



FRAGMENTS

EXPLOSIVE WEAPONS MONITOR QUARTERLY

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Collecting and Sharing Data on Explosive Weapons Use

A prerequisite for understanding impact, informing change and implementing the Political Declaration

Simon Bagshaw, Policy Advisor, Article 36

Explosive Weapons Use and the Provision of Healthcare in 2022

A review of data from the Safeguarding Health in Conflict Coalition

Tim Bishop, Conflict and Hunger & Press Lead, and Christina Wille, Director, Insecurity Insight

Explosive Weapons Use in Sudan

The devastating impacts on civilians of bombing and shelling in Sudan's towns and cities

Katherine Young, Research & Monitoring Coordinator, Explosive Weapons Monitor

A NOTE FROM THE EXPLOSIVE WEAPONS MONITOR



The Explosive Weapons Monitor – a research initiative of the International Network on Explosive Weapons (INEW) – is pleased to introduce *Fragments*, the new Explosive Weapons Monitor Quarterly Series. Each issue includes a collection of articles that address topics related to the use of explosive weapons in populated areas and contribute research to or report on developments and news relevant to this issue area.

With this series, the Explosive Weapons Monitor aims to advance the global recognition and understanding of the full impact on civilians of the use of explosive weapons and to strengthen global efforts to address the humanitarian consequences of explosive weapons use, which include the universalisation and implementation of the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas*.

Fragments aims to reach a combination of specialised audiences familiar with the issue of explosive weapons in populated areas, including those affected by explosive weapons use, as well as the community of practice working to address the impacts of explosive weapons through the Declaration.

When explosive weapons are used in cities, towns and other populated areas, civilians suffer disproportionately. We hope *Fragments* will continue and inspire further discussions about ways in which the international community can mitigate this risk to civilians, take steps to prevent the harm to civilians caused by the use of explosive weapons, and to provide necessary and lifesaving assistance to victims and survivors.

If you are interested in engaging with us on these issues, please consider contributing articles, suggestions for additional research or any input you may have on topics covered in this and future issues.



Katherine Young
Research & Monitoring Coordinator, Explosive Weapons Monitor

FRAGMENTS: EXPLOSIVE WEAPONS MONITOR QUARTERLY SERIES

Fragments – the Explosive Weapons Monitor Quarterly Series – is a collection of articles that address topics related to the use of explosive weapons in populated areas and contribute research to or report on developments and news relevant to this issue area. Fragments aims to reach a combination of specialised audiences familiar with the issue of explosive weapons in populated areas, including those affected by explosive weapons use, as well as the community of practice working to address the impacts of explosive weapons through the Political Declaration on the Use of Explosive Weapons.

The Explosive Weapons Monitor is a research initiative of the International Network on Explosive Weapons (INEW). It conducts research and analysis on harms from and practices of explosive weapons use in populated areas and monitors universalisation and implementation of the Political Declaration on the Use of Explosive Weapons.

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On the cover:

People inspect the rubble at a house that was hit by an artillery shell in the Azhari district in the south of Khartoum, Sudan, on 6 June 2023.

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COLLECTING AND SHARING DATA ON EXPLOSIVE WEAPONS USE

A PREREQUISITE FOR UNDERSTANDING IMPACT, INFORMING CHANGE
AND IMPLEMENTING THE POLITICAL DECLARATION

SIMON BAGSHAW, POLICY ADVISOR, ARTICLE 36

The importance of collecting data on the impact of explosive weapons on civilians and civilian objects is firmly recognized in the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas* that was adopted and endorsed by 83 states in November 2022. This article examines the Declaration's commitments on data collection and suggests practical steps for their implementation by endorser states.

Introduction

Collecting and sharing data on the impact on civilians of the use of explosive weapons in populated areas has long been recognized as critically important. In 2009, as the issue of explosive weapons in populated areas was emerging onto the global policy agenda, the need for states, international organisations and civil society to “develop better data as a basis for policy making on explosive weapons” was a key recommendation of Landmine Action's pioneering report on the issue.¹

The following year, the United Nations (UN) Secretary-General called for more systematic data collection and analysis of the “human costs” of explosive weapons use as this was “essential to deepening the understanding of the humanitarian impact ... and to informing the development of policy and practice that would strengthen the implementation of international humanitarian and human rights law.”²

From 2011, civil society, the UN and the International Committee of the Red Cross (ICRC) worked to collect, analyse and report data on the humanitarian impact of the use of explosive weapons globally and in relation to specific conflicts. Their efforts established a credible evidence base to support advocacy aimed at raising awareness of the harm to civilians resulting from the use of explosive weapons in populated areas and the need for state-led action to address it.

State action on the issue resulted in November 2022 in the endorsement by 83 states of the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas*.³ The outcome of almost three years of intergovernmental consultations, the Declaration marked the first formal recognition at the international level that the use of explosive weapons in populated areas has severe humanitarian consequences that must be addressed.



The importance of including data collection and sharing in the future declaration was apparent from the outset of the consultation process leading to its adoption. At the first consultation in November 2019 (and all subsequent consultations), the International Network on Explosive Weapons (INEW), a coalition of civil society organizations, was among the participants to call for the future declaration to commit states to “[s]upport and undertake data gathering including data on victims of explosive weapons disaggregated by sex, age, and ability, and data on the weapon types used in populated areas and their impacts”.⁴

INEW and its members, along with the UN and the ICRC, were also key in advocating for a broad understanding of the impact of explosive weapons and the scope of the data required. Impact should not only be considered in terms of the direct effects of explosive weapons, such as deaths and injuries, but also their indirect or reverberating effects: “a series of complex knock-on effects that spread out over time and space in urban ecosystems, with negative consequences for civilian well-being and the environment in which people live [and which] manifest across a wide range of interlinked sectors, including urban infrastructure, public health, education, culture and heritage, food security, economic prospects, and adverse environmental impacts.”¹

The importance of data collection on the impact of explosive weapons is firmly recognized in the Declaration as endorsed in November 2022. A number of its commitments speak to data collection and sharing by armed forces and supporting the data collection efforts of civil society, the UN and the ICRC. This article examines those commitments and makes recommendations for how they should be implemented by endorsing states.⁵

The Political Declaration and Data Collection and Sharing

The Declaration includes a number of provisions on data collection.

Paragraph 1.8 of the preamble underlines the rationale for, and importance of, data collection for states and armed forces, stating in part that:

“...improved data on civilian harm would help to inform policies designed to avoid, and in any event minimize, civilian harm; aid efforts to investigate harm to civilians; support efforts to determine or establish accountability, and enhance lessons learned processes in armed forces.”

Paragraph 1.8 could be interpreted as broadening the notion of data collection in terms of its purpose and the actors involved. Prior to the Declaration, data collection was largely understood in the context of the work of civil society, the UN and the ICRC. Its purpose was to raise awareness of the humanitarian impact of explosive weapons use and to push for more effective protection of civilians. The notion of data collection under the Declaration is expanded and focuses more on supporting states and their armed forces in understanding the causes of civilian harm. This understanding can then be used to inform tactical changes and the development of policy to mitigate harm and to support accountability by identifying civilian harm incidents that require investigation.

This understanding is reflected in the Declaration’s “operative section” which contains three paragraphs that speak to data collection and sharing with a particular, though not exclusive, emphasis on the role of armed forces.

Specifically, **paragraph 4.2** commits states to:

“Collect, share, and make publicly available disaggregated data on the direct and indirect effects on civilians and civilian objects of military operations involving the use of explosive weapons in populated areas, where feasible and appropriate.”

In addition to ascribing a clear role to states and, by extension their armed forces, in collecting and sharing data, this paragraph is significant in that it clearly signifies that data should be collected on both the direct and indirect effects of the use of explosive weapons. Data collection is not just about capturing data on the number of civilians killed and injured by explosive weapons, but on the knock-on and longer-term impacts as well, such as damage to healthcare and other essential infrastructure. This would provide a fuller and more comprehensive understanding of the impact of military operations on civilians which would support the identification of tactical and other actions to better mitigate or prevent harm to civilians.

Paragraph 4.2 should be read in conjunction with **paragraph 3.4** which, in part, commits states to:

“Ensure that their armed forces ... conduct damage assessments to the degree feasible, and identify lessons learned.”

Reference should also be made to **paragraph 4.3** which, though aimed at states, addresses the role of the UN, the ICRC and civil society in data collection. The paragraph commits states to:

“Facilitate the work of the [UN, ICRC] and relevant civil society organizations collecting data on the impact of civilians of military operations involving the use of explosive weapons in populated areas, as appropriate.”

Implementing the Commitments in Paragraphs 4.2 and 3.4

States could readily implement the commitments in paragraphs 4.2 and 3.4 of the Declaration through the practice of civilian harm tracking – an internal process through which state armed forces systematically gather data on civilian deaths and injuries, property damage or destruction, and other instances of harm to civilians caused by its operations.

The alternative would be for armed forces to rely on the existing practice of battle damage assessments (BDAs), or “damage assessments” as referred to in paragraph 3.4. BDAs are conducted immediately after an attack to assess the effect or degree of damage inflicted on the target and to make recommendations for additional strikes. In practice, BDAs are not always undertaken nor do they always consider the impact of the attack on civilians and civilian objects, let alone the resulting direct and indirect effects.⁶

Embedding the commitments in paragraphs 4.2 and 3.4 in policy and practice

A conscious and concerted effort to understand the impact of military operations on civilians and civilian objects, including from the use of explosive weapons, is vital for ensuring accountability and redress, learning lessons and continuously working to strengthen the protection of civilians over time. To this end, in order to implement the commitments in paragraphs 4.2 and 3.4, militaries should develop policy and practice which provides for the establishment of:

- A standing capability to track, receive, analyze, and learn from, incidents of harm to civilians and civilian objects that would also provide the basis for regular, public reporting. Such a capability should ensure the collection of data on both the direct and indirect effects of military operations on civilians.
- Processes to ensure that analyses, findings and lessons-learned routinely inform operational changes and broader policy development in support of more effective protection of civilians. Implementing the Commitment in Paragraph 4.3.

Existing military policy and practice on civilian harm tracking

Civilian harm tracking has been implemented by a range of armed forces in different contexts.⁷ For example, it was a critical component of the broader efforts of the International Security Assistance Force in Afghanistan from 2008 onwards to protect civilians from the effects of military operations⁸, and of the indirect fire policy developed by the African Union Mission in Somalia in 2010.¹⁰

NATO’s 2021 Handbook on Protection of Civilians refers to tracking incidents of civilian casualties as key to mitigating civilian harm from NATO’s own actions and central to “Civilian Casualty Management Actions”. NATO’s updated joint targeting doctrine, issued in November 2021, provides for the establishment of a “casualty tracking mechanism” as part of the assessment phase of the joint targeting cycle. It further stipulates the use of sex and age disaggregated data to inform future operations and minimize civilian casualties and the integration of a gender perspective in the assessment of human and material damages.

Civilian harm tracking also features in the United States Department of Defense’s (DOD) Civilian Harm Mitigation and Response Action Plan, issued in August 2022. The Action Plan establishes Civilian Harm Assessment Cells that are responsible for identifying, receiving and compiling information related to civilian harm; undertaking civilian harm assessments; supporting the command in taking response actions; analysing incidents, patterns, and trends and making these available to command staff to inform current operations and broader organizational learning; and to document, archive, and disseminate information within DOD related to assessments, investigations and responses.¹¹

Implementing the Commitment in Paragraph 4.3

The actors listed in paragraph 4.3 – the UN, the ICRC and civil society – collect such data for a variety of reasons, including to better understand the full scope of short and long-term impacts on civilians of explosive weapons use in populated areas. Data collection is also an essential component of their efforts to assist the victims of explosive weapons and to protect civilians from the risk of explosive remnants of war (ERW), including through such activities as risk education, and ERW marking and clearance.

Embedding the commitment in paragraph 4.3 in policy and practice

The commitment by states to facilitate the work of the UN, the ICRC and civil society organizations collecting data on the impact of explosive weapons should be understood broadly by states to include a range of possible actions which should be reflected in revised or new policy and practice. These include:

- Collecting, sharing, and making publicly available to the UN, the ICRC and civil society organizations disaggregated data on the direct and indirect effects on civilians and civilian objects of military operations involving the use of explosive weapons in populated areas (as provided for in paragraph 4.2)
- Commissioning and/or funding research and studies by the UN, the ICRC and civil society organizations into the short and long-term impact of the use of explosive weapons in populated areas to further broaden and deepen our understanding of those impacts, the nature and scope of what “can be reasonably foreseen in the planning of military operations”¹², and the steps required to prevent and mitigate them.

- Supporting ERW risk education, marking and clearance activities by the UN, the ICRC and civil society by providing them with data on the use of explosive weapons, including the approximate number of explosive weapons used, the type and nature of explosive weapons used, and the general location of known and probably unexploded ordnance.

Conclusion

Collecting and sharing data on the use of explosive weapons in populated areas is a fundamental prerequisite for understanding the impacts of such use on civilians and for informing tactical and broader policy changes to better protect civilians.

Since November 2022, data collection is also a fundamental prerequisite for the implementation of the political Declaration. The inclusion in the Declaration of commitments relating to data collection and sharing by armed forces, as well as their role in supporting the data collection efforts of other actors, is an important recognition of the vital contribution of these activities to strengthening the protection of civilians.

Key now will be ensuring that states and their armed forces establish the necessary capacities, policies and processes to give effect to these commitments. Fortunately, precedents exist, especially in the area of civilian harm tracking, and can be built upon. In that sense, the path forward is clear. Endorser states and their armed forces must now demonstrate the political will to follow it.

Civilians work to clean up the destroyed maternity section of the Vilniansk hospital in Zaporizhia region, Ukraine, after it was struck by a Russian missile in November 2022.

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IMPACT OF EXPLOSIVE WEAPONS USE ON THE PROVISION OF HEALTHCARE IN 2022

A REVIEW OF DATA FROM THE SAFEGUARDING HEALTH IN CONFLICT COALITION

TIM BISHOP, CONFLICT AND HUNGER & PRESS LEAD,
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The Safeguarding Health in Conflict Coalition reported at least 634 attacks on healthcare in which explosive weapons were used in 2022. This data, collected by Insecurity Insight, shows the widespread disruption of the provision of healthcare across the globe as a result of the use of explosive weapons in populated areas, the full scope of which will extend long beyond the time and location in which they were recorded. Ongoing data collection on civilian harm from the use of explosive weapons remains critically important to supporting efforts to address and mitigate this harm.

Introduction

“It was the sound of a whistle and an explosion. [...] It was the sound of broken glass, dust rising. But it was for a few seconds. Everything fell and everyone began to realise what had happened.” – Dr. Alla Barsehian, Ukrainian Healthcare Centre.¹³

Ukrainian healthcare workers recalled a Russian cruise missile attack on the Bashtanka Multiprofile Hospital in southern Ukraine on an April afternoon in 2022 that completely destroyed about 30-40 percent of the hospital's premises, including the infectious diseases department and the outpatient polyclinic. At least 330 of its windows were shattered, and multiple doors were blown off their hinges by the explosion's blast.¹⁴ Meanwhile, Russian armed forces continued bombing Bashtanka city with Grad rockets, air-dropped bombs and Tochka-U missiles, wounding civilians in need of medical care from the city's hospital.

This incident is just one of at least 634 attacks on healthcare in which explosive weapons were used in 2022 recorded by Insecurity Insight for the Safeguarding Health in Conflict Coalition (SHCC).¹⁵ In a June 2023 report

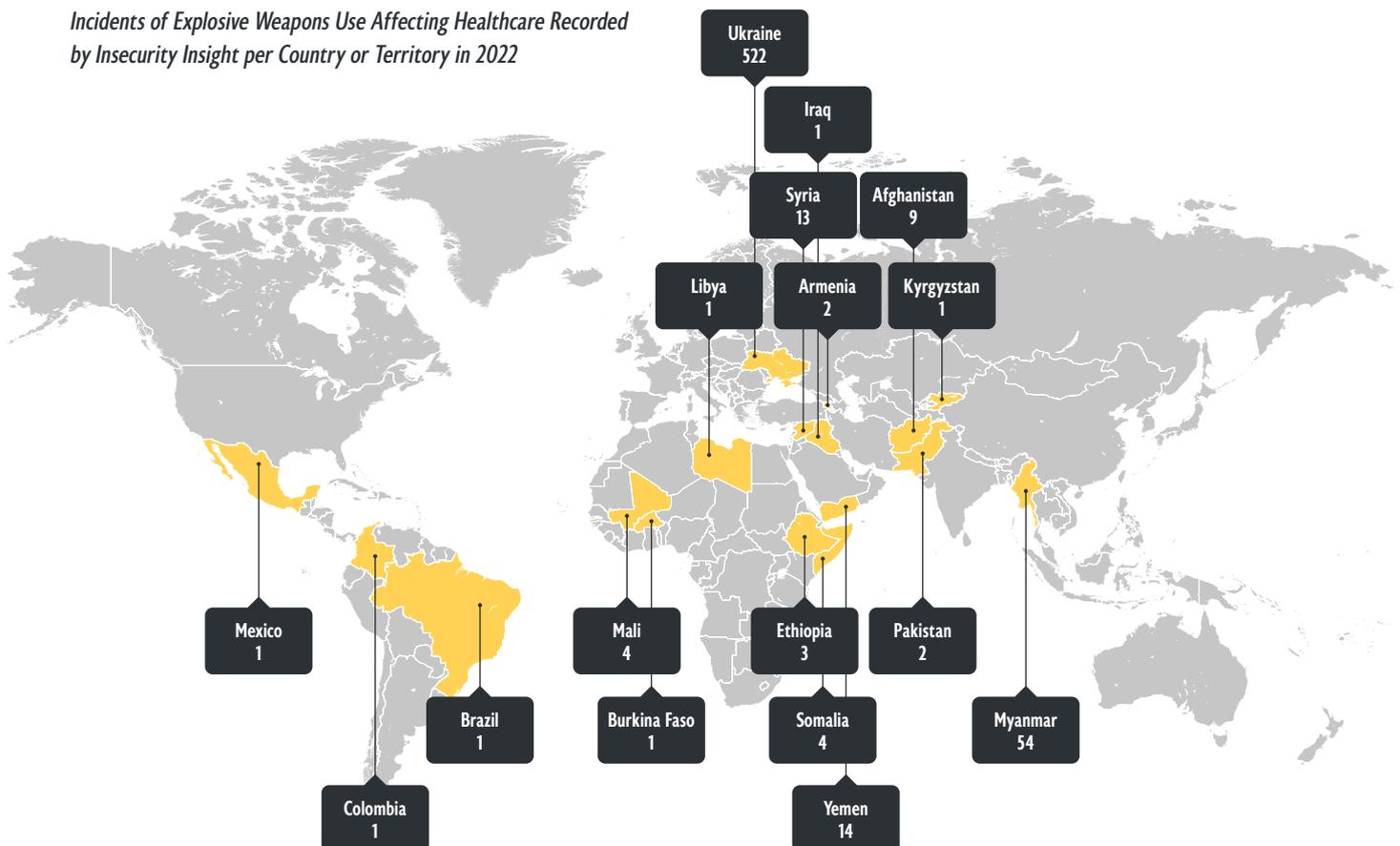
published by the SHCC, 'Ignoring Red Lines: Violence Against Health Care in Conflict 2022', explosive weapons use accounted for a high proportion of all documented 1,989 incidents of violence against or obstruction of healthcare in conflicts across the world.¹⁶ This is no surprise – explosive weapons used in populated areas have devastating consequences for civilians across the world, including the damage and destruction of critical civilian infrastructure that affects access to essential services such as healthcare.

This article reports on the impact of explosive weapons on the provision of healthcare in 2022 as captured in data collected by Insecurity Insight and presented by the SHCC. This data shows the widespread disruption of the provision of healthcare across the globe as a result of the use of explosive weapons in populated areas, which demonstrates a pattern of civilian harm that both includes and stems from the damage and destruction of health infrastructure and the killing and injuring of health workers.

Widespread Disruption of the Provision of Healthcare

Hospitals, mobile clinics, pharmacies, ambulances, patients and health workers were directly impacted by the use of explosive weapons in 17 countries and territories in 2022.

Incidents of Explosive Weapons Use Affecting Healthcare Recorded by Insecurity Insight per Country or Territory in 2022



Nearly four-fifths of all 634 reported incidents of attacks on healthcare with explosive weapons occurred in Ukraine. Incidents also occurred frequently in Myanmar, where Insecurity Insight recorded 54 attacks, and in Syria and Yemen, where ten attacks were recorded in each country.

All of these events impacted the provision of healthcare in different and complex ways, beyond the damage and destruction to hospitals and clinics. For example:

- Airstrikes in Yemen damaged at least one medicines warehouse, making access to life-saving medicines more challenging for Yemeni civilians.
- At least one health worker travelling to assist injured civilians was killed by air-launched bombing in Syria.
- Ambulances were damaged by directly-emplaced explosives, such as landmines, on at least ten occasions in Myanmar.

The use of different types of explosive weapons, which range from small weapons, such as hand-grenades, to significantly larger aircraft bombs and ground-launched rockets and missiles, also had varied effects on the provision of healthcare.

Ground-launched explosive weapons

Ground-launched explosive weapons, such as artillery shells and ground-launched missiles and mortars, were reportedly used in 365 incidents that affected healthcare in 2022, and accounted for over half of all recorded attacks on healthcare with explosive weapons. Over 90 percent of these attacks were attributed to Russian armed forces in Ukraine, primarily in the eastern half of the country.

Ground-Launched Explosive Weapons



365

Incidents affecting healthcare



249

Incidents where health facilities were damaged or destroyed



32

Health workers killed

In at least 187 incidents in Ukraine, hospitals were damaged or destroyed, often to a large extent as documented above with regards to the Bashtanka Multiprofile Hospital. In addition to the damage and destruction of hospitals, ambulances, clinics and mobile health centres were damaged or destroyed by ground-launched explosive weapons in 63 incidents in Ukraine.

Some hospitals were directly hit by ground-launched explosive weapons, and others were damaged by the wide area effects of the weapon's blast and fragmentation. The ground-launched Iskander-M missile, for example, which was often used by Russian armed forces at the start of the conflict, has a blast radius of 25,000 square metres.¹⁷

Devastation of the Ukrainian Healthcare System by Explosive Weapons

Over four-fifths of all incidents recorded by Insecurity Insight in 2022 in which explosive weapons were used in attacks on healthcare were reported in Ukraine in the context of the full-scale invasion by Russian armed forces.

During the first two weeks of the invasion, at least seven attacks on health facilities were reported every day, and rates of attacks on healthcare remained high throughout the year.¹⁸ The high number and frequency of attacks by armed forces destroyed Ukraine's health infrastructure and reduced the number of active healthcare personnel by at least 14 percent. Further, it disrupted the medical supply chain and health facilities' ability to maintain data registration and reporting.

This had a profound impact on civilian health outcomes and forced health workers to change how routine care is provided. For example, the number of strokes and myocardial infarctions increased significantly - even considering gaps in surveillance data in the regions at the fighting frontline - indicating a critically higher burden of these conditions.¹⁹

At least 29 health workers, most of whom worked in Ukraine's national healthcare system, were also killed in Ukraine. Often, health workers were struck by shelling or rocket fire while travelling to work and, in several instances, by mortars or shelling while working as military medics in battlefield contexts. In at least four cases, health workers were killed during attacks on health facilities. For example, in September 2022, a psychiatric hospital was shelled by Russian armed forces in Strelecha village, Kharkiv oblast, leading to the deaths of four health workers who had been helping evacuate the hospital due to heavy fighting in the surrounding areas.²⁰

In Myanmar, Myanmar's armed forces damaged and destroyed hospitals with the use of artillery and shelling on at least seven occasions. Ground-launched explosive weapons also damaged or destroyed ambulances, hospitals, health centres and clinics in Afghanistan, Armenia, Kyrgyzstan, Libya, Mali, Somalia, Syria and Yemen.

Air-launched explosive weapons

At least 97 incidents in which air-launched explosive weapons, such as airstrikes and air-dropped bombs, were used against health facilities were recorded by Insecurity Insight in 2022.



Nearly 60 percent of these incidents were attributed to Russian armed forces in Ukraine. The devastation from these air-launched explosive weapons was often large-scale. For example, the wards, showers, toilets and dental office of the Khukhra Primary care clinic in Sumy oblast were completely destroyed when it was struck by a 500 kg Russian air-dropped bomb in March 2022.²¹ The wide area effects of the bombs also affected the health system. A hospital in Poltava oblast, though not attacked directly, was forced to use a generator to continue operating in November after Russian forces attacked nearby critical infrastructure with air-launched explosive weapons, disrupting the supply of water and causing power outages.²²

In Myanmar, at least 20 airstrikes against health facilities were recorded by Insecurity Insight in 2022. More than half of these attacks damaged or destroyed hospitals, clinics and health centres. Six health workers were also killed in four separate incidents. In one of these incidents, the People's Defense Forces used drones to drop an improvised explosive device (IED) on a health centre in Sagaing, later claiming the attack had targeted SAC military personnel believed to be occupying the centre.²³

Affects on health infrastructure as a result of airstrikes were also recorded in Ethiopia, Mali, Syria and Yemen. In Yemen, the Saudi-led coalition damaged or destroyed health infrastructure with air-dropped explosive weapons on at least six occasions. In Syria, plane and drone-launched bombing by the armed forces of Türkiye damaged or destroyed two health centres, including one used for COVID-19 vaccinations, a hospital under construction and a clinic. A health worker was also killed by an air-dropped bomb by the armed forces of Türkiye.²⁴

Directly-emplaced explosive weapons

Directly-emplaced explosive weapons, such as anti-personnel mines and IEDs, were reportedly employed in at least 58 incidents affecting healthcare in 2022.



Twenty-three of these incidents occurred in Myanmar, half of which resulted in the damage or destruction of ambulances that drove over and detonated mines or IEDs. In several other instances, health workers were injured when mines and IEDs detonated as they were walking to work or to visit patients. The placement of directly-emplaced explosive weapons in locations such as roads can also have a significant on the transportation of patients who need access to healthcare.²⁵

Outside of Myanmar, incidents in which directly-emplaced explosive weapons affected the provision of healthcare occurred most frequently in Ukraine, Afghanistan, Burkina Faso, Colombia, Iraq, Mali, Pakistan, Somalia, Syria and Yemen.

Conclusion

The full scope of harm to civilians from the use of explosive weapons in attacks on healthcare reported here will extend long beyond the time and location in which they were recorded. After being struck by Russian air-launched explosive weapons in March 2022, the Iziom Central City Hospital in Ukraine was still functioning at only 10 percent of its capacity in December of that year due to the extensive damage caused to it.²⁶ Physical restrictions to accessing healthcare due to the attacks will remain in place, civilians will feel less confident that they can visit hospitals, clinics and health centres in safety, and unexploded ordnance from explosive weapons which initially failed to detonate will exacerbate these challenges. The traumatisation of health workers who endured attacks will also persist. This is all likely to undermine civilians' physical and mental health for years to come.

Ongoing data collection on civilian harm from the use of explosive weapons remains critically important to supporting efforts to address and mitigate this harm, including through implementation of the commitments of the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas*.²⁷ This will be a key area of work for all stakeholders to this process to avoid the use of explosive weapons in populated areas.



Smoke rises from a fire at a lumber warehouse in southern Khartoum, Sudan, amidst ongoing fighting and “the sound of heavy artillery fire” on 7 June 2023.

© AFP via Getty Images

EXPLOSIVE WEAPONS USE IN SUDAN

THE DEVASTATING IMPACTS ON CIVILIANS OF BOMBING AND SHELLING IN SUDAN’S TOWNS AND CITIES

KATHERINE YOUNG, RESEARCH & MONITORING COORDINATOR, EXPLOSIVE WEAPONS MONITOR

Since the eruption of conflict on 15 April 2023, the Sudan Armed Forces (SAF) and Rapid Support Forces (RSF) have used explosive weapons in towns and cities in Sudan that have killed and injured civilians, damaged and destroyed civilian infrastructure, and disrupted services essential to the lives and well-being of civilians. As a result, civilians live with a dangerous shortage of food and water, unreliable access to electricity, and impeded access to healthcare. To prevent this foreseeable pattern of harm and mitigate risk to civilians, armed forces and groups in Sudan – and elsewhere – must avoid the use of explosive weapons in populated areas.

Introduction

On 15 April 2023, civilians in Sudan's capital, Khartoum, knew conflict had come by the sounds of fighter jets in the air and the firing of artillery rounds in the streets. That day, fighting erupted between Sudan's military, the Sudan Armed Forces (SAF), and a paramilitary group known as the Rapid Support Forces (RSF). The fighting, led by rival military leaders who had jointly overthrown Sudan's transitional government at the end of 2021, spread quickly from Khartoum to other parts of the country, including Darfur region and the Kordofan states.²⁸

Khartoum has since been devastated by nearly five months of conflict. Entire sections of the city have been destroyed, and civilians who could not flee now face critical shortages of water, electricity, food and medicine as a result. In West Darfur – a region yet recovered from decades of pre-existing violence – aid camps, health facilities and markets were destroyed. Paramilitary forces fired heavy artillery and, when civilians desperate for food and water in the 100-degree heat began fleeing the city, shot and killed people in the streets.²⁹

This conflict has played out largely in Sudan's towns and cities – in many cases densely populated areas where civilians live and work. While RSF fighters on the ground spread throughout these populated areas armed with artillery and anti-aircraft weaponry, SAF fighter planes, attack helicopters and drones launch missiles and drop bombs from above. In one case, a Khartoum resident told Human Rights Watch about the RSF fighters deployed in front of her home, some of whom she found sleeping inside her building. Outside, they fired anti-aircraft cannons "each time there was a plane" during fighting she described as unrelenting for the first three days of the conflict.³⁰

The resulting damage and destruction of civilian infrastructure has had devastating impacts on the provision of essential services. As a result, civilians live with a dangerous shortage of food and water, unreliable access to electricity, and impeded access to healthcare. Millions of Sudanese have fled to other parts of Sudan or to neighboring countries, including Central African Republic, Chad, Egypt, Ethiopia and South Sudan. Others have remained trapped as fighting continues around them, with little access to humanitarian aid.³¹

While the impacts on civilians from the use of explosive weapons in populated areas in Sudan are devastating, they are also foreseeable. For more than a decade, civil society and international organisations have documented the patterns of harm from the use of explosive weapons, in which civilians overwhelmingly bear the brunt of their use in populated areas. Despite the well-documented risk to civilians, explosive weapons are frequently used in populated areas in conflicts across the globe. To prevent harm and mitigate risk to civilians, armed forces and groups in Sudan – and elsewhere – must avoid the use of explosive weapons in populated areas.

Civilian Death and Injury

The concentration of fighting in populated areas in Sudan has resulted in high numbers of civilian deaths and injuries caused by the use of explosive weapons. Action on Armed Violence – an armed violence monitor which records civilian casualties reported in English-language media sources – identified at least 524 civilian deaths and 721 injuries from the use of explosive weapons in 71 incidents from the beginning of the conflict through August 2023.

In the conflict generally, where gun and tank fire often accompany explosive weapons use, the United Nations (UN) envoy for Sudan on 14 September 2023 estimated that at least 5,000 people have been killed and 12,000 wounded since the conflict began. As tracking casualties has been difficult in the context of diminished healthcare capacity, the actual figures are very likely higher.³²

Air-launched Explosive Weapons Use by the Sudan Armed Forces

As airstrikes and artillery attacks intensified in residential areas of Khartoum in September, an airstrike by the SAF killed at least 40 people in a market in southern Khartoum on 10 September 2023. Médecins Sans Frontières (MSF), which operates the nearby Bashair hospital, estimated that at least 60 others were injured, many of whom lost limbs. This strike was part of a broader pattern of air-launched explosive weapons use by the SAF, which has on multiple occasions bombed and shelled markets filled with crowds of civilians in Khartoum. Al Jazeera reported two other attacks on markets in June, which killed at least 36 people in total. In parts of Omdurman city the week before at least 51 people were killed by airstrikes over the course of two days.³³

Damage and Destruction of Infrastructure and the Disruption of Essential Services

A significant proportion of civilian harm caused by the use of explosive weapons in Sudan comes from the resulting effects of damage and destruction of civilian infrastructure and the disruption of essential services. On 12 September 2023, the UN High Commissioner for Human Rights, when addressing the Human Rights Council on Sudan, said that thousands of public buildings and homes have been destroyed as a result of airstrikes and shelling. This, in turn, impacts the provision of essential services.

Homes and shelters

Fighting in urban areas in Sudan has often resulted in the deaths and injuries of civilians while sheltering at home or in places where they sought safety. In Khartoum, for example, a woman told Human Rights Watch that her two-year-old niece was killed when a munition struck her relative's home on 17 April 2023.³⁴

Schools and universities were frequently used as shelters by those displaced by the conflict. In El Geneina, the capital of West Sudan, dozens of civilians were killed and injured by repeated attacks with ground-launched explosive weapons that were fired at women's dormitories at El Geneina University, where mostly women and children were sheltering after fleeing their homes nearby.³⁵

Water and electricity

Water and sanitation services have been greatly impacted during five months of conflict in Sudan. On the first day of the conflict, the station supplying parts of North Khartoum with water was damaged, leaving about 300,000 people without water through at least the end of May. Damage to water infrastructure from air-launched explosive weapons affected water pipes and water treatment plants, making water service for civilians unreliable and intermittent. Without reliable access to drinking water, civilians sought water from other sources, including the Nile River in Khartoum. Civilians sometimes waited for days in their homes for breaks in fighting to go to the Nile to collect water.³⁶

On the same day in Omdurman and Um Bada, near Khartoum, two electric transformers were destroyed, putting water pumping stations out of service. As of 11 September 2023, the transformers had yet to be replaced. As water pumps rely on electricity to function, near constant power outages have affected the supply of drinking water. Power outages have resulted from both damage to infrastructure and the absence of workers as civilians flee conflict-affected areas. Making repairs has also been difficult, as conditions are unsafe or access is blocked for engineers and technicians.³⁷

A Khartoum resident told Human Rights Watch:

"Whenever [we get] water or electricity, we have to make quick decisions about what to do with that ... you never know when it is going to be cut again. You can hear kids crying, [but don't know if it is] because of the sound of gunfire or explosions, or because they are hungry and thirsty."³⁸

Healthcare

The provision of healthcare in Sudan has also been significantly impacted by conflict concentrated in populated areas. Insecurity Insight, for the Safeguarding Health in Conflict Coalition, recorded 30 attacks on healthcare with explosive weapons in Sudan since the beginning of the conflict through 30 August 2023, the majority of which were recorded in Khartoum. At least seven healthcare workers were killed by explosive weapons while inside health facilities or in their homes.

The WHO estimates that about 65 percent Sudan's population is without access to healthcare, and more than 70 percent of health facilities in conflict areas are not functioning. The implications of this are devastating. For example, nine patients that require renal dialysis die each day, as dialysis centers have closed due to a lack of supplies.³⁹

Reverberating effects of conflict in populated areas

Bombing and shelling by the SAF and RSF in Sudan's towns and cities, as well as other forms of violence experienced by civilians during the conflict, will have longer-term effects on communities and infrastructure that extend their impact, in different forms, to a wider population over a longer period of time.

Displacement

Since mid-April, about 5.25 million people have left their homes and fled to other parts of Sudan or to neighboring countries, including Central African Republic, Chad, Egypt and South Sudan. More than 4.1 million people are displaced within Sudan, the majority of whom (69 percent) are originally from Khartoum,⁴⁰ while more than one million people have crossed into neighboring countries.⁴¹ Sudan now has the highest number of internally displaced people (IDPs) globally, as this number has nearly doubled since conflict began to include nearly 7.1 million people, 3.3 million of which are children.⁴²

Humanitarian access

As the number of people in Sudan in need of humanitarian assistance increased by 30 percent to nearly 14.1 million since the beginning of the conflict, the ability of agencies to deliver this much-needed aid has decreased. At least 19 humanitarian workers have been killed, making Sudan "one of the most dangerous countries in the world to be a humanitarian," according to the UN High Commissioner of Human Rights.⁴³

This conflict-induced insecurity, fuelled in part by the particularly devastating impact on humanitarian access by explosive weapons use, has caused aid agencies in Sudan to scale down programmes and evacuate staff into safer parts of the country.

Areas where fighting continues in Central Darfur have been particularly challenging. In early September, the UN Office for the Coordination of Humanitarian Affairs (OCHA) had unconfirmed reports from community leaders that hundreds of people were killed and injured in IDP camps across the region.⁴⁴ In one incident, a journalist was killed when the Hasaheisa IDP Camp was shelled. In South Darfur, three refugees were killed by shelling of their camp in April shortly after conflict erupted, leaving the camp with a shortage of water, food and medicine.

Food insecurity

The reverberating impacts of conflict in Sudan will likely drive 20.3 million people into high levels of food insecurity between July and September 2023, according to the Integrated Food Security Phase Classification (IPC), with the highest percentages of food insecurity concentrated in areas most affected by the conflict.⁴⁵ In Sudan, increased food insecurity is also driven in part by water scarcity, as lack of water can drive up food prices and the consumption of unsafe drinking water can aggravate conditions such as malnutrition.

Fighting in Sudan's towns and cities contributes directly to increased food insecurity. Between 15 April and 14 September 2023, Insecurity Insight recorded at least 26 incidents in which explosive weapons reportedly affected food security in Sudan. Most frequently, these incidents involved airstrikes, shelling and artillery strikes on markets.

Unexploded ordnance

The use of explosive weapons in fighting between the SAF and RSF in Sudan has resulted in unexploded ordnance left in the country's towns and cities. In Nyala city, in South Darfur, for example, civilians have been put at increased risk from unexploded ordnance found on public roads and in residential neighbourhoods.⁴⁶ This includes unexploded artillery shells, mortars, air-dropped bombs, and anti-aircraft weapons, according to the UN Mice Action Service (UNMAS).⁴⁷

Conclusion

Five months of conflict in Sudan's towns and cities has had devastating impacts on civilians. The damage and destruction to civilian infrastructure from the use of explosive weapons in populated areas, in particular, has left civilians with a dangerous shortage of food and water, unreliable access to electricity and impeded access to healthcare. These foreseeable impacts on civilians – where damage and destruction of civilian infrastructure has severe impacts on the provision of essential services, leading to long-term consequences for entire communities – are well-documented in conflicts throughout the world.

To prevent harm and mitigate risk to civilians, armed forces and groups in Sudan – and elsewhere – must take steps to avoid the use of explosive weapons in populated areas. Sudan has not yet endorsed the *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas*,⁴⁸ which requires states to place limitations on the use of explosive weapons in populated areas and to support impacted communities.



People inspect the rubble at a house that was hit by an artillery shell in the Azhari district in the south of Khartoum, Sudan, on 6 June 2023.

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 - 8 See Centre for Civilians in Conflict (2014). 'Civilian Harm Tracking: Analysis of ISAF Efforts in Afghanistan'.
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 - 10 NATO (2021). 'Allied Joint Doctrine for Joint Targeting, Edition B, version 1', pp. 1-19.
 - 11 US Department of Defense (2022). 'Civilian Harm Mitigation and Response Action Plan', pp. 20-21.
 - 12 In addition to undertaking assessments, paragraph 3.4 commits states to ensure that their armed forces take into account the direct and indirect effects on civilians and civilian objects "which can be reasonably foreseen in the planning of military operations and the execution of attacks in populated areas".
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The Explosive Weapons Monitor is a research initiative of the International Network on Explosive Weapons (INEW). It conducts research and analysis on harms from and practices of explosive weapon use in populated areas and monitors universalisation and implementation of the Political Declaration on the Use of Explosive Weapons.

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