

# Aweil Centre Multi-Sector Brief

Aweil Centre County, Northern Bahr-el-Ghazal State, South Sudan, August 2019

## Introduction

In previous years, the prevalence of global acute malnutrition (GAM)<sup>1</sup> in Aweil Centre county has been higher than the World Health Organisation's (WHO) recommended emergency threshold of 15% GAM<sup>2</sup>. Therefore, along with the other counties in Northern Bahr-el-Ghazal (NBeG) state, the nutrition situation is regularly monitored by partners through annual or biannual SMART surveys in the pre- or post-harvest seasons. Heavy flooding in June and July<sup>3,4</sup> throughout the county adds additional urgency in understanding the potential effects on malnutrition, food security and health.

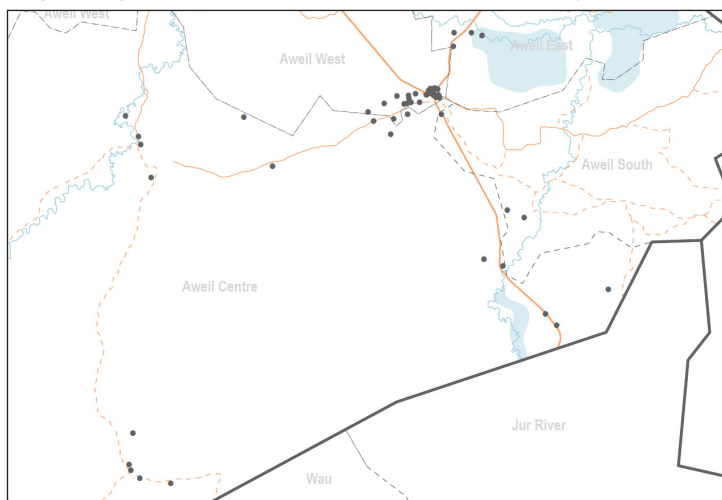
In May 2018, a SMART<sup>5</sup> survey was conducted by Medair in Aweil Centre focusing on rural areas, excluding Aweil town, which showed GAM by weight-for-height z-scores (WHZ) of 6.3% (3.8 – 10.4 95% CI)<sup>6</sup>, and severe acute malnutrition (SAM)<sup>1</sup> of 1.3% (0.5 – 2.9 95% CI)<sup>6</sup>. The May 2017 SMART survey covered both rural and urban areas, inclusive of Aweil town, and demonstrated a GAM of 23.3% (19.6 – 27.5 95% CI)<sup>6</sup>. The August 2019 Integrated Phase Classification (IPC) Workshop classified the county as Phase 4 for Acute Food Insecurity (AFI)<sup>7</sup> and Phase 4 for Acute Malnutrition (AMN)<sup>7</sup>.

Through REACH's support to the Nutrition Cluster and Nutrition Information Working Group (NIWG), REACH provided technical support and consultation to Medair in July 2019 to continue to monitor the nutrition situation in Aweil Centre county, which included Aweil town. The objective included collecting multi-sectoral information to better understand the key drivers of acute malnutrition in the county. This brief presents a list of recommendations that were drafted by Medair based on the findings.

## Population and Livelihoods Profile

Aweil Centre is located in the south and western portions of NBeG state<sup>8</sup>. The county includes Aweil town, and is surrounded by Aweil North, Aweil East, Aweil South and Aweil West counties,

Map 1: Map of assessed locations in Aweil Centre county



## Key Findings

- For July 2019, GAM by WHZ was 19.3% (15.7 – 23.6%) with SAM by WHZ of 3.7% (2.3 – 6.1 95% CI), indicating a 'very high' level of acute malnutrition based on new WHO thresholds. This GAM is similar to results from previous years, however the prevalence of GAM in rural Aweil Centre (14.7%), is significantly higher than when assessed in July 2018 (6.3%)<sup>6</sup>. Nearly one-fourth of pregnant and lactating women (PLW) were also found to be acutely malnourished (23.0%).

- Key drivers of acute malnutrition are likely food insecurity due to flooding and inflated market prices at the height of the lean season, as well as the poor health and WASH environment due to poor sanitation, poor access to health services, and instances of flooding throughout the county.

- The crude mortality rate (CMR) was 0.42 (0.27 – 0.66 95% CI) deaths per 10,000 people per day, and the under-five mortality rate (U5MR) was 0.17 (0.02 – 1.27 95% CI) deaths per 10,000 under-five children per day. The CMR was not significantly different from May 2018 (0.23), and suggests a stable situation.

- Food consumption indicators were poor in Aweil Centre at the peak of the lean season in July. More than half of assessed households were found with food consumption scores (FCS)<sup>9</sup> of 'poor' or 'borderline' (59.9%), indicating consumption of poorer quality foods. Most households were found with 'severe' and 'medium' reduced Coping Strategies Index (rCSI)<sup>10</sup> (86.7%), and more than one-fourth were 'severe' or 'very severe' on the household hunger scale (28.3%)<sup>11</sup>, indicating low quantity of foods consumed. A convergence of evidence indicated pockets of severely food insecure households in Arroyo and Barmayen payams and their surrounding areas<sup>12</sup>.

- Flooding in June and July has affected livelihoods in Aweil Centre county. Two-thirds of key informants reported that some households had lost crops due to flooding in the previous month, with nearly half of key informants reporting that a majority of households in the community had been affected. This may reduce food availability from crops in the coming months for parts of the county.

- Unseasonably high and fluctuating food prices in June and July were reported by most households (89%) and have led to financial barriers in accessing food. The lack of purchasing power is particularly relevant to the majority of households that reported that market purchase was their main source of cereals in the past seven days (63%).

- Child morbidity was very high in the two weeks prior to data collection (54.9%), with the most frequently reported symptoms being fever (51.1%), cough (36.7%) and diarrhoea (33.6%). Recent flooding and the poor health and WASH environment are likely contributors to high morbidity, which in turn is likely driving acute malnutrition in parts of Aweil Centre county.

- Infant and young child feeding (IYCF) was poor for both breastfeeding and complementary feeding practices, with only marginal levels of exclusive breastfeeding (53.7%), and children meeting the recommended minimum meal frequency (MMF) per day (49.4%). Overall, there were very low levels of children consuming a minimum acceptable diet (MAD) (8.0%) and meeting the recommended minimum dietary diversity (MDD) (19.3%). Sub-optimal IYCF practices likely impede proper growth and development and increase the risk of childhood illness and acute malnutrition.

## Methodology

Data collection occurred between 25 July and 08 August. Information captured included anthropometric measurements, demographics and mortality, food security, livelihoods, child morbidity and health seeking behaviour, infant and young child feeding, and key WASH variables. Standard SMART guidelines were followed throughout the design, data collection, and analysis phases<sup>4</sup>. Sampling was conducted with a two-stage, cluster sampling design, with villages or neighbourhoods as the primary sampling unit (PSU), or cluster, we selected using probability-proportional to size (PPS) sampling. Nine HHs within each PSU were selected through simple random sampling. Target sample size was 531 HHs, 531 children 6-59 months, and 59 clusters. The final results captured 460 households and 54 clusters, five clusters were excluded due to inaccessibility. Not meeting the target sample size likely decreased the intended precision of the results. A total of 488 children 6-59 months old were measured, with measurements for 481 of these children being used in the final analysis of GAM by WHZ, and seven children were excluded based on SMART flag criteria. A total of 233 pregnant and lactating women (PLWs) were also assessed with mid-upper arm circumference (MUAC) for acute malnutrition. Anthropometric and mortality results were analysed using Emergency Nutrition Assessment (ENA) software for SMART (9th July, 2015 version) software and other variables using R v3.5.2. Anthropometric and mortality results were validated by the NIWG in South Sudan, with a data quality plausibility score of 0% (excellent). GAM by WHZ is representative of the population at a 95% confidence level and precision of +/- 3.5%. Representativeness was limited due to access challenges during the rainy season, therefore parts of Chel South, Barmayen, and Bau areas were excluded from sampling, and some clusters were also found inaccessible during data collection in Barmayen payam. Findings for GAM by WHZ can be interpreted at a 95% confidence level, with a precision of +/- 5%; CMR can be interpreted at a 95% confidence level with a precision of +/- 0.5 deaths per 10,000 people per day. At least one key informant, preferably traditional leader, was interviewed at each cluster site for additional information on shocks. A total of 46 KIs were interviewed throughout Aweil Centre county.

and rural areas which extend to border Raja and Jur River counties, Western Bahr el Ghazal<sup>8</sup>. Aweil Centre consists of seven payams<sup>8</sup> (sub-districts): Aulic, Barmayen, Arroyo, Awada, Nyalath, Chel South and Umora, and has an estimated population of 199,461 people<sup>13</sup>.

The majority of Aweil Centre county is located in the Western plains groundnuts, sesame, and sorghum livelihood zone characterised by the cultivation and trade of primarily rain-fed sustenance crops and some cash crops such as sesame and groundnuts<sup>8</sup>. While annual rains generally allow for this cultivation, NBeG also has a history of flooding, with severe events noted in 2008 and 2010<sup>3</sup>. Much of Aweil Centre lies within a floodplain in low-lying areas, making it especially prone to annual flooding that may seasonally cut off the population's access to main markets such as in Aweil town, Arroyo and Barmayen<sup>8</sup>. For populations in Aweil town and in other parts of Northern Bahr el Ghazal, cross-border trade is particularly important with cereals (sorghum) being some of the main imports, while other goods are sold to Sudanese traders, such as Arabic gum and livestock<sup>8</sup>.

## Humanitarian Services

Medair is the main nutrition partner for Aweil Centre county, providing Outpatient Therapeutic (OTP<sup>14</sup>) and Targeted Supplementary Feeding (TSFP<sup>15</sup>) programmes at 15 static and mobile sites, with a handful of sites supported by other nutrition partners (ACF, IRC and Concern). Malaria Consortium is the main health system partner providing primary health care, ante-natal and post-natal care, and immunisation services (EPI) throughout the county, though Medair also supports when and if gaps exist. Welthungerhilfe (WHH) is the main food security and livelihoods partner and supports targeted general food distributions to vulnerable populations, including households (HHs) with children or pregnant and lactating women

(PLWs) enrolled in treatment programs, HHs with chronically ill, elderly, widowed, or orphaned children. There are limited WASH interventions throughout the county, though a few activities are supported by Medair, South Sudan Red Cross and the Center for Emergency and Development Support (CEDs) within Aweil town.

## Nutrition and Mortality Outcomes

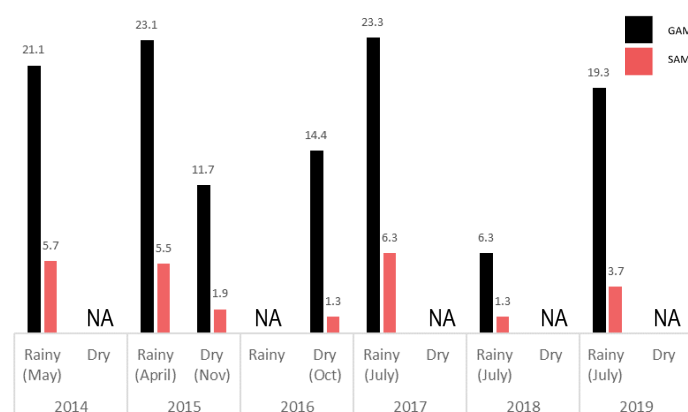
Acute malnutrition was classified as "Very High" in Aweil Centre county by the new WHO recommended thresholds<sup>16</sup>, with a GAM prevalence of 19.3% (15.7 – 23.6% 95% CI) and a SAM prevalence of 3.7% (2.3 – 6.1% 95% CI). The GAM was significantly greater than the WHO recommended emergency threshold of 15% (p=0.011), however was comparable to GAM found in May 2017 (p=0.153). GAM by MUAC<sup>17</sup> was 8.8% (6.5 – 11.8 95% CI) and SAM by MUAC 1.8% (0.8 – 4.2 95% CI). If considering combined criteria of either WHZ and MUAC, GAM rises to 23.3% and SAM to 5.3%. In addition, nearly one-fourth of PLWs were assessed with severe or acute malnutrition (23.0%).

There were differences in the distribution of malnutrition by sex, age and geography. Boys were significantly more likely to be malnourished than girls, both by GAM (p=0.005) and SAM (p=0.022). The reasons for this observation are unclear and lie beyond the

**Table 1: Summary Population Demographics (n = 458 HH)**

Household Composition	Mean or %
Avg. Age of Head of Household	41.0
Avg. HH Size	7.4
% of children under 5 years of age	17.1%
<b>Vulnerabilities</b>	<b>%</b>
% of HHs with female head of household	72.4%
% of HHs with a separated child	3.5%
% of HHs with an unaccompanied child	2.2%
% of HHs with a chronically ill/physically or mentally disabled member	7.2%
% of HHs with a high age-dependency ratio <sup>18</sup>	9.3%

**Figure 1: GAM prevalence for Aweil Centre county, 2014 - 2019**



scope of this study. Younger children were seemingly more likely to be malnourished than older children, with more than one-quarter of children aged 6-17 months being malnourished (29.3%) compared to less than a tenth of children aged 42-53 months (8.9%). These differences suggest health and infant and young child feeding practices may be contributing factors (See IYCF Section).

The July 2018 SMART survey only covered rural Aweil Centre, and showed a significantly lower result of 6.3% ( $p=0.005$ ), suggesting that the increase in GAM prevalence could be linked to the inclusion of the urban population into the survey sample. The 2019 SMART assessment included both urban areas, including urban areas such as Aweil town, Maper Akot, and Kuom, and rural areas comprised of the rest of Aweil Centre payams. Urban areas, with an indicative GAM of 22.5%, were significantly more likely to have malnourished children compared to rural areas, with an indicative GAM of 14.7% ( $p=0.043$ ). There was low design effect<sup>19</sup> (1.20) suggesting a mostly even distribution of malnutrition cases throughout Aweil Centre county. Most payams showed indicative GAM above 15%, with the exception of Alok/Barmayen and Awada payams. However, results for Alok/Barmayen payam are likely not completely representative as a number of sites were inaccessible due to weather and travel conditions at the time of the survey.

The CMR for Aweil Centre county was 0.42 (0.27 – 0.66 95% CI) deaths per 10,000 people per day, with an under-5 mortality rate (U5DR) of 0.17 (0.02 – 1.27 95% CI) deaths per 10,000 under-five children per day. These values were similar from the May 2018 result of 0.23 (0.1 – 0.53 95% CI)<sup>6</sup>. The majority of reported deaths were in their current location (86.7%) with a handful reported either during migration (6.7%) or in place of last residence (6.7%). Most deaths were reportedly due to illness (73.3%), followed by injury/trauma (13.3%) or unknown (13.3%).

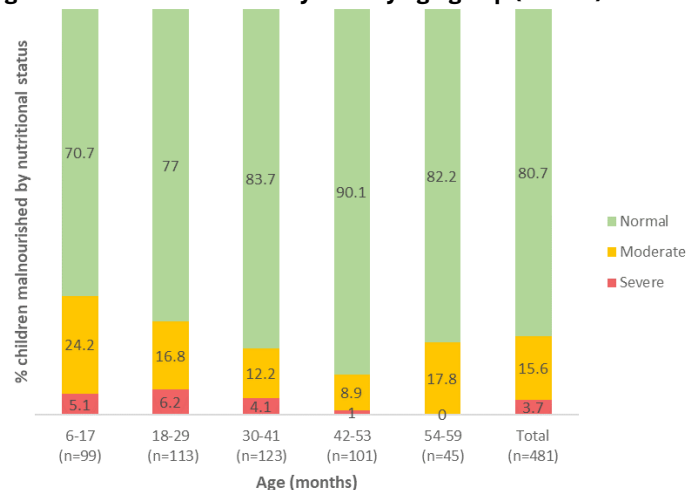
## Contributing Factors

Both food insecurity, and poor health/WASH environments were likely major contributing factors to high acute malnutrition in Aweil Centre county. Food insecurity was compounded by flooding caused by atypical rainfall in June and July, and unseasonably high food prices<sup>22</sup> reduced financial access to food for market dependent populations in the county. Very high childhood morbidity also contributed to acute malnutrition, likely increased by poor access to health care, and a poor WASH environment due to lack of sanitation facilities and flooding.

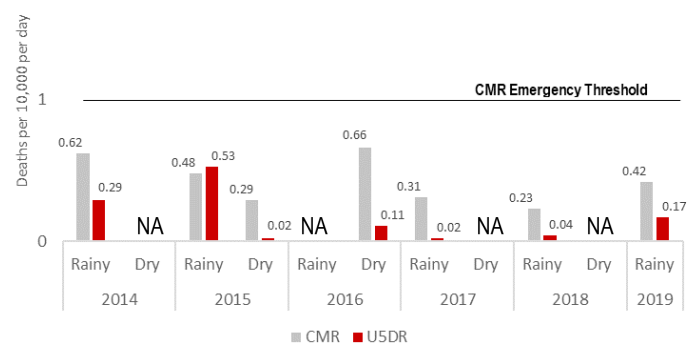
### Reduced Food Availability

Reported rainfall in Aweil Centre in June 2019 (193mm) was far higher compared to the long term mean (155mm) - additionally, as Figure 4 shows, there were periods of significant rainfall reported in the start of June and July<sup>20</sup>. There were also reports of heavy rainfall in July affecting Barmayen payam, however, rainfall data is aggregated to the county level - limiting the ability to identify specific pockets of heavy rainfall.

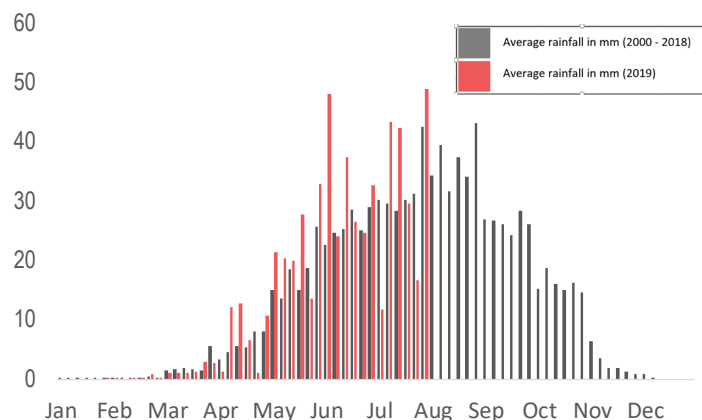
**Figure 2: Distribution of GAM by WHZ by age group (months)**



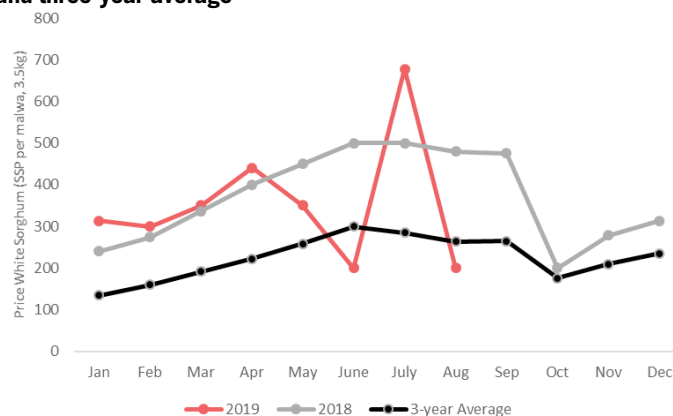
**Figure 3: Mortality rates for Aweil Centre county, 2014 - 2019**



**Figure 4: Long Term Rainfall (2000 - 2018) compared to 2019<sup>20</sup>**



**Figure 5: Price of white sorghum by malwa (3.5kg)<sup>21</sup>, 2018, 2019 and three-year average<sup>22</sup>**



Current and future food availability depends heavily on agricultural production, which in turn has been impacted by access to land, extensive flooding and pests. Overall, HHs in Aweil Centre rely on rain-fed agriculture for income and consumption, with only a handful of HHs reporting they don't engage in agriculture at all (15.7%). Of HHs needing to access agricultural land, more than two-thirds reportedly could access land in both 2019 (73.2%) and 2018 (73.7%). This suggests that while there is overall access to land, roughly a quarter of HHs reported not having access this planting season (26.8%), which will affect availability of food for that population for the coming harvest season.

This lack of access could be partly explained by the above average rainfall witnessed in June and July, potentially flooding crop lands or displacing HHs. Approximately two-thirds of key informants reported that in their settlement, flooding had made people leave their homes (64.6%), and two-thirds reported flooding had destroyed crops (66.7%) to varying degrees in the last month - further reflecting the extent of the reported flooding. In addition to atypical flooding, some HHs reported unusually high levels of pests and crop disease were affecting their crops (24.3%), further limiting the prospects of adequate crop yields in the coming harvest. Overall, HH crop yields are likely to be negatively impacted by floods and pests - potentially leading to food stocks to deplete earlier than normal.

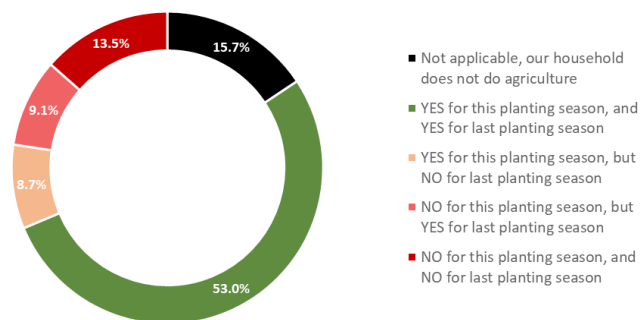
## Market Dependency

During the rainy season, HH dependency on markets increases as food stocks become depleted, increasing exposure to market volatility. From May to July, HHs have reportedly been relying on casual and skilled labour, trade, or other non-agricultural activities as their main source of income, and depending on either market purchase (62.6%) or food for labour (15.0%) as their main source of cereals. Additionally, the majority of HHs reported unusually high food (88.9%) and non-food (79.3%) prices in the last six months. Reduced income (69.3%) and reduced employment of HH members (43.4%) were additional shocks reported by HHs. Despite a reportedly high level of engagement in casual labour, large increases in market cereal prices since 2017 in Aweil, have led to increasingly limited financial access to food. Food prices notably spiked this last July when the average price for a malwa<sup>21</sup> of white sorghum was 678 SSP, the highest recorded in the county in the last 5 years, and 35% greater than the price same time last year<sup>22</sup>. As a result, it is likely that HHs are diverting spending on non-food items (NFIs) to account for the atypical spike in food prices or using savings designated for other means. Additionally, the disproportional increase in food prices compared to wages likely affected household purchasing power, further reducing financial access to food during a period of high market dependency.

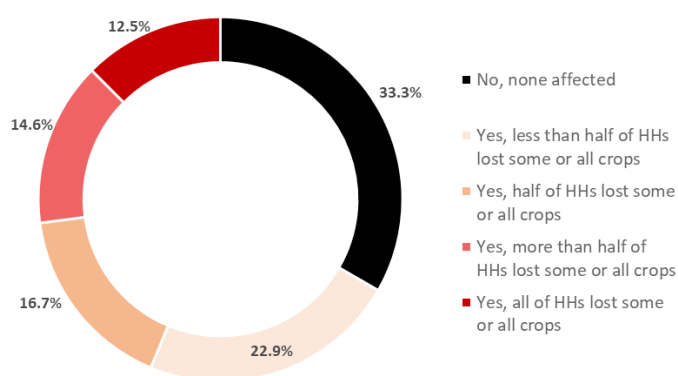
## Food Security Outcome Indicators

Overall, food consumption outcome indicators suggest both poor quality and quantity of food consumed. Food consumption scores (FCS) and household dietary diversity scores (HDDS)<sup>23</sup>, typically used to assess the quality of food consumed, suggest low quality of food being consumed with the majority of assessed households

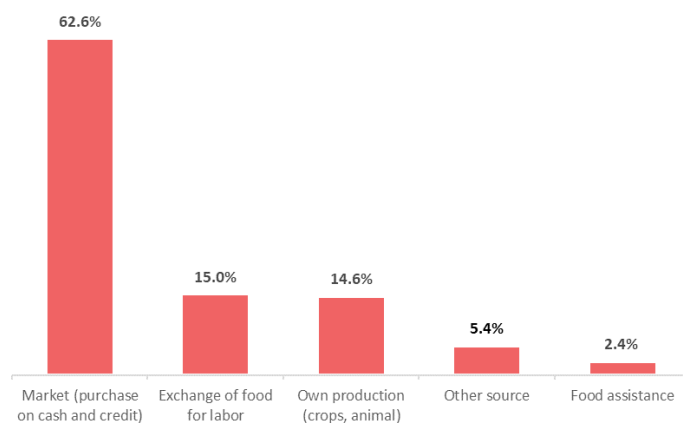
**Figure 6: % of households by agricultural land access in 2018 and 2019**



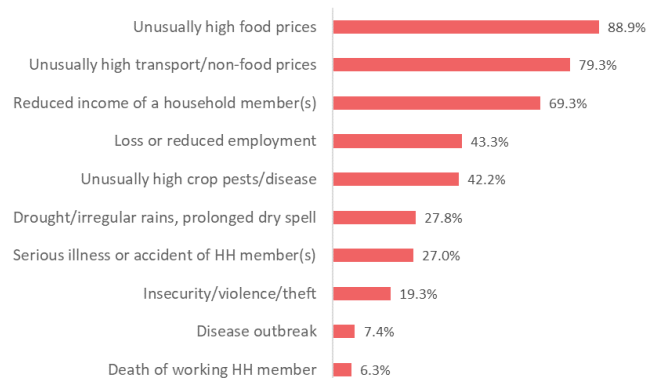
**Figure 7: % of KIs reporting flooding affected crops, n = 46**



**Figure 8: % of households by main source of cereals in last 7 days**



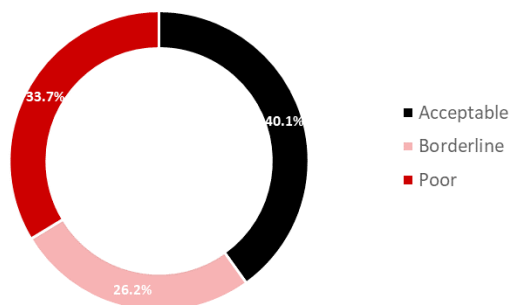
**Figure 9: % of households by shocks<sup>24</sup> experienced in last 6 months**



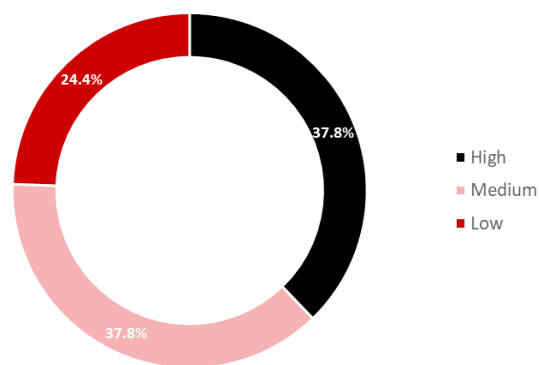
found to have 'poor' or 'borderline' FCS (59.9%), and nearly two-thirds were found with 'low' or 'medium' HDDS (62.2%). Poor quality food means a lack of diversity, especially a lack in staple and protein foods. The reduced Coping Strategies Index (rCSI) and household hunger scale (HHS), which are both proxies for quantity of food consumed, suggest reduced household food consumption, with the vast majority of assessed HHs found with 'medium' or 'severe' rCSI scores (86.7%), and one-quarter of HHs found with 'severe' or 'very severe' HHS scores (28.3%). This suggests that many HHs are experiencing reduced quantity of food, with many HH members reportedly skipping meals and going days without eating. Analysing the data at the HH level suggests that over a quarter of HHs were experiencing high levels of food insecurity based on the outcome indicators, likely contributing to the emergency level GAM prevalence.

Additionally, livelihood coping strategies (LCS)<sup>25</sup> were assessed to provide an understanding of the severity of coping strategies used by HHs to mitigate food consumption gaps. Overall, nearly half of assessed HHs reported utilising 'crisis' and 'emergency' level livelihood coping strategies either in the last 30 days or having already exhausted their strategies in the last 12 months. The most frequently reported coping strategies included borrowing money and/or purchasing food on credit (stress, 48.9%) - reflecting the high market dependency and reported decrease in HH purchasing

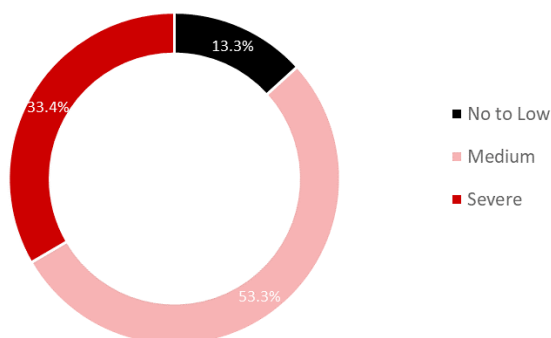
**Figure 12: % of households by food consumption scores**



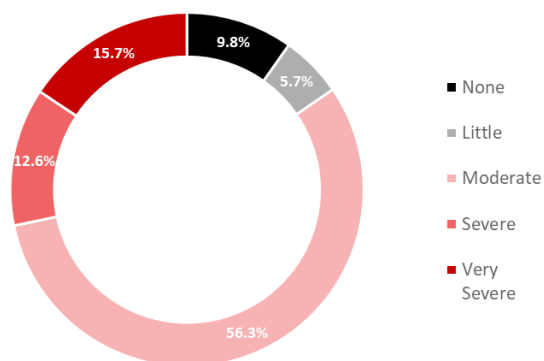
**Figure 10: % of households by household dietary diversity scores**



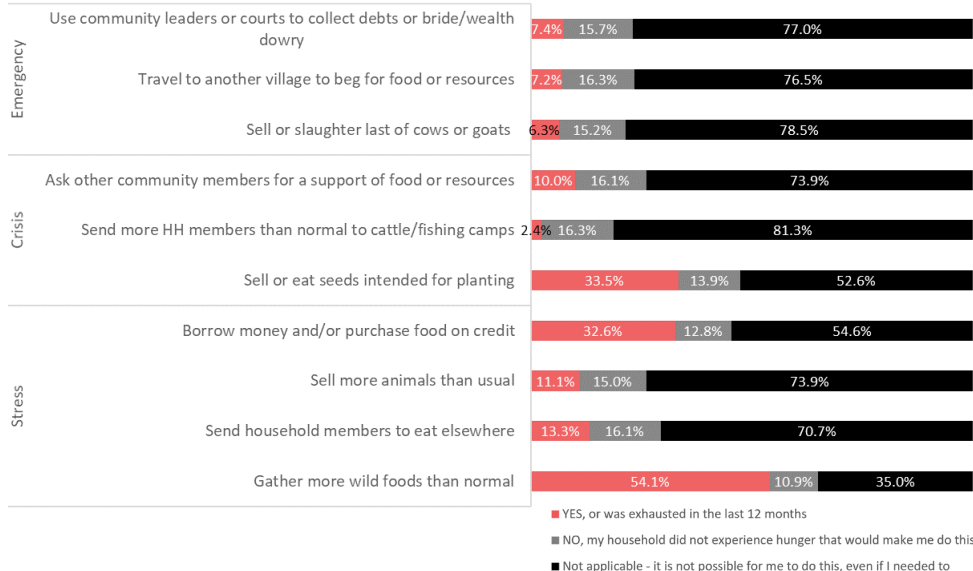
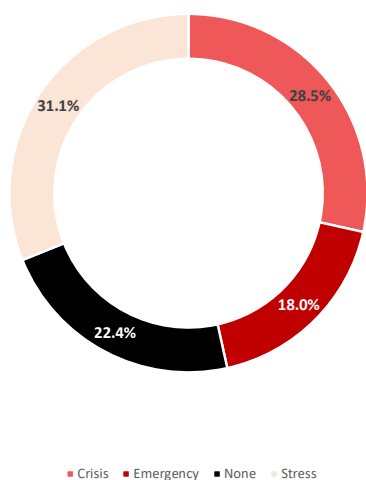
**Figure 11: % of households by reduced coping strategies index**



**Figure 13: % of households by household hunger scale**



**Figure 14 and 15: % of households by Livelihoods coping strategies category and coping behaviour**



power - gathering wild foods more than normal for this time of year (stress, 32.7%), and selling or eating seeds intended for planting this season (crisis, 26.6%). While LCS are typically contextualised to the assessment area, it should be noted that most of the LCS assessed are more applicable to rural areas as opposed to urban areas such as Aweil town, therefore severe coping within the town may not be reflected in the results.

When examining the data at HH level, pockets of severely food insecure households were found in Arroyo, Barmayen and Awada payams based on the convergence of FCS, rCSI, HHS and LCS. Of these food insecure areas, clusters in Arroyo payam demonstrated an indicatively higher GAM by WHZ prevalence compared to the rest of rural Aweil Centre (17.6%), suggesting food insecurity in this area may be related to increased malnutrition outcomes.

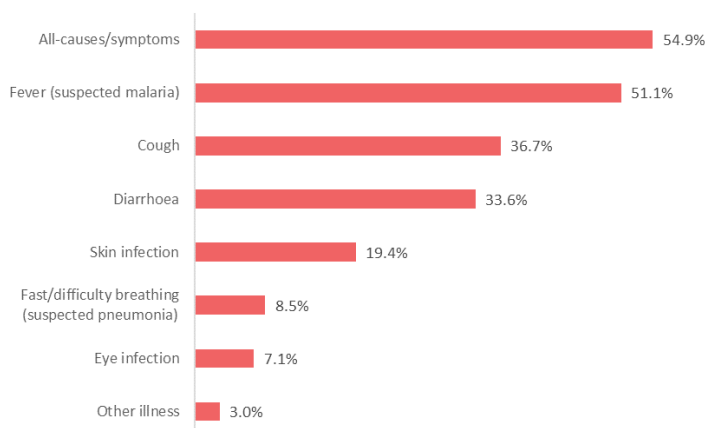
Overall, the food security outcome indicators suggest that HHs in Aweil Centre were experiencing high levels of food insecurity, primarily driven by seasonal depletion of food stocks and limited financial access to food. Additionally, climatic shocks were reported to have immediate effects on HH access to livelihoods, as crops were reportedly destroyed due to floods, as well as medium term consequences on HH food availability and accessibility, due to below average crop yields. The likely subsequent decrease in supply and increase in demand, likely added additional stress on markets.

## WASH and Health Environment

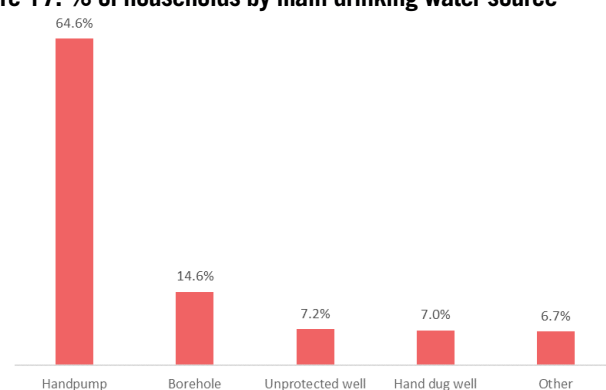
The UNICEF conceptual framework<sup>26</sup> states that poor health and WASH environments can be underlying causes for malnutrition. A poor WASH environment can contribute to malnutrition by increasing exposure to pathogens and increasing the risk of illness. This can be due to a lack of safe and sufficient drinking water sources, a lack of sanitation facilities, and the creation of breeding grounds for disease vectors like mosquitos. In turn, poor access to primary care and preventative health services can contribute to more frequent and severe childhood illness in the population, driving acute malnutrition. Childhood illness can directly contribute to acute malnutrition by increasing a child's caloric and nutrient needs, decreasing absorption of nutrients, and reducing appetite<sup>27</sup>, factors that are, in turn, exacerbated by the poor access to health services.

In Aweil Centre county, a combination of the poor sanitation environments, repeated flooding, and low coverage of campaign services, such as Vitamin A supplementation and deworming treatment, have likely contributed to the very high childhood morbidity observed, which in turn increases the vulnerability to acute malnutrition<sup>26</sup>. More than half of children were reportedly ill in the two weeks prior to data collection (54.9%), with the most frequently reported symptoms being fever (51.1%), cough (36.7%) and diarrhoea (33.6%). Fever is often treated as a proxy for suspected malaria and fast/difficult breathing as a proxy for suspected pneumonia. Surprisingly, despite the high level of suspected malaria, most children 6-59 months had reportedly slept under a mosquito net the previous night, which may suggest nets are not treated with insecticides.

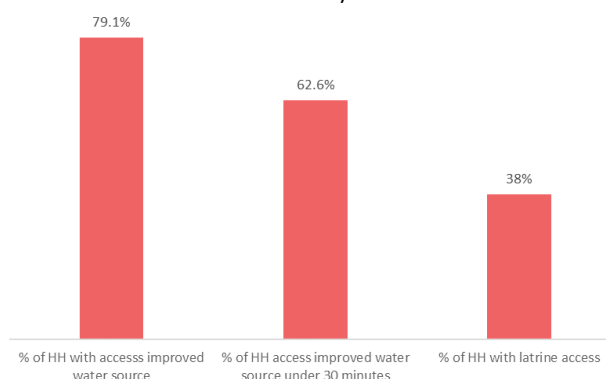
**Figure 16: % of children 6-59 months who were sick in the two weeks prior to data collection, by symptom reported**



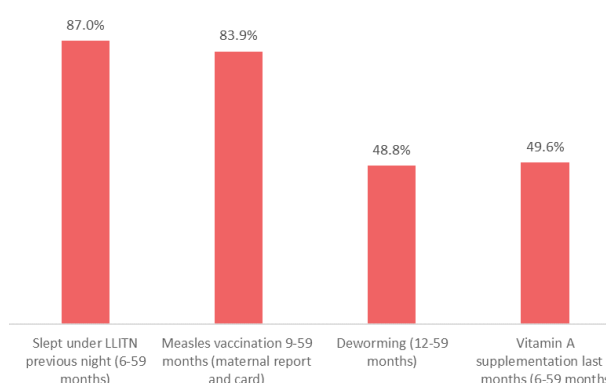
**Figure 17: % of households by main drinking water source**



**Figure 18: % households with access to improved water, access to improved water sources under 30min, latrine access**



**Figure 19: % of children accessing preventative health services or sleeping under a mosquito net the previous night**



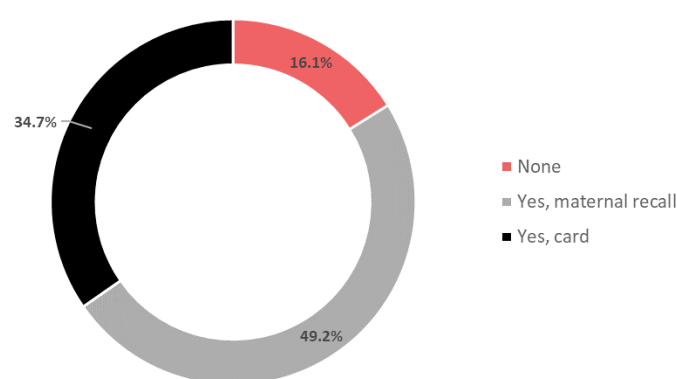
**Table 2: % of sick children 6-59 months old, by treatment sought and payam/area**

Treatment type sought	Overall	Arroyo/Chel South n = 39	Aulic n = 16	Awada n = 26	Aweil Town and Kuom n = 128	Barmayen/A lok n = 35	Maper Akot n = 52	Nyalath n = 33
None sought	17.6%	28.2%	6.3%	23.1%	12.5%	31.4%	17.3%	12.1%
Hospital	35.9%	2.6%	6.3%	0.0%	66.4%	0.0%	30.8%	45.5%
PHCC/PHCU	25.5%	35.9%	31.3%	65.4%	14.1%	54.3%	13.5%	12.1%
Mobile Clinic	8.2%	17.9%	6.3%	7.7%	3.1%	5.7%	21.2%	0.0%
Private physician/clinic	9.1%	0.0%	50.0%	3.8%	3.9%	2.9%	13.5%	24.2%
Traditional practitioner	1.8%	7.7%	0.0%	0.0%	0.0%	5.7%	0.0%	3.0%
iCCM	1.8%	7.7%	0.0%	0.0%	0.0%	0.0%	3.8%	3.0%

The poor WASH environment likely contributed to this high morbidity observed in Aweil Centre county. Access to both sufficient and potable water appeared to be moderate in Aweil Centre county, however the level of contamination of water sources was not assessed and may be affected due to recent flooding. HH water consumption was relatively low (9.9 liters per person per day), yet it was noted that most HHs were bathing and cleaning at the point of use, water use which was not captured by the questionnaire. Assessed water consumption is likely mainly representing collected and stored drinking water. Nearly four-fifths of assessed HHs reportedly had access to an improved water source (79.1%), such as hand pumps and tap stands, and the majority reported being able to access an improved water source within 30 minutes (62.6%). Other reported water sources included unprotected wells (7.2%), hand dug wells (7.0%), and swamps or other stagnant water (3.5%). HHs that reported not using improved sources were rural communities outside central villages such as Arroyo, Awada and Barmayen, as well as some assessed neighbourhoods in Aweil town including Malou Aweer, Maper North, Ayuung, Warkuach and New Site Village. In comparison, access to latrines was low with only slightly more than one-third of households reportedly able to access any type of latrine (38%), suggesting widespread open defecation. **This indicates that there is likely poor environmental sanitation due to widespread open defecation, and that flooding in June and July may have exacerbated the spread of pathogens to HHs and water sources.**

Access to primary health care, preventative services, and timely health seeking behaviour can help reduce the severity and duration of illness and mortality outcomes, and can prevent acute malnutrition. However in Aweil Centre, coverage of preventive services was low and some respondents reported non-optimal care seeking practices, likely increasing the risk of preventable diseases and therefore the vulnerability of children to acute malnutrition. The majority of caregivers reported taking their child to either the hospital (35.9%), primary health care centre or unit (PHCC/PHCU) (25.5%), or mobile clinics (8.2%), with the remaining either not seeking treatment (17.6%) or going to a private physician or clinic (9.2%). The highest proportions of caregivers reporting not having sought treatment were found in Barmayen and Arroyo payams, while caregivers in Aweil town, Kuom, Maper Akot and Nyalath most

**Figure 20: % of children 9-59 months by source of measles vaccination reporting**



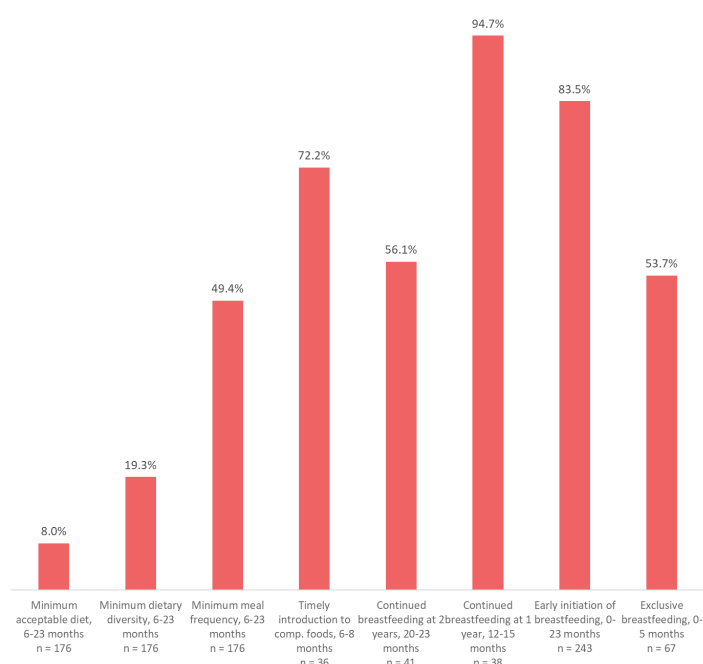
frequently reported having sought treatment at the hospital. Poor health seeking behaviours in the Barmayen and Arroyo payams could be related to access challenges during the rainy season, and to the fact that these communities are more spread out than those close to Aweil town, where static health facilities are more readily available. Less than half of age-appropriate children had reportedly received Vitamin A supplementation (49.6%) or deworming treatment (49.6%) in the previous 6 months, typically distributed in bi-annual national immunisation day (NID) campaigns. While most children 9-59 months had reportedly received measles vaccination (83.9%), only a third of children were confirmed by vaccination card (34.7%), far below the SPHERE recommended 95% coverage<sup>28</sup>.

The recent flooding may be promoting breeding grounds for mosquitoes, and causing unhygienic conditions as evidenced by the high prevalence of diarrhoea and skin disease. As flooding continues in communities throughout the rainy season, it is expected that the health and WASH environment will remain poor and exacerbate acute malnutrition in flood affected areas.

## Infant and Young Child Feeding (IYCF)

IYCF practices are the set of optimal breastfeeding and complementary feeding practices recommended by the WHO. A 24-hour recall was used to assess the food consumption and complementary feeding practices of children 6-23 months old. Due to small sample sizes, these IYCF results should be considered indicative for the survey population.

**Figure 21: Summary of key IYCF indicators**



Overall, breastfeeding practices were poor for children less than six months of age in Aweil Centre county, with only slightly more than half of children 0-5 months found to be exclusively breastfed<sup>29</sup> (61.7%), and a similar proportion of children under-two years reportedly being put to the breast within one hour of birth (58.7%)<sup>30</sup>. Both these practices are shown to reduce the risk of diarrhoeal diseases and illness in early life, which is particularly important given the lack of sanitation coupled with seasonal flooding. Continued breastfeeding at one year (94.7%) was acceptable, however continued breastfeeding dropped at two years of age (56.1%)<sup>31</sup>. To promote proper growth and development and to ensure children are meeting their caloric/nutrient needs, it is recommended to continue breastfeeding children until two years old, and to complement with weaning foods<sup>31</sup>.

Complementary feeding practices were poor, suggesting children under two years were not getting the quantity and quality of foods needed for proper growth and development at the time of data collection. Approximately only half of the sampled children were found to be receiving the recommended amount of meals each day (49.4%), and an even smaller proportion was found to be meeting the minimum acceptable dietary diversity (19.3%). The majority of children aged 6-8 months were reportedly consuming soft or semi-solid foods (72.2%), which is an indication of timely introduction of complementary foods.

Poor IYCF practices can increase exposure to pathogens as well as decrease nutrient intake and utilisation, causing increased risk of diminished growth and development, and increased morbidity. Sub-optimal practices at the time of data collection could be related to HH food insecurity, which may cause caregivers to have less time to provide care or breastfeeding to the child. Poor HH food security may also make less preferred foods more relied on and reduce meal sizes for the child.

## Conclusion

The prevalence of GAM in Aweil Centre is 'Very High' by WHO thresholds, and is worse than last year in rural areas. The high GAM is most likely due to a combination of high morbidity related to poor health and WASH environments, and food insecurity at the peak of the lean season. Flooding in Aweil Centre in June and July not only increased the risk of water-borne and vector-borne illnesses and decreased access to health services, but has also damaged crops and disrupted livelihoods, further reducing food availability. HHs in and surrounding Aweil town are subject to seasonal and irregular price hikes causing challenges in financial access to food. Arroyo and Barmayen payams, and their surrounding communities, were areas of particular concern as evidence suggested there may be pockets of food insecurity, with Arroyo also demonstrating an indicatively higher prevalence of acute malnutrition.

Based on the findings, Medair drafted a list of recommendations to inform humanitarian actors in Aweil Centre county:

- In view of the poor food security situation, continue general food distributions and expand target groups, particularly in Barmayen and Arroyo payams.
- Restore the BSFP targeting both children under-5 years and PLWs (BSFP not done this year 2019 in Aweil Centre)
- Nutrition partners continue to target hard-to-reach areas and improving the coverage by expansion of community active screening practices/activities
- Health strengthening system partner to improve access to primary health care and improve coverage of measles and other vaccine-preventable diseases
- Increase opportunities for linkage of nutrition patients with food security and livelihoods
- Follow up market assessments to determine feasibility of alternative food security and livelihoods interventions.

## Footnotes

1 Global acute malnutrition (GAM) is the proportion or prevalence of acute malnutrition in a population, including both severe acute malnutrition (SAM) and moderate acute malnutrition (MAM). GAM is typically determined as the proportion of children 6-59 months using weight-for-height z-scores (WHZ) of less than -2 (wasting or marasmus), or the presence of bilateral pitting oedema (kwashiorkor), which is an abnormal swelling of the feet associated with severe acute malnutrition. A child is classified as MAM if they have a WHZ greater than equal to -3 and less than -2. A child is classified as SAM if they have a WHZ of <-3 or the presence of bilateral pitting oedema. GAM is determined from the proportion of all children 6-59 months with either MAM or SAM out of all children 6-59 months.

2 The management of nutrition in major emergencies. WHO. 2000.

3 Flood displaces residents in Aweil. Jumbamonitor.com. Published 08/08/2019. Accessed: 06/09/2019

4 Emergency Plan of Action (EPoA) South Sudan: Floods. 22 June 2019.

5 Standardized Methodology for Assessment in Relief and Transition (SMART). More information on SMART can be found here.

6 South Sudan SMART Survey Matrix.

7 IPC Analysis Workshop, South Sudan, September 2019

8 Livelihoods Zone Map and Descriptions for The Republic of South Sudan (Updated). FEWSNET. August 2018.

9 Food consumption score (FCS) is an indicator of the general quantity and quality of foods being consumed in a household, based on how many days any household members have consumed 9 distinct food groups within a 7 day recall period. Households are categorized into categories of severity based on their responses. FCS is often used as a proxy for quality of food consumed. Standard FCS thresholds are <21 for 'poor', 21-<=35 for 'borderline' and 35+ for 'acceptable'. Elevated thresholds were used for this survey. More information on FCS can be found here.

10 Reduced Coping Strategies Index (rCSI) measures a household's experience of coping with food insecurity by asking the frequency of five universal coping strategies over a 7 day recall period. rCSI is often used as a proxy for quantity of food consumed. Thresholds and categories used for analysis are those used for IPC AFI in South Sudan. More information on rCSI can be found here.

11 Household hunger scale (HHS) measures the perceived hunger by asking the frequency a household has experienced three common experiences associated with hunger in the past 30 days (no food in the house, slept hungry, gone whole day and night without food). HHS is often used as a proxy for quantity of food consumed. Thresholds and categories used for analysis are those used for IPC AFI in South Sudan. More information on HHS can be found here.

12 FEWSNET Matrix Analysis. July 2019

13 Population estimate based on mass MUAC screenings and mass measles campaign data from August 2018.

14 OTP services are used to provide outpatient nutrition treatment for severely acutely malnourished children.

15 TSFP services are used to provide outpatient, preventative nutrition treatment for moderately acutely malnourished children.

16 Prevalence thresholds for wasting, overweight and stunting in children under 5 years. Mercedes de Onis et al. Public Health Nutrition. August 2018.

17 Mid-upper arm circumference (MUAC) is one anthropometric measure used to determine the nutritional status of a child, where the circumference around the mid-point of the left arm is measured. If MUAC is <11.5cm, the child is considered SAM, and if between 11.5 - <12.5cm then the child is classified with moderate acute malnutrition (MAM).

18 Age dependency ratios show the ratio of dependent household members who are either children (<18 years) or elderly (>65 years) of all household members. A high proportion suggests there are fewer productive members supporting the household. For this analysis, a household was classified with a high age-dependency ratio if it was 75% or greater.

19 Design effect is a measure of clustering of survey results and is used in nutrition surveys to assess the clustering of cases of malnutrition.

20 CLIMIS, Rainfall Data South Sudan. August 2019

21 A malwa is a unit of measure approximately equivalent to 3.5kg.

22 CLIMIS, Market Prices South Sudan. August 2019

23 Household dietary diversity score (HDDS) gives a proxy indication of a household's economic access to a variety of foods asking if anyone in the household has accessed 12 distinct food groups within a 24 hour recall period. Households are categorized into categories of severity based on their responses. HDDS is often used as a proxy for quality of food consumed. Thresholds used for analysis are those used for IPC AFI in South Sudan. More information on HDDS can be found here.

24 Shocks are abnormal events that can negatively impact a household's ability to access food or household resilience, and were assessed for the last 6 months prior to data collection.

25 Livelihood coping strategies measure what extreme behaviours households are utilizing to access food or resources within the past 30 days. A household is categorized as 'none', 'stress', 'crisis' or 'emergency' based on the most extreme strategy reported out of a list of 10 coping strategies. The following strategies were classified as 'stress', (a) gathering wild foods more than normal for this time of year, (b) sending household members to eat elsewhere, (c) selling more animals than usual, (d) borrowing money or purchasing food on credit; 'crisis' strategies included (e) selling or eating seeds intended for planting this season, (f) sending more household members than normal to cattle or fishing camps, (g) asking other community members for a support of food; and 'emergency' included (h) selling or slaughtering the last of your cows and goats, (i) traveling to another village to beg for food or other resources, (j) use community leaders or a local court to collect debts or bride wealth/dowry, or to gain a support of food or other resources from another community member.

26 The UNICEF Conceptual Framework on Causes of Malnutrition was developed in 1990, and provides an explanatory framework for understanding the immediate, underlying and basic causes of malnutrition.

27 The Harmonized Training Package. Module 8 Health assessment and the link with nutrition. Part 2: Technical Notes.

28 The Sphere Handbook. Humanitarian Charter and Minimum Standards in Humanitarian Response. 2018 Edition.

29 Exclusive breastfeeding is when a child only receives breastmilk for the first 6 months of life, excluding foods, water or any other liquids, and has been shown to decrease the risk of diarrhoeal diseases in children in this age group. (Essential Nutrition Actions: Improving Maternal, Newborn, Infant and Young Child Health and Nutrition. WHO. 2013).

30 Early initiation of breastfeeding within the first hour after a child is born is recommended in order to promote the consumption of colostrum, keep the child warm after birth and the development of the mother-child bond. (Essential Nutrition Actions: Improving Maternal, Newborn, Infant and Young Child Health and Nutrition. WHO. 2013)

31 Continued breastfeeding is recommended up to 2 years of age or beyond to ensure the child is getting adequate energy and nutrients for optimal growth and development. Continued breastfeeding at one year is assessed by whether children 12-15 months had breastmilk the previous day, and continued breastfeeding at two years by whether children 20-23 months had breastmilk the previous day. (Essential Nutrition Actions: Improving Maternal, Newborn, Infant and Young Child Health and Nutrition. WHO. 2013)

## About REACH

REACH is a leading humanitarian information provider that uses primary data collection and in-depth analysis as tools to enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development settings.

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