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‘We let the blood flow’: Flooding, health and overlapping crisis as experienced by south Sudanese women

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Introduction

‘Women are the people who suffer most in every community. We have a significant number of widows after they lost their husbands in the war. Others have their husbands away in the cattle camps. This leaves the women to take care of the children solely. Even where the husbands are present, women are the major breadwinners’, explains the secretary for the Sudan People’s Liberation Movement (KII 002). This quote highlights not only the vulnerability marginalization and burdens faced by women in South Sudan but also their resilience and ability to serve as key leaders for their families and communities in the face of incredibly difficult situations. South Sudan’s population – and in particular, South Sudanese women – are experiencing floods, displacement, conflict and the lasting impacts of the Covid-19 pandemic, all in a country with a nascent health system and deeply vulnerable to the consequences of climate change.

In this chapter, we utilize an intersectional lens to look at how multiple crises, in particular disasters, the Covid-19 pandemic and climate change affect vulnerable groups, in particular, women. We analyse the different experiences and needs of women across ethnicities and age groups to bring out an intersectional understanding of vulnerability. The chapter begins with an outline of the political and historical developments in South Sudan and draws upon extensive literature to describe the humanitarian, health and climate vulnerabilities. Next, we describe the methodology and data collection which was undertaken in Jonglei state in 2021 and South Sudan’s capital, Juba, in 2023.

The findings describe impacts of climate and conflict on women's health and well-being. Finally, the conclusions set forth the need for gender-sensitive policy responses to address the ongoing humanitarian crises and the displacement.

Contextualizing South Sudan's overlapping crisis

South Sudan is ranked as the second most vulnerable country globally to environmental hazards (OCHA 2025). Since its independence in 2011, the country has experienced severe droughts (2011, 2015) and floods (2014, 2017, 2019, 2020, 2021, 2022, 2023 and 2024), resulting in a high number of deaths, displacements and livestock losses, all of which have had a significant impact on people's livelihoods (World Bank 2023; UN OCHA 2024). As a result, in 2023 and 2024, the country experienced severe food insecurity compounded with high inflation rates. The overlapping vulnerabilities have reduced the coping abilities of the population, especially women who are mostly the breadwinners in the communities. There were four consecutive seasons of intense annual flooding between 2019 and 2022 (UNHCR 2022). Two-thirds of the country experienced flooding in 2022, with over 900,000 people affected (UNHCR 2022). In 2024, situation reports highlight the plight of people with disabilities, women, children and older persons in these overlapping crises, with their pre-existing challenges intensifying their several needs (REACH 2024a). Disasters are not felt uniformly across the country – in Greater Kapoeta and Lafon County in Eastern Equatoria, in the south-east of the country, drought has affected farming and livestock for the displaced populations, limiting access to food, water and pasture for livestock and significantly disrupting food production and availability (REACH 2023). Meanwhile, flash floods have affected lives and livelihoods in Western Equatoria, Upper Nile, Central Equatoria, Jonglei and Warrap states (OCHA 2024). Along the White Nile, Pibor, and other riverine plains, floods have been a regular phenomenon (REACH 2023). Beyond disasters, climate change has resulted in decreased agricultural productivity and food insecurity, increased frequency, water scarcity and reduced availability of clean drinking water, loss of biodiversity, and ecosystem services, and community displacement due to sea-level rise and land degradation (Ebi 2020). These challenges stemming from climate change and environmental shocks take place in a politically unstable country regarded as the world's third 'most fragile' state (Fragile States Index 2024). South Sudan has around 2.2 million internally displaced people (IDPs) – a number which is growing as a result of increased returnees in the wake of the crisis in Sudan, which began in April 2023, and an increase in violence and

cessation of food distribution in parts of Ethiopia (UNUNOCHA 2024). These issues have disrupted cross-border trade, humanitarian access and oil exports, all of which are vital to South Sudan's economy and food security. The influx of returnees, alongside environmental shocks, has affected food security and access to basic needs and services (IFRC 2023).

Underlying healthcare challenges aggravate and reinforce existing health inequities in the country. Floods directly affect water, sanitation and hygiene (WASH) systems, limit access to health and markets as well as lead to a rise in cases of waterborne diseases such as malaria and cholera. Malaria was the leading cause of morbidity and mortality in the country, accounting for 65 per cent of outpatient visits and 20 per cent of deaths in 2017 (WHO 2017). Since the 2013 crisis, cholera cases have been reported every year between 2014 and 2017 (at least 28,676 cases including 644 deaths) in major urban centres such as Juba, in internally displaced populations and cattle camps, flood-affected locations and other locations with inadequate access to safe water, sanitation and hygiene (WASH) (WHO 2022). A cholera outbreak was declared by the government on 7 May 2022 in Rubkona County. In 2020, heavy rains and floods affected more than one million people, increasing the risk of waterborne diseases such as cholera, typhoid and hepatitis E (IRC 2020).

The health system in South Sudan faces severe challenges arising from historical legacies, continuous conflicts and limited resources. War, conflict, neglect and corruption have prevented the expansion of basic services and infrastructure, which has severely impacted the country's health system (Sørbø, Schomerus and Aalen 2016). Jones, Howard and Legido-Quigley (2015) describe how the conflict has impacted the health systems either through attacks on clinics or professionals, looting of medicines and resources at health centres during conflict, as well as limitations in providing services to the populations who are regularly displaced or returning. The Government of South Sudan allocated less than 2 per cent of its national budget for health care in 2021 (WHO 2021). The fragility of the system is worsened by the lack of health workers: with only one midwife and one doctor per 65,574 people, South Sudan has severe shortages in its medical workforce (UNFPA n.d). Only one-third of medical facilities are still open in conflict areas (Dafallah 2023) and the health system has an estimated $700 million in financial losses in 2023 (Dafallah 2023). The health system cannot meet the growing demand and complexity of health services while also providing quality and equitable care to the population. The consequences of climate change and disasters compound health and well-being issues of the people of South Sudan, necessitating immediate and coordinated action from

the government, donors and partners to strengthen the health system's resilience and adaptation (Odhiambo, Jeffery, Lako, Devkota and Valadez 2020).

Women also experience specific challenges in South Sudan during crisis. The gender disparities in South Sudan are particularly challenging due to lack of monitoring data for reporting on Sustainable Development Goals (UN Women 2024). In the absence of updated information, the recent statistics report data from 2018, 26.7 per cent of women aged fifteen to forty-nine years were subject to physical and/or sexual violence by a current or former intimate partner in the previous twelve months (UN Women 2024). Moreover, women of reproductive age (15–49 years) often face barriers with respect to their sexual and reproductive health and rights: contraceptive prevalence rate was only 6 per cent for all methods (UNFPA 2022). The maternal mortality rate is 1,223 deaths per 100,000 live births, which is among the highest in the world (WHO 2024). Only 16 per cent of women and girls over fifteen are literate, compared to 40 per cent for men (World Bank 2016). Women and girls also face barriers while accessing basic menstrual health information and supplies during floods due to limited income-generating opportunities, reduced buying power and under-prioritization of sanitary materials during prolonged emergencies. Their means of managing their menstrual periods is by just letting it flow, sometimes using old and dirty rags to absorb the blood or by sitting on the ground and allowing the blood to flow. This has left girls and women further vulnerable and prone to the risk of infections and indignity. Furthermore, delivery of menstrual supplies to rural parts of South Sudan is hindered as the transport infrastructure is destroyed by the floods.

Sexual and gender-based violence (SGBV) is also prominent in South Sudan and is often most pronounced during periods of crisis. In 2020, conflict-related crimes perpetrated on women primarily consisted of abduction (41%) and killing (28%), for the most part during localized violence, with 18 per cent of victims being subjected to conflict-related sexual violence, including rape and sexual slavery (UNICEF 2019). In October 2020, UNICEF reported that early and forced marriages are common in South Sudan with 52 per cent of all girls married before eighteen years of age (UNICEF 2020). A study conducted by South Sudan Women Empowerment Network SSWEN (2021) found that sexual violence against children is one specific form of GBV that is reported and channelled into conflict dispute mechanisms, which refer cases to the police or other legal authorities. Women living with disabilities are also twice as likely to experience domestic violence or another form of SGBV as other women and up to three times more likely to experience sexual assault by a stranger or

acquaintance (SSWEN 2021). In their assessment of gender inequitable norms and gender-based violence in South Sudan, Scott et al. (2013) found that the customary laws regarding rape in South Sudan often reflect the culture and do not include rape in the context of marriage. Conflict and SGBV are also frequently managed through the customary law system, which can be more focused on easing tensions between communities, primarily through the payment of compensation or the return of stolen property, than providing justice for an individual. This creates a culture of impunity for perpetrators and can leave the grievances of an SGBV survivor and their family unaddressed (LAW 2016). Thus, the women survivors face several barriers in accessing medical support for their recovery. These include lack of awareness of the physical, mental and socio-economic consequences of SGBV, poor knowledge of and the types of services available, as well as the limited availability and poor quality of services. They also face societal challenges which are compounded by pervasive stigma associated with various forms of violence that prevent SGBV survivors from seeking support and accessing health services (SSWEN 2021). Previous research from other fragile and conflict-affected areas such as Cambodia indicate that the risks of SGBV are exacerbated during disaster situations (IFRC 2022). The impact of overlapping crises not only affects women and increases the risks of violence against them, it also remains underreported and thereby several challenges emerge while designing and developing humanitarian interventions. The next section describes the methods used to understand how crises impact women, the emerging needs, measures and actions as well as existing gaps in humanitarian interventions.

Methodology and data collection

This chapter uses data gathered in 2021 (phase 1) and 2023 (phase 2) using semi-structured interviews, household surveys, focus group discussions and key informant interviews. The lead author was commissioned to undertake a study on Christian Aid's and partner NGO's response in Ayod and Fangak counties in Jonglei state. The second author was the lead at African Development Aid (ADA), the local partner organization, who were implementing the humanitarian response programme to Covid-19 in Jonglei in 2021. During phase 1, the second author was involved in data collection with three investigators from ADA (2 men, 1 woman) who conducted a needs assessment using a mixed-methods approach in July 2021. Ayod and Fangak were hard hit by the overlapping crises

of Covid-19, conflict, displacement, flooding and food insecurity in South Sudan. During phase 2, in December 2023, the lead author visited Juba and conducted interviews with key informants and stakeholders who were responding to floods, displacement and chronic food insecurity.

In phase 1, the data collection instruments – interview, focus group discussions (FGD) with topic guides and household survey – were developed by the lead author and refined based on feedback from CAID and ADA staff. The ADA field team undertook field visits to Ayod and Fangak and collected data on the floods and waterlogging, and specifically discussed women's needs during Covid-19 and floods. This mixed methods approach was essential because it not only provided data on household coping strategies in response to floods and displacement but also gathered perspectives from community members and leaders in the *payam*. In 2021, 462 household surveys were conducted using a structured questionnaire administered using KOBO Toolbox. KOBO Toolbox has been widely used in humanitarian settings, where internet connectivity can be a challenge, as was the case in Fangak.

The questionnaire included seven sections with roughly eighty questions. It covered a wide range of topics, including socio-demographic information, current household status, socio-economic household profile, support, local challenges and capacities, health and trust, and accountability and information sharing. The responses were recorded by research assistants, hired and trained by ADA, whereby the answers could be selected from a dropdown list with five to seven relevant options. The questionnaire allowed for a variety of response formats, such as open-ended questions, yes/no answers and multiple-choice options. Nineteen key informant interviews (KIIs) with NGO staff, technical experts on protection, international donors and field team members were held from May to July 2021. A semi-structured discussion guide was developed to elicit the views and experiences of community members, particularly women and other vulnerable groups such as persons with physical difficulties, mental challenges and elderly persons (>60 years). Six FGDs were conducted separately for men and women, as well as for various age, ethnic and displacement groups. There were two separate FGDs conducted in Ayod, with seven male and female members in each. Four were held in Fangak – two each with separate male and female members. In total, twenty-nine people participated in the FGDs. A full breakdown of research participants can be found in Tables 12.1 and 12.2.

During phase 2 in December 2023, twenty-two additional KIIs were conducted with local government representatives, health workers, community leaders, women's groups, youth groups and humanitarian NGO staff in Juba.

Table 12.1 Total number of KIIs and FGDs across Ayod, Fangak and DEC partners

		No. of participants FGDs				No. of participants KIIs		
Province	**FGDs**	**Total**	**Female Age (30–65)**	**Male Age (30–65)**	**KIIs**	**Total**	**Female Age (30–65)**	**Male Age (30–65)**
Ayod	2	8	4	4	9		1	5
Fangak	4	21	7	14	6		1	4
DEC Partners	-	-	-	-	3			
Total	6	6	11	18	19		2	9

Table 12.2 Household survey respondents' characteristics in Ayod and Fangak, 2021

Type of household respondents	**Statistics (%)**
Distribution by gender	
Male respondents	5
Female respondents	95
Distribution by location	
Ayod	56.28
Fangak	43.79
Languages spoken	
Nuer	99.78
Dinka	12.36
Households consisting of	
– Persons with physical difficulties (mobility, sight, hearing)	12.72
– Person with mental challenges	5.89
– Elderly person (>60 years)	26.60
– Pregnant or lactating woman	32.81
– Caregivers for children under two years	21.98
Household composition	
Married respondents	69.28
Widowed	8.87
Separated/divorced	5.63
Unable to read	91.77

KIIs helped gather detailed information on how various actors are responding to the challenges of disasters and displacement and issues faced by women in South Sudan. These were conducted in English primarily and lasted between forty and fifty minutes. All the study participants were informed about the study, prior to any data collection, in their own language. There was no monetary compensation for participation. The field team observed steps to ensure confidentiality and anonymity of responses and assured the respondents that their participation was voluntary and they were free to withdraw at any time. The respondents were assured that the information collected will be kept confidential and would only be used for purposes of the study. ADA team members conducted key informant interviews, which were recorded in handwritten notes and then transcribed and translated. All databases, field notes and typed transcripts were stored in password-protected computers with access only to the research team.

Women comprised the vast majority (95%) of respondents to the survey, with the remainder (5%) completed by men. The households included respondents who self-reported as follows: people with physical disabilities (12.72%), people with mental health issues (5.89%), elderly persons (>60 years) (26.60%), pregnant or lactating women (32.81%) and caregivers for children under the age of two (21.98%). The data also includes the respondents' marital status and level of literacy. Most respondents (69.28%) were married, with 8.87 per cent widowed and 5.63 per cent separated or divorced. The data also shows that a significant number of respondents (91.77%) are unable to read.

Findings

Our study underlines the role of women across ethnic groups in South Sudan during complex emergencies. They act as providers for their families and are the primary caregivers for children and older people. In the following section, we explain how overlapping crisis impact different women. We found that the combined effects of Covid-19 and disasters further restricted access to basic services such as health care, water, sanitation, and hygiene (WASH), food and protection.

Access to services amidst overlapping crisis

In Ayod and Fangak, it emerged that as overlapping issues continue – floods, Covid-19 and displacement – women were the hardest hit as their access to basic

services – food, WASH, education, health facilities and information, markets and livelihood opportunities – deteriorate. Ayod County faced floods due to heavy rains from mid-August 2020 and the subsequent rise in water levels in the rivers Nile, Phow and Canal. The floods rendered most parts of the county inaccessible, forcing residents to use canoes or wade through knee-length and sometimes chest-level water levels to access facilities such as toilets, markets and health facilities. The most affected locations of Ayod were Jiech, Kedak, Pagil, Gorwai and Mogok. Floods severely affected shelter, mobility, farming, fishing, WASH and health facilities. On the other hand, during an FGD with female participants in Fangak, the participants reported that about 85 per cent of the land was covered by water. Since there was no harvest after 2020, people in the community were running out of food. One participant in the all women's FGD in Fangak told us, 'Floods destroyed all our crops in the farms and also the food we had stored in our houses. The days have been very hard on us; we didn't have anything to feed our children. There were days we went to bed hungry and woke up the following day without knowing what to eat.'

Food scarcity affected the entire community at large. According to our research participants, the World Food Programme (WFP) and other humanitarian services provided food. WFP airdropped food, but due to flooding, several locations were inaccessible, and there were no clear locations for the drops to take place. According to a key informant (KII 001) the food airdrops had not happened in sometime. They informed us that

> The last distribution was last year in July [2020]. The composition of food stuff supplied were 50 kgs of sorghum, 3 litres of cooking oil, 500 grams of salt and 50 kgs of pulses. The food does not last long because households are hosting other IDPs. I think the household that had the food longest would be two months. […] Humanitarian assistance has been hard due to poor access to this location.

The food supplies were expected to last until three months as per the WFP calculations. However, as the household sizes had increased up to eight members in average due to additional IDPs, it shortened the number of days while the food stock lasted.

Survey respondents mentioned that due to the severity of floods, dry areas for cultivation were difficult to find, with most of the farmlands occupied by water. The rest of the dry land has clay soil, which is not very fertile. KIIs indicate that the 2019 floods had led to no 'harvest' in 2020, and as the floodwater had not receded, there would be no harvest in 2021. There has been a drastic decline in the area planted leading to a significant deterioration of crop production in

the two counties since the flooding started. From the Crop and Food Security Assessment Missions (CFSAM) crop production data, in Ayod and Jonglei there were major reductions in areas that produce cereals and the gap between overall requirements and production in cereals in 2022 and 2023 (CFSAM 2023). People coped by eating water lilies, grass and wild fruits, while others sold their cattle at low prices. Though humanitarian assistance was limited, participants remarked that nets distributed by ADA in 2020 had been helpful. Action Contra le Faim (ACF) also distributed food supplies in May 2021 to 950 households. People were unsure about the coming years because more rains are expected. Those living near the river continued fishing, while those surrounded by floodwaters were adopting fish breeding and catching without any equipment. Initially agencies such as Christian Aid and local partner ADA focused largely on Covid-19 response, but once the grave need for the floods was understood, they adapted their programme to meet the needs of the flood-affected and the displaced communities.

The floods in 2019 and 2020 had resulted in major waterlogging in Fangak. This meant that women, primarily mothers and young girls, had to wade through knee-deep waters to access health centres. Since their access to markets was cut off, they struggled to produce any food and failed to ensure one meal for their families in waterlogged areas. Survey results indicated that only 16 per cent of respondents had enough food to meet their needs, while 81 per cent said they had experienced food shortage. The primary barriers to food access were a lack of income, high food prices, a scarcity of markets and insecurity. Environmental disasters, such as floods, disrupted agricultural production and market availability, as well as the accessibility and distribution of food aid. The floodwaters have even hampered the ability of business owners to restock their supplies. An NGO staff member (KII 05) told us that

> survival is very difficult since [the] majority consume water lily. The flood water has small fishes, but the young men have moved to the fishing camps or near the Nile River which is a day's distance to fish. Families that have money and those with energy to row or move slowly in the water are able to reach out to the neighbouring Payams (Pagil, Mogok and Gurwai) to purchase or borrow food from relatives.

According to our household surveys, most people reported food shortages, as can be seen in Figure 12.3. During the FGD held in Paguir, Fangak, a woman recalled that as 'All the men were engaged in constructing the dyke', there was 'no one to go hunting or fishing'. As a result, the women of the area

> had to go in the swamps to get fish (sit in the water and spread our dresses, then wait for the fish to get trapped in the dress). We boiled the fish since we didn't have any other ingredients like cooking oil, salt and other accompaniments like maize flour, and rice. When fish became hard for us women, we cut the water lilies, grass and lalop (wild fruit).

At the same time as flooding was impacting the type and quantity of available foods, so too was the Covid-19 pandemic. The pandemic reduced income and livelihood opportunities, raised food prices and inflation, and restricted food movement and trade. According to a local administrative authority (KII 01) in Paguir, food prices had increased and community members still faced several challenges to rebuild their livelihoods, chiefly since the region was controlled by the opposition party. They reported,

> The fluctuation of the dollar against [South Sudanese Pound] SSP plus effects of floods and Covid-19 has had negative effects on Paguir's population. Right now, only three major shops are operating here, and they still don't have most of the items. This is because of the high prices of items. […] We lack space … most of our land is covered in water; we can't farm or keep our livestock with us. This year, no single household planted anything. Paguir is also among the inaccessible payams in Fangak. Most humanitarian agencies in Fangak concentrate in areas near the river because they can be accessed by the river.

The impacts of food scarcity, malnutrition and hunger are not evenly felt across communities. Children, for example, are more vulnerable to the effects of undernutrition, including stunting, wasting and micronutrient deficiencies (UNICEF 2022). Often it is women who have hurt the most. According to a woman (KII 004) who ran a small business in Paguir,

Table 12.3 Household survey on self-reported food shortages

Variables	**Statistics (*n*)**
Household experienced food shortages in the past eighteen months	
Ayod	
Respondents who self-reported having experienced food shortage.	141
Respondents who self-reported not experienced food shortage	11
Fangak	
Respondents who self-reported having experienced food shortage	117
Respondents who self-reported not experienced food shortage	3

> I think it has gotten worse. We wake up not knowing what to feed our children. Before the floods, Old Fangak was accessible by foot (two hours walk). Right now, we have to pay [for] canoes to Old Fangak at [a] minimum 5,000 SSP. Most of us cannot afford that. Most organizations who were supporting the people here before can no longer come because of poor access. Food shortages is the major problem for most people here.

The existing crumbling WASH services further deteriorated due to waterlogging and floods from 2020. Survey results indicate that people relied on a variety of primary sources of water, including tube wells (1%), harvested rainwater (13%), streams and rivers (41%), ponds (2%) and other sources which were not specified (43%). Only 6 per cent of respondents said they had access to sanitation facilities, while 94 per cent used unimproved sanitation, such as open defecation, pit latrines without slabs or bucket toilets. In terms of hygiene, 50.32 per cent of respondents wash their hands with water from ponds, swamps or floodwater, while 35.97 per cent use ash or mud as a substitute for soap due to limited availability. Even though only 13.71 per cent of people use soap to wash their hands, they have foregone this practice as they can no longer access markets to purchase soaps.

These findings were corroborated by a County Education Director in Ayod (KII 005), who, in July 2020, told us:

> WASH has totally collapsed and the community members, including the children defecate, either directly in the water or move to the bush to relieve themselves. The toilets in the schools are in bad shape with many in a filthy condition that cannot be used anymore […] for most homes who have the elderly or disabled they have invented unique methods of cutting plunks and mounting them on top of each other inside the water to create room for defecating and urinating […] [Only half of bore holes are functioning and they] cannot serve the whole community since they are situated at one end of the Payam with the rest [are] either submerged under water [while] others [are] totally damaged and need repair and or a dyke constructed around them. This has made it difficult for the elderly and families far away from the water points [to] use the flood or surface water for their domestic consumption. No proper training has been done for the past 10 months hence the serious danger that has led to diarrhoea cases, increased mosquito breeding habitats leading to Malaria cases.

Through focus group discussions, it emerged that the primary barriers to accessing safe water were distance, cost, lack of maintenance and contamination. The term *safe* is also relatively used here since most of the boreholes were submerged by the floods. With the majority of the population practising open

defecation, all the faecal waste matter along with the floodwaters contaminated the groundwater. So the water from the boreholes was not entirely safe for human consumption. Floods also damaged or destroyed existing water infrastructure, reducing the availability and quality of water sources and increasing the risk of waterborne diseases like cholera, typhoid and hepatitis. The Covid-19 pandemic increased the demand and need for safe water, which is necessary for hygiene, infection prevention and control. However, the supply and availability of water did not meet the demand and need, resulting in water scarcity, rationing and conflict. The lack of access to safe water had an impact on the population's food security and nutrition, as water is required for agricultural production, food preparation and consumption. These effects were unevenly felt with women, people living with disability and older people, among others, who were acutely impacted.

Sexual and reproductive health, sociocultural norms and overlapping crises

Sexual and reproductive health outcomes for women remain largely unaddressed during crises situations, such as after extreme flooding (UNFPA 2024). In Ayod and Fangak, most respondents mentioned lack of hygiene awareness and facilities, increasing instances of gender-based violence, and lack of access to health information and facilities. Women's menstrual needs during floods, in particular, remain largely ignored. According to survey results, 60.1 per cent of female respondents reported not using menstrual hygiene products, while 17.6 per cent reported using old clothes or rags in general. They either buried their menstrual waste or threw it away in floodwaters. While 23.19 per cent of female respondents believe that providing menstrual hygiene awareness to their spouses would help them deal with the issue in a culturally and respectfully open manner, others suggested that providing information on sanitary pad usage and disposal, as well as counselling support, could improve menstrual hygiene management. The flood situation worsened hygiene practices, as reported by participants. In Fangak and Ayod, many of the challenges women faced stemmed from cultural taboos surrounding menstruation, as well as the community's patriarchal nature. During an FGD with women in Ayod, it emerged that young girls and women who could not afford sanitary pads used rags to stop the bleeding. Due to floods and waterlogging hygiene practices have worsened as women faced mobility restrictions. Women reported defecating in the water, bathing in the flood water, drinking and cooking using the flood water, as a result of which

they could not manage their menstrual hygiene needs effectively. Similarly, in Fangak, a woman in an FGD in Paguir mentioned, 'We just let it [menstrual blood] flow and avoid going near men [during those days]. We do not have sanitary towels; most women here don't even know what that is.'

A major challenge within sexual reproductive healthcare is addressing menstrual hygiene needs for women and young adolescent girls. Due to persistent traditions, cultural beliefs and norms, menstrual hygiene is not discussed publicly, and as a result, support for girls and women at home and in the community is insufficient to effectively manage menstruation (UNESCO 2015). There is a lack of discussion and education about sexual maturation and reproductive health, and it exposes girls and women to misinformation and myths from a variety of sources, including peers, parents and teachers (Sumpter and Torondel 2013). Programmes fail to address the structural and systemic barriers that prevent them from accessing and utilizing the services they require. Following from lack of menstrual hygiene knowledge and awareness and availability of cheap menstrual products, the provision of critical WASH infrastructure, especially resilient to flooding and waterlogging, means women and girls cannot wash their sanitary clothes, properly dispose the sanitary napkins and maintain personal hygiene due to lack of bathing and toilet facilities at the household and communal level.

Women also experience heightened household and caring burdens during and following disasters as a result of sociocultural norms and the gendered division of labour. As a woman at an FGD in Ayod articulated, 'Men are weak and lazing at the marketplace waiting for the women to look for food. Traditionally, most women have learnt how to take care of the family through observation and socialization. Men are trained to cultivate land, build Tukul, cattle rearing, and that highlights a lot about gender roles and norms.' Key stakeholders observed that although the uncertainty of the future has affected both men and women, there is a gendered burden of caring, which falls upon women alone. With the extended nature of crises – conflict, disasters, pandemic – it becomes hard to ascertain whether this is a result of adverse coping strategies. The expectations placed on women, along with the burden of caregiving, become their sole responsibility. When they were unable to meet these demands, it led to violent incidents involving their spouses.

The intersectionality of culture and gender also becomes apparent in polygamous societies. These need to be factored while designing relief interventions and identifying households to receive support. A respondent in

Paguir told us, 'Our women grew up upholding the Nuer culture. Most of them have not gone to school and get married from the age of seventeen years. They are generally expected to provide food for their household, fetch firewood and take care of the children, while men engage in fishing and livestock rearing.' In Jiech, Ayod men often have more than two wives, and this has implications for the distribution of aid, as not all family's members will be registered. An NGO official in Ayod explains that 'the community in Jiech is a polygamous one yet the distribution doesn't target the whole household during distribution. Most families are selected based on the need and support is spread evenly in different families, the polygamous families only get the first or second family registered for services'.

It emerged that scaling up and enhancing the quality of health services was necessary to improve health access and outcomes for women. There are major gaps in sexual and reproductive health services in Ayod and Fangak, especially in providing information and services for family planning, menstrual hygiene, and sexually transmitted infections, which results in lot of misbeliefs and spread of misinformation. For instance, while discussing infections and family planning services, a woman in an FGD in Paguir shared: 'For UTIs [urinary tract infections] we only pray to God for protection since we do suffer from UTIs. We visit the clinics in the County Health Department for treatment. This has affected women from getting pregnant because fewer women have been conceiving since the onset of floods.' This infertility during emergencies could potentially be due to the urinary tract infections, which were prevalent during floods, and very limited treatment options were available to the women. From a programmatic perspective, distribution of disposable sanitary towels was extremely unsustainable, as it would mean distributing monthly. Bulk transportation was impossible with very limited landing spots. On the other hand, distribution of reusable towels would have a health implication, considering that women and girls had extremely limited access to clean water and dry spots for hanging the pads to dry.

The health interventions need to adopt an intersectional approach so that access to timely and reliable information can be ensured for young girls and women across different ages and cultural groups. For instance, young school-going girls lacked access to information on the onset of menstrual hygiene, adolescent girls and young married women did not receive any information or knowledge of safe sex practices, awareness on sexual violence, while pregnant women shared the lack of inputs on nutrition. This finding is consistent with

Atari et al.'s (2024) study, which investigated menstrual hygiene knowledge and practices among young adolescent girls in South Sudan.

Conclusions

This chapter has argued that women's experiences in South Sudan are varied according to their age, physical capability, location, as well as the opportunities and barriers they encounter in accessing health services in the face of overlapping crises, namely environmental disasters, ongoing conflict and insecurity, and health emergencies. This chapter indicates that as women's access to basic services – education, WASH, health and livelihoods – deteriorated due to multiple crises, they resorted to maladaptive strategies because the responsibility to feed and care for their family was their sole responsibility. We further found that the lack of quality and accessible healthcare and sociocultural norms reinforced women's experiences with gender-based violence. An intersectoral lens indicates how women's needs and experiences intersect with the nature of crises: floods, displacement, health; exposure to risks: financial, diseases, infections; geographical location: rural or town-based, proximity to markets, river and health centres; social categories: ethnicity, age and ability.

In this chapter, we examined the health equity implications of environmental disasters in South Sudan. We used a gender and intersectionality approach to investigate how different groups of women are affected by and respond to health risks and environmental disasters, taking into account the numerous and interconnected factors that shape their vulnerabilities and capacities, such as age, ethnicity, disability and socio-economic status. We utilized new data from our survey and field visits in two provinces in Jonglei, to demonstrate the challenges and opportunities that women face during Covid-19 and environmental disasters, as well as the strategies and behaviours that they use to cope and adapt to the changing situation.

We discovered that the impact of disasters, in particular flooding, significantly impacted access to basic services and women's broader vulnerability. The disruption of these services had a significant impact on the population's health and well-being, particularly on women and other vulnerable groups, who were at higher risk of morbidity and mortality, as well as food insecurity and gender-based violence. More must be done to address the complex and interconnected crises women face during and after disasters, especially since the frequency and intensity of these are predicted to increase as a result of climate change.

References

Atari, D. O., S. K. Tariquzzaman and A. Nancy (2024) 'Knowledge and perceptions on menstrual hygiene management among school-going adolescent girls in South Sudan', *Journal of Adolescent Research*, 39(2): 361–86. https://doi.org/10.1177/07435584211043293.

CFSAM (2023) 'Crop and food security assessment missions database'. https://climis-southsudan.org/crop/data (Accessed 21 October 2024).

Dafallah, A., O. K. O. Elmahi, M. E. Ibrahim et al. (2023) 'Destruction, disruption and disaster: Sudan's health system amidst armed conflict', *Confl Health*, 17: 43. https://doi.org/10.1186/s13031-023-00542-9.

Ebi, K. L. and J. J. Hess (2020) 'Health risks due to climate change: Inequity in causes and consequences', *Health Aff* (Millwood), 39(12): 2056–62. doi: 10.1377/hlthaff.2020.01125. PMID: 33284705. Available online: https://pubmed.ncbi.nlm.nih.gov/33284705/. (Accessed 8 October 2025).

Fragile States Index (2024) 'The fund for peace'. Available at: https://fragilestatesindex.org/ (Accessed 26 September 2024).

IFRC (2022) 'The responsibility to prevent and respond to sexual and gender-based violence in disasters and crises: Research results of sexual and gender-based violence (SGBV) prevention and response before, during and after disasters in Cambodia'. Available at: https://www.rcrc-resilience-southeastasia.org/wp-content/uploads/2024/08/SGBV-2022-for-print_Single-compressed.pdf (Accessed 10 Oct 2024).

IFRC (2023) South Sudan Unified Plan - Mid-year report 2023. https://reliefweb.int/report/south-sudan/south-sudan-unified-plan-mid-year-report-2023 (Accessed 22 August 2024).

IRC - International Rescue Committee (2020) 'South Sudan Floods 2020'. Available at: https://reliefweb.int/report/south-sudan/south-sudan-flooding-situation-report-31jan2021 (Accessed 22 August 2024).

Jones, A., N. Howard, H. Legido-Quigley (2015) 'Feasibility of health systems strengthening in South Sudan: a qualitative study of international practitioner perspectives', *BMJ Open*, 5: e009296. doi: 10.1136/bmjopen-2015-009296.

LAW - Legal Action Worldwide (2016) 'Accountability for sexual violence committed by armed men in South Sudan'. May 2016. Available at: https://www.legalactionworldwide.org/wp-content/uploads/Legal-Action-Worldwide-Report-on-Accountability-for-Sexual-Violence-Committed-by-Armed-Men-in-South-Sudan-1.pdf (Accessed 9 October 2024).

Odhiambo, J., C. Jeffery, R. Lako, B. Devkota and J. J. Valadez (2020) 'Measuring health system resilience in a highly fragile nation during protracted conflict: South Sudan 2011–15', *Health Policy Plan,* April 1, 35(3): 313–22. doi: 10.1093/heapol/czz160.

OCHA (2024) 'South Sudan: Flooding situation report'. Available at: https://www.unocha.org/south-sudan (Accessed 9 October 2024).

REACH (2023) 'Humanitarian situation monitoring'. November 2023.

REACH (2024) 'Voices from South Sudan: Affected Communities' Perceptions on Humanitarian Aid, May 2024 South Sudan'. https://repository.impact-initiatives.org/document/repository/9ad1daf7/REACH-AAP_Voices-from-South-Sudan_May-2024-1.pdf (Last Accessed 10 August 2024).

Reliefweb (2022) 'Ministry of Health Statement on Declaration of Cholera Outbreak in Rubkona County, South Sudan'. Available at: https://guardian.ng/apo-press-releases/ministry-of-health-statement-on-declaration-of-cholera-outbreak-in-rubkona-county-south-sudan/ (Accessed 16 October 2024).

Sørbø, Gunnar M., Mareike Schomerus and Lovise Aalen (2016) 'Country evaluation brief-South Sudan, Chr. Michelsen Institute (CMI)'. https://www.cmi.no/publications/file/5983-country-evaluation-brief-south-sudan.pdf. (Last Accessed 14 August 2024).

'SSWEN 2021 Initial assessment and mapping: Reducing inequality and gender-based violence in South Sudan: Case Studies for Wau, Juba, and Renk'. https://www.eeas.europa.eu/sites/default/files/south_sudan_womens_empowerment_network_6.12.2021_1_002.pdf (Last Accessed 17 August 2024).

Sumpter, C. and B. Torondel (2013) 'A systematic review of the health and social effects of menstrual hygiene management', *PLoS One*, 26 April, 8(4): e62004. doi: 10.1371/journal.pone.0062004.

UNESCO and SNV Netherlands Development Organisation (2015) 'Girls in control: Compiled findings from studies on Menstrual Hygiene Management of schoolgirls in Ethiopia, South Sudan, Tanzania, Uganda and Zimbabwe'. The Hague: SNV. Available at: https://healtheducationresources.unesco.org/library/documents/girls-control-compiled-findings-studies-menstrual-hygiene-management-school-girls (Accessed 22 June 2025)

UNICEF (2019) 'Briefing note gender based violence'. December 2019. https://www.unicef.org/southsudan/media/2071/file/UNICEF-South-Sudan-GBV-Briefing-Note-Aug-2019.pdf?mc_cid=df23736a5b&mc_eid=edad8600b3 (Last Accessed 17 August 2024).

UNICEF (2020) 'Some things are not fit for children – marriage is one of them'. 05 October 2020. https://www.unicef.org/southsudan/press-releases/some-things-are-not-fit-for-children?mc_cid=df23736a5b&mc_eid=edad8600b3 (Last Accessed 17 August 2024).

UN OCHA (2024) 'South Sudan: Country profile'. https://www.unocha.org/south-sudan.

UN OCHA (2024) 'South Sudan: Flooding situation flash update no. 3' (As of 12 September 2024). Available at: https://www.unocha.org/publications/report/south-sudan/south-sudan-flooding-situation-flash-update-no-3-12-september-2024 (Accessed 26 September 2024).

UN OCHA (2025). 'South Sudan: Humanitarian needs and response plan 2025', December 2024, South Sudan: Humanitarian Needs and Response Plan 2025 (December 2024) | OCHA (Accessed 22 June 2025).

UN Women Data Hub (2024) 'South Sudan'. Available at: https://data.unwomen.org/country/south-sudan (Accessed 26 September 2024).

UNFPA (2022) https://www.unfpa.org/sites/default/files/portal-document/DP.FPA_.CPD_.SSD_.4%20-%20South%20Sudan%20CPD%20-%20Final%20-%205Jul22_ENG_0.pdf (Accessed 9 October 2024).

UNFPA (2024) 'Maternal health, South Sudan'. Available at: https://southsudan.unfpa.org/en/topics/maternal-health-18 (Accessed 1 October).

UNFPA (2024b) 'A year of war on the bodies of women and girls fleeing Sudan crisis'. https://southsudan.unfpa.org/en/news/year-war-bodies-women-and-girls-fleeing-sudan-crisis-0 (Accessed 3 October 2024).

United Nations High Commissioner for Refugees (UNHCR) (2022) 'Devastation in South Sudan following fourth year of historic floods', 21 October. Webpage, Available at: https://www.unhcr.org/news/briefing-notes/devastation-south-sudan-following-fourth-year-historic-floods.

World Bank (2016) 'Literacy rate, adult female (% of females ages 15 and above)'. Available at: https://data.worldbank.org/indicator/SE.ADT.LITR.FE.ZS (Accessed 22 August 2024).

World Bank (2023) 'South Sudan Overview: Development news, research, data'. Last Updated 11 April 2024. https://www.worldbank.org/en/country/southsudan/overview.

WHO (2016) 'WHO and partners battle multiple disease outbreaks in South Sudan'.

WHO (2017) 'South Sudan malaria indicator survey 2017'. Available at: https://www.afro.who.int/publications/south-sudan-malaria-indicator-survey-2017 (Accessed 22 August 2024).

WHO (2021) 'South Sudan annual Report'. Available at: https://www.afro.who.int/sites/default/files/2022-05/WHO%20South%20Sudan%20Annual%20Report%202021.pdf (Accessed 22 August 2024).

WHO (2022) 'Aiming for zero cholera in South Sudan'. Available at: https://www.who.int/about/accountability/results/who-results-report-2020-mtr/country-story/2022/aiming-for-zero-cholera-in-south-sudan (Accessed 16 October 2024).

WHO (2024) 'Maternal mortality'. Available at: https://www.who.int/news-room/fact-sheets/detail/maternal-mortality (Accessed 9 October 2024).