 2022.
63. IEA. Global coal demand is set to return to its all-time high in 2022 - news. IEA. https://www.iea.org/news/global-coal-demand-is-set-to-return-to-its-all-time-high-in-2022. Published July 28, 2022. Accessed December 3, 2022.
64. Gourinchas P-O. Global economic growth slows amid gloomy and more uncertain outlook. IMF. https://www.imf.org/en/Blogs/Articles/2022/07/26/blog-weo-update-july-2022. Published July 26, 2022. Accessed December 9, 2022.
65. TBS Report. Shrinking businesses ring recession alarm in major economies. *The Business Standard*. https://www.tbsnews.net/world/global-economy/shrinking-businesses-ring-recession-alarm-major-economies-468914. Published July 31, 2022. Accessed December 9, 2022.
66. Fairless T. Higher interest rates can take a long time to bring down inflation. *The Wall Street Journal*. https://www.wsj.com/articles/higher-interest-rates-can-take-a-long-time-to-bring-down-inflation-11666517405. Published October 23, 2022. Accessed December 4, 2022.
67. Canepa F, Schneider H. Central Banks raise rates again as fed drives global inflation fight. Reuters. https://www.reuters.com/markets/europe/central-banks-raise-rates-again-fed-drives-global-inflation-fight-2022-09-22/. Published September 22, 2022. Accessed December 4, 2022.
68. Hole J. Central Banks will fail to tame inflation without better fiscal policy, study says. Reuters. https://www.reuters.com/markets/us/central-banks-will-fail-tame-inflation-without-better-fiscal-policy-study-says-2022-08-27/. Published August 27, 2022. Accessed December 4, 2022.
69. Smialek J. Central Banks accept pain now, fearing worse later. *The New York Times*. https://www.nytimes.com/2022/09/22/business/economy/central-banks-inflation.html. Published September 22, 2022. Accessed December 4, 2022.
70. Hagstrom A. UK inflation matches us, soars to highest point in 40 years. Fox Business. https://www.foxbusiness.com/markets/uk-inflation-highest-40-years. Published May 18, 2022. Accessed December 9, 2022.
71. Hannon P. U.K. inflation hits 41-year high as recession looms. *The Wall Street Journal*. https://www.wsj.com/articles/u-k-inflation-hits-41-year-high-as-recession-looms-11668582865. Published November 16, 2022. Accessed December 9, 2022.
72. Lopez G. Inflation's 40-year high. *The New York Times*. https://www.nytimes.com/2022/04/13/briefing/inflation-forty-year-high-gas-prices.html. Published April 13, 2022. Accessed December 9, 2022.
73. Reuters. Japan's consumer prices spike to highest level in 40 years: Govt Data. Business Standard News. https://www.business-standard.com/article/international/japan-s-consumer-prices-spike-to-highest-level-in-40-years-govt-data-122111800287\_1.html. Published November 18, 2022. Accessed December 9, 2022.
74. Arnold M. German inflation hits 40-year high as ECB president warns of 'supply shock'. *Financial Times*. https://www.ft.com/content/2f2fb7cc-3039-416b-ad22-f42315d0b1d0. Published March 30, 2022. Accessed December 9, 2022.
75. Alkhalifa MR. France's annual inflation rate hits 6.1% in July. *Forbes Middle East*. https://www.forbesmiddleeast.com/industry/economy/frances-inflation-hits-highest-levels-in-july-since-1985-reaching-61. Published August 12, 2022. Accessed December 9, 2022.
76. Indo-Asian News Service. Inflation in Italy surges by 8.4% to reach a 37-year high in August. *Business Standard News*. https://www.business-standard.com/article/international/inflation-in-italy-surges-by-8-4-to-reach-a-37-year-high-in-august-122090100108\_1.html. Published September 1, 2022. Accessed December 9, 2022.
77. Bloomberg News. Russian inflation spikes to 20-year record on war and sanctions. Bloomberg.com. https://www.bloomberg.com/news/articles/2022-05-13/russian-inflation-spikes-to-20-year-record-on-war-and-sanctions. Published May 13, 2022. Accessed December 9, 2022.
78. Pitel L. Turkish inflation hits 20-year high of 61% as energy and food costs soar. Financial Times. https://www.ft.com/content/19e9541c-e0b6-4a1c-adb3-afc3f8e1a880. Published April 4, 2022. Accessed December 9, 2022.
79. AFP-Beijing . China's factory inflation hits 25-year high. *The Daily Star*. https://www.thedailystar.net/business/global-economy/news/chinas-factory-inflation-hits-25-year-high-2198676. Published October 14, 2021. Accessed December 12, 2022.
80. Tewari S. Five reasons why China's economy is in trouble. BBC News. https://www.bbc.com/news/world-asia-china-62830775. Published October 4, 2022. Accessed December 12, 2022.
81. Woo R, Zhang E, Gao L. China's economic wobbles worsen as factory, property woes Mount. Reuters. https://www.reuters.com/world/china/chinas-july-factory-activity-grows-slower-pace-caixin-pmi-2022-08-01/. Published August 1, 2022. Accessed December 12, 2022.
82. White E, Lin A. China risks 1mn Covid deaths in 'Winter wave', modelling shows. *Financial Times*. https://www.ft.com/content/4e1f0062-279c-4390-86f8-4d331418a8f5. Published December 7, 2022. Accessed December 12, 2022.
83. Arnold M. Eurozone inflation hits record high of 10.7%. *Financial Times*. https://www.ft.com/content/d783e38e-7a58-4285-b68a-55e357bb8c4b. Published October 31, 2022. Accessed December 9, 2022.
84. Hannon P. Eurozone inflation rate rises to 10.7% as recession looms. *The Wall Street Journal*. https://www.wsj.com/articles/eurozone-inflation-rate-rises-to-10-7-as-recession-looms-11667210401. Published November 1, 2022. Accessed December 9, 2022.
85. TBS Report. 6 major countries that went bankrupt in recent times. *The Business Standard*. https://www.tbsnews.net/world/6-major-countries-went-bankrupt-recent-times-453426. Published July 5, 2022. Accessed December 9, 2022.
86. Mohamed H. After Lebanese statement, what does state bankruptcy mean? EgyptToday. https://www.egypttoday.com/Article/3/114546/After-Lebanese-statement-what-does-state-bankruptcy-mean. Published April 4, 2022. Accessed December 9, 2022.
87. Harvey F. 'more than 50 poor countries in danger of bankruptcy' says UN official. *The Guardian*. https://www.theguardian.com/environment/2022/nov/10/54-poor-countries-in-danger-of-bankruptcy-amid-economic-climate-cop27. Published November 10, 2022. Accessed December 9, 2022.
88. Reuters. Debt default: At least dozen countries are in Danger Zone. The Financial Express. https://thefinancialexpress.com.bd/economy/debt-default-at-least-dozen-countries-are-in-danger-zone-1658052169. Published June 17, 2022. Accessed December 9, 2022.
89. Mathews AW. Cost of employer-provided health coverage passes $20,000 a year. *The Wall Street Journal*. https://www.wsj.com/articles/cost-of-employer-provided-health-coverage-passes-20-000-a-year-11569429000. Published September 25, 2019. Accessed December 4, 2022.
90. Lubin D. A stronger dollar might hit emerging economies harder this cycle. *Financial Times*. https://www.ft.com/content/3e8737a0-b4c1-4e7c-b93f-f646e3c699dd. Published June 27, 2022. Accessed December 4, 2022.
91. Pizzinelli C, Shibata I. Why jobs are plentiful while workers are scarce. IMF. https://www.imf.org/en/Blogs/Articles/2022/01/19/why-jobs-are-plentiful-while-workers-are-scarce. Published January 19, 2022. Accessed December 4, 2022.
92. Englund W. An energy crisis is gripping the world, with potentially grave consequences. *The Washington Post*. https://www.washingtonpost.com/business/2021/10/09/energy-crisis-global/. Published October 9, 2021. Accessed December 4, 2022.
93. Carrière-Swallow Y, Deb P, Furceri D, Jiménez D, Ostry JD. How soaring shipping costs raise prices around the world. IMF. https://www.imf.org/en/Blogs/Articles/2022/03/28/how-soaring-shipping-costs-raise-prices-around-the-world. Published March 28, 2022. Accessed December 4, 2022.
94. Golle V. Supply chain latest: How freight rates are adding to inflation. Bloomberg.com. https://www.bloomberg.com/news/newsletters/2021-12-20/supply-chain-latest-how-freight-rates-are-adding-to-inflation. Published December 20, 2021. Accessed December 4, 2022.
95. Miller R, Curran E. Job cuts in tech and banking don't mean mass layoffs in looming global recession. Bloomberg.com. https://www.bloomberg.com/news/articles/2022-11-28/job-cuts-in-tech-and-banking-don-t-mean-mass-layoffs-in-looming-global-recession#xj4y7vzkg. Published November 27, 2022. Accessed December 4, 2022.
96. Bendavid E, Boerma T, Akseer N, et al. The effects of armed conflict on the health of women and children. *Lancet*. 2021;397(10273):522-532. doi:10.1016/S0140-6736(21)00131-8
97. UN News. More than 100 million now forcibly displaced: UNHCR report. United Nations. https://news.un.org/en/story/2022/06/1120542. Published June 16, 2022. Accessed December 10, 2022.
98. Mahase E. UN warns of "devastating" effect of covid-19, conflict, and climate change on women's and children's health. *British medical journal*. 2022;379:o2497. Published 2022 Oct 18. doi:10.1136/bmj.o2497
99. UN News. GLOBAL ISSUES: Children. United Nations. https://www.un.org/en/global-issues/children. Published 2019. Accessed December 12, 2022.
100. Save the Children. 1 in 6 children living in conflict zones at risk of sexual violence by armed groups. Save the Children International. https://www.savethechildren.net/news/1-6-children-living-conflict-zones-risk-sexual-violence-armed-groups. Published February 18, 2021. Accessed December 12, 2022.
101. Rolander N. Military spending passes $2 trillion as Europe boosts defenses. Bloomberg.com. https://www.bloomberg.com/news/articles/2022-04-24/military-spending-passes-2-trillion-as-europe-boosts-defenses. Published April 24, 2022. Accessed December 10, 2022.
102. Jahan S. Covid-19: The makings of a third World War. *The Daily Star*. https://www.thedailystar.net/opinion/news/covid-19-the-makings-third-world-war-2078057. Published April 15, 2021. Accessed December 12, 2022.
103. Ferguson N. Cold War 2 with China and Russia is becoming WW3. Bloomberg.com. https://www.bloomberg.com/opinion/articles/2022-10-23/cold-war-2-with-china-and-russia-is-becoming-ww3-niall-ferguson. Published October 23, 2022. Accessed December 12, 2022.
104. Mollman S. Wall street's 'dr. doom' says 'World War III has already effectively begun'. *Fortune*. https://fortune.com/2022/10/28/wall-street-dr-doom-world-war-nouriel-roubini-china-taiwan-ukraine-recession/. Published October 28, 2022. Accessed December 12, 2022.
105. Rosenfeld G. Perspective | how will we know when it's World War III? *The Washington Post*. https://www.washingtonpost.com/outlook/2022/04/05/how-will-we-know-when-its-world-war-iii/. Published April 5, 2022. Accessed December 12, 2022.
106. Waheeduzzaman A. Don't let world leaders put us through World War III. *The Daily Star*. https://www.thedailystar.net/opinion/views/news/dont-let-world-leaders-put-us-through-world-war-iii-3150126. Published October 23, 2022. Accessed December 12, 2022.
107. Astrov V, Ghodsi M, Grieveson R, et al. Russia’s invasion of Ukraine: Assessment of the humanitarian, economic, and financial impact in the short and medium term. *International Economics and Economic Policy*. 2022;19(2):331-381. doi:10.1007/s10368-022-00546-5
108. Haque U, Naeem A, Wang S, et al. The human toll and humanitarian crisis of the Russia-Ukraine war: the first 162 days. *BMJ Glob Health*. 2022;7(9):e009550. doi:10.1136/bmjgh-2022-009550
109. Kumar BN, James R, Hargreaves S, et al. Meeting the health needs of displaced people fleeing Ukraine: Drawing on existing technical guidance and evidence. *The Lancet Regional Health - Europe*. 2022;17:100403. Published 2022 May 7. doi:10.1016/j.lanepe.2022.100403
110. Dhawan M, Choudhary OP, Priyanka, Saied AA. Russo-Ukrainian war amid the COVID-19 pandemic: Global impact and containment strategy. *International Journal of Surgery*. 2022;102:106675. doi:10.1016/j.ijsu.2022.106675
111. United Nations. Report on the human rights situation in Ukraine - ohchr.org. United Nations Human Rights Office of The High Commissioner. https://www.ohchr.org/sites/default/files/documents/countries/ua/2022-09-23/ReportUkraine-1Feb-31Jul2022-en.pdf. Published September 27, 2022. Accessed December 9, 2022.
112. Casey C. Disability in times of conflict. *Forbes*. https://www.forbes.com/sites/carolinecasey/2022/12/02/disability-in-times-of-conflict/?sh=861ec2067c75. Published December 2, 2022. Accessed December 8, 2022.
113. AP. With Europe's second-worst vaccine rate, Ukraine suffers COVID surge. euronews. https://www.euronews.com/2021/10/23/with-europe-s-second-worst-vaccination-rate-ukraine-suffers-covid-surge. Published October 23, 2021. Accessed December 6, 2022.
114. Yakovleva A, Kovalenko G, Redlinger M, et al. Tracking SARS-COV-2 variants using Nanopore sequencing in Ukraine in 2021. *Scientific Reports - Nature*. 2022;12(1):15749. Published 2022 Sep 21. doi:10.1038/s41598-022-19414-y
115. Seriakova I, Yevtushenko V, Kramarov S, Palatna L, Shpak I, Kaminska T. Clinical course of COVID-19 in hospitalized children of Ukraine in different pandemic periods. *European Clinical Respiratory Journal*. 2022;9(1):2139890. Published 2022 Oct 30. doi:10.1080/20018525.2022.2139890
116. Poberezhets V. Healthcare crisis in Ukraine - worrying consequences of the Russian-Ukrainian war. *Croatian Medical Journal*. 2022;63(4):315-316. doi:10.3325/cmj.2022.63.315
117. Uwishema O, Sujanamulk B, Abbass M, et al. Russia-Ukraine conflict and COVID-19: a double burden for Ukraine's healthcare system and a concern for global citizens. *Postgraduate Medical Journal*. 2022;98(1162):569-571. doi:10.1136/postgradmedj-2022-141895
118. Jankowski M, Gujski M. Editorial: The Public Health Implications for the Refugee Population, Particularly in Poland, Due to the War in Ukraine. *Medical Science Monitor*. 2022;28:e936808-1-e936808-4. Published 2022 Apr 1. doi:10.12659/MSM.936808
119. Greenaway C, Fabreau G, Pottie K. The war in Ukraine and refugee health care: considerations for health care providers in Canada. *Canadian Medical Association Journal*. 2022;194(26):E911-E915. doi:10.1503/cmaj.220675
120. Kardas P, Babicki M, Krawczyk J, Mastalerz-Migas A. War in Ukraine and the challenges it brings to the Polish healthcare system. *The Lancet Regional Health - Europe*. 2022;15:100365. Published 2022 Mar 15. doi:10.1016/j.lanepe.2022.100365
121. Klas J, Grzywacz A, Kulszo K, et al. Challenges in the Medical and Psychosocial Care of the Paediatric Refugee-A Systematic Review. *International Journal of Environmental Research and Public Health*. 2022;19(17):10656. Published 2022 Aug 26. doi:10.3390/ijerph191710656
122. Popov O, Iatsyshyn A, Kovach V, et al. Risk Assessment for the Population of Kyiv, Ukraine as a Result of Atmospheric Air Pollution. *Journal of Health and Pollution*. 2020;10(25):200303. Published 2020 Jan 22. doi:10.5696/2156-9614-10.25.200303
123. Nchasi G, Mwasha C, Shaban MM, et al. Ukraine's triple emergency: Food crisis amid conflicts and COVID-19 pandemic. *Health Science Reports*. 2022;5(6):e862. Published 2022 Oct 7. doi:10.1002/hsr2.862
124. Ваніян Р. Over 1,000 medical facilities damaged since war start – Health Ministry. UKRANIA NEWS. https://ukranews.com/en/news/891664-over-1-000-medical-facilities-damaged-since-war-start-health-ministry. Published November 1, 2022. Accessed December 4, 2022.
125. Howard S. Ukraine invasion: safe corridor for medical supplies is urgently needed, says WHO. *British medical journal*. 2022;376:o570. Published 2022 Mar 3. doi:10.1136/bmj.o570
126. Guy J, Kesaieva Y, Shelley J, Lapin D, Lister T. Russian strikes leave 10 million Ukrainians without power as temperatures plummet. CNN. https://edition.cnn.com/2022/11/18/europe/ukraine-power-grid-first-snow-intl/index.html. Published November 18, 2022. Accessed December 8, 2022.
127. Mckinley JC. With nearly half of Ukraine's energy grid knocked out, Zelensky says 17 regions face a 'difficult situation.'. *The New York Times*. https://www.nytimes.com/2022/11/19/world/europe/with-nearly-half-of-ukraines-energy-grid-knocked-out-zelensky-says-17-regions-face-a-difficult-situation.html. Published November 19, 2022. Accessed December 8, 2022.
128. Reuters. Half of Kyiv's region to remain without power for days - governor. Reuters. https://www.reuters.com/world/europe/half-kyivs-region-remain-without-power-days-governor-2022-12-06/. Published December 5, 2022. Accessed December 8, 2022.
129. Aipanjiguly S. WHO/europe and ECDC report reveals increasing numbers living with undiagnosed HIV in the region. World Health Organization. https://www.who.int/europe/news/item/30-11-2022-who-europe-and-ecdc-report-reveals-increasing-numbers-living-with-undiagnosed-hiv-in-the-region. Published November 30, 2022. Accessed December 3, 2022.
130. Patel SS, Erickson TB. The new humanitarian crisis in Ukraine: Coping with the public health impact of hybrid warfare, mass migration, and mental health trauma [published online ahead of print, 2022 Mar 23]. *Disaster Medicine and Public Health Preparedness*. 2022;1-5. doi:10.1017/dmp.2022.70
131. Lai To L. China, the USA and the South China Sea conflicts. *Security Dialogue*. 2003;34(1):25-39. doi:10.1177/0967010603034001673
132. Shukla S. What is nine-dash line? the basis of China's claim to sovereignty over South China Sea. ThePrint. https://theprint.in/theprint-essential/what-is-nine-dash-line-the-basis-of-chinas-claim-to-sovereignty-over-south-china-sea/469403/. Published July 28, 2020. Accessed December 13, 2022.
133. U.S.-China Trade Facts. The People's Republic of China. United States Trade Representative. https://ustr.gov/countries-regions/china-mongolia-taiwan/peoples-republic-china. Published 2021. Accessed December 13, 2022.
134. Asian News International. China's trade war with US resulted in loss of USD 550 billion: Report. *The Economic Times*. https://economictimes.indiatimes.com/news/international/business/chinas-trade-war-with-us-resulted-in-loss-of-usd-550-billion-report/articleshow/90025687.cms?from=mdr. Published March 6, 2022. Accessed December 13, 2022.
135. Liu L, Huang Y, Jin J. China's Vaccine Diplomacy and Its Implications for Global Health Governance. *Healthcare* (Basel). 2022;10(7):1276. Published 2022 Jul 10. doi:10.3390/healthcare10071276
136. Kay C, Makol MK. India hopes 'pharma city' will break China's grip on drug industry. Bloomberg.com. https://www.bloomberg.com/news/features/2022-04-11/india-hopes-pharma-city-will-break-china-s-grip-on-drug-industry. Published April 11, 2022. Accessed December 19, 2022.
137. Sadek MAZ. *The Business Standard*. https://www.tbsnews.net/thoughts/price-hike-active-pharmaceutical-ingredients-concern-access-healthcare-442026. Published June 18, 2022. Accessed December 3, 2022.
138. Papageorgiou M, de Melo Dda SN. China as a responsible power amid the COVID-19 crisis: Perceptions of partners and adversaries on Twitter - *Fudan Journal of the Humanities and Social Sciences*. SpringerLink. https://link.springer.com/article/10.1007/s40647-022-00344-y. Published February 25, 2022. Accessed December 19, 2022.
139. Zha D. China and the Global Search for Health Security: History, vaccines, and Governance - *China International Strategy Review*. SpringerLink. https://link.springer.com/article/10.1007/s42533-021-00066-y. Published March 24, 2021. Accessed December 19, 2022.
140. Jimenez D. US pharmacopeia report finds high reliance on Indian manufacturers for apis. Pharmaceutical Technology. https://www.pharmaceutical-technology.com/news/us-pharmacopeia-report-high-reliance-indian-manufacturers-api/. Published March 17, 2022. Accessed December 3, 2022.
141. Authenticated US Government Information. 117TH CONGRESS 2D SESSION-H. R. 7121. GovInfo. https://www.govinfo.gov/content/pkg/BILLS-117hr7121ih/pdf/BILLS-117hr7121ih.pdf. Published March 17, 2022. Accessed December 13, 2022.
142. Sud V, McCarthy S. Indian and Chinese troops clash on disputed border. CNN. https://edition.cnn.com/2022/12/13/asia/india-china-border-dispute-skirmish-tawang-sector-intl-hnk/index.html. Published December 13, 2022. Accessed December 13, 2022.
143. Chatterjee P. Indian pharma threatened by COVID-19 shutdowns in China. *Lancet*. 2020;395(10225):675. doi:10.1016/S0140-6736(20)30459-1
144. Sharma DC. India-China border standoff raises concerns on drug supplies. *Lancet Oncology*. 2020;21(11):1408-1409. doi:10.1016/S1470-2045(20)30621-5
145. Guerin PJ, Singh-Phulgenda S, Strub-Wourgaft N. The consequence of COVID-19 on the global supply of medical products: Why Indian generics matter for the world?. *F1000Research*. 2020;9:225. Published 2020 Apr 1. doi:10.12688/f1000research.23057.1
146. Buddhavarapu R. India wants to be the 'pharmacy of the world.' but first, it must wean itself from China. CNBC. https://www.cnbc.com/2022/05/27/india-needs-to-fill-china-gaps-to-become-the-pharmacy-of-the-world.html. Published May 27, 2022. Accessed December 13, 2022.
147. Zhang T. Strengthening Crisis Management, the most urgent task in current China–US and China–japan security relations. *China International Strategy Review*. 2021;3(1):34-55. doi:10.1007/s42533-021-00067-x
148. Cannon BJ, Rossiter A. Locating the quad: Informality, institutional flexibility, and future alignment in the indo-pacific. *International Politics*. March 2022. doi:10.1057/s41311-022-00383-y
149. Wang W. Opportunities and challenges facing China’s economic “external circulation”. *China International Strategy Review*. 2022;4(1):108-128. doi:10.1007/s42533-022-00106-1
150. Kokumo N. Japan bolsters pharmaceutical production to avoid overdependence on China. JAPAN Forward. https://japan-forward.com/japan-bolsters-pharmaceutical-production-to-avoid-overdependence-on-china/. Published June 18, 2020. Accessed December 13, 2022.
151. Shepherd C, Wu P-L. Taiwan, missiles and spying set to be China's priorities under new Xi term. *The Washington Post*. https://www.washingtonpost.com/world/2022/10/28/china-politburo-xi-jinping-policy/. Published October 28, 2022. Accessed December 13, 2022.
152. Tang D. Xi Jinping claims China wants to 'get along' with Biden as tensions rise over Taiwan. World | *The Times*. https://www.thetimes.co.uk/article/xi-jinping-claims-china-wants-to-get-along-with-biden-as-tensions-rise-over-taiwan-lvjz2fqfs. Published October 27, 2022. Accessed December 13, 2022.
153. Heijmans P, Wang C, Ellis S. Taiwan tensions raise alarms over risks to world's subsea cables. BNN-Bloomberg. https://www.bnnbloomberg.ca/taiwan-tensions-raise-alarms-over-risks-to-world-s-subsea-cables-1.1838046. Published October 27, 2022. Accessed December 13, 2022.
154. Wintermeyer L. The Chip Company in Taiwan you've never heard of that powers the devices in your life -TSMC. *Forbes*. https://www.forbes.com/sites/lawrencewintermeyer/2022/08/05/the-chip-company-youve-never-heard-of-that-powers-the-devices-in-your-life--and-its-in-taiwan/?sh=34fe54c1c6d4. Published November 8, 2022. Accessed December 13, 2022.
155. Cheng E. China needs Taiwan's biggest chipmaker - more than the other way around. CNBC. https://www.cnbc.com/2022/08/17/china-needs-taiwans-biggest-chipmaker-more-than-the-other-way-around.html. Published August 19, 2022. Accessed December 13, 2022.
156. Sutradhar KB, Sumi CD. Implantable microchip: the futuristic controlled drug delivery system. *Drug Delivery*. 2016;23(1):1-11. doi:10.3109/10717544.2014.903579
157. AP. China blocks some Taiwan imports but avoids chip disruptions. USNews. https://www.usnews.com/news/business/articles/2022-08-03/china-blocks-some-taiwan-imports-but-avoids-chip-disruption. Published August 3, 2022. Accessed December 13, 2022.
158. Mnatsakanyan G. Heatwave, drought and war leave Nagorno-Karabakh short of water. Eurasianet. https://eurasianet.org/heatwave-drought-and-war-leave-nagorno-karabakh-short-of-water. Published September 8, 2021. Accessed December 8, 2022.
159. Khurshudyan I, Cunningham E, Berger M. The nagorno-karabakh conflict between Armenia and Azerbaijan, explained. *The Washington Post*. https://www.washingtonpost.com/world/2022/08/04/nagorno-karabakh-conflict-explained/. Published September 13, 2022. Accessed December 6, 2022.
160. Kazaryan AM, Edwin B, Darzi A, et al. War in the time of COVID-19: humanitarian catastrophe in Nagorno-Karabakh and Armenia. *Lancet Glob Health*. 2021;9(3):e243-e244. doi:10.1016/S2214-109X(20)30510-6
161. Shoib S, Arif N, Nahidi M, Rumiyya K, Swed S, Yusha'u Armiya'u A. Nagorno-Karabakh conflict: Mental health repercussions and challenges in Azerbaijan. *Asian Journal of Psychiatry*. 2022;73:103095. doi:10.1016/j.ajp.2022.103095
162. Cookman L. In Armenia, why are just 15 percent fully vaccinated? Al Jazeera. https://www.aljazeera.com/news/2021/12/6/covid-19-vaccine-denial-still-rife-in-armenia. Published December 6, 2021. Accessed December 7, 2022.
163. OECD. COVID-19 crisis response in Eastern Partner countries. OECD. https://read.oecd-ilibrary.org/view/?ref=129\_129637-ttbr2lwvsh&amp;title=COVID-19-Crisis-Response-in-EU-Eastern-Partner-Countries. Published October 13, 2020. Accessed December 7, 2022.
164. IMF, Middle East and Central Asia Dept. Republic of azerbaijan: 2021 Article IV Consultation-Press Release; and staff report. *IMF eLIBRARY*. https://www.elibrary.imf.org/view/journals/002/2021/278/article-A001-en.xml?ArticleTabs=abstract. Published December 22, 2021. Accessed December 7, 2022.
165. Yazdanpanah Dero Q, Yari E, Charrahy Z. Global warming, environmental security and its geo-economic dimensions case study: Caspian Sea level changes on the balance of transit channels. *Journal of Environmental Health Science and Engineering*. 2020;18(2):541-557. Published 2020 Jun 4. doi:10.1007/s40201-020-00481-0
166. World Bank/ADB. Climate Risk Country Profile Armenia. *Climate Knowledge Portal World Bank*. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15765-WB\_Armenia%20Country%20Profile-WEB\_0.pdf. Published 2021. Accessed December 8, 2022.
167. Reuters. Kyrgyz leader urges calm after deadly conflict with Tajikistan. CNN. https://edition.cnn.com/2022/09/20/asia/kyrgyzstan-tajikistan-negotiating-intl-hnk/index.html. Published September 20, 2022. Accessed December 6, 2022.
168. Davies A. Kyrgyzstan-tajikistan border clashes claim nearly 100 lives. BBC News. https://www.bbc.com/news/world-asia-62950787. Published September 19, 2022. Accessed December 6, 2022.
169. Tompson W, Lecomte G, Pretet A, Mackle L. Covid-19 crisis response in Central Asia. OECD. https://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-central-asia-5305f172/. Published December 16, 2020. Accessed December 6, 2022.
170. Gotsadze G, Mirzikashvili N, Kekelidze D, et al. The State of Public Health Education and Science During and After the Fall of the Soviet Union: Achievements, Remaining Challenges, and Future Priorities. *Frontiers in Public Health*. 2022;10:871108. Published 2022 Jun 15. doi:10.3389/fpubh.2022.871108
171. AP. Iran raises prices of food staples, stirring panic and anger. U.S.News. https://www.usnews.com/news/business/articles/2022-05-12/iran-raises-prices-of-food-staples-stirring-panic-and-anger. Published May 12, 2022. Accessed December 8, 2022.
172. Reuters. Soaring bread prices spark protests and shop fires in Iran, IRNA reports. Reuters. https://www.reuters.com/world/middle-east/soaring-bread-prices-spark-protests-shop-fires-iran-irna-2022-05-13/. Published May 13, 2022. Accessed December 8, 2022.
173. Javadi A, Ghahremanzadeh M, Sassi M, Javanbakht O, Hayati B. Economic evaluation of the climate changes on food security in Iran: application of CGE model [published online ahead of print, 2022 Nov 28]. *Theoretical and Applied Climatology*. 2022;1-19. doi:10.1007/s00704-022-04289-w
174. Mousavi A, Ardalan A, Takian A, Ostadtaghizadeh A, Naddafi K, Bavani AM. Climate change and health in Iran: a narrative review. *Journal of Environmental Health Science and Engineering*. 2020;18(1):367-378. Published 2020 Apr 2. doi:10.1007/s40201-020-00462-3
175. Cooper K, English J. UNICEF calls for the protection of children against all forms of violence in Iran amid public unrest. UNICEF. https://www.unicef.org/press-releases/unicef-calls-protection-children-against-all-forms-violence-iran-amid-public-unrest. Published November 27, 2022. Accessed December 20, 2022.
176. Kokabisaghi F. Assessment of the Effects of Economic Sanctions on Iranians' Right to Health by Using Human Rights Impact Assessment Tool: A Systematic Review. *International Journal of Health Policy and Management*. 2018;7(5):374-393. Published 2018 May 1. doi:10.15171/ijhpm.2017.147
177. Bastani P, Dehghan Z, Kashfi SM, Dorosti H, Mohammadpour M, Mehralian G. Challenge of Politico-Economic Sanctions on Pharmaceutical Procurement in Iran: A Qualitative Study. *Iranian Journal of Medical Sciences*. 2022;47(2):152-161. doi:10.30476/IJMS.2021.89901.2078
178. Asadi‐Pooya AA, Nazari M, Damabi NM. Effects of the international economic sanctions on access to medicine of the Iranian people: A systematic review. *Journal of Clinical Pharmacy and Therapeutics*. November 2022:1-7. doi:10.1111/jcpt.13813
179. Mirzaei H, Abdi Z, Ahmadnezhad E, et al. Health Status in the Islamic Republic of Iran, Middle East and North Africa Countries: Implications for Global Health. *Iranian Journal of Public Health*. 2020;49(1):86-95.
180. Essar MY, Ashworth H, Nemat A. Addressing the humanitarian crisis in Afghanistan through $10 billion Afghani assets: what are the challenges and opportunities at hand?. *Global Health*. 2022;18(1):74. Published 2022 Jul 30. doi:10.1186/s12992-022-00868-8
181. Islam Z, Kokash DM, Babar MS, et al. Food Security, Conflict, and COVID-19: Perspective from Afghanistan. *American Journal of Tropical Medicine and Hygiene*. 2021;106(1):21-24. Published 2021 Nov 10. doi:10.4269/ajtmh.21-1058
182. Hameed MA, Rahman MM, Khanam R. Assessing the asymmetric war-growth nexus: A case of Afghanistan. *PLoS One*. 2022;17(8):e0272670. Published 2022 Aug 17. doi:10.1371/journal.pone.0272670
183. Hussaini SJ, Ali SH, Syyeda Rahmat Z, Islam Z, Tharwani ZH. Mental health impacts of earthquake on Afghans amidst humanitarian crisis. *Annals of Medicine and Surgery*. 2022;81:104521. Published 2022 Sep 1. doi:10.1016/j.amsu.2022.104521
184. Walraven G, Yousofzai Y, Mirzazada S. The World Bank's health funding in Afghanistan. Lancet. 2021;398(10306):1128. doi:10.1016/S0140-6736(21)02015-8
185. Asady A, Sediqi MF, Habibi SS. The Fourth Wave of the COVID-19 in Afghanistan: The Way Forward. *Infection and Drug Resistance*. 2022;15:3369-3371. Published 2022 Jun 28. doi:10.2147/IDR.S365868
186. Masood W, Aquil S, ullah H, et al. Impact of climate change on health in Afghanistan amidst a humanitarian crisis. *The Journal of Climate Change and Health*. 2022;6:100139. doi:10.1016/j.joclim.2022.100139
187. Nafeh F, Fusigboye S, Sornpaisarn B. Understanding injecting drug use in Afghanistan: A scoping review. Subst Abuse Treat Prev Policy. 2022;17(1):65. Published 2022 Sep 19. doi:10.1186/s13011-022-00491-1
188. World Bank Group. By the numbers: The cost of war & peace in the Middle East. World Bank. https://www.worldbank.org/en/news/feature/2016/02/03/by-the-numbers-the-cost-of-war-and-peace-in-mena. Published February 8, 2016. Accessed December 12, 2022.
189. Tin D, Fares S, Al Mulhim M, Ciottone GR. Terrorist Attacks in the Middle East: A Counter-Terrorism Medicine Analysis [published online ahead of print, 2022 Mar 3]. *Prehospital and Disaster Medicine*. 2022;1-5. doi:10.1017/S1049023X22000358
190. English J, Oweis S. Violence, conflict and unrest robs nearly 580 children of their lives in the Middle East and North Africa since start of year. UNICEF. https://www.unicef.org/press-releases/violence-conflict-and-unrest-robs-nearly-580-children-their-lives-middle-east-and. Published November 18, 2022. Accessed December 3, 2022.
191. Norlén TC. Middle East Pre‐Existing Conditions: Regional Security after Covid‐19. *Middle East Policy*. 2022;29(1):104-124. doi:10.1111/mepo.12614
192. Ahmed SH, Nashwan AJ. Cholera outbreak amid civil war: A public health crisis in Syria. *Journal of Infection and Public Health*. 2022;15(12):1484-1485. doi:10.1016/j.jiph.2022.11.013
193. Alhaffar MHDBA, Janos S. Public health consequences after ten years of the Syrian crisis: a literature review. *Global Health*. 2021;17(1):111. Published 2021 Sep 19. doi:10.1186/s12992-021-00762-9
194. Butt MS, Tharwani ZH, Muzzamil M, Rafi HM. Maternal mortality and its prominence in the Syrian Arab Republic: Challenges, efforts, and recommendations. *Annals of Medicine and Surgery*. 2022;82:104584. Published 2022 Sep 8. doi:10.1016/j.amsu.2022.104584
195. Khawaldah H, Alzboun N. Socio-economic and environmental impacts of Syrian Refugees in Jordan: A Jordanians' perspective. *Heliyon*. 2022;8(8):e10005. Published 2022 Jul 20. doi:10.1016/j.heliyon.2022.e10005
196. Al Qaralleh AS. Jordan and Syrian humanitarian refugees' dilemma: international law perspective. *Heliyon*. 2022;8(5):e09377. Published 2022 May 4. doi:10.1016/j.heliyon.2022.e09377
197. Al-Ahdal T, Farahat RA. The urgency of suicide prevention in Yemen: Challenges and recommendations - Correspondence. *International Journal of Surgery*. 2022;106:106924. doi:10.1016/j.ijsu.2022.106924
198. UNHCR. Yemen Crisis explained. The UN Refugee Agency. https://www.unrefugees.org/news/yemen-crisis-explained/. Published July 14, 2022. Accessed December 14, 2022.
199. Garber K, Fox C, Abdalla M, et al. Estimating access to health care in Yemen, a complex humanitarian emergency setting: a descriptive applied geospatial analysis. *Lancet Glob Health*. 2020;8(11):e1435-e1443. doi:10.1016/S2214-109X(20)30359-4
200. Hashim HT, Miranda AV, Babar MS, et al. Yemen's triple emergency: Food crisis amid a civil war and COVID-19 pandemic. *Public Health in Practice*. 2021;2:100082. doi:10.1016/j.puhip.2021.100082
201. Rahmat ZS, Islam Z, Mohanan P, et al. Food Insecurity during COVID-19 in Yemen. *American Journal of Tropical Medicine and Hygiene*. 2022;106(6):1589-1592. Published 2022 Jun 15. doi:10.4269/ajtmh.22-0059
202. Guha Sapir D, Ogbu JT, Scales SE, et al. Civil War and death in Yemen: Analysis of Smart Survey and Acled Data, 2012–2019. *PLOS Global Public Health*. 2022;2(8):1-16. doi:10.1371/journal.pgph.0000581
203. AlKarim T, Abbara A, Attal B. Armed conflict alone does not explain the devastation of Yemen's health system. *BMJ Global Health*. 2021;6(2):e004740. doi:10.1136/bmjgh-2020-004740
204. Saleh EA, Haddadin RN, Saleh B, Elayeh E. Changes in drug demand when a pandemic coincides with other outbreaks in a war zone country: a cross-sectional pilot study. *Journal of Pharmaceutical Policy and Practice*. 2022;15(1):89. Published 2022 Nov 22. doi:10.1186/s40545-022-00487-z
205. Dureab F, Al-Sakkaf M, Ismail O, et al. Diphtheria outbreak in Yemen: the impact of conflict on a fragile health system. *Conflict and Health*. 2019;13:19. Published 2019 May 22. doi:10.1186/s13031-019-0204-2
206. Chehayeb K. Explainer: Why can't Lebanon elect a president? *The Washington Post*. https://www.washingtonpost.com/world/explainer-why-cant-lebanon-elect-a-president/2022/12/09/bd889f3c-7786-11ed-a199-927b334b939f\_story.html. Published December 9, 2022. Accessed December 14, 2022.
207. England, A., & Jalabi, R. (2022, September 21). Lebanon's banks to close 'indefinitely' after heists by angry depositors. *Financial Times*. Retrieved December 14, 2022, from <https://www.ft.com/content/bdcfb31d-1fe9-4c94-88a6-0c5e5aeb68b7>
208. Reuters. (2022, October 18). At war for decades, Lebanon and Israel agree a rare compromise. Reuters. Retrieved December 14, 2022, from <https://www.reuters.com/world/middle-east/war-decades-lebanon-israel-edge-towards-rare-deal-2022-10-11/>
209. Dahham J, Kremer I, Hiligsmann M, et al. Valuation of Costs in Health Economics During Financial and Economic Crises: A Case Study from Lebanon [published online ahead of print, 2022 Oct 26]. *Applied Health Economics and Health Policy*. 2022;1-8. doi:10.1007/s40258-022-00769-2
210. UNHCR. Lebanon at a glance. UNHCR Lebanon. https://www.unhcr.org/lb/at-a-glance. Published 2022. Accessed December 14, 2022.
211. Daily Mirror. SL ranks 5th among 10 countries with highest food price inflation: World Bank. *Daily Mirror*. https://www.dailymirror.lk/breaking\_news/SL-ranks-5th-among-10-countries-with-highest-food-price-inflation-World-Bank/108-243560. Published August 23, 2022. Accessed December 14, 2022.
212. Inman P. Food prices soaring in developing world amid Ukraine crisis, World Bank finds. *The Guardian*. https://www.theguardian.com/business/2022/aug/01/food-prices-soar-across-world-amid-ukraine-crisis-world-bank-finds. Published August 1, 2022. Accessed December 20, 2022.
213. Gebeily, M. (2022, October 21). Cholera outbreak hits Syrian refugees sheltering in camps in Lebanon. Reuters. Retrieved December 14, 2022, from <https://www.reuters.com/world/middle-east/cholera-outbreak-hits-syrian-refugees-sheltering-camps-lebanon-2022-10-21/>
214. Salih ZM. Sudan Faces 'generational catastrophe' as millions of children Miss School. *The Guardian*. https://www.theguardian.com/global-development/2022/oct/05/sudan-faces-generational-catastrophe-as-millions-of-children-miss-school. Published October 5, 2022. Accessed December 17, 2022.
215. UNHCR. UNHCR warns of surging needs in Sudan amid skyrocketing prices and gaps in humanitarian funding. UNHCR. https://www.unhcr.org/news/briefing/2022/9/632d73474/unhcr-warns-surging-needs-sudan-amid-skyrocketing-prices-gaps-humanitarian.html. Published September 23, 2022. Accessed December 14, 2022.
216. Sirgany SE, Elbagir N, Abdullah Y. Sudan's president Bashir forced out in military coup. CNN. https://edition.cnn.com/2019/04/11/africa/sudan-unrest-intl/index.html. Published April 11, 2019. Accessed December 14, 2022.
217. Shoib S, Osman Elmahi OK, Siddiqui MF, Abdalrheem Altamih RA, Swed S, Sharif Ahmed EM. Sudan's unmet mental health needs: A call for action. *Annals of Medicine and Surgery*. 2022;78:103773. Published 2022 May 11. doi:10.1016/j.amsu.2022.103773
218. UNHCR. Thousands displaced by escalating conflict in South Sudan's Greater Upper Nile Region. UNHCR. https://www.unhcr.org/news/press/2022/12/63905eca4/thousands-displaced-escalating-conflict-south-sudans-greater-upper-nile.html. Published December 7, 2022. Accessed December 14, 2022.
219. Lutwama GW, Sartison LJ, Yugi JO, et al. Health services supervision in a protracted crisis: a qualitative study into supportive supervision practices in South Sudan. *BMC Health Services Research*. 2022;22(1):1249. Published 2022 Oct 14. doi:10.1186/s12913-022-08637-4
220. Anib VA, Achiek MM, Ndenzako F, Olu OO. South Sudan's road to universal health coverage: a slow but steady journey. *The Pan African Medical Journal*. 2022;42(Suppl 1):1. Published 2022 Jun 7. doi:10.11604/pamj.supp.2022.42.1.34035
221. Elagali A, Ahmed A, Makki N, et al. Spatiotemporal mapping of malaria incidence in Sudan using routine surveillance data. *Scientific Reports - Nature*. 2022;12(1):14114. Published 2022 Aug 18. doi:10.1038/s41598-022-16706-1
222. Elahssan R, Shariff F, OGrady M, Yousif TI. Telehealth application in Sudan: requirements and potential benefits. *Sudanese Journal of Paediatrics*. 2022;22(1):5-9. doi:10.24911/SJP.106-1591278403
223. St John RB. The Changing Libyan Economy: Causes and Consequences. *The Middle East Journal*. 2008;62(1):75-91. doi:10.3751/62.1.14
224. Raghavan S. In battle for Tripoli, medical workers are becoming casualties. *The Washington Post*. https://www.washingtonpost.com/world/in-battle-for-tripoli-medical-workers-are-becoming-casualties/2019/08/15/defc4384-b48a-11e9-8e94-71a35969e4d8\_story.html. Published August 16, 2019. Accessed December 15, 2022.
225. Iwendi GC, Alsadig AM, Isa MA, et al. COVID-19 in a shattered health system: Case of Libya. *Journal of Global Health*. 2021;11:03058. Published 2021 Apr 3. doi:10.7189/jogh.11.03058
226. Elhadi M, Msherghi A. COVID-19 and civil war in Libya: the current situation. *Pathogens and Global Health*. 2020;114(5):230-231. doi:10.1080/15575330.2020.1769292
227. Allen LN, Aghilla M, Kak M, et al. Conflict as a macrodeterminant of non-communicable diseases: the experience of Libya. *BMJ Global Health*. 2022;7(Suppl 8):e007549. doi:10.1136/bmjgh-2021-007549
228. BBC World Service. The story of Africa. BBC News. https://www.bbc.co.uk/worldservice/africa/features/storyofafrica/11chapter3.shtml. Accessed December 17, 2022.
229. Ahronhem A. Thousands of airstrikes carried out by Israel in past five years. *The Jerusalem Post*. https://www.jpost.com/israel-news/article-702634. Published March 29, 2022. Accessed December 16, 2022.
230. The New Arab Staff. Israel dropped 5,500 bombs on Arab states in just five years. *The New Arab*. https://www.newarab.com/news/israel-dropped-5500-bombs-arab-states-just-five-years. Published March 29, 2022. Accessed December 16, 2022.
231. Dahdal Y, Davidovitch N, Gilmont M, et al. Lessons of the Israeli-Palestinian Conflict for Public Health: The Case of the COVID-19 Vaccination Gap. *International Journal of Environmental Research and Public Health*. 2021;18(21):11292. Published 2021 Oct 27. doi:10.3390/ijerph182111292
232. Alkhaldi M, Coghlan R, Miller S, Basuoni AA, Tanous O, Asi YM. State Accountability for the Good Health of Palestinians Has Failed: What Can the Global Health Community Do Next?. *Health and Human Rights Journal*. 2022;24(1):77-84.
233. WHO, Occupied Palestine Territory. *Right to Health 2018*. ISBN: 978-92-9022-287-3, ISBN: 978-92-9022-288-0 (online); 2019.
234. Asi YM, Tanous O, Wispelwey B, AlKhaldi M. Corrigendum to: Are there ‘two sides’ to attacks on healthcare? evidence from Palestine. *European Journal of Public Health*. 2021;32(1):161-161. doi:10.1093/eurpub/ckab208
235. Williams CA, Hanan NP, Neff JC, et al. Africa and the global carbon cycle. *Carbon Balance and Management*. 2007;2:3. Published 2007 Mar 7. doi:10.1186/1750-0680-2-3
236. Gruzd S, Bosman I, Benkenstein A, van Staden C. Africa: Key issues to track in 2022. SAIIA. https://saiia.org.za/research/africa-key-issues-to-track-in-2022/. Published February 4, 2022. Accessed December 11, 2022.
237. Reuters. Africa losing up to 15% of GDP growth to climate change, African Development Bank says. Reuters. https://www.reuters.com/world/africa/africa-losing-up-15-gdp-growth-climate-change-afdb-2022-09-13/. Published September 13, 2022. Accessed December 17, 2022.
238. Pearce O, Andrijevic M. The cost to Africa-Drastic economic damage from climate change. Irish charity fighting global poverty-Christian Aid Ireland. https://www.christianaid.org.uk/sites/default/files/2022-11/the-cost-to-africa.pdf. Published November 2022. Accessed December 17, 2022.
239. Anugwom EE. Reflections on climate change and public health in Africa in an ERA of global pandemic. *Contemporary Developments and Perspectives in International Health Security*-Volume 2. April 2021. doi:10.5772/intechopen.97201
240. Atwoli L, Erhabor GE, Gbakima AA, et al. COP27 climate change conference: urgent action needed for Africa and the world [published correction appears in BMJ. 2022 Nov 9;379:o2702]. *British medical journal*. 2022;379:o2459. Published 2022 Oct 18. doi:10.1136/bmj.o2459
241. Lakhani N. Climate crisis will have huge impact on Africa's economies, study says. *The Guardian*. https://www.theguardian.com/world/2022/nov/09/climate-crisis-huge-impact-africa-economies-study-says. Published November 9, 2022. Accessed December 11, 2022.
242. Phillips MM. A quarter of Africans face food-security crisis partly due to Ukraine War, Red Cross says. *The Wall Street Journal*. https://www.wsj.com/articles/a-quarter-of-africans-face-food-security-crisis-partly-due-to-ukraine-war-red-cross-says-11649176087. Published April 5, 2022. Accessed December 12, 2022.
243. Sacko J, Mayaki I. How the russia-ukraine conflict impacts Africa | Africa Renewal. United Nations. https://www.un.org/africarenewal/magazine/may-2022/how-russia-ukraine-conflict%C2%A0impacts-africa. Published May 2022. Accessed December 12, 2022.
244. Holder J. Tracking coronavirus vaccinations around the world. *The New York Times*. https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html. Published December 2, 2022. Accessed December 6, 2022.
245. Njoh AA, Saidu Y, Bachir HB, et al. Impact of periodic intensification of routine immunization within an armed conflict setting and COVID-19 outbreak in Cameroon in 2020. *Conflict and Health*. 2022;16(1):29. Published 2022 Jun 2. doi:10.1186/s13031-022-00461-1
246. Elagali A, Ahmed A, Makki N, et al. Spatiotemporal mapping of malaria incidence in Sudan using routine surveillance data. *Scientific Reports - Nature*. 2022;12(1):14114. Published 2022 Aug 18. doi:10.1038/s41598-022-16706-1
247. Okiro EA, Ayieko P. Childhood mortality during conflicts in Africa. *Lancet*. 2018;392(10150):804-805. doi:10.1016/S0140-6736(18)31373-4
248. O'Loughlin J, Linke AM, Witmer FD. Effects of temperature and precipitation variability on the risk of violence in sub-Saharan Africa, 1980-2012. *Proceedings of the National Academy of Sciences* (USA). 2014;111(47):16712-16717. doi:10.1073/pnas.1411899111
249. Burke MB, Miguel E, Satyanath S, Dykema JA, Lobell DB. Warming increases the risk of civil war in Africa. *Proceedings of the National Academy of Sciences* (USA). 2009;106(49):20670-20674. doi:10.1073/pnas.0907998106
250. Cappelli F, Conigliani C, Consoli D, Costantini V, Paglialunga E. Climate change and armed conflicts in Africa: Temporal persistence, non-linear climate impact and geographical spillovers. *Economia Politica*. June 2022. doi:10.1007/s40888-022-00271-x
251. Ikoku O. How climate change fuels conflicts in West Africa. How climate change fuels conflicts in West Africa – Economy and ecology. *International Politics and Society*. https://www.ips-journal.eu/topics/economy-and-ecology/how-climate-change-fuels-conflicts-in-west-africa-6227/. Published October 4, 2022. Accessed December 12, 2022.
252. Chol C, Negin J, Garcia-Basteiro A, et al. Health system reforms in five sub-Saharan African countries that experienced major armed conflicts (wars) during 1990-2015: a literature review. *Global Health Action*. 2018;11(1):1517931. doi:10.1080/16549716.2018.1517931
253. Ahmed A, Ali Y, Siddig EE, et al. Hepatitis E Virus Outbreak among Tigray War Refugees from Ethiopia, Sudan. *Emerging Infectious Diseases*. 2022;28(8):1722-1724. doi:10.3201/eid2808.220397
254. Tegegne MD, Melkam M, Adane T, Getawa S. COVID-19 preventive practice and associated factors in Ethiopia: A systematic review and meta-analysis. *Public Health in Practice* (Oxf). 2022;4:100329. doi:10.1016/j.puhip.2022.100329
255. Berhe E, Tesfay B, Teka H. Vicarious trauma on the hemodialysis healthcare workers in the besieged Ethiopia's Tigray region: a call to action. *BMC Medicine*. 2022;20(1):431. Published 2022 Nov 8. doi:10.1186/s12916-022-02637-1
256. Sharif S. Analysis | Ethiopia's peace may depend on post-conflict plans for Tigray soldiers. *The Washington Post*. https://www.washingtonpost.com/politics/2022/11/18/ethiopia-peace-tplf-tigray/. Published November 18, 2022. Accessed December 13, 2022.
257. Wall LL. The Siege of Ayder Hospital: A Cri de Coeur From Tigray, Ethiopia. *Female Pelvic Medicine and Reconstructive Surgery*. 2022;28(5):e137-e141. doi:10.1097/SPV.0000000000001181
258. Davies L. Tigray: Almost One in three children under five malnourished, Un says. *The Guardian*. https://www.theguardian.com/global-development/2022/aug/20/tigray-ethiopia-almost-one-in-three-children-under-five-malnourished-un-says. Published August 20, 2022. Accessed December 13, 2022.
259. Temesgen Abebe H, Mitiku Ashebir M, Mohamedniguss Ebrahim M, et al. Epidemiological and Clinical Characteristics of COVID-19 Patients in Northern Ethiopia: A Retrospective Cohort Study. *Infection and Drug Resistance*. 2022;15:3579-3588. Published 2022 Jul 7. doi:10.2147/IDR.S345936
260. Gesesew HA, Berhe KT, Gebretsadik S, Abreha M, Haftu M. Fistula in War-Torn Tigray: A Call to Action. *International Journal of Environmental Research and Public Health*. 2022; 19(23):15954. <https://doi.org/10.3390/ijerph192315954>
261. Gholami M, Fawad I, Shadan S, et al. COVID-19 and healthcare workers: A systematic review and meta-analysis. *International Journal of Infectious Diseases*. 2021;104:335-346. doi:10.1016/j.ijid.2021.01.013
262. Anderson T. Stopping attacks on health care. *Bulletin of the World Health Organization*. 2022;100(8):470-471. doi:10.2471/BLT.22.020822
263. Macaulay C, Soy A. Ethiopia's Tigray Conflict: Truce agreed. BBC News. https://www.bbc.com/news/world-africa-63490546. Published November 2, 2022. Accessed December 11, 2022.
264. CDC. 2014-2016 ebola outbreak in West Africa. Centers for Disease Control and Prevention. https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html. Published March 8, 2019. Accessed December 14, 2022.
265. Sun J, Uwishema O, Kassem H, et al. Ebola virus outbreak returns to the Democratic Republic of Congo: An urgent rising concern. *Annals of Medicine and Surgery*. 2022;79:103958. Published 2022 Jun 6. doi:10.1016/j.amsu.2022.103958
266. Murhima'Alika CC, Balemba GM, Lyabayungu PM, et al. Human Milk output among mothers previously treated for severe acute malnutrition in childhood in Democratic Republic of Congo. *BMC Nutrition*. 2021;7(1):61. Published 2021 Oct 25. doi:10.1186/s40795-021-00467-7
267. Al Jazeera. African leaders agree on 'immediate ceasefire' in Eastern DRC. Conflict News | Al Jazeera. https://www.aljazeera.com/news/2022/11/23/african-leaders-agree-on-immediate-ceasefire-in-eastern-drc. Published November 23, 2022. Accessed December 14, 2022.
268. AFP. DR Congo exodus of 300,000 'may hamper ebola battle'. BBC News. https://www.bbc.com/news/world-africa-48676435. Published June 18, 2019. Accessed December 14, 2022.
269. AFP. Myanmar rebels accuse junta of rakhine village killings. *New Age*. https://www.newagebd.net/article/186172/myanmar-rebels-accuse-junta-of-rakhine-village-killings. Published November 11, 2022. Accessed December 10, 2022.
270. Bearak M. Bangladesh is now home to almost 1 million Rohingya refugees. *The Washington Post*. https://www.washingtonpost.com/news/worldviews/wp/2017/10/25/bangladesh-is-now-home-to-almost-1-million-rohingya-refugees/. Published October 25, 2017. Accessed December 10, 2022.
271. Rashid M, Iqbal F. 1.2M rohingyas entered BD since 1942. *The Daily Observer*. https://www.observerbd.com/details.php?id=94407. Published September 13, 2017. Accessed December 10, 2022.
272. UN News. Response plan launched to support 1.4 million Rohingya and Bangladeshis | UN News. United Nations. https://news.un.org/en/story/2022/03/1115012. Published March 29, 2022. Accessed December 10, 2022.
273. Ismail M, Hussain MF, Abdullah Al Hasan M, Kamal AM, Rahman M, Hasan MJ. Health problems among Forcibly Displaced Myanmar Nationals (FDMNs) admitted to the Medicine ward of Cox's Bazar Medical College Hospital. *Journal of Migration and Health*. 2022;6:100123. Published 2022 May 31. doi:10.1016/j.jmh.2022.100123
274. Mohiuddin AK. An extensive review of patient satisfaction with healthcare services in Bangladesh. *Patient Experience Journal*. 2020;7(2):59-71. doi:10.35680/2372-0247.1415
275. Ali M, Rahman MA, Njuguna H, et al. High Prevalence of Hepatitis B and C Virus Infections Among Rohingya Refugees in Bangladesh: A Growing Concern for the Refugees and the Host Communities. *Clinics in Liver Disease* (Hoboken). 2022;19(1):1-6. Published 2022 Jan 24. doi:10.1002/cld.1197
276. Palit S, Yang H, Li J, Khan MAS, Hasan MJ. The impact of the COVID-19 pandemic on the mental health of Rohingya refugees with pre-existing health problems in Bangladesh. *Conflict and Health*. 2022;16(1):10. Published 2022 Mar 3. doi:10.1186/s13031-022-00443-3
277. Chowdhury SA, McHale T, Green L, Mishori R, Pan C, Fredricks I. Health professionals' perspectives on the impact of COVID-19 on sexual and gender-based violence (SGBV) and SGBV services in Rohingya refugee communities in Bangladesh. *BMC Health Services Research*. 2022;22(1):743. Published 2022 Jun 4. doi:10.1186/s12913-022-08122-y
278. Alam AM. Providing COVID-19 vaccination to refugees and displaced people: Lessons from the vaccine roll-out for the Rohingya refugees in Cox's Bazaar, Bangladesh [published online ahead of print, 2022 Nov 23]. *The Lancet Regional Health – Southeast Asia*. 2022;100120. doi:10.1016/j.lansea.2022.100120
279. Reuters. Rohingya Crisis Fund is 'well short of needs' – UN refugee agency. Arab News. https://www.arabnews.com/node/2148536/world. Published August 23, 2022. Accessed December 10, 2022.
280. Stoken JM. Suffering in silence: Sexual and gender-based violence against the Rohingya community and the importance of a global health response. *Journal of Global Health*. 2020;10(2):020324. doi:10.7189/jogh.10.020324
281. Staff Correspondent. Rohingyas' illegal drug trade poses a threat: Discussion. *New Age*. https://www.newagebd.net/article/176367/rohingyas-illegal-drug-trade-poses-a-threat-discussion. Published July 21, 2022. Accessed December 10, 2022.
282. Chowdhury Z, Lion A. Cox's bazar: Drugs, Guns, murders and the Untouchables. *The Business Standard*. https://www.tbsnews.net/bangladesh/crime/coxs-bazar-drugs-guns-murders-and-untouchables-533970. Published November 17, 2022. Accessed December 10, 2022.
283. Indo-Asian News Service. Rohingyas engaged in arms, drug, big threat to Bangladesh: PM hasina. *Business Standard News*. https://www.business-standard.com/article/international/rohingyas-engaged-in-arms-drug-big-threat-to-bangladesh-pm-hasina-122061901003\_1.html. Published June 20, 2022. Accessed December 10, 2022.
284. Sawicka B. Post-harvest losses of agricultural produce. *Post-harvest Losses of Agricultural Produce*. March 2019:1-16. doi:10.1007/978-3-319-69626-3\_40-1
285. Mohiuddin AK. Mini-Review on domination of pollutant residues among food products:perspective of south-East Asian countries. *Journal of Food and Agriculture*. 2019;12(1):1-6. doi:10.4038/jfa.v12i1.5215
286. Salter SJ. The food-borne identity. *Nature Reviews Microbiology*. 2014;12(8):533-533. doi:10.1038/nrmicro3313
287. WHO. Food safety. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/food-safety. Published May 19, 2022. Accessed December 9, 2022.
288. Lee H, Yoon Y. Etiological Agents Implicated in Foodborne Illness World Wide. *Food Science of Animal Resources*. 2021;41(1):1-7. doi:10.5851/kosfa.2020.e75
289. Yeasmin D, Baker M, Kamal A-HM, et al. Exploring customers’ perceptions of food adulteration at bazaars and supermarkets in Dhaka, Bangladesh;. Preprint Under Review at *BMC Public Health*. July 2022:1-28. doi:10.21203/rs.3.rs-1802935/v1
290. Spink J, Elliott C, Dean M, Speier-Pero C. Food fraud data collection needs survey. *npj Science of Food*. 2019;3:8. Published 2019 May 16. doi:10.1038/s41538-019-0036-x
291. Mohiuddin AK. Health hazards with adulterated spices: Save the “Onion Tears.” *Innovare Journal of Medical Sciences*. 2020;8(3):8-11. doi:10.22159/ijms.2020.v8i3.36439
292. Victor D. World population reaches 8 billion, U.N. says. *The New York Times*. https://www.nytimes.com/2022/11/15/world/world-population-8-billion.html. Published November 15, 2022. Accessed December 9, 2022.
293. O'Grady S, Mahfouz HF. As climate change worsens, Egypt is begging families to have fewer kids. *The Washington Post*. https://www.washingtonpost.com/world/2022/11/06/egypt-cop27-climate-change-population/. Published November 7, 2022. Accessed December 17, 2022.
294. Carnegie ER, Inglis G, Taylor A, Bak-Klimek A, Okoye O. Is Population Density Associated with Non-Communicable Disease in Western Developed Countries? A Systematic Review. *International Journal of Environmental Research and Public Health*. 2022;19(5):2638. Published 2022 Feb 24. doi:10.3390/ijerph19052638
295. Jamal Y, Gangwar M, Usmani M, et al. Identification of Thresholds on Population Density for Understanding Transmission of COVID-19. *Global Environmental and Occupational Health*. 2022;6(9):e2021GH000449. Published 2022 Sep 1. doi:10.1029/2021GH000449
296. Md Iderus NH, Lakha Singh SS, Mohd Ghazali S, et al. Correlation between Population Density and COVID-19 Cases during the Third Wave in Malaysia: Effect of the Delta Variant. *International Journal of Environmental Research and Public Health*. 2022;19(12):7439. Published 2022 Jun 17. doi:10.3390/ijerph19127439
297. Mulugeta A, Gebregziabher M. Saving children from man-made acute malnutrition in Tigray, Ethiopia: a call to action. Lancet Glob Health. 2022;10(4):e469-e470. doi:10.1016/S2214-109X(22)00023-7
298. Gutiérrez-Romero R. Conflicts increased in Africa shortly after COVID-19 lockdowns, but welfare assistance reduced fatalities. *Economic Modelling*. 2022;116:105991. doi:10.1016/j.econmod.2022.105991
299. WHO, Regional Committee for Europe. EUR/RC69/14 Rev.1 Copenhagen, 16–19 September 2019: Draft who European roadmap for implementation of Health Literacy Initiatives through the life course. WHO. https://www.who.int/europe/publications/i/item/EUR-RC69-14Rev.1. Published September 16, 2019. Accessed December 7, 2022.
300. Emerson MR, Buckland S, Lawlor MA, et al. Addressing and evaluating health literacy in mHealth: a scoping review. *mHealth*. 2022;8:33. Published 2022 Oct 30. doi:10.21037/mhealth-22-11
301. Public Health England. Local action on health inequalities-Improving health literacy to reduce health inequalities. Public Health England. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/460710/4b\_Health\_Literacy-Briefing.pdf. Published September 2015. Accessed December 8, 2022. Practice resource summary
302. Shebehe J, Montgomery S, Hansson A, Hiyoshi A. Low health literacy and multiple medications in community-dwelling older adults: a population-based cohort study. *British medical journal*. 2022;12(2):e055117. Published 2022 Feb 21. doi:10.1136/bmjopen-2021-055117
303. Kyabaggu R, Marshall D, Ebuwei P, Ikenyei U. Health Literacy, Equity, and Communication in the COVID-19 Era of Misinformation: Emergence of Health Information Professionals in Infodemic Management [published correction appears in JMIR Infodemiology. 2:e35012.]. *JMIR Infodemiology*. 2022;2(1):e35014. Published 2022 Apr 28. doi:10.2196/35014
304. Ellender CM, Boyde M, Scott IA. Health literacy assessment in the clinic: benefits, pitfalls and practicalities. *Australian Journal of Primary Health*. 2022;28(5):365-370. doi:10.1071/PY22015
305. Ibrahim H, Nair SC. Comment on Health Literacy: The Common Denominator of Healthcare Progress. *The Patient - Patient-Centered Outcomes Research*. 2021;14(6):869-870. doi:10.1007/s40271-021-00556-6
306. Li Y, Lv X, Liang J, Dong H, Chen C. The development and progress of health literacy in China. *Frontiers in Public Health*. 2022;10:1034907. Published 2022 Nov 7. doi:10.3389/fpubh.2022.1034907
307. Meherali S, Punjani NS, Mevawala A. Health Literacy Interventions to Improve Health Outcomes in Low- and Middle-Income Countries. *Health literacy research and practice*. 2020;4(4):e251-e266. doi:10.3928/24748307-20201118-01
308. Mohiuddin AK. Our low health literacy needs urgent fixing. *The Daily Star*. https://www.thedailystar.net/opinion/views/news/our-low-health-literacy-needs-urgent-fixing-3193246. Published December 11, 2022. Accessed December 11, 2022.
309. Bhardwaj T. ‘Ambition to achieve net-zero emissions by 2050 would be paved through an All-Electric All-Digital world.’ *The Financial Express*. https://www.financialexpress.com/lifestyle/science/ambition-to-achieve-net-zero-emissions-by-2050-would-be-paved-through-an-all-electric-all-digital-world/2379203/. Published November 30, 2021. Accessed December 11, 2022.
310. Costa C Jr, Wollenberg E, Benitez M, Newman R, Gardner N, Bellone F. Roadmap for achieving net-zero emissions in global food systems by 2050. *Scientific Reports - Nature*. 2022;12(1):15064. Published 2022 Sep 5. doi:10.1038/s41598-022-18601-1
311. Way R, Ives MC, Mealy P, Farmer JD. Empirically grounded technology forecasts and the Energy Transition. *Joule*. 2022;6(9):2057-2082. doi:10.1016/j.joule.2022.08.009
312. Copley J. What long-term stagnation of global economy means for climate change. *Business Standard News*. https://www.business-standard.com/article/international/what-long-term-stagnation-of-global-economy-means-for-climate-change-122103000277\_1.html. Published October 30, 2022. Accessed December 9, 2022.
313. Hye HA. A deal is reached at COP27 but with what prospect? *The Financial Express*. https://thefinancialexpress.com.bd/views/views/a-deal-is-reached-at-cop27-but-with-what-prospect-1669041707. Published November 21, 2022. Accessed December 11, 2022.
314. Chestney N. Global Nuclear Power Capacity Needs to double by 2050 -IEA. Reuters. https://www.reuters.com/business/energy/global-nuclear-power-capacity-needs-double-by-2050-iea-2022-06-30/. Published June 29, 2022. Accessed December 11, 2022.
315. BBC News. Germany: Nuclear power plants to close by 2022. BBC News. https://www.bbc.com/news/world-europe-13592208. Published May 30, 2011. Accessed December 11, 2022.
316. Editorial Board. Opinion | germany is closing its last nuclear plants. what a mistake. *The Washington Post*. https://www.washingtonpost.com/opinions/2022/01/01/germany-is-closing-its-last-nuclear-plants-what-disaster/. Published December 31, 2021. Accessed December 11, 2022.
317. Russo A, Blettner M, Merzenich H, Wollschlaeger D, Erdmann F, Gianicolo E. Incidence of childhood leukemia before and after shut down of nuclear power plants in Germany in 2011: A population-based register study during 2004 to 2019 [published online ahead of print, 2022 Sep 26]. *International Journal of Cancer*. 2022;10.1002/ijc.34303. doi:10.1002/ijc.34303
318. Koontalay A, Suksatan W, Prabsangob K, Sadang JM. Healthcare Workers' Burdens During the COVID-19 Pandemic: A Qualitative Systematic Review. *Journal of Multidisciplinary Healthcare*. 2021;14:3015-3025. Published 2021 Oct 27. doi:10.2147/JMDH.S330041
319. Al-Otaibi T, Abbas A, Ashry Gheith O, et al. Determinants, predictors and negative impacts of burnout among health care workers during COVID-19 pandemic. *Journal of King Saud University - Science*. 2023;35(1):102441. doi:10.1016/j.jksus.2022.102441
320. Biber J, Ranes B, Lawrence S, et al. Mental health impact on healthcare workers due to the COVID-19 pandemic: a U.S. cross-sectional survey study. *Journal of Patient-Reported Outcomes*. 2022;6(1):63. Published 2022 Jun 13. doi:10.1186/s41687-022-00467-6
321. WHO. Health and care worker deaths during COVID-19. World Health Organization. https://www.who.int/news/item/20-10-2021-health-and-care-worker-deaths-during-covid-19. Published October 20, 2021. Accessed December 10, 2022.
322. Guilford G. Covid-19 illnesses are keeping at least 500,000 workers out of U.S. labor force, study says. *The Wall Street Journal*. https://www.wsj.com/articles/covid-19-illnesses-are-keeping-at-least-500-000-workers-out-of-u-s-labor-force-study-says-11662955321. Published September 12, 2022. Accessed December 10, 2022.
323. Poon YR, Lin YP, Griffiths P, Yong KK, Seah B, Liaw SY. A global overview of healthcare workers' turnover intention amid COVID-19 pandemic: a systematic review with future directions. *Human Resources for Health*. 2022;20(1):70. Published 2022 Sep 24. doi:10.1186/s12960-022-00764-7
324. Frogner BK, Dill JS. Tracking Turnover Among Health Care Workers During the COVID-19 Pandemic: A Cross-sectional Study. *Journal of the American Medical Association Health Forum*. 2022;3(4):e220371. Published 2022 Apr 8. doi:10.1001/jamahealthforum.2022.0371
325. Ekblad S. To Increase Mental Health Literacy and Human Rights Among New-Coming, Low-Educated Mothers With Experience of War: A Culturally, Tailor-Made Group Health Promotion Intervention With Participatory Methodology Addressing Indirectly the Children. *Frontiers in Psychiatry*. 2020;11:611. Published 2020 Jul 8. doi:10.3389/fpsyt.2020.00611
326. Hawke A. Improving health literacy among refugee and migrant children. UNICEF Europe and Central Asia. https://www.unicef.org/eca/stories-region/improving-health-literacy-among-refugee-and-migrant-children. Published 2020. Accessed December 4, 2022.
327. Keasley J, Oyebode O, Shantikumar S, et al. A systematic review of the burden of hypertension, access to services and patient views of hypertension in humanitarian crisis settings. *BMJ Global Health*. 2020;5(11):e002440. doi:10.1136/bmjgh-2020-002440
328. Alawneh IS, Yasin A, Musmar S. The Prevalence of Uncontrolled Hypertension among Patients Taking Antihypertensive Medications and the Associated Risk Factors in North Palestine: A Cross-Sectional Study. *Advances in Medicine*. 2022;2022:5319756. Published 2022 Aug 25. doi:10.1155/2022/5319756
329. Rahman A, Biswas J, Banik PC. Non-communicable diseases risk factors among the forcefully displaced Rohingya population in Bangladesh. *PLOS Global Public Health*. 2022;2(9). doi:10.1371/journal.pgph.0000930
330. Sarangi A, McMahon T, Gude J. Benzodiazepine Misuse: An Epidemic Within a Pandemic. *The Cureus Journal of Medical Science*. 2021;13(6):e15816. Published 2021 Jun 21. doi:10.7759/cureus.15816
331. Lopez G. Marijuana majority. *The New York Times*. https://www.nytimes.com/2022/11/23/briefing/legal-weed-marijuana.html. Published November 23, 2022. Accessed December 3, 2022.
332. Kaiman J, Smith D, Anand A, et al. How sick are the world's healthcare systems? *The Guardian*. https://www.theguardian.com/society/2014/oct/29/how-sick-are-worlds-healthcare-systems-nhs-china-india-us-germany. Published October 29, 2014. Accessed December 17, 2022.
333. The Lancet. Health care in conflict: war still has rules. *Lancet*. 2018;391(10135):2080. doi:10.1016/S0140-6736(18)31120-6
334. Ulmer N, Barten DG, De Cauwer H, et al. Terrorist Attacks against Hospitals: World-Wide Trends and Attack Types. *Prehospital and Disaster Medicine*. 2022;37(1):25-32. doi:10.1017/S1049023X22000012
335. McNeilly B, Jasani G, Cavaliere G, Alfalasi R, Lawner B. The Rising Threat of Terrorist Attacks Against Hospitals. *Prehospital and Disaster Medicine*. 2022;37(2):223-229. doi:10.1017/S1049023X22000413
336. Cavaliere GA, Alfalasi R, Jasani GN, Ciottone GR, Lawner BJ. Terrorist Attacks Against Healthcare Facilities: A Review. *Health Security*. 2021;19(5):546-550. doi:10.1089/hs.2021.0004
337. Sekkarie M, Murad L, Al-Makki A, Al-Saghir F, Rifai O, Isreb M. End-Stage Kidney Disease in Areas of Armed Conflicts: Challenges and Solutions. *Seminars in Nephrology*. 2020;40(4):354-362. doi:10.1016/j.semnephrol.2020.06.003
338. Peters SE, Dennerlein JT, Wagner GR, Sorensen G. Work and worker health in the post-pandemic world: a public health perspective. *Lancet Public Health*. 2022;7(2):e188-e194. doi:10.1016/S2468-2667(21)00259-0
339. Giles C. Brexit intensifies labour shortages as companies struggle to hire. *Financial Times*. https://www.ft.com/content/a9677ee4-281d-4d0d-8456-661982890304. Published August 14, 2022. Accessed December 5, 2022.
340. Simon R. Small businesses get creative as they still struggle with hiring. *The Wall Street Journal*. https://www.wsj.com/articles/small-businesses-get-creative-as-they-still-struggle-with-hiring-11664184781. Published September 26, 2022. Accessed December 5, 2022.
341. Fox M. As small businesses recover from the pandemic, they face a new obstacle: Finding workers. CNBC. https://www.cnbc.com/2021/05/06/small-businesses-struggle-to-find-workers-as-pandemic-eases.html. Published May 6, 2021. Accessed December 5, 2022.
342. Carpenter J. 4 big questions for Big Tech after its worst day for layoffs in 2022. *Fortune*. 2022;Newsletters(Data Sheet). https://fortune.com/2022/11/04/tech-layoffs-twitter-stripe-lyft-chime-amazon-apple-hiring-freeze/. Accessed December 5, 2022.
343. WSJ Staff Report. Tech Layoffs Across the Industry: Amazon, Meta and More Cut Staff. *Wall Street Journal*. https://www.wsj.com/story/from-twitter-to-meta-tech-layoffs-by-the-numbers-0afd8714. Published November 30, 2022. Accessed December 5, 2022.
344. Krouse S, Flint J. From CNN to Paramount, media companies cut jobs as pressures Mount. *The Wall Street Journal*. https://www.wsj.com/articles/cnn-gannett-other-media-giants-resort-to-layoffs-ahead-of-potential-downturn-11670043844?mod=business\_minor\_pos22. Published December 3, 2022. Accessed December 5, 2022.
345. Gold H. BBC and guardian blame the pandemic for 250 job cuts | CNN business. CNN. https://edition.cnn.com/2020/07/15/media/guardian-bbc-job-cuts/index.html. Published July 15, 2020. Accessed December 5, 2022.
346. Clarke P. Bankers brace for job cuts after fees plunge at JPMorgan, Morgan Stanley and Citi. *Financial News*. https://www.fnlondon.com/articles/jpmorgan-citi-morgan-stanley-jobs-cuts-hiring-earnings-20221014. Published October 14, 2022. Accessed December 5, 2022.
347. Fontanella-Khan J. Cost cuts loom on wall street as balance of power with staff shifts. *Financial Times*. https://www.ft.com/content/9f1aa4c6-7aee-4d19-b13d-aa469a6ada06. Published July 25, 2022. Accessed December 5, 2022.
348. Nguyen L, Azhar S, Nishant N. Morgan Stanley making 'modest' job cuts; CEO 'wouldn't bet against' musk. Reuters. https://www.reuters.com/business/finance/morgan-stanley-making-modest-job-cuts-ceo-says-2022-12-01/. Published December 2, 2022. Accessed December 20, 2022.
349. Francis T, Emily Glazer. Layoffs hit white-collar workers as Amazon, Walmart, others cut jobs. *The Wall Street Journal*. https://www.wsj.com/articles/layoffs-hit-white-collar-workers-as-amazon-walmart-others-cut-jobs-11669930249. Published December 1, 2022. Accessed December 5, 2022.
350. Mathers M. Tesco to axe 300 jobs but remaining staff will get pay rise. *The Independent*. https://www.independent.co.uk/news/business/news/tesco-job-cuts-staff-pay-rise-b2196234.html. Published October 5, 2022. Accessed December 5, 2022.
351. Taylor T. Nike plans layoffs in pivot to sell directly to Consumers Online. SportTechie. https://www.sporttechie.com/nike-layoffs-online-consumers-retail/. Published June 29, 2020. Accessed December 5, 2022.
352. Jacobsen S. Sweden's H&M to lay off 1,500 staff in drive to cut soaring costs and rescue profits. Reuters. https://www.reuters.com/business/retail-consumer/retailer-hm-cut-1500-jobs-2022-11-30/. Published November 30, 2022. Accessed December 5, 2022.
353. WHO. Building Primary Care in a changing europe: Case studies. *European Observatory on Health Systems and Policies*. https://www.euro.who.int/\_\_data/assets/pdf\_file/0011/277940/Building-primary-care-changing-Europe-case-studies.pdf. Published 2015. Accessed December 18, 2022. ISBN: 978 92 890 50 333
354. Deutsche Welle. German opposition slams 36,000 vacant care jobs – DW – 04/25/2018. dw.com. https://www.dw.com/en/german-opposition-slams-government-for-36000-vacant-jobs-in-care-industry/a-43532272. Published April 25, 2018. Accessed December 18, 2022.
355. Bencharif S-T. Too far, too old, too few: Europe is running out of doctors. *POLITICO*. https://www.politico.eu/article/france-doctors-europe-too-far-too-old-too-few/. Published November 23, 2022. Accessed December 18, 2022.
356. Henley J, Connolly K, Jones S, Giuffrida A. 'a ticking time bomb': Healthcare under threat across Western Europe. *The Guardian*. https://www.theguardian.com/society/2022/dec/14/a-ticking-time-bomb-healthcare-under-threat-across-western-europe. Published December 14, 2022. Accessed December 18, 2022.
357. WHO, Regional Office for Europe. *Health and care workforce in Europe: TIME TO ACT*. World Health Organization. https://apps.who.int/iris/handle/10665/362379. Published 2022. ISBN: 978-92-890-5833-9
358. WHO Media Release. Ticking timebomb: Without immediate action, health and care workforce gaps in the European region could spell disaster. World Health Organization. https://www.who.int/europe/news/item/14-09-2022-ticking-timebomb--without-immediate-action--health-and-care-workforce-gaps-in-the-european-region-could-spell-disaster. Published September 14, 2022. Accessed December 18, 2022.
359. Robinson J. Over 3,000 more pharmacists needed in general practice to tackle GP shortages, says think tank report. *The Pharmaceutical Journal*. https://pharmaceutical-journal.com/article/news/over-3000-more-pharmacists-needed-in-general-practice-to-tackle-gp-shortages-says-think-tank-report. Published March 22, 2019. Accessed December 18, 2022.
360. Mohiuddin AK. Pharmacists in Public Health: Scope in Home and Abroad. *SOJ Pharmacy & Pharmaceutical Sciences*. 2019;6(1):1-23. doi:10.15226/2374-6866/6/1/00196
361. GBD 2019 Human Resources for Health Collaborators. Measuring the availability of human resources for health and its relationship to universal health coverage for 204 countries and territories from 1990 to 2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2022;399(10341):2129-2154. doi:10.1016/S0140-6736(22)00532-3
362. Feng J, Li L, Wang C, et al. The prevalence of turnover intention and influencing factors among emergency physicians: A national observation. *Journal of Global Health*. 2022;12:04005. Published 2022 Feb 5. doi:10.7189/jogh.12.04005
363. Sun X, Zhang M, Lu Z, et al. Turnover intention and related factors among resident physicians in China under the standardised residency training programme: a cross-sectional survey. *British Medical Journal*. 2022;12(4):e061922. Published 2022 Apr 11. doi:10.1136/bmjopen-2022-061922
364. Chen Y, You Y, Shen Y, Du Z, Dai T. Village doctors' dilemma in China: A systematic evaluation of job burnout and turnover intention. *Frontiers in Public Health*. 2022;10:970780. Published 2022 Nov 10. doi:10.3389/fpubh.2022.970780
365. Mekonnen T, Abera T, Tilahun A, Tadese A, Yadesa T. Self-reported turnover intention and associated factors among health professionals in Kafa Zone, Southwest Ethiopia. *SAGE Open Medicine*. 2022;10:20503121221088097. Published 2022 Mar 29. doi:10.1177/20503121221088097
366. Hou H, Pei Y, Yang Y, et al. Factors Associated with Turnover Intention Among Healthcare Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in China. *Risk Management and Healthcare Policy*. 2021;14:4953-4965. Published 2021 Dec 14. doi:10.2147/RMHP.S318106
367. De Hert S. Burnout in Healthcare Workers: Prevalence, Impact and Preventative Strategies. *Local and Regional Anesthesia*. 2020;13:171-183. Published 2020 Oct 28. doi:10.2147/LRA.S240564
368. Bourget MMM, Cassenote AJF, Scheffer MC. Physician turnover in primary health care services in the East Zone of São Paulo City, Brazil: incidence and associated factors. *BMC Health Services Research*. 2022;22(1):147. Published 2022 Feb 4. doi:10.1186/s12913-022-07517-1
369. Hu H, Wang C, Lan Y, Wu X. Nurses' turnover intention, hope and career identity: the mediating role of job satisfaction. *BioMed Central Nursing*. 2022;21(1):43. Published 2022 Feb 10. doi:10.1186/s12912-022-00821-5
370. Machitidze M. Impact of the nurses education and shortage on the patients care outcomes-literature review. *American Journal of Biomedical Science & Research*. 2022;15(4):441-443. doi:10.34297/ajbsr.2022.15.002135
371. Smokrović E, Kizivat T, Bajan A, et al. A Conceptual Model of Nurses' Turnover Intention. *International Journal of Environmental Research and Public Health*. 2022;19(13):8205. Published 2022 Jul 5. doi:10.3390/ijerph19138205
372. Boniol M, Kunjumen T, Nair TS, Siyam A, Campbell J, Diallo K. The global health workforce stock and distribution in 2020 and 2030: a threat to equity and 'universal' health coverage?. *BMJ Global Health*. 2022;7(6):e009316. doi:10.1136/bmjgh-2022-009316
373. Kamarulzaman A, Ramnarayan K, Mocumbi AO. Plugging the medical brain drain. *Lancet*. 2022;400(10362):1492-1494. doi:10.1016/S0140-6736(22)02087-6
374. Tansu A, Culp K. Risk to Civilian Nuclear Power Plant Workers During the Ukrainian-Russian War [published online ahead of print, 2022 Dec 8]. *Workplace Health & Safety*. 2022;21650799221134427. doi:10.1177/21650799221134427
375. Williams M, Armstrong L, Sizemore DC. Biologic, Chemical, and Radiation Terrorism Review. *StatPearls Publishing*; August 22, 2022.
376. Rathish B, Pillay R, Wilson A, Pillay VV. Comprehensive Review of Bioterrorism. *National Library of Medicine*. https://www.ncbi.nlm.nih.gov/books/NBK570614/. Published April 5, 2022. Accessed December 14, 2022.
377. The Guardian Art and Design Gallery. Doomsday dens: Inside Israel's bomb shelters – in pictures. *The Guardian*. https://www.theguardian.com/artanddesign/gallery/2017/aug/14/israel-bomb-shelters-adam-reynolds-photography. Published August 14, 2017. Accessed December 14, 2022.
378. Schaer C. The Bunkers That Came In From the Cold. USNews. https://www.usnews.com/news/best-countries/articles/2019-11-07/fears-of-a-new-cold-war-bring-germanys-nuclear-bunkers-back-into-fashion. Published November 7, 2019. Accessed December 14, 2022.
379. Noack R. Sweden has 65,000 nuclear shelters. now, in the era of Trump, it wants more. *The Washington Post*. https://www.washingtonpost.com/news/worldviews/wp/2017/11/03/sweden-has-65000-nuclear-bunkers-now-in-the-era-of-trump-it-wants-more/. Published December 1, 2021. Accessed December 14, 2022.
380. Harding T. Finland prepares its bunkers designed for nuclear attack. *The National*. https://www.thenationalnews.com/world/europe/2022/05/12/finland-prepares-its-bunkers-designed-for-nuclear-attack/. Published May 12, 2022. Accessed December 14, 2022.
381. Horowitz J. Pandemic fears give way to a rush for bomb shelters. *The New York Times*. https://www.nytimes.com/2022/03/12/world/europe/ukraine-europe-nuclear-war-anxiety.html. Published March 12, 2022. Accessed December 14, 2022.
382. Ruff TA. Ending nuclear weapons before they end us: current challenges and paths to avoiding a public health catastrophe. *Journal of Public Health Policy*. 2022;43(1):5-17. doi:10.1057/s41271-021-00331-9
383. Farkas CB, Dudás G, Babinszky GC, Földi L. Analysis of the Virus SARS-CoV-2 as a Potential Bioweapon in Light of International Literature [published online ahead of print, 2022 May 16]. Mil Med. 2022;usac123. doi:10.1093/milmed/usac123
384. Birn A-E, Pillay Y, Holtz TH. Chapter 8. Health under crises and the limits to humanitarianism. *Textbook of Global Health, 4th Edition*. March 2017:335-376. doi:10.1093/acprof:oso/9780199392285.003.0008
385. Daw MA. The Impact of Armed Conflict on the Epidemiological Situation of COVID-19 in Libya, Syria and Yemen. *Frontiers of Public Health*. 2021;9:667364. Published 2021 Jun 11. doi:10.3389/fpubh.2021.667364
386. Quinn V JM, Dhabalia TJ, Roslycky LL, et al. COVID-19 at War: The Joint Forces Operation in Ukraine. *Disaster Medicine and Public Health Preparedness*. 2022;16(5):1753-1760. doi:10.1017/dmp.2021.88
387. Wells JS, Scheibein F. Global pandemics, conflict and networks - the dynamics of international instability, infodemics and health care in the 21st century. *Journal of Research in Nursing*. 2022;27(3):291-300. doi:10.1177/17449871221090778
388. Ikegami M, Wang Z. Does military expenditure crowd out health-care spending? Cross-country empirics [published online ahead of print, 2022 Jun 8]. *Qual Quant*. 2022;1-16. doi:10.1007/s11135-022-01412-x
389. Kaiman J, Smith D, Anand A, et al. How sick are the world's healthcare systems? *The Guardian*. https://www.theguardian.com/society/2014/oct/29/how-sick-are-worlds-healthcare-systems-nhs-china-india-us-germany. Published October 29, 2014. Accessed December 17, 2022.
390. Rahman MM, Ghoshal UC, Ragunath K, et al. Biomedical research in developing countries: Opportunities, methods, and challenges. *Indian Journal of Gastroenterology*. 2020;39(3):292-302. doi:10.1007/s12664-020-01056-5
391. Cazzolla Gatti R. Why We Will Continue to Lose Our Battle with Cancers If We Do Not Stop Their Triggers from Environmental Pollution. *International Journal of Environmental Research and Public Health*. 2021; 18(11):6107. <https://doi.org/10.3390/ijerph18116107>
392. Koumoundouros T. Ancient 15,000-year-old viruses found in melting Tibetan glaciers. *ScienceAlert*. https://www.sciencealert.com/ancient-15000-year-old-viruses-found-in-melting-tibetan-glaciers. Published October 26, 2022. Accessed December 17, 2022.
393. Geddes L. Next pandemic may come from melting glaciers, new data shows. *The Guardian*. https://www.theguardian.com/science/2022/oct/19/next-pandemic-may-come-from-melting-glaciers-new-data-shows. Published October 18, 2022. Accessed December 17, 2022.
394. Goss JR. Health Expenditure Data, Analysis and Policy Relevance in Australia, 1967 to 2020. *International Journal of Environmental Research and Public Health*. 2022;19(4):2143. Published 2022 Feb 14. doi:10.3390/ijerph19042143
395. Cader AA, Perera L. ADBI Working Paper Series-Understanding the Impact of the Economic Crisis on Child and Maternal Health among the Poor: Opportunities for South Asia. Asian Development Bank Institute. https://www.adb.org/sites/default/files/publication/156148/adbi-wp293.pdf. Published July 2011. Accessed December 19, 2022.
396. Bao W, Tao R, Afzal A, Dördüncü H. Real Estate Prices, Inflation, and Health Outcomes: Evidence From Developed Economies. *Frontiers in Public Health*. 2022;10:851388. Published 2022 Feb 14. doi:10.3389/fpubh.2022.851388
397. American Hospital Association. Massive growth in expenses & rising inflation fuel financial challenges for America's Hospitals & Health Systems: AHA. American Hospital Association. https://www.aha.org/system/files/media/file/2022/04/2022-Hospital-Expenses-Increase-Report-One-Pager.pdf. Published April 2022. Accessed December 18, 2022.
398. Guerra O, Agyapong VIO, Nkire N. A Qualitative Scoping Review of the Impacts of Economic Recessions on Mental Health: Implications for Practice and Policy. *International Journal of Environmental Research and Public Health*. 2022;19(10):5937. Published 2022 May 13. doi:10.3390/ijerph19105937
399. Jung H, Kwon YD, Noh JW. Financial burden of catastrophic health expenditure on households with chronic diseases: financial ratio analysis [published correction appears in BMC Health Serv Res. 2022 Nov 17;22(1):1368]. *BMC Health Services Research*. 2022;22(1):568. Published 2022 Apr 27. doi:10.1186/s12913-022-07922-6
400. Ansberry C. Another inflation stress: Rising costs of senior-living homes strain families. *The Wall Street Journal*. https://www.wsj.com/articles/another-inflation-stress-rising-costs-of-senior-living-homes-strain-families-11663818638. Published September 22, 2022. Accessed December 18, 2022.
401. Jimenez Rincon S, Dou N, Murray-Kolb LE, et al. Daily food insecurity is associated with diet quality, but not energy intake, in winter and during COVID-19, among low-income adults. *Nutrition Journal*. 2022;21(1):19. Published 2022 Mar 24. doi:10.1186/s12937-022-00768-y
402. Chernew M, Cutler DM, Keenan PS. Increasing health insurance costs and the decline in insurance coverage. *Health Services Research*. 2005;40(4):1021-1039. doi:10.1111/j.1475-6773.2005.00409.x
403. Fleron A, Krishna A, Singhal S. The gathering storm: The transformative impact of inflation on the healthcare sector. McKinsey & Company. https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/the-gathering-storm-the-transformative-impact-of-inflation-on-the-healthcare-sector. Published September 2022. Accessed December 18, 2022.
404. Claborn DM. A Narrative Review of the Role of Economic Crisis on Health and Healthcare Infrastructure in Three Disparate National Environments. *International Journal of Environmental Research and Public Health*. 2020;17(4):1252. Published 2020 Feb 15. doi:10.3390/ijerph17041252
405. Shivakumar MS. Vietnam: Twenty Years After. *Economic and Political Weekly*. 1995;30(29):1836-1838. <https://www.jstor.org/stable/4403017>.
406. O'Lear S, Gray A. Asking the Right Questions: Environmental Conflict in the Case of Azerbaijan. Area. 2006;38(4):390-401. <https://www.jstor.org/stable/20004563>.
407. Kuyumjian N. Perspectives: Don't water it down: The role of water security in the armenia-azerbaijan war. Eurasianet. https://eurasianet.org/perspectives-dont-water-it-down-the-role-of-water-security-in-the-armenia-azerbaijan-war. Published December 22, 2021. Accessed December 17, 2022.
408. Samadikuchaksaraei A, Mousavizadeh K. High-tech biomedical research: lessons from Iran's experience. *BioMedical Engineering OnLine*. 2008;7:17. Published 2008 May 23. doi:10.1186/1475-925X-7-17
409. Cieslik N. Fragility and conflict: On the front lines of the fight against poverty. World Bank. https://www.worldbank.org/en/topic/poverty/publication/fragility-conflict-on-the-front-lines-fight-against-poverty. Published March 17, 2020. Accessed December 18, 2022.
410. World Bank. Overview: Fragility, Conflict & Violence. World Bank. https://www.worldbank.org/en/topic/fragilityconflictviolence/overview. Published September 30, 2022. Accessed December 18, 2022.
411. Selassie W. JACOB HOLDING ON TO THE MAN ANGEL YHWH! Symbolize a Nation and People Holding on to Their Faith and Received a Blessing. Lulu.com; 2019. ISBN: 0244165572, 9780244165574
412. Wong E. The U.S. wants to counter China's moves in Africa. but American officials try not to mention that. *The New York Times*. https://www.nytimes.com/2022/12/14/us/politics/china-africa-us-relations.html. Published December 14, 2022. Accessed December 17, 2022.
413. Bisset V, Nichols K, Chapman A, Bikales J, Villegas P, Thebault R. Ukraine live briefing: Russia blames West for Global Food Crisis despite blockade on Ukrainian grain. *The Washington Post*. https://www.washingtonpost.com/world/2022/07/24/russia-ukraine-war-latest-updates/. Published July 26, 2022. Accessed December 17, 2022.
414. uacrisis. How many health care facilities were destroyed by the Russian military. Ukraine Crisis Media Center. https://uacrisis.org/en/how-many-health-care-facilities-were-destroyed-by-the-russian-military. Published September 13, 2022. Accessed December 18, 2022.
415. Vikhrov N. Near the Russian border, a Ukrainian hospital under bombardment. Byline Times. https://bylinetimes.com/2022/09/14/near-the-russian-border-a-ukrainian-hospital-under-bombardment/. Published September 14, 2022. Accessed December 17, 2022.
416. People in Need-PIN. The Ukrainian refugee crisis: Providing important historical context for the current situation. ReliefWeb. https://reliefweb.int/report/poland/ukrainian-refugee-crisis-providing-important-historical-context-current-situation. Published October 6, 2022. Accessed December 17, 2022.
417. UNICEF. Humanitarian action for children 2022 - Ukraine and refugee Response Crisis. UNICEF. https://www.unicef.org/media/130176/file/2022-HAC-Ukraine-and-Refugee-Outflow-revised-Nov.pdf. Published November 2022. Accessed December 17, 2022.
418. Yazdi Feyzabadi V, Haghdoost A, Mehrolhassani MH, Aminian Z. The Association between Peace and Life Expectancy: An Empirical Study of the World Countries. *Iranian Journal of Public Health*. 2015;44(3):341-351.
419. Kruk ME, Gage AD, Arsenault C, et al. High-quality health systems in the Sustainable Development Goals era: time for a revolution [published correction appears in Lancet Glob Health. 2018 Sep 18;:] [published correction appears in Lancet Glob Health. 2018 Nov;6(11):e1162] [published correction appears in Lancet Glob Health. 2021 Aug;9(8):e1067]. *Lancet Global Health*. 2018;6(11):e1196-e1252. doi:10.1016/S2214-109X(18)30386-3
420. Takian A, Rajaeieh G. Peace, Health, and Sustainable Development in the Middle East. *Archives of Iranian Medicine*. 2020;23(4Suppl1):S23-S26. Published 2020 Apr 1. doi:10.34172/aim.2020.s5
421. Barber H. Europe's hospitals face collapse within 10 years. *The Telegraph*. https://www.telegraph.co.uk/global-health/climate-and-people/europes-health-systems-face-collapse-mass-retirements-threaten/. Published September 14, 2022. Accessed December 18, 2022.
422. Hasselbach C. Europe is the main focus for weapons exporters. dw.com. https://www.dw.com/en/sipri-europe-is-the-main-focus-for-weapons-exporters/a-61101019. Published March 13, 2022. Accessed December 18, 2022.
423. Salami RK. A letter in the Lancet of June 2020¹ claimed the COVID-19 pandemic teaches lessons we must embrace to overcome two additional existential threats: nuclear war and global warming. What lessons can we learn from the global response to COVID-19 that could help the world address future threats such as climate change or the proliferation of nuclear weapons? ¹Muller and Nathan. *Medicine, Conflict and Survival*. 2022;38(4):332-338. doi:10.1080/13623699.2022.2139861