2024

PHSA -Sudan Complex Emergency 030424

SUDAN CONFLICT

3 APRIL 2024

World Health Organization

HEALTH CLUSTER

Sudan Conflict

Date: 03 April 2024

Public Health Situation Analysis (PHSA)

Typologies of emergency	Main health threats	WHO grade	Security level (UNDSS)	INFORM risk (rank)
Conflict Food security Displacement Epidemics	Trauma and injury Malnutrition Measles Malaria Dengue Fever Non-communicable Diseases (NCD) Mental health		**High (5/5):** Khartoum, Central Sudan **Substantial (4/5):** Eastern Sudan, El Gezira, White Nile, Sennar, Northern Darfur, South and West Kordofan, Southern Darfur, Western Darfur. **Moderate (3/5):** Central Sudan	**INFORM Risk (0-10):** 7.3 (Very High) **Global Ranking 2024 (1-191 countries):** 8

SUMMARY OF CRISIS AND KEY FINDINGS

Humanitarian needs across Sudan are at record highs with 24.8 million people, or every second person, needing humanitarian assistance in 2024.[1] This is 9 million more than in 2023.[2] People have been forced to flee their homes due to the dire humanitarian situation and the destruction of essential infrastructure, such as roads, hospitals, medical facilities, and schools, as well as power, water, and communications services.[3] The number of people displaced by the conflict continues to increase, with 8.1 million people fleeing their homes in Sudan. Approximately 6.3 million people are displaced within Sudan and another 1.8 million people who fled abroad.[4]

Since the outbreak of the current conflict in mid-April 2023, at least 14 600 have died and 33 000 have been injured (although establishing accurate numbers of civilian casualties has been challenging).[5] Most civilian deaths have been the result of the use of heavy weaponry in densely populated areas, with women and children constituting a significant proportion of the casualties reported.[6]

Disease outbreaks are increasing in the face of disruptions of basic public health services, including vaccination, disease surveillance, functions of public health laboratories and rapid response teams.[7] In addition, insecurity, displacement, limited access to medicines, medical supplies, electricity, and water continue to pose enormous challenges to delivering health care across the country.[8] Outbreaks are ongoing in several states, including cholera, measles, malaria, poliovirus type 2 (cVDPV2) and dengue fever.[9]

The ongoing conflict has intensified weaknesses in the health system, with massive destruction of healthcare infrastructure, especially in Khartoum and the Darfur region.[10] About 65% of the population lack access to healthcare and between 70 – 80% of health facilities are not functioning due to the ongoing conflict as of February 2024 (OCHA).[11] This is an increase from December 2023, when HeRAMS was undertaken in five states (Khartoum, Kassala, Red Sea, White Nile and Gedaref) and found that 45% of health facilities are fully functional, 10% are partially functional and 45% are non-functional.[12]

The situation is particularly dire for internally displaced persons (IDPs), as only 2% of them have undeterred access to health care.[13] The WHO Surveillance System for Attacks on Health Care (SSA) indicates that 62 attacks on health care have been reported since the onset of the violence on 15 April 2023.[14] The situation in Sudan is therefore a

perfect storm, as the health system is barely functional, the childhood immunization programme has broken down for most crisis-affected people, and infectious diseases are spreading.[15]

The latest food security analysis projected 17.7 million people in Sudan (37% of the population) to face high acute food insecurity (IPC Phase 3+) between October 2023 and February 2024.[16] Nearly 18 million people are acutely food insecure (IPC 3+), a dire record during the harvest season; and almost half of children are acutely malnourished. [17] More than 710 000 children are expected to face severe acute malnutrition (SAM) in 2024, representing the highest number of people in need of nutrition assistance ever recorded in Sudan.[18] Without intervention, the number could rise to 3.5 million people before the end of 2024.[19]

Various challenges have been affecting the delivery of humanitarian assistance in many parts of the country, including insecurity, looting, bureaucratic impediments, poor network and phone connectivity, lack of cash, and limited possibility to have technical and humanitarian staff on the ground.[20] Fuel shortages also affect the movement of humanitarian staff and supplies and the generation of power needed for operations (maintaining cold chain storage, supplying water, providing health care etc).[21] Internet and communication network outages across Sudan began on February 2, 2024, leaving an estimated 65% of the country without network access.[22]

In recent months, Sudan has faced significant challenges due to ongoing and new clashes in different parts of the country.[23] Safer areas have become overcrowded, contributing to the spread of diseases and fierce competition for necessities such as water and pasture.[24] The widespread destruction and displacement have severely impacted the economy, causing overwhelming food insecurity in some regions. Additionally, the risks of civil and tribal wars increased, fuelled by the proliferation of weapons, tribalism, and racial discrimination.[25]

Research by Search for Common Ground revealed various significant effects from clash incidents, with economic disruptions and infrastructure destruction being the most reported consequences, cited by 33% of respondents. Displacement of people (IDPs, refugees) and the loss of lives or injuries were also noted as critical impacts, reported by 20% and 16% of respondents, respectively. Furthermore, 26% of respondents mentioned social divisions or mistrust as significant outcomes.[26]

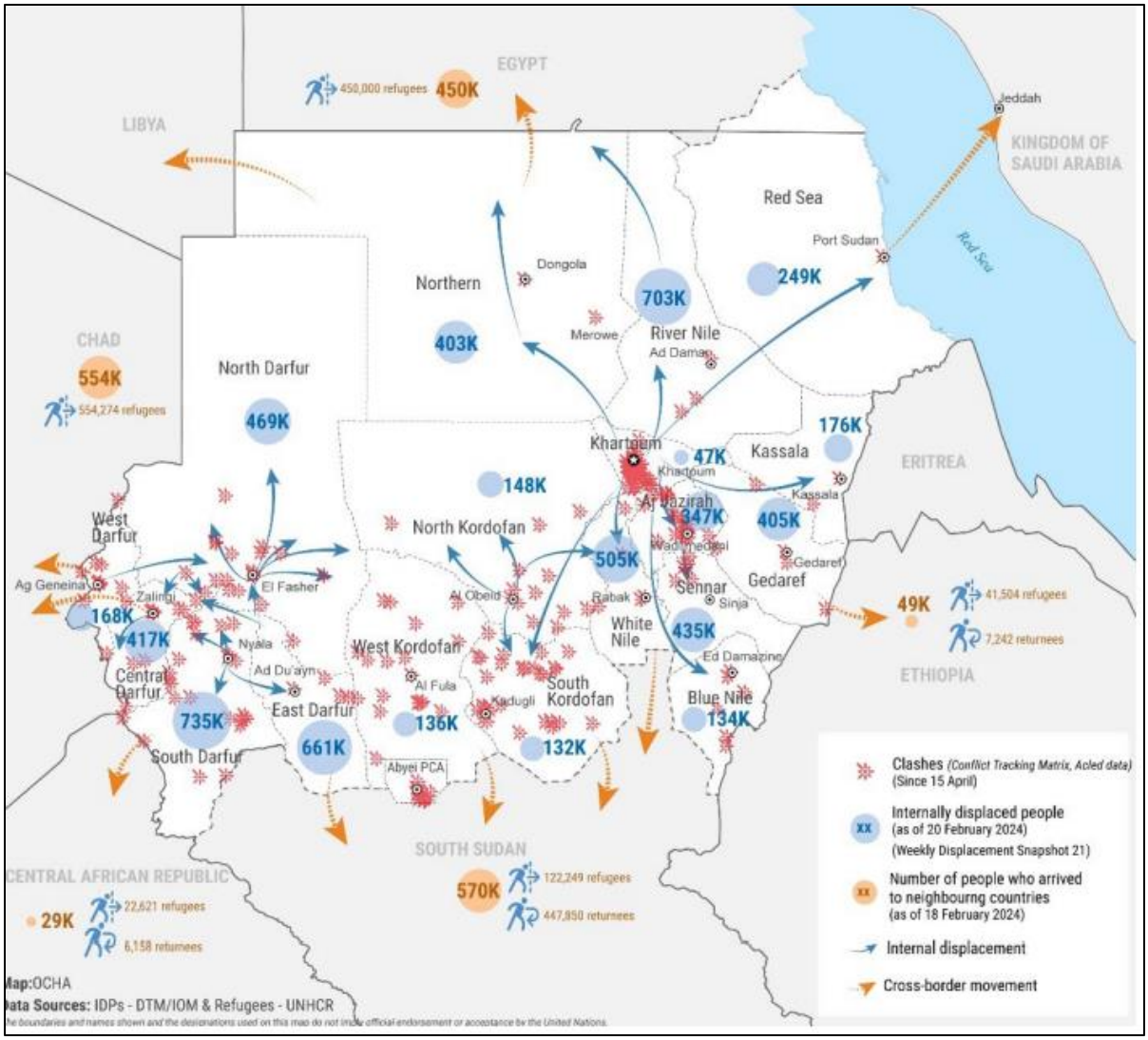

Figure 1- Sudan Crisis Map (OCHA, 23 February 2024)

HUMANITARIAN PROFILE

PEOPLE IN NEED (PiN) 2024

PiN: 24.8 million[27]

Target: 14.7 million[28]

HEALTH NEEDS

Needs: 14.9[29]

Target: 4.9 million[30]

DISPLACEMENT SINCE APRIL 2023

Total displaced: 8.1 million[31]

IDPs: 6.3 million[32]

FATALITIES

Deaths: 13 900[33]

Injuries: 33 000+ [34]

Humanitarian Response Plan (HRP): In 2024, Sudan is experiencing unprecedented humanitarian demands, with 24.8 million individuals, equivalent to every other person, requiring humanitarian aid.[35] Millions lack access to essential goods and services such as food, health care, nutrition services, water, shelter, electricity, and education, .[36]

The 2024 Sudan Humanitarian Needs and Response Plan (HNRP) requires $2.7 billion to provide life-saving multi-cluster and protection assistance to 14.7 million people across Sudan in 2024. [37] As of 23 February 2024, the appeal is 3.5% funded, with $95.5 million received.[38] Despite the challenges, 58 humanitarian partners reached more 900 000 people with life-saving assistance in January 2024.[39]

On 20 February 2024, Emergency Relief Coordinator Martin Griffiths released US$20 million for life-saving humanitarian support to vulnerable people across Sudan through the Central Emergency Response Fund (CERF).[40] This year the CERF allocation is among the smallest in recent years for the world's least-financed crises.[41]

Population in need of health services and population targeted: A total of 14.9 million people are currently in need of primary health-care services, while almost 30 million people do not have access to healthcare services.[42] The Health Cluster will require US$ 178 million to meet the health needs of the 4.9 million people that make up the highly vulnerable target population.[43] Due to challenges with security, access, and resource availability, only one third of those in need will be targeted in 2024 (cf. figure 2).[44]

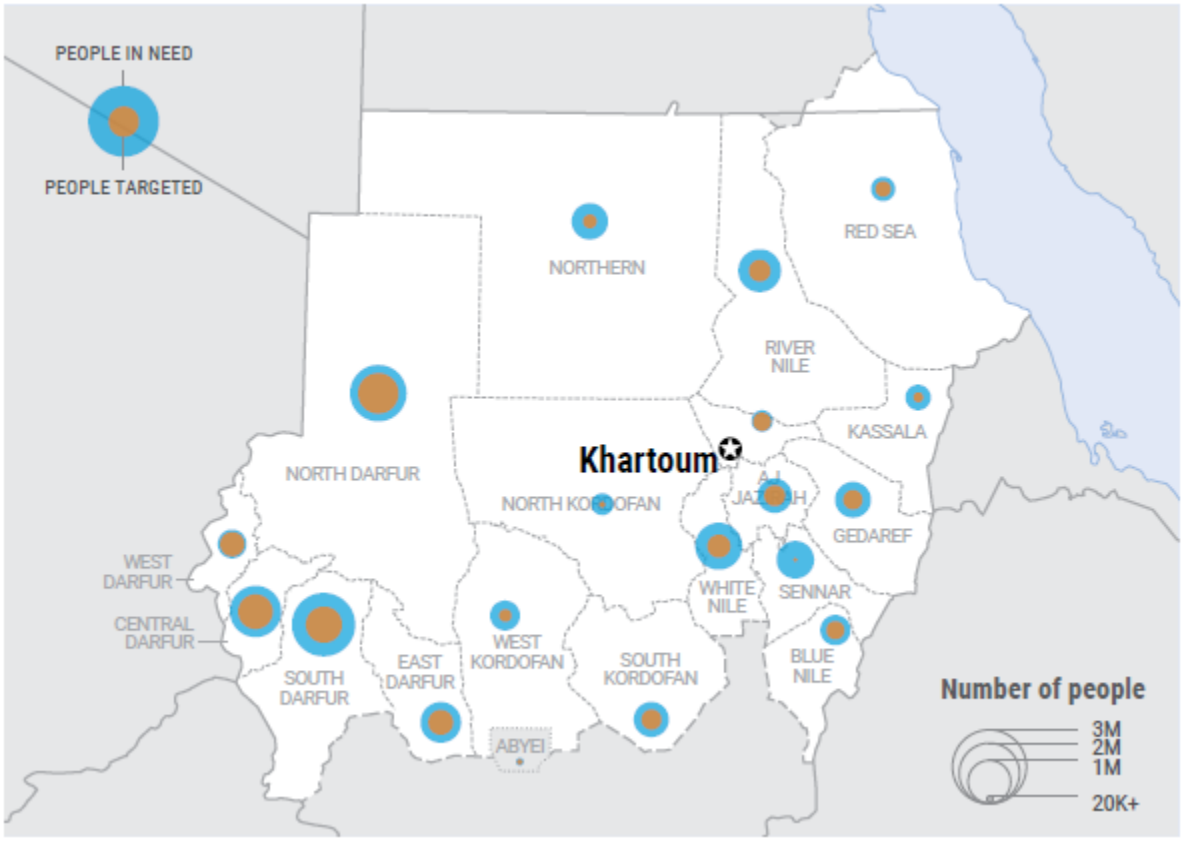

Figure 2- Distribution of people in need and people targeted by province[45]

Displaced: The IDPs are in 6771 locations across all of Sudan's 18 states. The highest proportions of displaced persons are in the Darfur region (37%) followed by River Nile (11%), White Nile (8%), Sennar (7%), Gedaref (6%), Northern (6%), and Aj Jazirah states (6%).[46]

The majority of IDPs – 67%– reside in host communities and in so-called "gathering sites", including schools, informal settlements or open areas and abandoned buildings, and live in dire conditions with limited support from humanitarian organizations.[47] There are severe shortages of food, and they lack access to safe drinking water, healthcare and essential medical supplies and sanitation.[48] Overcrowding has resulted in the rapid spread of diseases.[49]

The surge of newly displaced persons across Sudan has overwhelmed public services and resources in the areas of arrival, creating appalling living conditions, particularly in hundreds of gathering sites where new IDPs continue to arrive.[50] A January 2024 inter-sectoral assessment of gathering sites In Port Sudan Found that top priority needs are food, health and shelter and non-food items, water and sanitation and education.[51]

Food Insecurity: The latest food security analysis projected 17.7 million people in Sudan (37% of the population) to face high acute food insecurity (IPC Phase 3+) between October 2023 and February 2024.[52] Nearly 18 million people are acutely food insecure (IPC 3+), a dire record during the harvest season; and almost half of children are acutely malnourished.[53] Of these, nearly five million people are projected to be in Emergency levels of hunger (IPC Phase 4), the highest number ever recorded in the country during the harvest season.[54] More than 75% of the five million people facing Emergency hunger (IPC Phase 4) are situated in conflict hotspots in greater Khartoum, Darfur and Kordofan's.[55] Darfur is the worst-affected region, with over 40% of the population in four out of five Darfur states described as having insufficient food consumption.[56] Without support, there's a risk that pockets of these people

could deteriorate into Catastrophe (IPC Phase 5). [57] Widening hostilities have driven atrocities against civilians, the destruction of goods and infrastructure, large-scale population displacement, pervasive looting, and severely limited humanitarian access; all of which have disrupted the country's food supply.[58]

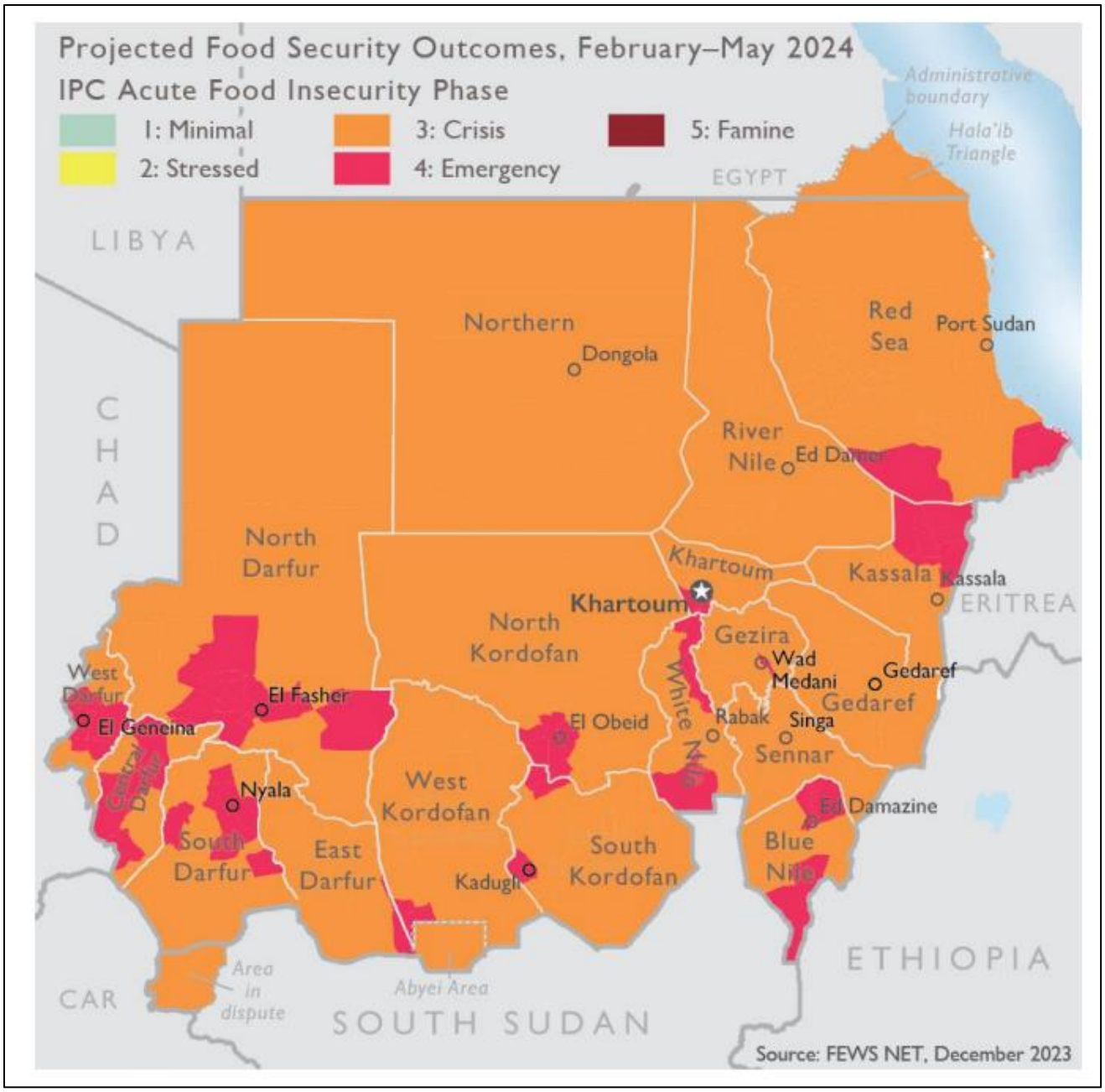

Figure 3- Projected Food Security Outcomes (USAID, Feb 2024)[59]

Humanitarian Access: In December 2023, the Humanitarian Aid Commission (HAC) announced that more than 3 000 humanitarian organizations had ceased working in Sudan due to the fighting and the lack of access, including 2 900 national organizations, and 110 foreign and regional organizations.[60]

Since the fighting started, 20 humanitarian workers have been reported killed and 33 have been reported injured. The actual number of aid workers killed and injured may be higher, as systematic reporting is inhibited by a range of

factors.[61] Offices, assets and warehouses of humanitarian partners have been looted in conflict-affected areas.[62] By 30 September 2023, 50 humanitarian warehouses and 86 offices had been looted and 220 vehicles stolen.[63]

Between June and December 2023, humanitarian organizations managed to move about 177 500 metric tonnes (MT) of relief supplies across lines of conflict in parts of Sudan. However, since mid-December 2023, all crossline movements have been suspended due to bureaucratic impediments, insecurity and the expansion of the conflict to eastern parts of Sudan.[64] On February 2, the World Food Programme (WFP) called on parties to the conflict to provide immediate guarantees for the safe and unimpeded delivery of food assistance, as the agency faces threats, roadblocks, and demands by armed groups for fees and taxation. [65]

Sudan recently experienced a prolonged and extensive outage of its telecommunications and internet infrastructure. The operational activities of humanitarian agencies were significantly disrupted due to the network outage. [66] Conflict-affected populations identified to receive humanitarian cash assistance depend on internet connectivity to receive mobile cash transfers from relief agencies; as such, telecommunications blackouts may limit relief actors' ability to reach those in need of assistance. [67]

Vulnerable Groups: The scarcity of resources and limited international humanitarian aid has significantly increased the risks for vulnerable people in both host communities and amongst IDPs.[68] Specifically, those at risk are older persons, persons with disabilities, women and girls. [69] There are also reports of targeting of individuals and communities along ethnic lines and political affiliations. [70]

Regional Impact: The conflict in Sudan has created a humanitarian catastrophe that is sending shockwaves across the region. The scale of the crisis is difficult to fathom as it has driven hunger to record levels and created the world's largest displacement crisis.[71] The crisis and the refugee migration has further compounded the humanitarian needs in South Sudan and Chad.[72] An estimated 5.8 million people, over 32% of Chad's population, require humanitarian assistance due to protracted conflict, displacement, and climate shocks.[73] The influx of nearly 500 000 Sudanese refugees since April 2023, almost doubling the total refugee population, puts immense pressure on resources and infrastructure,[74] which, if not mitigated, may even result in the closure of the border by Chad authorities to limit the strain on the system. In South Sudan, more than 7.1 million people are projected to face acute food insecurity (IPC Phase 3+) in the April-July 2024 lean season.[75] Returnees and refugee arrivals face critical needs for shelter, food, health services, and water, sanitation and hygiene (WASH). The host community, accommodating 58% of arrivals, strains limited resources, particularly in health services and WASH facilities.[76]

HEALTH STATUS AND THREATS

Population mortality: In Sudan, life expectancy at birth (years) has improved by 6.68 years from 62.5 years in 2000 to 69.1 years in 2019.[77] WHO reports that for females, the top causes of death per 100 000 population were ischaemic heart disease, neonatal conditions, stroke, lower respiratory infections and hypertensive heart disease.[78] For males, the top causes of death per 100 000 population were ischaemic heart disease, neonatal conditions, stroke, road injury and lower respiratory infections.[79]

However, according to the Annual Health Statistical Report 2019, the top causes of death include pneumonia (7.4%), followed by malaria (6.8%), and malignant neoplasms (4.6%).[80] This demonstrates there are significant challenges due to the multiple non-aligned, un-linked, uncoordinated data systems in use.[81] There is a lack of data sharing, disaggregated data and weak data analysis, reporting capacity and use of data collected in decision-making processes. Information relies heavily on population studies rather than routine data.[82] There is no active mortality surveillance system for the crisis-affected areas; few mortality surveys (in the context of SMART surveys) have been published since the start of the conflict, and none from any of the most crisis-affected states[83].

Sudan health indicators are lagging MDG/SDG targets. Sudan continues to have high rates of child and maternal mortality. The maternal mortality ratio was 295 per 100 000 live births in 2017, while the 2015 MDG target was 134 and the 2030 SDG target is 70.[84] Health outcome disparities across states, gender and poverty levels have not yet been addressed.[85] The under-5 mortality rate is highest in East Darfur State (112 per 1000 live births) and lowest in the Northern State (30 per 1000 live births).[86] Children living in the poorest households are twice as likely of dying before their fifth birthday, compared to children from the wealthiest household.[87]

MORTALITY INDICATORS	SUDAN	YEAR	SOURCE
Life expectancy at birth	69.1 years	2019	WHO[88]
Crude mortality	7 per 1,000 people	2020	World Bank[89]
Infant mortality rate (deaths < 1 year per 1000 births)	39 per 1000 people	2021	UNICEF[90]
Child mortality rate (deaths < 5 years per 1000 births)	54 per 1000 people	2021	UNICEF[91]

Vaccination coverage: Sudan has witnessed a remarkable improvement in routine vaccination coverage during the last few years. This was a result of the stable implementation of routine immunization for the prevention and control of vaccine-preventable childhood diseases.[92] The routine immunization programme in Sudan has good political support which has been translated into modest financial support. [93] However, the protracted crises continue to undermine the gains or progress of development efforts. The coverage of routine vaccination remains below targets.[94] Furthermore, there has been no vaccination at all in many parts of the country, notably the Darfur and Kordofan states, since the start of the conflict, thus creating a large and growing pool of susceptible individuals.

Regarding COVID-19 vaccination, 28% of the population received a vaccine by March 2023. This accounts for 12.6 million people.[95] A 2023 study on vaccine hesitancy found that in Sudan, higher education levels and employment were associated with an increase in knowledge about the vaccine in around half of the participants. However, most of participants had not taken the vaccine at the time of the study, and the trust in vaccines was found to not be high, with many having concerns about safety.[96]

SUDAN VACCINATION DATA (WHO)[97]		African Region Comparison
DTP-containing vaccine, 1st dose (2022)	94%	80%
DTP-containing vaccine, 3rd dose (2022)	84%	72%
Polio, 3rd dose(2022)	85%	71%
Rotavirus, last dose(2022)	84%	51%
Measles-containing vaccine, 1st dose (2022)	81%	69%
Measles-containing vaccine, 2nd dose (2022)	63%	45%

DISEASE RISK ANALYSIS

Key Health Risks over coming month		
Public health risk	**Level of risk*** **	**Rationale**
Trauma and injury		Armed confrontations and violence have increased protection risks. Direct military action, such as air strikes, indiscriminate bombings, armed confrontations, and the threat of unexploded ordnance and mines, disrupt life for civilians, especially IDPs and refugees on the move.[98] Since the outbreak of the current conflict in mid-April 2023, at least 14 600 have died and 33 000 have been injured.[99] Access to trauma care is impeded by a lack of access to hospitals, and an urgent need for access to trauma kits.
MMalnutrition		Sudan has one of the highest rates of child malnutrition worldwide.[100] More than 710 000 children are expected to face severe acute malnutrition (SAM) in 2024.[101] This figure represents the highest number ever recorded in Sudan.[102] Without intervention, the number could rise to 3.5 million before the end of 2024.[103]
MeaslesMeasles		About 5000 cases of measles with 106 deaths (CFR 2.27%) were reported as of March 15th, 2024;[104] though this represents only data from accessible areas, and so likely hides a much larger problem in hard-to-reach areas. There also have been outbreaks of measles in areas hosting large numbers of displaced children.[105] In 2022, it was considered one of the major risks facing Sudan.[106] The risk of measles outbreaks will be particularly high for mobile populations including IDPs, refugees, and any others in camp settings. This risk is further exacerbated by lack of access to vaccinations.[107]
Malaria		Over 1.3 million clinical cases of malaria with 143 deaths (CFR 0.011%) were reported as of March 15th, 2024.[108] The entire population of Sudan is at risk of malaria.[109] Malaria has remained stagnant on the list of the top ten causes of illness, and it remains a substantial health problem and national health priority.[110]
Dengue Fever		Over 8300 cases of dengue with 66 deaths (CFR 0.79%) were reported as of March 15th, 2024.[111] The current dengue fever outbreak started in July 2022, with the first suspected dengue case reported on 31 July 2022 from the Kassala locality in Kassala State. An outbreak was officially declared on 14th Feb 2023.[112]
Non-communicable Diseases (NCDs)		NCDs contribute to over half of all mortalities in Sudan, with specifically high burdens such as rheumatic heart disease, hypertension, and diabetes.[113] Data from the NCD Progress Monitor showed that the percentage of NCD-related mortality had increased from 32% in 2015 to 54% in 2022.[114] The current conflict has disrupted essential services and supplies of medicine. Insulin has been identified as an urgently needed medical supply.[115] On 24 June 2023, 13 children with kidney disease reportedly died due to inadequate treatment options.[116] An MSF have reported that Al Nao Hospital is recording on average 3 to 5 deaths due to Diabetic Ketoacidosis daily.[117] One dialysis centre in the Darfurs has indicated that all 200 of its clients are presumed dead due to disruption of services.
Mental health		Sudan's civil wars have been linked to an increase in mental diseases such as depression and post-traumatic stress disorder (PTSD), particularly among children and women.[118] No national prevalence study has been conducted across the whole country, but higher rates of psychiatric disorders have been

		found among internally displaced persons (53%). [119] Many communities throughout Sudan use traditional and religious healers to help meet their primary healthcare needs. [120]
Cholera and Acute Watery Diarrhoea (AWD)		Suspected cholera cases continue to increase, with 11 035 suspected cases, including 307 associated deaths (CFR2.78%), reported from 64 localities of 12 states as of 18 March 2024.[121] While cases appear to show a decreasing trend overall, the actual number of cases and deaths may be much higher, since surveillance system accuracy is affected by access limitations, [122] Notably resulting in a near-total lack of surveillance data from the Darfur or Kordofan states. Many parts of Sudan deal with annual floods during the rainy season and those areas have historically been susceptible to the waterborne diseases that accompany the rains. Poor sanitation, due to weak infrastructure and adverse hygiene practices allows AWD to spread rapidly through populations.[123]
Protection Risks (including GBV)		Since mid-April 2023, there have been widespread allegations of sexual and gender-based violence in the areas most affected by fighting, including Khartoum State, Darfur and Kordofan regions.[124] As of 7 February 2024, there were documented 60 incidents of conflict-related sexual violence, affecting at least 120 victims. [125] Many incidents may go unreported due to poor communications, lack of access to services and community stigma. [126]
Poliovirus type 2 (cVDPV2)		Pre-conflict in 2022, poliovirus was considered a moderate risk in Sudan.[127] However, in January 2024, a new strain (SUD-RED-1) of circulating vaccine-derived poliovirus type 2 (cVDPV2) was isolated from environmental samples collected from the Port Sudan district of Red Sea state in Sudan.[128] The risk at the national level is assessed as high given the massive conflict within the country, sub-optimal surveillance system, and concurrent health emergencies. [129]
Maternal and neonatal health		In May 2023, reports stated that more than 1.1 million pregnant Sudanese women needed care. [130] Women's access to maternal health services had become increasingly challenging due to the scarcity and inaccessibility of healthcare facilities across the country.[131] The Sudan Health Cluster reports that just 36 out of 189 localities are covered by partners providing maternal health services, while only 9 out of 18 states are covered.[132]
Chronic infectious diseases (TB/HIV)		For all chronic infectious diseases, interruption of treatment is likely given the ongoing conflict for those affected. This is exacerbated by a current lack of diagnostic capacity and medication.
Hepatitis B		Recent evidence classifies Sudan among countries with a high hepatitis B virus infection (prevalence ≥ 8% according to WHO 2016 data).[133]
Hepatitis E		There has been an ongoing hepatitis E outbreak in the country since 2021. As of 14th April 2023, a total of 2 884 suspected cases (AR 0.51/1,000) including 24 associated deaths (CFR 0.83%) had been reported.[134] Since the escalation of violence on 15th April 2023 through 15 Mar 2024, a total of 373 cases have been

		reported across 9 States. There is a risk of increase in cases given issues with access to clean water, sanitation, and hygiene products[135] As of February 18th 2024, there is also a confirmed outbreak of hepatitis E amongst Sudanese refugees in Chad;[136] it can only be assumed that there are also cases of hepatitis E in the crisis-affected populations in the Darfurs and Kordofans, which lie geographically between these two areas of confirmed outbreaks, but for which there is no surveillance in place.
Typhoid		Typhoid fever is still a major public health issue in Sudan, notably in communities with limited healthcare systems, with a high percentage of the population living in unhygienic environments, and don't have access to safe water.[137] Since the escalation of violence on 15th April 2023 through 15 Mar 2024, a total of 177 360 cases have been reported across 14 States.
COVID-19		While COVID-19 is very likely to continue circulating during the conflict, transmission is unlikely to be significantly exacerbated. However, increased mortality and morbidity may occur among severe cases due to a lack of access to healthcare and oxygen caused by the conflict.[138] As of March 2023, there had been 63 829 cases reported in Sudan, with 5 017 deaths.[139]
Mpox		The total reported suspected mpox cases between 1 January 2022 and 4 April 2023 reached 378: this included 19 confirmed cases and one associated death. In total, 38 localities from 13 States reported suspected cases and 11 localities from six states reported 19 confirmed cases. Notably, in late 2022, several cases of Clade I (assumed to be more severe than the globally dominant Clade II) mpox were reported among children in refugee camps in Gadaref, highlighting potential risk of spread to refugees and IDPs.[140]
Meningitis		Worldwide, the incidence of meningitis is highest in the meningitis belt, which includes Sudan; in the meningitis belt, at least 350 million people are at risk for meningitis during annual epidemics.[141] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 122 cases of meningitis have been reported across 4 States; these are recorded as 'viral meningitis' but it is not clear that none of these have been meningococcus, as there is not systematic testing.
Diphtheria		Pre-conflict in 2022, diphtheria was considered one of the high risk hazards facing Sudan.[142] Although routine DTP vaccination is part of the Expanded Programme on Immunization (EPI), there are still reported cases and outbreaks of diphtheria across the country.[143] The most recent outbreak occurred in 2019 with 105 reported cases, with most cases coming from one locality in South Darfur state.[144] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 5 cases of diphtheria have been reported from 2 States, although surveillance is very limited.
Technological and environmental health risks		In April 2023, WHO officials initially believed it was extremely dangerous when one side in the conflict seized the lab and asked technicians to leave.[145] However, according to the WHO Rapid Risk Assessment that followed, all pathogens present in the laboratory were already present in the community, so there was little risk of major community outbreaks due to leak of samples from the lab.[146]
****[Select cell and fill with the colour]*		

Red: **Very high risk**. Could result in high levels of excess mortality/morbidity in the upcoming month. Orange: **High risk**. Could result in considerable levels of excess mortality/morbidity in the upcoming months. Yellow: **Moderate risk.** Could make a minor contribution to excess mortality/morbidity in the upcoming months. Green: **Low risk.** Will probably not result in excess mortality/morbidity in the upcoming months.

Trauma and injury: As the conflict continues, 7.7 million people in Sudan need protection assistance.[147] Since the outbreak of the current conflict in mid-April 2023, at least 14 600 have died.[148] The majority of civilian deaths were the result of the use of heavy weaponry in densely populated areas, with women and children constituting a significant proportion of the casualties reported.[149] Worsening this situation are the mobilisation and arming of civilians by both parties of the conflict and part of the civilian population arming themselves for protection from armed violence, heightening protection risks among the public.[150]

Malnutrition: Sudan has one of the highest rates of child malnutrition worldwide.[151] Currently 4.7 million people in the country need nutrition assistance.[152] The worsening security situation is anticipated to intensify food insecurity, adversely affecting the nutritional outlook for 2024. [153] Children, already vulnerable, face worsened conditions due to the fighting. They are missing meals, suffering stunted growth, and facing increased risks of deadly diseases. [154] Children under five endure acute malnutrition at incredibly high levels, with hundreds of thousands fighting life-threatening malnutrition.[155] More than 710 000 children are expected to face severe acute malnutrition (SAM) in 2024.[156] This figure represents the highest number of people in need of nutrition assistance ever recorded in Sudan. [157] Without intervention, the number could rise to 3.5 million before the end of 2024.[158] Malnourished people, particularly pregnant women and children, experience the worst outcomes of disease.[159] Malnourished children are at increased risk of dying from illnesses like diarrhoea, pneumonia and measles, especially in settings where they lack access to life-saving health services. [160] In Darfur, there are reports of people resorting to eating animal feed and tree bark. For the first time since the crisis began, displacement in the Darfur states is now being driven by hunger rather than insecurity.

Measles: About 5000 cases of measles with 106 deaths were reported as of March 15th 2024.[161] There also have been reports of outbreaks of measles in areas hosting large numbers of displaced children.[162] Sudan has experienced multiple measles outbreaks in the past 11 years.[163] In response to the 2023 outbreak, the Federal EPI had planned to conduct nationwide catch-up campaigns between Apr-June 2023 before the launch of MR vaccine in country, but the situation did not allow the campaign as planned until January 2024. The MR campaign was successfully conducted across 7 States and 63 localities of Sudan between 22-27 January 2024. Out of 63 targeted localities, 54 localities achieved >95% of administrative coverage and 9 localities achieved between 80-<95% coverage. Overall national administrative coverage was 101% (above 100% due to change in target population as a result of high population movements). Notably, this campaign did not cover the highly crisis-affected Darfur or Kordofan states, so there has been no immunization at all in these states since the conflict began.

Pre-conflict in 2022, measles was considered one of the major risks facing Sudan.[164] There is a lack of locality-based data on disease outbreaks for measles. However, data indicates that nearly 30% of the cases are estimated to be severe and targeted for case management.

According to the FMOH's national Measles risk assessment conducted July-August 2021, a total of 25 localities in 12 States were identified as having very high and high risk of measles.[165] The very high-risk category was confined to three states namely: Gedaref state, Kassala state and South Darfur state. [166] According to Sudan immunity profile data, by 31 December 2022, the number of measles-susceptible children under 5 years of age would be 1,145,174 (average of 2018- 2021 unprotected children 17%) year.[167] Such large number of measles-susceptible children puts Sudan at risk of large measles outbreaks. The risk of measles outbreaks will be particularly high for mobile populations including IDPs, refugees, and any others in camp settings. This risk may be further exacerbated by lack of access to vaccinations.[168]

Malaria: Malaria has remained stagnant on the list of the top ten causes of illness, OPD attendance, hospital admission and deaths in Sudan; and hence, it remains a substantial health problem and national health priority. [169]

Pre-conflict in 2022, malaria was considered one of the major risks facing Sudan.[170] Over 1.3 million clinical cases of malaria with 143 deaths were reported as of March 15th, 2024. [171]

The entire population is at risk of malaria, with 86.7% of the population classified to be at high risk. In terms of morbidity and mortality the disease led to a mid-point estimate of 1 954 302 cases and 5 003 deaths in 2018. [172]The malaria incidence rate in the general population is 343 per 1000 (i.e., 8 546 830). [173]Sudan shares international borders with seven countries; five of them are malaria endemic. The rainy season varies from about three months (July - September) in the north, to six months (June - November) in South Kordofan, Blue Nile and South Darfur states, resulting in various levels of malaria endemicity. [174]

Dengue Fever: Pre-conflict in 2022, dengue was considered one of the major risks facing Sudan.[175] The public health threat of arboviruses is rapidly growing worldwide particularly in Sub-Saharan Africa including Sudan. The predominant mosquito vector, *Aedes aegypti*, transmitting viruses causing dengue fever, chikungunya, yellow fever (YF), West Nile, and Rift Valley fever (RVF), is widely prevalent in all 18 States of Sudan, although the prevalence is relatively low in Khartoum and Northern State. In 2022, dengue was found to have expanded beyond its historical geospatial distribution to reach new areas, especially those heavily infested with the *Aedes aegypti* mosquito, affirming the impact of high movement on disease distribution.[176] According to the FMOH, the current dengue fever outbreak started in July 2022, with the first suspected dengue case reported on 31 July 2022 from the Kassala locality in Kassala State. An outbreak was officially declared on 14th Feb 2023. [177] About 8341 cases and 66 deaths of dengue were reported as of March 15th, 2024.[178]

The current situation in Sudan will have implications on prevention and control of vector-borne diseases in general. The existing vector control programs are poorly resourced and will demand additional financial and logistical resources. The displaced population as well as the host communities in Gazira and Sinnar States will require immediate coverage by core vector control interventions to ensure their protection. [179]

Many affected areas are suffering acute water supply shortages leading to prolonged water storage practices, creating suitable breeding environments for the *Aedes* mosquito. The risk of mosquito breeding is expected to rise due to damage of water stations and interruption of distribution programs, in addition to increased water storage practices; this is particularly the case in Khartoum, North Kordofan, West Darfur, and White Nile States, where dengue was circulating and the security situation is preventing access to drinking water in addition to an increasing demand on trained vector-control staff and high transportation costs due to fuel scarcity.[180]

Non-communicable Diseases (NCD): Data from the NCD Progress Monitor showed that the percentage of NCD-related mortality had increased from 32% in 2015 to 54% in 2022. [181] Sudan faces challenges in implementing NCD policies, particularly those targeting healthy diets, medications and data management systems. This may be linked to the prolonged history of conflict, shortage of trained health personnel, limited resources and lack of robust NCD surveillance systems in the country. The ongoing devastating war and destruction of the healthcare system infrastructure in Sudan has further intensified these challenges.[182]

Insulin has been identified as an urgently needed medical supply.[183] On 24 June 2023, 13 children with kidney disease reportedly died due to inadequate treatment options. [184] An MSF report from Al Nao Hospital confirmed the facility had exhausted its normal supply of insulin and the medical team are now reporting on average 3 to 5 deaths due to diabetic ketoacidosis (DKA) daily. [185] MSF reported on mortality data between 19 August to 20 October 2023, finding that out of the medical deaths at the hospital, 17% (n=42) were due to DKA, which is preventable with sufficient access to insulin. Due to the huge access barriers caused by violence and the lack of medication readily available, the number of people dying in the community from DKA is likely to also be high. In addition to the 42 DKA deaths, there were 49 deaths in the hospital due to other NCDS, including hypertension, acute coronary syndrome, cardiovascular disease, as well as chronic renal and liver failure.[186] MSF also report that 20% of all patients seen by the mobile clinic teams in Al Jazeera presented with an NCD.[187] One dialysis centre in the Darfurs has indicated that all 200 of its clients are presumed dead due to disruption of services.

The prevalence of cardiovascular disease (CVD) in Sudan was estimated at 2.5% following a 2011, study but has likely increased since then. Hypertensive heart disease (HHD), rheumatic heart disease (RHD), ischaemic heart disease

(IHD) and cardiomyopathy constitute more than 80% of CVD in Sudan. [188] In the immediate term, for those affected with CVD, there is a risk of interruption in supply of medicines and limited access to healthcare. This is critical for people with uncontrolled blood pressure and/or people at higher risk of stroke; thus, higher mortality is expected in the immediate term for these conditions. [189]Risk of disruption of treatment and health care capacity is also likely to lead to an increased risk of negative outcomes for oncology patients. There is a particularly high risk for individuals under immunosuppressive therapy, given the increased risk of infection in the context of the crisis. [190]

In November 2023, MSF reported that there is a critical shortage of NCD medication available in Sudan, due to the occupation and looting of the National Medical Supply Funds (NMSF) warehouses in Khartoum, where medicines for the entire country, as well as the national pharmacy for chronic diseases, are located. This gap in NCD medication is not being filled by imported medication into the country, compounded further by difficulty in transporting any medication elsewhere in the country to hard-to-reach areas. [191]

With health facilities under-resourced and understaffed, coupled with economic hardship and cost of transportation, many patients arrive in advanced, critical stages of their diseases, often complicated by additional health issues or co-morbidities. Even if medical teams can provide some level of treatment to manage the conditions, there remain obstacles to effectively address the NCD, like a lack of alternative secondary healthcare facilities for critical patient referral. [192]

Cholera and **Acute Watery Diarrhoea (AWD)**: Suspected cholera cases continue to increase, with 11 035 suspected cases, including 307 associated deaths, reported from 64 localities of 12 states as of 18 March 2024.[193] The overall trend over the past three months has been downward, with a much lower increase than in previous months. For instance, between 30 November and 31 December, the number of cases increased by 77.2%, and between 31 October and 30 November the increase was 120.9 %.[194] While cases appear to show a decreasing trend overall, the actual number of cases and deaths may be much higher, since surveillance system accuracy is affected by access limitations, [195] notably resulting in a near-total lack of surveillance data from the Darfur or Kordofan states.

Oral cholera vaccination (OCV) campaigns were carried out in Gedaref and Aj Jazirah states during November, and in a locality in Khartoum State in December, reaching over 2.6 million people. Recent rounds of OCV campaigns concluded mid-February 2024 in Red Sea, Kassala and White Nile States targeted 1.9 million people. In total, as of end of February 2024, a total of 4 582 191 people above 1 year were targeted across 6 States and 14 localities of Sudan, and 4 537 644 (99%) were reached with the intervention. No OCV campaign has been conducted in the Darfur or Kordofan states.

In Sudan, the traditions and habits of the community constitute one of the factors that increase the transmission of cholera. Paradoxically, cholera treatment centres play a catalytic role in cholera transmission.[196] As part of the Sudanese cultural practice, family members are allowed to enter the CTCs to take care of their loved ones.[197] This poses a challenge for IPC officers as they endeavour to protect patients, healthcare workers, and co-patients. It has been observed that some visitors come with healthcare-associated infections and reinfect the previous patients.[198]

As of December 2023, confirmed cases have been reported in Gedaref, Kassala, Red Sea, White Nile, Blue Nile, Sennar, Gezira, South Kordofan states and Khartoum. Since the outbreak started, about 4500 cases and 142 associated deaths have been reported to the Federal Ministry of Health.[199]

Sudan experienced more than seventeen outbreaks of cholera and or Acute Watery Diarrhoea (AWD) during the years 1966, 1970, 1972, 1980, 1981, 1985, 1988, 1999, 2002, 2004, 2006, 2007, 2008, 2016, 2017, 2018, 2019 and 2020.[200]

The 2018 simple spatial survey method (S3M-II6) showed an increase in access to water by six per cent over the 2014 multiple index cluster survey (MICS) figure of 68%.[201] Still, around twelve million people (or around one third of the population) do not have access to safe drinking water and are at risk of waterborne disease.[202] Sanitation coverage has stagnated, and nearly a third of children and their families (around 12 million people) are practicing open defecation.[203]

Mental Health: Sudan's civil wars have been linked to an increase in mental health conditions such as depression and post-traumatic stress disorder (PTSD), particularly among children and women.[204] Although no national prevalence study has been conducted, many articles have been published addressing the psychiatric needs of specific groups. For instance, the prevalence of depression and anxiety in high-school students in Khartoum State has been estimated to be 12%.[205] Higher rates of psychiatric disorders have been found among internally displaced persons (53%), including major depressive disorder (24.3%), generalised anxiety disorder (23.6%), social phobia (14.2%) and post-traumatic stress disorder (12.3%).[206]

The prevalence for major psychotic disorders among the internally displaced population is 1.5%, but no data are available for suicide attempts, completed suicides, or drug and alcohol addiction.[207] More broadly, ICRC have found that more than one person in five that live in a conflict area have some form of mental health condition.[208]

Although mental health is a major cause of morbidity, mental health programmes in Sudan continue to be allocated insufficient resources.[209] In 2020, the total number of mental health professionals working in all sectors, including the private sector and services run by non-governmental organisations (NGOs), was 899. There are also massive regional inequities; only a small proportion of psychiatrists work in rural areas, which are home to two-thirds of Sudan's population.[210] In January 2024, the Sudan Health Cluster reported that just 9 out of 189 localities are covered by partners providing mental health services, while only 5 out of 18 states are covered.[211]

Many communities throughout Sudan use traditional and religious healers to help meet their primary healthcare needs, including for mental health. Besides being accessible and available, traditional healers are often part of the wider cultural belief system and are considered integral to everyday life and well-being.[212]

Poliovirus type 2 (cVDPV2): In January 2024, a new strain (SUD-RED-1) of circulating vaccine-derived poliovirus type 2 (cVDPV2) was isolated from environmental samples collected from the Port Sudan district of Red Sea state in Sudan;[213] it was detected in six wastewater samples collected from September 2023 to January 2024.[214] Currently, no human cases are associated with this new strain. However, in 2022 the country was affected by cVDPV2, and a case with acute flaccid paralysis (AFP) caused by a different stain (emergence group NIE-ZAS-1) was reported in West Darfur.[215]

Sudan’s Federal Ministry of Health (FMOH) is planning to launch a polio vaccination campaign in April 2024 in response to the new emergence of variant poliovirus type 2 reported in January 2024. While no vaccination campaign has taken place since April 2023 due to the ongoing conflict, surveillance for poliovirus in children – conducted by searching intensely for acute flaccid paralysis (AFP), the most common indicator of polio infection – and in wastewater has been strengthened to swiftly detect any presence of the virus.[216]

Although poliomyelitis (polio) is a highly contagious disease that can cause permanent paralysis (approximately one in 200 infections) or death (2-10% of those paralyzed), this environmental detection does not currently represent a serious public health impact.[217] Pre-conflict, in 2022, poliovirus was considered a moderate risk in Sudan.[218]

Maternal and neonatal health: In May 2023, reports suggested that more than 1.1 million pregnant Sudanese women need care.[219] As the conflict continues, Sudan has now become the largest internal displacement crisis globally, with women and girls accounting for half of those affected.[220] The UN Office of the High Commissioner for Human Rights (OHCHR) has received information that women’s sexual and reproductive health and rights have been severely impacted. Women’s access to maternal health services has become increasingly challenging due to the scarcity and inaccessibility of healthcare facilities across the country.[221]

The destruction of hospital buildings and health centres, a shortage of medication and medical supplies, and medical personnel and hospitals being under incessant attacks associated with the conflict, have impeded essential maternal health services, such as antenatal care, safe deliveries, and postnatal care.[222] Many pregnant women travel a long distance to access care, which can be laborious and harmful to their health and the health of the baby.[223]

Furthermore, the conflict has not only caused a reduction in maternal health care but has also meant there are no resources to care for the increasing number of preterm babies resulting from the insecurity, stress, and malnutrition endured by the pregnant women.[224] Being born prematurely can cause lifelong developmental issues in the babies.

A delay in emergency obstetric care and giving birth in places with poor sanitation can worsen Sudan's infant and maternal mortality rates.[225]

Pregnant women have also not been spared from the psychological consequence of conflict. The traumatic nature of the conflict and the sound of bullets and artillery trigger fear, panic, and anxiety in this vulnerable group.[226]

Chronic infectious diseases (TB/HIV): For all chronic infectious diseases, interruption of treatment is likely, given the ongoing conflict. Interruption of treatment will likely impact on both disease course and on transmissibility. Limited access to health care for acute flare ups and opportunistic infections may result in excess deaths. This is exacerbated by a current lack of diagnostic capacity and medication.

TB incidence is 63 per 100 000, equalling 28 000 cases per year. Mortality from TB is estimated to be 4100 per year.[227] Conflicts impact health infrastructure and human resources, which can hinder disease prevention and control measures. This escalates the burden of communicable diseases, such as tuberculosis (TB). In addition, conflicts cause the displacement of populations and impair access to healthcare. This can increase TB transmission, worsen patient outcomes and lead to increasing rates of drug resistance.[228]

Although the HIV epidemic in Sudan has been classified as a low epidemic for the last 10 years, enrolment and retention on treatment are low.[229] HIV prevalence is around 0.2% as per the 2019 estimates and projections. There are remarkable variations in the distribution of the HIV burden between the different regions/ states of the country.[230]

Hepatitis B: Recent evidence classifies Sudan among countries with a high hepatitis B virus infection (prevalence ≥ 8% according to WHO 2016 data).[231]

Hepatitis E: There has been an ongoing hepatitis E outbreak in the country since 2021. As of 14th April 2023, a total of 2 884 suspected cases (AR 0.51/1,000) including 24 associated deaths (CFR 0.83%) had been reported.[232] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 373 cases have been reported across 9 States. There is a risk of increase in cases given issues with access to clean water, sanitation, and hygiene products[233] There is a particularly high risk of infection for those in camp settings, and for pregnant women, for whom mortality can be high. Large number of internally displaced persons (IDPs) across various States of Sudan because of current conflict can further deteriorate the situation.[234] Close to 641 Hep E cases with 1 death (CFR 0.15%) have been reported among Sudanese refugees in Chad from three refugee camps and one refugee site in Adre district of Quaiddi province, across the border from West Darfur; it can only be assumed that there are also cases of hepatitis E in the crisis-affected populations in the Darfurs and Kordofans, which lie geographically between these two areas of confirmed outbreaks, but for which there is no surveillance in place.

Typhoid: Typhoid fever is still a major public health issue in Sudan, notably in communities with limited healthcare systems, with an uneducated population that lives in unhygienic environments, and with residents who habitually drink unsafe water from tube wells rather than washing their hands after using the restroom.[235] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 177 360 cases have been reported across 14 States.

COVID-19: While COVID-19 is very likely to continue circulating during the conflict, transmission is unlikely to be significantly exacerbated. However, increased mortality and morbidity may occur among severe cases due to a lack of access to healthcare and oxygen caused by the conflict.[236] As of March 2023, there had been 63 829 cases reported in Sudan, with 5 017 deaths.[237]

Mpox: The total reported suspected mpox cases between 1 January 2022 and 4 April 2023 reached 378: this included 19 confirmed cases and one associated death. In total, 38 localities from 13 States reported suspected cases and 11 localities from six states reported 19 confirmed cases. Notably, in late 2022, a several cases of Clade I (assumed to be more virulent than the globally dominant Clade II) mpox were reported among children in refugee camps in Gadaref, highlighting potential risk of spread to refugees and IDPs.[238]

Diphtheria: The first documented diphtheria outbreak in Sudan dates to 1974.[239] Although routine DTP vaccination is part of the Expanded Programme on Immunization (EPI), there are still reported cases and outbreaks of diphtheria across the country.[240] The most recent outbreak occurred in 2019 with 105 reported cases, with most cases coming from one locality in South Darfur state.[241] Pre-conflict in 2022, diphtheria was considered one of the high risk hazards facing Sudan.[242] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 5 cases of diphtheria have been reported from 2 states, although surveillance is very limited.

Meningitis: Worldwide, the incidence of meningitis due is highest in the meningitis belt; a region of sub-Saharan Africa. Across the meningitis belt, at least 350 million people are at risk for meningitis during these annual epidemics.[243] Since the escalation of violence on 15th April 2023 through 15 March 2024, a total of 122 cases of meningitis have been reported across 4 States; these are recorded as 'viral meningitis' but it is not clear that none of these have been meningococcus, as there is not systematic testing.

DETERMINANTS OF HEALTH

Food Insecurity: In February 2024 there were reports that harvests, currently underway, are projected as significantly below average in localized areas of greater Darfur and greater Kordofan, and severely reduced in West Darfur and Central Darfur states. [244] With expectations of a reduced harvest, prices of staple food are likely to remain atypically high in the harvest season and will likely rise further during the post-harvest period, with significant deviations from the norm.[245] In December 2023, the conflict spread into south-eastern Sudan, which typically accounts for more than one-half of the country's total annual cereal production, exacerbating already record-high levels of food insecurity.[246]

The price of staple grain could rise by 50–100% in the next months compared to last year. [247] This will further aggravate the trend of soaring staple food prices, observed since the conflict began. [248] In 2023, food prices were 228% higher than the previous two years, with the average cost of the local food basket 88% higher compared to before the conflict, according to the FAO-WFP report.[249] The conflict has resulted in below-average domestic cereal harvests and low food stocks, and insufficient wheat imports.[250]
The latest IPC analysis published in December 2023 show that between October 2023 and February 2024, more than 37% of the population are classified in IPC Phase 3 or above (Crisis level or worse), of which 10% (4.9 million) are in IPC Phase 4 (Emergency)[251].

Water, Sanitation and Hygiene (WASH): Sudan did not meet the Millennium Development Goal (MDG) targets for water supply and sanitation and still has a long way to go to meet UHC by 2030.[252] WASH services have been provided to Sudan IDPs on an ongoing basis for years, but the situation has deteriorated due to a worsening economic crisis, non-functional or aging WASH infrastructure or conflict-destroyed infrastructure, decreased/insufficient revenue collections, poor budget allocation, and increased operation maintenance costs attributed to an increase in fuel prices.[253]

The 2020 Multi-Sector Need Assessment (MSNA) showed that about 25% of the water sources are not functioning and 70% of the population (around 28 million people) do not have access to basic sanitation services. Around twelve million people do not have access to toilets and thus openly defecate.[254]

Socio-economic challenges: Sudan's economy has experienced a sharp downward deterioration, with increased budget deficit, driven by a reduction in public revenues and a disruption in exports due to the fighting.[255] Supply chain disruption has led to a decline in domestic production and economic activities.[256] This has also been exacerbated by widespread looting and destruction of businesses, markets, factories, and warehouses.[257]

These factors have contributed to the devaluation of the Sudanese pound by approximately 40%. [258] People living in conflict zones have faced skyrocketing prices of food and non-food items, reduced purchasing power, and limited livelihood opportunities.[259] For instance, in September 2023, the average sorghum price nationally was 15-20% higher than the year before, and 238-370% higher than the five years average.[260]

As a result of the conflict, all social security schemes have been suspended.[261] Consequently, household incomes are expected to decline by over 40% in both urban and rural areas, leading to an estimated increase of 1.8 million people living in poverty compared to before the conflict, likely impacting significantly on persons already in a vulnerable situation. [262]

Protection Risks

- **Gender-Based Violence (GBV):** Since mid-April 2023, there have been widespread allegations of sexual and gender-based violence in the areas most affected by fighting, including Khartoum State and the Darfur and Kordofan regions.[263] As of 7 February, there had been documented 60 incidents of conflict-related sexual violence, affecting at least 120 victims;[264] However, many incidents go unreported due to poor communications, lack of access to services and community stigma. [265] According to the GBV sub-cluster, since 15 April 2023, the number of people in need of GBV services has increased from over 1 million to 4.2 million. The number of individuals targeted for GBV services has increased to 1.3 million, with an increase of over 90% of targeted individuals in states heavily impacted but still accessible. In more than 90% of the localities across Sudan, GBV services are unavailable. This lack of access poses significant challenges, especially during emergency situations when essential resources like water may be far from temporary shelters or located in unsafe areas. Owing to the collapse of the healthcare system and other public services, and given the intensity of the hostilities, access to medical care services, psychological support, and legal assistance have been challenging for victims of sexual and gender-based violence. [266] Most victims were unable to access the necessary medical care during the first 72 hours of the incidents, including post-exposure prophylaxis or emergency contraception.[267] Women and girls in conflict zones are facing escalating protection threats and reduced access to basic services, such as essential healthcare, with kidnapping, forced marriage, intimate partner violence, and conflict-related sexual violence being reported.[268]
- **Child Protection:** More than 3 million children have been internally displaced since April 2023. [269] Children are facing conflict-related protection violations—including child abuse and exploitation, family separation, and gender-based violence. [270] The recruitment and use of children by the parties to the conflict has been reported in Darfur, Kordofan, and Khartoum.[271] Furthermore, as over 37% of the population in Sudan experience IPC 3 or worse food insecurity levels, families are resorting to coping mechanisms, which may include child marriage, abuse, exploitation, separation from family, coerced armed group recruitment, and gender-based violence.[272]
- **Mine Action:** The widespread use of conventional weapons including field artillery, mortars, air-dropped weapons and anti-aircraft guns has left copious unexploded ordnance (UXO) in Khartoum and other urban areas.[273] In January 2024, for the first time since the conflict began, civilian deaths were reported to have been caused by landmines. On 21 January, 10 civilians were reportedly killed when their bus ran over a landmine in River Nile state.[274]

Education: As a result of the conflict, the enjoyment of the right to education continues to be affected. On 6 November 2023, UNICEF reported that an estimated 19 million children in Sudan, nearly all school-aged children, had been deprived of education. [275] At least 10 400 schools have been forced to close in conflict-affected areas in eight states across Darfur, Khartoum and Kordofan regions. [276] Additionally, 171 schools were reportedly being used as emergency shelters for the displaced population in areas less affected by the conflict. [277]

HEALTH SYSTEMS STATUS AND LOCAL HEALTH SYSTEM DISTRIBUTIONS

Pre-crisis health system status

Impact of the COVID-19 crisis: The COVID-19 pandemic has been a burden to the already fragile health system despite the relatively low case load, due to competition for resources needed in other parts of the health system.[278] The fragile surveillance system has low coverage in all states and was unable to cope and absorb the needs for enhanced surveillance in a situation of countrywide community transmission.[279] No effective tracing system was implemented during the pandemic.[280] Due to the socioeconomic crisis and the rapid devaluation of the Sudanese Pound, funds for operating expenses and running costs (fuels and electricity) for health structures are scarce and salaries are not paid regularly, affecting the delivery of health services.[281]

Expenditure: The allocation of public expenditure to the health sector, as a share of total public spending, fluctuated between 7 and 8% during the last decade.[282] Health expenditure predominantly takes place at the state level, amounting to 87%.[283] Before the crisis, it was found that people pay a considerable amount as out-of-pocket health expenditure (about 74% of total expenditure on health), while general government health expenditure represents only 26%).[284] During 2020, the costs of health services increased by 90%, further increasing the out-of-pocket expenditures.[285]

Universal Health Coverage: Sudan's UHC Service Coverage Index was reported at 44.3% in 2017.[286] There is inequality of access and uptake of services among and within states, and fragmented training of health promoters at the community levels. In general, there was underutilization of PHC services, especially noted in public centres, and the justification according to reviewers was due to a gap in having comparable health service standards/quality between government health providers on one hand and the private and nongovernmental facilities on the other. Without a strong PHC system, it is difficult to address the challenges posed by both communicable and noncommunicable disease or progress towards universal health coverage.[287]

Geographic inequalities: Coverage of reproductive, maternal, neonatal and child health services remains consistently lower in rural areas.[288]By looking at all aspects of the health system and health indicators, there are remarkable discrepancies between socioeconomic strata in states.[289] The lack of equity is apparent even within states, between rural and urban areas, between high-income and low-income and between different localities.[290] Inequity also manifests in distribution of inputs of the health system, including human resources, health facilities and health expenditure.

Health infrastructure and functionality: The Sudan 2023 Health Resources and Services Availability Monitoring System (HeRAMS) Annual Report found that of 503 health facilities surveyed (noting that this represents less than 10% of all facilities), 83% were fully functioning, 9% were partially functioning and 8% were non-functioning. Causes of non-functionality were mainly attributed to lack of security, medical supplies and staff.[291] In terms of accessibility, 83% were fully accessible, 15% were partially and 2% were inaccessible (due to the security situation and physical barriers). In terms of building damage, 80% were not damaged and 16% were partially damaged. The main cause of damage was lack of maintenance. In terms of equipment condition, 75% of the health facilities had equipment intact, while 17% were not specified.[292]

Healthcare workers: There is disparity in the distribution of health care personnel between the public and private sectors and between urban and rural areas.[293] Moreover, the high turnover and migration of health professionals continue to threaten the capacity of the Federal Ministry of Health to respond to the increased demand for health services. There is a low nurse-to-doctor ratio, which affects the running and quality of care. There are 33.5 nurses and midwifery personnel and 2.8 physicians per 10 000 population according to 2021 data.[294]

<u>In crisis health system status</u>

Access: As of February 2024, about 65% of the population lacked access to healthcare according to OCHA .[295] Healthcare in Sudan also heavily relied on Khartoum, as almost 80% of health services were based in the city, meaning it affected the entire system when Khartoum's healthcare was debilitated. This direct effect of the conflict, which has affected both civilians and infrastructure, has further eroded the stability of the system.[296]

Health Infrastructure and Functionality: The ongoing conflict has intensified weaknesses in the health system, with massive destruction of healthcare infrastructure, especially in Khartoum and the Darfur region. [297] Between 70 – 80% of health facilities are not functioning due to the ongoing conflict. [298] This is an increase from December 2023, when HeRAMS was undertaken in five states (Khartoum, Kassala, Red Sea, White Nile and Gedaref) and found that 45% of health facilities were fully functional, 10% were partially functional and 45% were non-functional.[299] Causes of non-functionality were mainly attributed to lack of staff, security, physical access, equipment, medical supplies, finances and damage to health facilities. In term of status, 96% of health facilities were existing, 3% were closed while <1% were planned. In terms of building damage, 80% were not damaged and 16% were partially damaged. Water was available in 50% of health facilities, partially available in 38% of health facilities, and not available in 12% of health facilities. Power was available in 44% of health facilities, not available in 48%, and partially available in 8% of health facilities.[300] This is supported by reports from UNHCR which state that hospitals in conflict affected states are impacted by ongoing attacks, combined with insecurity, shortages of medical supplies, and lack of cash to meet operational costs and salaries.[301]

Medical Supplies and Medicine: While the conflict primarily affected health facilities in the Khartoum area, its repercussions extended to all states due to the country's reliance on Khartoum for medical supplies.[302] Medical supplies in country are estimated at about 25% of the needs, and for several months there has been a general crisis in medical supply at all levels of the health system.[303]The Sudan Health Cluster report that just 8 out of 18 states are covered with medicines and medical supplies provided by cluster partners.[304] For example, one Darfur State Ministry of Health reported that it had not received any medical supplies from the central supply in the past year.
Pharmacies are either depleted of supplies or drastically increasing prices, rendering much essential medicine unattainable for those in need. Consequently, individuals with chronic illnesses are experiencing and even dying from severe complications, most notably those with diabetes, hypertension, cancer, and kidney failure.[305] In November 2023, MSF reported that there is a critical shortage of NCD medication available in Sudan, due to the occupation and looting of the National Medical Supply Funds (NMSF) warehouses in Khartoum, where medicines for the entire country, as well as the national pharmacy for chronic diseases, are located. [306]

Healthcare workers: Civil servants across Sudan, including medical staff, have reportedly either not received their salaries or received only a small portion since the beginning of the conflict.[307] Insecurity Insight report that 54 health workers have been killed with 28 kidnapped and 63 injured.[308]

Healthcare attacks: The WHO Surveillance System for Attacks on Health Care (SSA) indicates that 62 attacks on health care have been reported since the onset of the violence on 15 April 2023, of which: 40 impacted facilities; 25 impacted personnel; 17 impacted supplies; eight impacted transport; eight impacted patients; and seven impacted warehouses. [309]

Armed groups have been involved in looting health facilities and threatening and killing health and humanitarian aid workers.

HUMANITARIAN HEALTH RESPONSE

In 2009, the Sudan Health Cluster was established to coordinate humanitarian activities. It has approximately 62 partners, comprising 24 national nongovernmental organizations, 23 international nongovernmental organizations, 8 United Nations agencies, 5 donors and the Federal Ministry of Health and state ministries of health.[314] The 2024 Sudan Humanitarian Needs and Response Plan (HNRP) requires $2.7 billion to provide life-saving multi-cluster and protection assistance to 14.7 million people across Sudan in 2024.[315] Due to challenges with security, access, and resource availability, only one third of those in need – 4.9 million of the most vulnerable individuals – have been targeted by the Health Cluster.[316]The Health Cluster will require US$ 178 million to meet the health needs of the highly vulnerable target population.[317]

Key information on disruption of key health system components

ACCESS TO HEALTHCARE

About 65% of the population lack access to healthcare according to OCHA .[310]

DISRUPTION TO SUPPLY CHAIN

Medical supplies in country are estimated at about 25% of the needs.[311]

DAMAGE TO HEALTH FACILITIES

70% – 80% of health facilities are not functioning due to the ongoing conflict. [312]

ATTACKS AGAINST HEALTH

62 attacks have been reported since the onset of the violence on 15 April 2023. [313]

INFORMATION GAPS / RECOMMENDED INFORMATION SOURCES

INFORMATION GAPS AND RECOMMENDED SOURCES		
Area	**Gap**	**Recommended tools/guidance for primary data collection**
Health status & threats for affected population	Surveillance data	Early Warning Alert and Response (EWAR), analysis of laboratory surveillance data, routine environmental monitoring
	Mortality (disease-specific)	Census, facility-based surveillance, prospective mortality surveillance
	Child health - malnutrition data	Anthropometric surveys (e.g., SMART), desk-based nutritional risk assessment
Health resources & services availability	Information on Health services availability, disruption and functionality in several areas	HeRAMS (WHO)
	Limited information on health workers availability	HeRAMS (WHO)
	Limited information on attacks on healthcare	Strengthen SSA (WHO)
Humanitarian health system performance	Information on quality of humanitarian health services provided to beneficiaries (accountability to affected populations)	Beneficiary satisfaction survey
	Information on limited number of health partners in some regions	Health Cluster/ OCHA /matrix 3/4/5Ws

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ENDNOTES

[1] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[2] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[3] EURO-MED Monitor (22nd February 2024), As conflict enters its 10th month, Sudan is expected to see greatest displacement wave, number of casualties yet [EN/AR]
[4] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[5] ACAPS Thematic report: Sudan - Protection concerns: ten months into the war, 29 February 2024
[6] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[7] OCHA(17 Feb 2024), Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024)
[8] OCHA(17 Feb 2024), Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024)
[9] OCHA(17 Feb 2024), Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024)
[10] UNFPA (2024), UNFPA Sudan Emergency Situation Report No.10 - 5 February 2024
[11] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[12] HeRAMS Dashboard Sudan accessible at below linkhttps://app.powerbi.com/view?r=eyJrIjoiYmZlYjM5ODItMTk4NC00OWNjLTkyOTctYWZhNGFiNTgwZjVmIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9
[13] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[14] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[15] WHO (15th Feb 2024), Sudan: a preventable health crisis that can be averted with unified action
[16] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[17] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[18] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[19] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[20] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[21] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[22] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[23] SFCG (Feb 2024), Sudan Conflict Snapshot – December 2023 & January 2024
[24] SFCG (Feb 2024), Sudan Conflict Snapshot – December 2023 & January 2024
[25] SFCG (Feb 2024), Sudan Conflict Snapshot – December 2023 & January 2024
[26] SFCG (Feb 2024), Sudan Conflict Snapshot – December 2023 & January 2024
[27] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[28] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[29] OCHA (December 2023), Humanitarian Needs And Response Plan Sudan
[30] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[31] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[32] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[33] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[34] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[35] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[36] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[37] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[38] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[39] OCHA (29th Feb 2024), Sudan: Humanitarian Response Dashboard (January 2024)
[40] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[41] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[42] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[43] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[44] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[45] OCHA (21 Dec 2023), Sudan Humanitarian Needs and Response Plan 2024 (December 2023)
[46] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[47] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[48] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[49] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[50] OCHA (December 2023), Humanitarian Needs And Response Plan Sudan
[51] OCHA (January 2024), Inter-Sectoral Needs Assessment In Port Sudan State
[52] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[53] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[54] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[55] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024

[56] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[57] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[58] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[59] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[60] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[61] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[62] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[63] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[64] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[65] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[66] UNHCR (22nd Feb 2024), Sudan Situation - UNHCR External Update #49, 14-21 February 2024
[67] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[68] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[69] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[70] UN HRC (Feb 2024), Sudan: 25 million people in dire humanitarian need, say UN experts
[71] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[72] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[73] Relief International (1 March 2024), Sudan Regional Crisis: Emergency Situation Update, January 2024
[74] Relief International (1 March 2024), Sudan Regional Crisis: Emergency Situation Update, January 2024
[75] WFP (26th Feb 2024), WFP Global Operational Response Plan 2024, Update #10 – February 2024
[76] Relief International (1 March 2024), Sudan Regional Crisis: Emergency Situation Update, January 2024
[77] WHO (2024), Sudan Data, available at: https://data.who.int/countries/729 [Accessed 28/2/24]
[78] WHO (2024), Sudan Data, available at: https://data.who.int/countries/729 [Accessed 28/2/24]
[79] WHO (2024), Sudan Data, available at: https://data.who.int/countries/729 [Accessed 28/2/24]
[80] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[81] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[82] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[83] Sudan Nutrition Cluster, SMART Survey Reports, available at: https://response.reliefweb.int/sudan/nutrition [Accessed 4/4/2024]
[84] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[85] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[86] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[87] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[88] WHO (2024), Sudan Data, available at: https://data.who.int/countries/729 [Accessed 28/2/24]
[89] World Bank (2024), Sudan Crude Mortality, available at: https://data.worldbank.org/indicator/SP.DYN.CDRT.IN?locations=SD[Accessed 28/2/24]
[90] UNICEF(2024), Sudan Data, available at: https://data.unicef.org/country/sdn/[Accessed 28/2/24]
[91] UNICEF(2024), Sudan Data, available at: https://data.unicef.org/country/sdn/[Accessed 28/2/24]
[92] WHO (2024), Sudan- Expanded programme on immunization
[93] WHO (2024), Sudan- Expanded programme on immunization
[94] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[95] John Hopkins (2023), Sudan, available at: https://coronavirus.jhu.edu/region/sudan/[Accessed 28/2/24]
[96] Badi S, Babiker LA, Aldow AY, Abas ABA, Eisa MA, Abu-Ali MN, Abdella WA, Marzouq ME, Ahmed M, Omer AAM, Ahmed MH. Knowledge and attitudes toward COVID-19 vaccination in Sudan: A cross-sectional study. AIMS Public Health. 2023 May 6;10(2):310-323. doi: 10.3934/publichealth.2023023. PMID: 37304594; PMCID: PMC10251048.
[97] WHO (2024), Immunization Dashboard, available at: https://immunizationdata.who.int/pages/profiles/sdn.html [Accessed 28/2/24]
[98] ACAPS Thematic report: Sudan - Protection concerns: ten months into the war, 29 February 2024
[99] ACAPS Thematic report: Sudan - Protection concerns: ten months into the war, 29 February 2024
[100] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[101] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[102] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[103] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[104] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[105] UNICEF (9 February 2024), Record numbers of children seek life-saving care as Sudan war drives world's worst displacement crisis [EN/AR]
[106] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[107] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[108] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[109] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[110] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[111] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[112] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[113] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[114] Elhadi YAM. Progress and challenges in implementing non-communicable disease policies in Sudan. Health Res Policy Syst. 2023 Dec 6;21(1):130. doi: 10.1186/s12961-023-01079-2. PMID: 38057882; PMCID: PMC10698879.

[115] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[116] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[117] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023

[118] 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. Ann Med Surg (Lond). 2022 May 11;78:103773. doi: 10.1016/j.amsu.2022.103773. PMID: 35600171; PMCID: PMC9117552.
[119] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[120] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[121] WHO Sudan IMT updates 19 Mar 2024
[122] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[123] UNICEF (2019) Sudan Annual Report- Water, Sanitation And Hygiene 2019
[124] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[125] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[126] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[127] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[128] WHO (Feb 2024), Internal Report- Event Information Site (EIS) Sudan | Circulating Vaccine Derived Poliovirus type 2 (cVDPV2)
[129] WHO (Feb 2024), Internal Report- Event Information Site (EIS) Sudan | Circulating Vaccine Derived Poliovirus type 2 (cVDPV2)
[130] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[131] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[132] WHO/Health Cluster (February 2024), Sudan Health Cluster: Sexual and reproductive health as of January 31, 2024
[133] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[134] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[135] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[136] WHO (Feb 2024), Internal Report- Forte suspicion de l'épidémie d'Hépatite E à Adré
[137] Mohamed AAA, Ahmed MAI, IbnIdriss GEO, et al. Typhoid fever: prevalence and risk factors among symptomatic Sudanese patients. *J Bacteriol Mycol Open Access*. 2023;11(2):72-75. DOI: 10.15406/jbmoa.2023.11.00347
[138] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[139] John Hopkins (2023), Sudan, available at: https://coronavirus.jhu.edu/region/sudan/[Accessed 28/2/24]
[140] WHO (June 2023), Sudan Public Health Situation Analysis Report (internal document, not published)
[141] Abdelrahim NA, Fadl-Elmula IM, Ali HM. Bacterial meningitis in Sudanese children; critical evaluation of the clinical decision using clinical prediction rules. BMC Pediatr. 2019 Sep 6;19(1):319. doi: 10.1186/s12887-019-1684-3. PMID: 31492124; PMCID: PMC6729048.
[142] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[143] Leena El-Samani, Razan Abdalla Taha, Yousef Khader (2020), Investigation of diphtheria outbreak in Al-Sunta locality in South Darfur State - Sudan, 2019/2020: a teaching case-study, Pan African Medical Journal
[144] Leena El-Samani, Razan Abdalla Taha, Yousef Khader (2020), Investigation of diphtheria outbreak in Al-Sunta locality in South Darfur State - Sudan, 2019/2020: a teaching case-study, Pan African Medical Journal
[145] Al Jazeera (25th April 2023), WHO says 'huge biological risk' after Sudan fighters occupy lab
[146] WHO (June 2023), Sudan Public Health Situation Analysis Report (internal document, not published)
[147] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[148] Berghof Foundation (26th Feb 2024), Sudan's deadly conflict
[149] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[150] ACAPS Thematic report: Sudan - Protection concerns: ten months into the war, 29 February 2024
[151] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[152] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[153] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[154] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[155] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[156] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[157] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[158] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[159] WHO (15th Feb 2024), Sudan: a preventable health crisis that can be averted with unified action
[160] WHO (15th Feb 2024), Sudan: a preventable health crisis that can be averted with unified action
[161] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[162] UNICEF (9 February 2024), Record numbers of children seek life-saving care as Sudan war drives world's worst displacement crisis [EN/AR]
[163] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[164] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[165] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[166] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[167] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[168] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)

[169] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[170] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[171] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[172] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[173] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[174] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[175] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[176] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[177] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[178] WHO (15th Mar 2024), Sudan: a preventable health crisis that can be averted with unified action
[179] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[180] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[181] Elhadi YAM. Progress and challenges in implementing non-communicable disease policies in Sudan. Health Res Policy Syst. 2023 Dec 6;21(1):130. doi: 10.1186/s12961-023-01079-2. PMID: 38057882; PMCID: PMC10698879.
[182] Elhadi YAM. Progress and challenges in implementing non-communicable disease policies in Sudan. Health Res Policy Syst. 2023 Dec 6;21(1):130. doi: 10.1186/s12961-023-01079-2. PMID: 38057882; PMCID: PMC10698879.
[183] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[184] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[185] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[186] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[187] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[188] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[189] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[190] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[191] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[192] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[193] WHO outbreaks dashboard
https://worldhealthorg.shinyapps.io/OutbreaksDashboard/#
[194] OCHA (4th February 2024), Sudan Humanitarian Update (4 February 2024) [EN/AR]
[195] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[196] WHO (3 March 2024), Sudan Cholera Snapshot - Issue 2, 29 February 2024
[197] WHO (3 March 2024), Sudan Cholera Snapshot - Issue 2, 29 February 2024
[198] WHO (3 March 2024), Sudan Cholera Snapshot - Issue 2, 29 February 2024
[199] UNICEF (4th December 2023) Fighting the cholera outbreak Amidst the conflict, Sudan Health Ministry and UNICEF launch a cholera vaccination campaign
[200] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[201] UNICEF (2019) Sudan Annual Report- Water, Sanitation And Hygiene 2019
[202] UNICEF (2019) Sudan Annual Report- Water, Sanitation And Hygiene 2019
[203] UNICEF (2019) Sudan Annual Report- Water, Sanitation And Hygiene 2019
[204] 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. Ann Med Surg (Lond). 2022 May 11;78:103773. doi: 10.1016/j.amsu.2022.103773. PMID: 35600171; PMCID: PMC9117552.
[205] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[206] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[207] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[208] ICRC (21st October 2021), Not only on Mental Health Day: Why mental health matters in conflict
[209] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[210] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[211] WHO / Health Cluster (February 2024), Sudan Health Cluster: Mental health services as of January 31, 2024
[212] Osman AHM, Bakhiet A, Elmusharaf S, Omer A, Abdelrahman A. Sudan's mental health service: challenges and future horizons. BJPsych Int. 2020 Feb;17(1):17-19. doi: 10.1192/bji.2019.19. PMID: 34287408; PMCID: PMC8277530.
[213] WHO (Feb 2024), Internal Report- Event Information Site (EIS) Sudan | Circulating Vaccine Derived Poliovirus type 2 (cVDPV2)
[214] WHO (11 March 2024), Sudan to respond to new emergence of variant poliovirus in Red Sea State
[215] WHO (Feb 2024), Internal Report- Event Information Site (EIS) Sudan | Circulating Vaccine Derived Poliovirus type 2 (cVDPV2)
[216] WHO (11 March 2024), Sudan to respond to new emergence of variant poliovirus in Red Sea State
[217] WHO (Feb 2024), Internal Report- Event Information Site (EIS) Sudan | Circulating Vaccine Derived Poliovirus type 2 (cVDPV2)
[218] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[219] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[220] UNFPA (15th Feb 2024), The Government of Japan and UNFPA Sudan sign US$793,233 contribution agreement for life-saving maternal care
[221] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)

[222] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[223] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[224] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[225] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[226] Sefiu Olalekan Olaleye, Temitope Folashade Aroyewun, Reem Abdelrahman Osman (2023), Sudan's maternal health needs urgent attention amid armed conflict, The Lancet
[227] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[228] Hassanain, S.A., Edwards, J.K., Venables, E. et al. Conflict and tuberculosis in Sudan: a 10-year review of the National Tuberculosis Programme, 2004-2014. Confl Health 12, 18 (2018). https://doi.org/10.1186/s13031-018-0154-0
[229] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[230] UNAIDS (2020), Country progress report – Sudan Global AIDS Monitoring 2020
[231] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[232] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[233] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[234] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[235] Mohamed AAA, Ahmed MAI, IbnIdriss GEO, et al. Typhoid fever: prevalence and risk factors among symptomatic Sudanese patients. *J Bacteriol Mycol Open Access*. 2023;11(2):72-75. DOI: 10.15406/jbmoa.2023.11.00347
[236] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[237] John Hopkins (2023), Sudan, available at: https://coronavirus.jhu.edu/region/sudan/[Accessed 28/2/24]
[238] WHO (June 2023), Sudan Public Health Situation Analysis Report (internal document, not published)
[239] Leena El-Samani, Razan Abdalla Taha, Yousef Khader (2020), Investigation of diphtheria outbreak in Al-Sunta locality in South Darfur State - Sudan, 2019/2020: a teaching case-study, Pan African Medical Journal
[240] Leena El-Samani, Razan Abdalla Taha, Yousef Khader (2020), Investigation of diphtheria outbreak in Al-Sunta locality in South Darfur State - Sudan, 2019/2020: a teaching case-study, Pan African Medical Journal
[241] Leena El-Samani, Razan Abdalla Taha, Yousef Khader (2020), Investigation of diphtheria outbreak in Al-Sunta locality in South Darfur State - Sudan, 2019/2020: a teaching case-study, Pan African Medical Journal
[242] National Multi-Hazard Health Emergencies Preparedness and Response Plan for Sudan, 2022
[243] Abdelrahim NA, Fadl-Elmula IM, Ali HM. Bacterial meningitis in Sudanese children; critical evaluation of the clinical decision using clinical prediction rules. BMC Pediatr. 2019 Sep 6;19(1):319. doi: 10.1186/s12887-019-1684-3. PMID: 31492124; PMCID: PMC6729048.
[244] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[245] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[246] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[247] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[248] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[249] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[250] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[251] IPC (12 December 2023), Sudan: IPC Acute Food Insecurity Analysis | October 2023 - February 2024 (December 12, 2023)
[252] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[253] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[254] UNICEF (2019) Sudan Annual Report- Water, Sanitation And Hygiene 2019
[255] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[256] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[257] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[258] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[259] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[260] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[261] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[262] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[263] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[264] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[265] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[266] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)

[267] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[268] UNFPA (2024), UNFPA Sudan Emergency Situation Report No.10 - 5 February 2024
[269] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[270] USAID (13th February 2024), Sudan - Complex Emergency Fact Sheet #10, Fiscal Year (FY) 2024
[271] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[272] ACAPS (29 Feb 2024), ACAPS Briefing note - Sudan: Healthcare and epidemics in the context of hunger, 27 February 2024
[273] UNMAS (June 2023), Sudan Profile
[274] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[275] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[276] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[277] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[278] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[279] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[280] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[281] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[282] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[283] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[284] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[285] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[286] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[287] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[288] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[289] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[290] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[291] WHO/ Health Cluster (4th February 2024), Sudan Health Cluster Annual Report - 2023
[292] WHO/ Health Cluster (4th February 2024), Sudan Health Cluster Annual Report - 2023
[293] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[294] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[295] OCHA(17 Feb 2024), Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024)
[296] ACAPS (29 Feb 2024), ACAPS Briefing note - Sudan: Healthcare and epidemics in the context of hunger, 27 February 2024
[297] UNFPA (2024), UNFPA Sudan Emergency Situation Report No.10 - 5 February 2024
[298] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[299] HeRAMS Dashboard Sudan accessible at below linkhttps://app.powerbi.com/view?r=eyJrIjoiYmZlYjM5ODItMTk4NC00OWNjLTkyOTctYWZhNGFiNTgwZjVmIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9
300 Sudan HeRAMS dashboard https://app.powerbi.com/view?r=eyJrIjoiYmZlYjM5ODItMTk4NC00OWNjLTkyOTctYWZhNGFiNTgwZjVmIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9
[301] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[302] USAID (28th Feb 2024), Sudan Crisis Situational Analysis - 28 February 2024
[303] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[304] WHO/Health Cluster (February 2024), Sudan Health Cluster: Medicines and medical supplies services as of January 31, 2024
[305] ACAPS (29 Feb 2024), ACAPS Briefing note - Sudan: Healthcare and epidemics in the context of hunger, 27 February 2024
[306] MSF Sudan Briefing Note: Urgent need for rapid scale-up of non-communicable disease medication and treatment v. 15 November 2023
[307] UNHRC (23rd Feb 2024), Situation of human rights in the Sudan; Report of the United Nations High Commissioner for Human Rights (A/HRC/55/29) (Advance Unedited Version)
[308] Insecurity Insight (19th February 2024), Attacks on Health Care Bi-Monthly News Brief: 24 January - 06 February 2024
[309] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[310] OCHA(17 Feb 2024), Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024)
[311] WHO (June 2023), Public Health Situation Analysis Report (internal document, not published)
[312] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[313] UNHCR (15th February 2024), At a Glance: Protection Impacts of the Conflict: Update no. 24, 15 February 2024
[314] WHO (2022), Country Cooperation Strategy for WHO and Sudan 2022–2025
[315] OCHA (23rd Feb 2024) Sudan Humanitarian Update (23 February 2024)
[316] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services
[317] WHO (8th Feb 2024), Urgent action needed to reach the most vulnerable in Sudan with life-saving health services