



SOUTH DARFUR EMERGENCY ASSISTANCE AND RECOVERY PROGRAMME

Knowledge, Attitudes and Practices Baseline
January 2017



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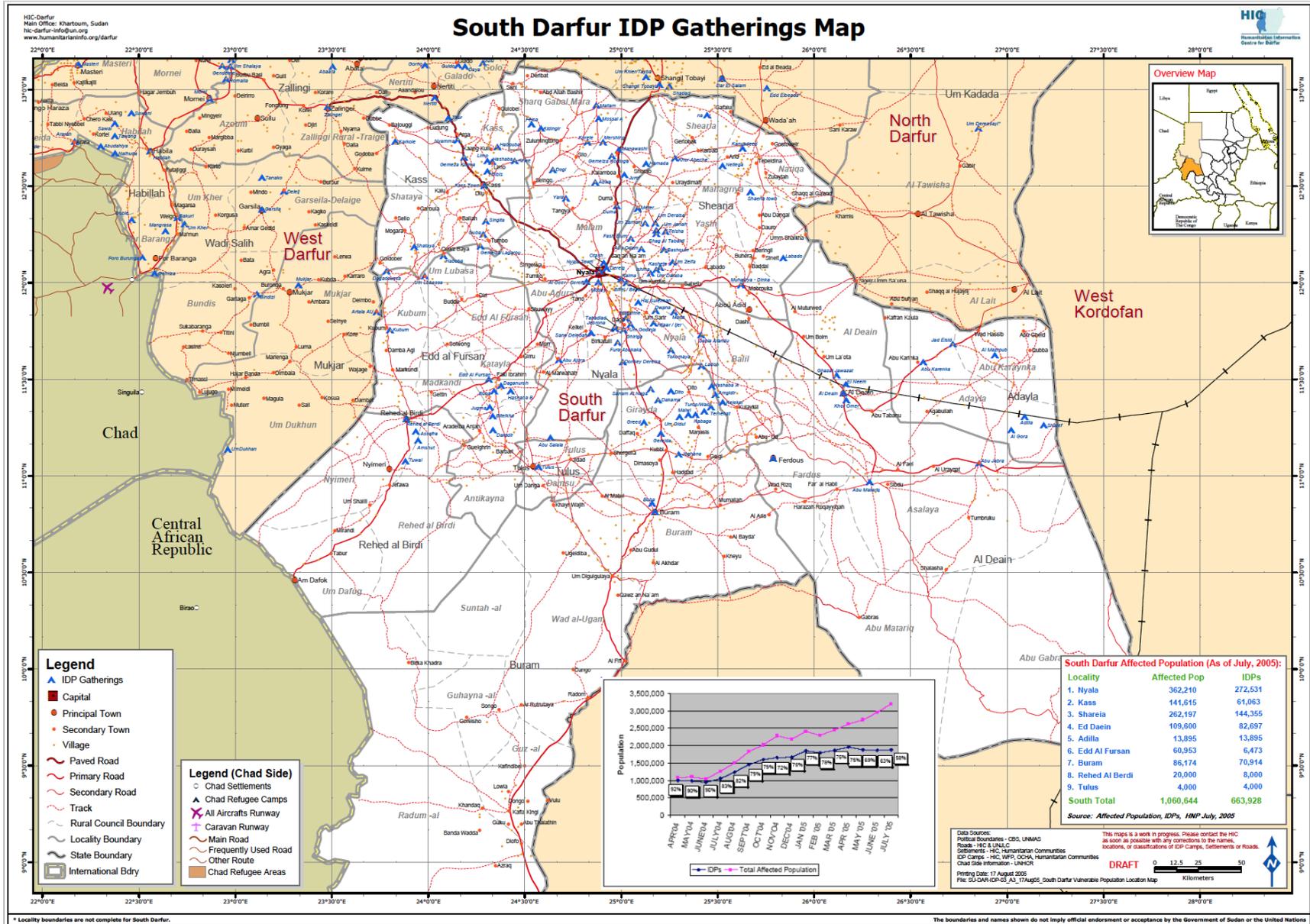
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Acronyms

CIS	CARE International Switzerland
CPA	Comprehensive Peace Agreement
FGD	Focus Group Discussion
GoS	Government of Sudan
HH	Household
IDP	Internally Displaced Person
KAP	Knowledge, Attitudes and Practices
KII	Key Informant Interview
PHCC	Primary Health Care Centre
UN	United Nations
WASH	Water, Sanitation and Hygiene
WUC	Water User Committee

Map





Executive Summary

Care International Switzerland (CIS) has been operating in South Darfur since 2009, providing emergency and early recovery interventions in water, sanitation and hygiene (WASH), health and nutrition. The current South Darfur Emergency Assistance and Recovery Program focuses specifically on these three sectors, and aims to provide services to the most vulnerable in Assalaya, Kalma, Kass, Gereida and Kubum IDP camps in South and East Darfur. This baseline evaluation survey of existing Knowledge, Attitude, and Practices (KAP) was conducted in order to guide and develop behaviour changes in the three intervention areas, as well as learn from previous project efforts. To this end, a mixed approach of quantitative and qualitative methods was used.

Water, Sanitation and Hygiene

In the area of WASH, varying degrees of knowledge among respondents were found regarding the safety of various water sources. Tap stands, hands pumps and protected wells are frequently used and preferred, but due to sufficiency issues unprotected wells and Wadi water are also common. **Issues found at multiple water sources are queue times of several hours due to overcrowding and livestock being watered at the drinking water points.** Also, due to the quantity of water and ability to store it, access to safe sources does not directly lead to higher consumption. **Only 36.70% (n=109) consume 15 litres or more water per day from safe water sources.** Besides the health risks stemming from unsafe water, people fetching water face considerable physical safety risks in many of programming areas. Respondents with access to safe water sources did generally not take steps to enhance water quality, contrary to respondents who had access to unsafe water sources, who did treat water prior to drinking it. Beyond this, the knowledge among respondents on what constitutes dirty water was most commonly limited to observable dirt (81.19%, n=82) rather than unseen bacteria, and the treatment methods were often relatively ineffective ones such as pouring the water through a cloth (46.53%, n=47). Of respondents who did not treat water, 77.84% (n=151) thought this was not necessary, while 13.40% (n=26) did not have the material to do so. **This suggests that the lack of water treatment is a knowledge issue.**

Although respondents overall demonstrate moderate to high levels of knowledge of water-related health risks, they are lacking in some areas, especially regarding the proper storage of water. A gap in the understanding of how poor water storage and container cleaning habits is likely a result of a combined lack of understanding of water contamination mechanisms after the source and a poor understanding of the negative health consequences, as knowledge of water-related diseases remains low. However, respondents displayed a positive attitude and openness towards change, as they indicated they were in need of additional training. This is evidenced by the qualitative data, wherein respondents indicate that community members are unaware of good WASH practices, and that training on these topics is necessary. Data furthermore suggests that knowledge of water management structures such as the water user committees (WUC) is low, and that they are not always viewed in a positive light. For example, of those who are aware of a WUC in their community, 89.34% (n=109) think it is useful or very useful, 29.51% (n=36) are unsatisfied, very unsatisfied or neutral about the information given about the WUC. Similarly, 45.08% (n=55) is unsatisfied, very unsatisfied or neutral about the way the WUC is managed. **The negative attitudes towards these committees translate in their non-use, and as a result the committees are often not fully utilized by residents.** In order to realize

behaviour change in this area, further transparency in the roles and responsibilities of the committee, as well as the recruitment and training of its members, is advisable.

Respondents are very concerned about inappropriate waste disposal and collection, citing health and safety risks to women and children. For example, insufficient latrines that led to overcrowding and unsanitary conditions had resulted in women needing to defecate in unsafe areas and conditions, such as in the bush or at night. Children on the other hand, were reported to frequently play in landfills, risking disease and illness. These unsafe practices, combined with good knowledge of the risks, resulted in a high perceived need and willingness to tackle these issues. For example, respondents called for training and education in constructing and maintaining sanitation facilities. In this case, the knowledge and attitudes are highly supportive of stronger programming in the sector. Finally, hygiene promotion was met with mixed reactions. Although message recall rates were high, the correlation with action was not straightforward. For some hygiene messages, for instance in relation to the use of soap, resource constraints were again found to be a prohibitive barrier for some households in adopting the practice. More material resource distribution may assist in translating the increased knowledge into actions.

Health and Illness

Knowledge of respondents' regarding health and illness was moderate. Respondents were somewhat aware of the reasons of various illnesses that were prevalent in the area, but generally preferred to try to treat illnesses themselves before visiting a professional. This was due to challenges they faced at the clinics, such as overcrowding, queue time, and a lack of qualified staff. At the same time, respondents demonstrated weak knowledge of how to appropriately deal with certain illnesses, such as diarrhoea. However, clinics, hospitals and primary health care centres were still the go-to point for health care in the event a child fell sick – this was the same for all areas. The main barriers to not using health care facilities were not knowledge- or attitude-related. Instead, previous negative experiences with the centres deter users and had made them cynical of the centres' abilities to deliver good care. Across the board, the capabilities of community health workers and other staff were strongly criticized due to a perceived lack of training and inability to treat more complex illnesses.

Knowledge gaps were evident in all areas. For example, few respondents were able to identify multiple causes of diarrhoea, and less than half was able to identify correct treatment of diarrhoea. Of respondents who indicated a household member had been sick with diarrhoea in the last month, 43.88% (n=43) said they should receive much more or somewhat more water, and 42.85% (n=42) said they should receive much more or somewhat more food. CIS project areas such as Kass did not perform significantly better than other areas where other health providers are providing similar services. We find similar gaps in attitude, where for example not washing hands is not always considered to be a health risk: 24.24% (n=72) considered a child getting sick from them not washing their hands to be only somewhat serious, and 31.99% (n=95) thought waterborne diseases were not at all or somewhat serious. But despite receiving hygiene promotion messages on multiple topics, respondents were not always able to translate these into good practices, mostly again due to a lack of resources and materials.

Nutrition

Specific attention was given to nutrition. Although respondents have high levels of knowledge of the benefits of a varied diet, they are often unable to translate this into good practices due to resources

constraints: lacking money or the land to farm food themselves. Due to the health risks associated with malnutrition, respondents were also asked about recognizing and treating the symptoms of malnutrition. Similar to the WASH findings, respondents were able to identify the most obvious symptoms of malnutrition, but unable to identify the less obvious ones, such as a lack of menstruation. For example, while 37.37% (n=111) identified fatigue or low energy as a symptom, 40.07% (n=119) said somebody being thin was also a symptom of malnutrition – although this is not a reliable indicator for malnutrition. Meanwhile, only 8.42% (n=25) correctly identified oedema as a symptom, and only 1.68% (n=5) identified a lack of menstruation in girls as a symptom. However, respondents are aware of this knowledge gap, and are open to learning more. This is evidenced by the qualitative data, where community members say that they need more information on the diagnoses and treatment of malnutrition, as well as educating others on its seriousness.

Safe Motherhood and Family Planning

A key issue in health care is providing care to pregnant and breastfeeding women. During qualitative data collection we found that although many respondents agree that pregnant women should pay extra attention to their health, they often lack the resources to do so. As such, insufficient care for this group does not derive as much from knowledge or attitude issues, but of material obstacles in translating desire into practice. Fortunately, many women were able to enlist the help of skilled birth attendants, although qualitative interviewing suggested that some did not fully trust the newly trained midwives who were trained during the intervention – highlighting an attitude issue. The opportunity costs of seeking pre- and antenatal care were also considered to be too high, as this meant missing out on employment opportunities or falling behind on household chores. This suggests that the benefits from pre- and antenatal care are not fully appreciated by the households in the area.

Finally, family planning was subject to many knowledge gaps and attitude issues. Almost half the respondents who were aware of family planning did not use them because they believed they had unhealthy or unsafe side effects, such as infertility. Those who did practiced methods that varied across the locations, but tended to be traditional and unreliable, such as counting days and breastfeeding. Use of modern family planning methods remains rare, mainly due to the misconceptions of side effects. For example, of those who were aware of, and used family planning methods (18.52%, n=55), 16.00% (n=8) used birth control pills, 2.00% (n=1) used spermicide, and none of them used condoms.



1. Introduction

Care International Switzerland in Sudan (CIS) has been operational in South Darfur since 2009, with emergency and early recovery interventions in sectors such as water, sanitation and hygiene (WASH), Health and Nutrition, and Economic Empowerment. Through economic empowerment and other livelihood programs, CIS is addressing the needs of the most vulnerable populations in Darfur, particularly the internally displaced persons (IDPs) communities. There are several projects being undertaken in Darfur program including livelihoods diversification, health improvement, women empowerment (with regard to reproductive health and rights), civil society strengthening, business engagement of the youth and women, and promoting conflict resolution and mutual peaceful co-existence. The *South Darfur Emergency Assistance and Recovery Program* focuses specifically on reproductive health, nutrition, and WASH interventions.

As part of the program CIS is targeting the most vulnerable IDPs in Assalaya, Kalma, Kass, Gereida and Kubum IDP camps and host communities with IDP populations in South and East Darfur States. The project aims to continue the provision of life-saving support to 306,419 IDPs in South Darfur and East Darfur in the health, nutrition, and WASH sectors.

This program has three specific objectives, starting with increasing access to integrated primary and reproductive healthcare services, including emergency referral to secondary healthcare and community-based health promotion activities benefiting 195,174 IDP in host and rural communities. The second is the integrated management of acute malnutrition services, which include prevention, treatment and outreach services benefiting 78,173 IDPs in host and rural communities. The third is the provision of safe water, adequate sanitation services, and hygiene promotion interventions benefiting 291,539 IDPs.

2. Purpose of Assessment and Methodology

The following section provides an overview of the aim of the assessment and the methodology applied during data collection. It also discusses possible limitations that occurred during data collection and the way this possibly impacts data analysis and reporting.

2.1 Aim of Assessment

With the above in mind, the overall objective of the *South Darfur Emergency Assistance and Recovery Program* was to capture the existing Knowledge, Attitudes, and Practices (KAP) of women, men, boys, and girls in their daily living around the health, nutrition and WASH sectors. The findings of the KAP survey will guide and develop behaviour changes to be used by CIS and its partners, as well as document lessons learned and provide practical recommendations for future improvements.

In particular, the study had the following objectives:

- **Measure** the extent of current knowledge on the health, nutrition, and WASH sectors within a given community; explore hypotheses or general beliefs; provide a realistic overview of the



situation;

- **Enhance** the knowledge, attitude, and practices of specific themes of the project; identify what is known and done about various aspects of the sectors in changing behaviour and practice;
- **Establish** baseline for use in future assessments and help measure current education activities' ability to change behaviour;
- **Develop** intervention strategies that reflect local circumstances and the cultural norms while incorporating behaviour change.

Finally, the assessment sought to provide information on the progress of existing projects set out by CIS in South Darfur. This included the provision of primary health care services and rural health services in Kass, which included the provision of maternal care and the training and supporting of community health care workers. These projects are described further in the relevant sections.

2.2 Methodology

For this study, Forcier Consulting applied both qualitative and quantitative tools. On-site visual observations were included in the quantitative questionnaire in order to confirm the presence or absence of specific items or facilities, such as the presence of soap used for hand washing. This approach allowed us to identify patterns and trends, as well as reduce bias from responses. Both household surveys and observations followed standardised question modules that included demographic, programmatic and section-specific topics on health, nutrition and WASH.

A sample size of 300 observations was set, with a 95% confidence level and a 5.66% margin of error. This sample size was considered sufficient for the purpose of this study, and is sufficiently sized to provide key baseline information and detect moderate level changes in targeted behaviours.

2.2.1 Quantitative Survey

Two teams of six enumerators, overseen by a Forcier Field Team Leader, conducted the quantitative Knowledge, Attitude, and Practice survey. A total of sixty surveys were planned with host and IDP households in Yassin, Assalaya, Kass, Kalma, and Kubum, leading to a total of 300 observations. The purpose of the KAP survey was to address the objective of assessing knowledge, attitude, and practice regarding health risks associated with poor hygiene management and behaviour in both the household and community level. A total of 309 observations were collected.

The KAP survey provided information on misconceptions or misunderstandings that may represent obstacles to the activities that CIS promotes and potential barriers to behaviour change. Additionally, it revealed existing good practices and norms that supplement the needed behaviour change for healthy community life. As such, it provides informative baseline information.

2.2.2 Qualitative Research

Qualitative interviews were conducted with multiple types of respondents in order to elicit narrative and in-depth information about the project activities. Two focus group discussions (FGD) and four key informant interviews (KII) were conducted per location, resulting in a total of 10 FGDs and 20 KIIs.



Participants in each location	
Focus Group Discussion	<ul style="list-style-type: none">• Males (IDP and Host Community members)• Females (IDP and Host Community Members)
Key Informant Interview	<ul style="list-style-type: none">• Community leader• Health Service staff member• Nutrition Worker• Hygiene Promoter

2.3 Limitations

Analysis in this report is limited by several factors. Although they are not detrimental to the validity of the findings in the report, focusing on the following elements could strengthen findings. These limitations arose from two sources: data limitations in the sample draw, especially regarding pregnant women, and broader issues in evaluation design, such as the lack of baseline evaluations for the project evaluation elements of previous, existing projects in South Darfur, or a comparison or control group to evaluate these findings against.

First, the number of pregnant women in the sample problematizes the generalizations made in the sections addressing maternal, prenatal and antenatal care. Due to the small number of pregnant women in the sample (11), drawing broad-based conclusions about their use of reproductive health clinics and barriers to the usage of these facilities. It is advisable that in future monitoring and evaluation efforts, a separate subsample be used to understand the challenges that this group faces.

Secondly, regarding the broader limitations of the evaluation, the lack of baseline information problematizes the evaluation of CIS' existing projects in South Darfur. This problematizes the attribution of changes in outcome indicators to project impact. Although respondents may report positive changes, statistical comparison is not possible.

2.4 Demographics

This section provides an overview of the characteristics of the sample population. Roughly sixty observations were collected in each location, with Kass, Kalma and Kubum in South Darfur being strictly IDP camps, and Assalaya and Yassin predominantly host communities. Background information collected on these locations confirms the presence of certain facilities and services in the location. It provides an overview of gender and educational attainment, employment and income, household size and food security.

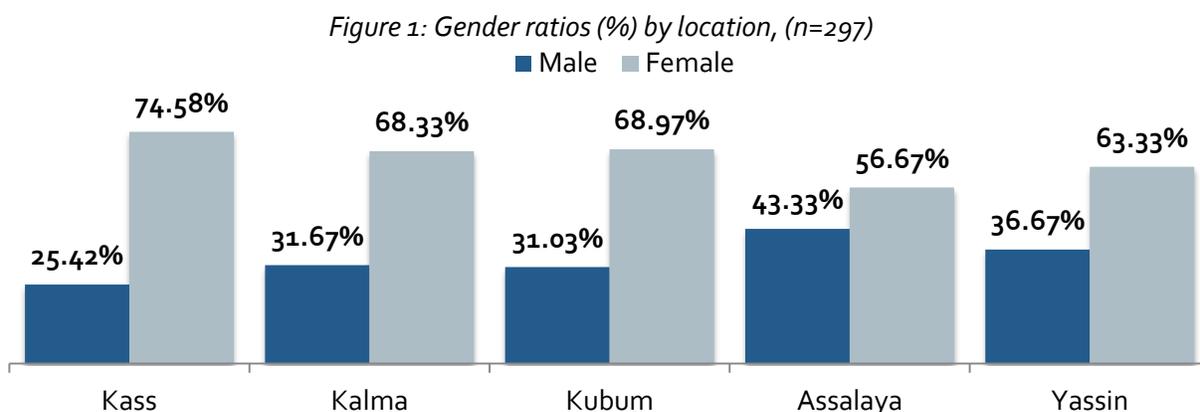
2.4.1 Gender and Education

Overall, the median age in the sample is 31 years old, with no significant differences between the five locations. This is within the expected range for random respondent selection, which also includes household heads. The most spoken language among respondents was Sudanese Arabic, spoken by 86.53% (n=257) of respondents. The other 13.47% (n=40) spoke Fur. Those speaking Fur tended to reside significantly more often in South Darfur, especially Kalma and Kubum. However, the number of



respondents who were a minority in their location was significantly higher in Assalaya and Yassin locations, where respectively 35% (n=21) and 40% (n=24) were identified as minority groups. Furthermore, the mean duration of their stay in an IDP camp was eleven years. This is not entirely surprising, considering that the Kass, Kubum and Kalma camps were established approximately twelve, six and three years ago, respectively. Considering also that residents in Kubum have extended land rights, it is likely that they establish themselves semi-permanently.

Although there are no significant differences in gender between the locations, the gender ratio is relatively skewed towards women. This is not uncommon in Darfur, where IDP camps tend to have larger populations of women, children and elderly. As can be seen in in figure 1, the ratios are slightly less skewed in Assalaya and Yassin.



The sample populations show significant differences in educational attainment, although to varying degrees depending on the category. For example, while 16.67% (n=10) of respondents in Assalaya completed secondary school compared to only 1.67% (n=1) in Kalma, residents in Kalma completed the highest level of religious education with 25.00% (n=15). This was only 13.79% (n=8) in Kalma. Gender appears to be a significant determinant for differences in education, as males appear to be more likely to have attained higher levels of education than women. For example, of the 17.85% (n=53) of respondents who had some primary school education, two-thirds were female. However, of the 6.40% (n=9) who completed secondary education, less than half were female. This finding is unsurprising considering the likelihood of girls dropping out of school, as they get older.

2.4.2 Employment and Income

Similarly to education, employment status among respondents is significantly different between locations and gender. While the unemployment level of residents in Kass, Kalma and Kubum hovers around 60%, it is 25% (n=15) in Assalaya, and 30% (n=18) in Yassin. Again, this is as expected considering that employment opportunities are limited within IDP camps, and that residents are usually strongly dependent on food rations and the distribution of non-food items. Furthermore, the majority of unemployed respondents are female, as 56.85% (n=112) of respondents are not currently employed, compared to 30.00% (n=30) of male respondents.

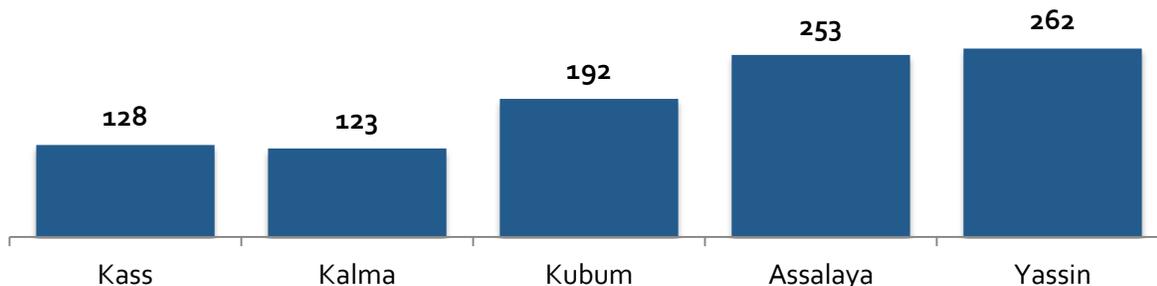
Gender disparities are also evident when comparing data for who the head of the household is. Of those surveyed, only 36.55% (n=72) of the women indicated that they were the head of the household,



compared to 73.00% (n=73) of the men. Of the 51.18% (n=152) of respondents who were not the head of the household, 90.79% (n=138) indicated that the head of the household was male. Again, this is not surprising considering that heads of households tend to be male, and that they might not be available during the day as they may be out for work (or out of the camp for labour migration). Those respondents also indicated that the heads of household are usually also employed, as 81.92% (n=123) held either casual, part-time permanent or full-time permanent labour. Other than themselves or the heads of the households, 77.44% (n=230) of the respondents indicated that there were no other members of the household currently employed. Those who were employed were engaged predominantly in casual labour. Again, these individuals were concentrated in the host communities Assalaya and Yassin.

Overall, 55.22% (n=164) of respondents' households were supported by one member in paid labour, with a reported mean income of 192 Sudanese pounds (SDG) per month, with mean incomes in Assalaya (208 SDG per month) and Yassin (262 SDG per month) being much higher than in Kass (128 SDG per month), Kalma (123 SDG per month) and Kubum (192 SDG per month). Residents from Kass and Kalma have very limited opportunities to earn wages outside the IDP camps, while the opportunities are more extensive in Kubum. This is reflected in the higher wages, as seen in the figure below.

Figure 2: Mean household monthly household income (in Sudanese pounds) by location, (n=297)



2.4.3 Household Size and Food Security

We find that there are no significant differences in household composition among respondents. The mean household size is reported to be 7, with on average one household member under five years old, two household members between five and 15 years old, three adults, and one person over 65 years old present in the household. 42 respondents (14.14%) indicated that there was a pregnant woman living in their household at the time of the survey, allowing for a sizeable sub-group to interview about safe motherhood and pre- and antenatal care.

Significant differences were found in term of food sources and availability. In line with what can be expected from an IDP camp, distributed rations and food bought from markets were the main sources of food in Kass, Kalma and Kubum, while in Assalaya and Yassin produced food and agriculture accounted as the main source of food more than half of the respondents. In Kass, Kalma and Kubum, over 95% of respondents indicated that they would need a lot more food to feed their household. Similarly, large numbers of respondents in these areas also expressed a frequent inability to get food from their main food sources. Qualitative data suggests that distribution of food rations has been



inconsistent, and that pressure on available resources has increased since a recent increase of IDPs. This increase was mentioned by residents from Kubum, who indicated that a flood in 2012 had led people from surrounding villages to move into the camps, which led to population growth. Floods during the rainy season are common, and plague large areas, including Kalma, every August.

3. Findings

The following section provides information on the knowledge, attitudes and practices in the sampled localities in South and East Darfur. It discusses various aspects of knowledge, attitudes and practices in the areas of water, sanitation and hygiene, nutrition, health and illness, and safe motherhood and family planning in depth, and provides recommendations where necessary.

3.1 Water

This section provides information on the knowledge, attitudes and practices of respondents in the various locations sampled. It focuses on environmental health, hygiene promotion, sanitation infrastructure and water supply infrastructure. To this end, it discusses various aspects of water, including quality, clean and protected sources and collection, consumption, treatment, storage and containers, water management and water-related diseases.

Key findings in these areas include that despite significant differences between locations in terms of access to safe and secure water sources; this does not directly translate into higher levels of water usage and water consumption. The availability of sources is found to influence with which persons in the household are available for fetching water. For example, when it is found to be unsafe for men to venture far outside the village or camp due to security concerns, this burden falls upon the females in the household. Even more often, children are made responsible for water collection. A lack of containers to store and carry water negatively impacted the water consumption of 56% of the people, as they cannot carry or store enough water, or need to make multiple trips.



Donkeys drinking from water source in Kass

Similarly, the availability of safe drinking water determines the number of people that treats their water. Respondents demonstrated relatively high levels of knowledge of different water treatment methods but faced obstacles to treating water due to a lack of resources and materials. Furthermore, maintenance of water points was also problematic due to a reported lack of spare parts and materials needed to fix broken water points and hand pumps. Maintenance of the water points was one of several water management tasks delegated to the community-led Water User Committees (WUC). However, throughout the surveyed areas, the WUCs operated with varying levels of satisfaction and transparency. In the locations of Kalma and Kubum, the WUCs were reportedly no longer active, or struggled with acceptance issues in the communities where their presence or authority was not accepted. In other cases, its members were reportedly unmotivated, presumably due to a lack of incentives. These issues problematized their effectiveness.

Knowledge, attitudes and practices of water-related diseases were also assessed. A key concerning finding in this area is that almost half of the respondents show poor knowledge: they are unable to make a connection between poor quality water and diarrhoea or dysentery. Knowledge of other diseases such as dysentery, cholera and typhoid was even lower, as was knowledge of vector-borne diseases such as malaria. However, respondents did recognize that children were more at risk of these issues – signalling the need for increased educational and awareness-raising efforts.



3.1.1 Water Sources and Collection

In order to understand the different habits and routines practices by respondents across the locations, various questions were asked about the sources of water used for drinking and household chores. It was found that the respondents in the IDP camps have better access to safe water sources compared to those in the host communities, largely due to better support from humanitarian and development actors. For example, while tap stands, hand pumps and protected wells were among the main sources of drink water for respondents in Kass, Kalma and Kubum, the majority of respondents in Assalaya and Yassin used sources considered unsafe as their main source of drink water.

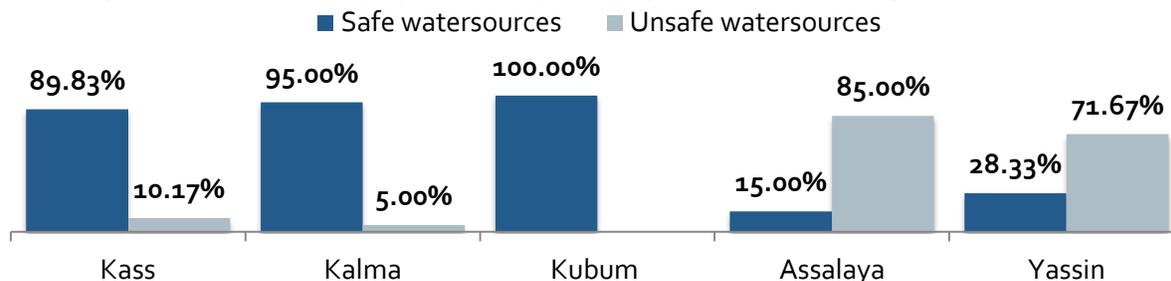


Women in Kass village walking towards the water point to fetch water

Overall, 65.66% (n=195) had access to safe drinking water sources. In Kass, 89.83% (n=53) used safe water sources, which was similarly high in Kalma (95.00%, n=57) and Kubum (100%, n=58). It should be noted that these percentages are unusually high, and are unlikely to be fully representative of the situation on the ground – and intermittent breakdowns of the sources mean that although the primary source may be a safe one, water is not always accessible from it. The groups of respondents fetching water from unsafe sources was much higher in the localities sampled in East Darfur: 85.00% (n=51) of respondents in Assalaya fetched water from unsafe water sources, as did 71.67% (n=43) of respondents from Yassin. Considering the often better-equipped facilities and services in IDP camps, this finding is not surprising, although there is a chance that respondents are also using other sources for drinking water, but did not report this. This potentially includes the use of unsafe water sources such as unprotected wells for drinking water, but this hypothesis was not confirmed at the time of data collection.

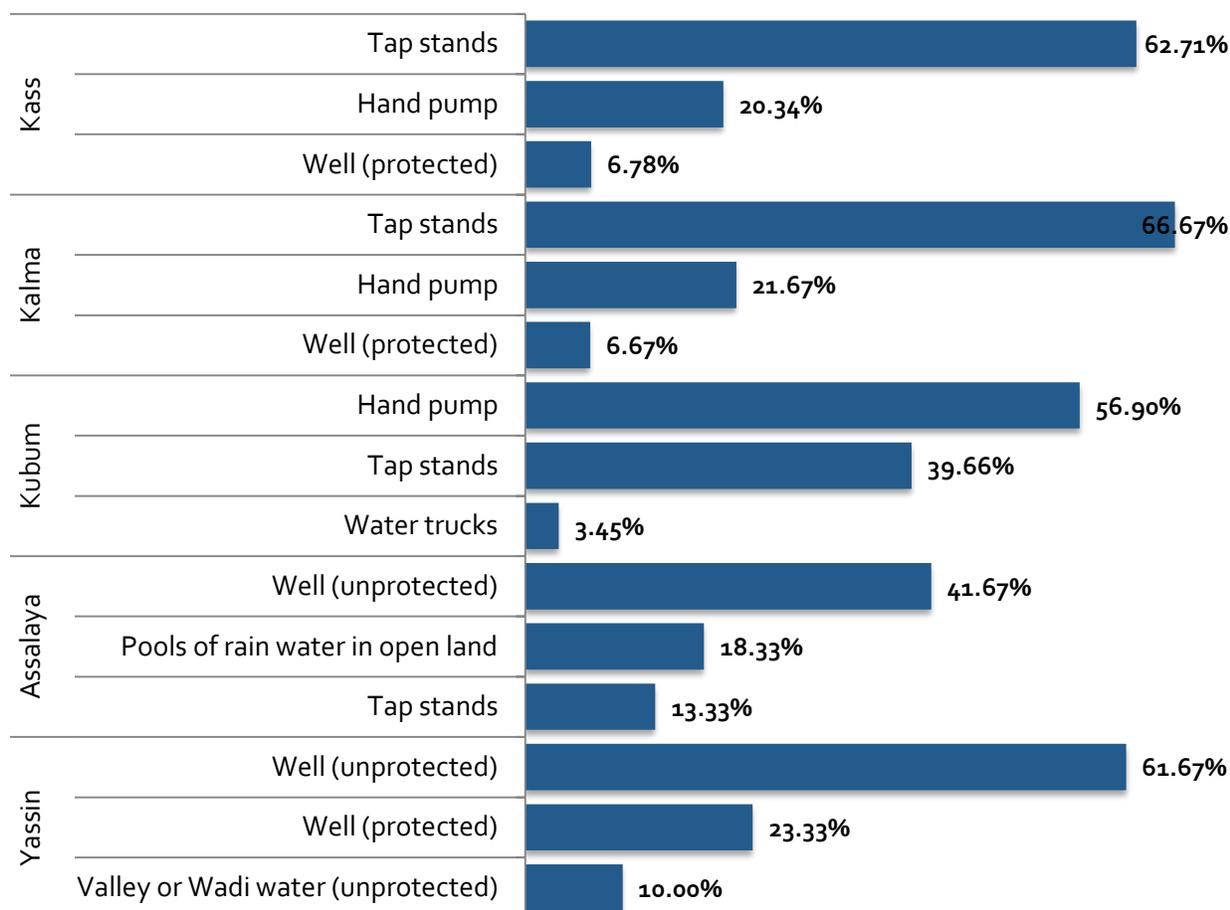


Figure 3: Reported use of safe and unsafe drinking water sources (%) by location, (n=297)



The figure below illustrates the three most cited main sources in each location. The Wadi water is available from June to October or November, and is commonly used for watering animals, washing and household chores, and sometimes as a source of drinking water.

Figure 4: Usage of three main sources of drinking water for the household (%) by location, (n=279)



During focus group discussions, respondents discussed water-related challenges they faced including overcrowding, long lines and long waiting times due to broken water points. In Yassin, wells were the main water sources, which were used for drinking, cooking, bathing, as well as for taking care of



livestock. The non-separation of humans and animals poses significant health risks. During the rainy season both people and livestock drink rainwater instead. The cost of water, at 6 pounders per barrel, was also considered to be high.¹



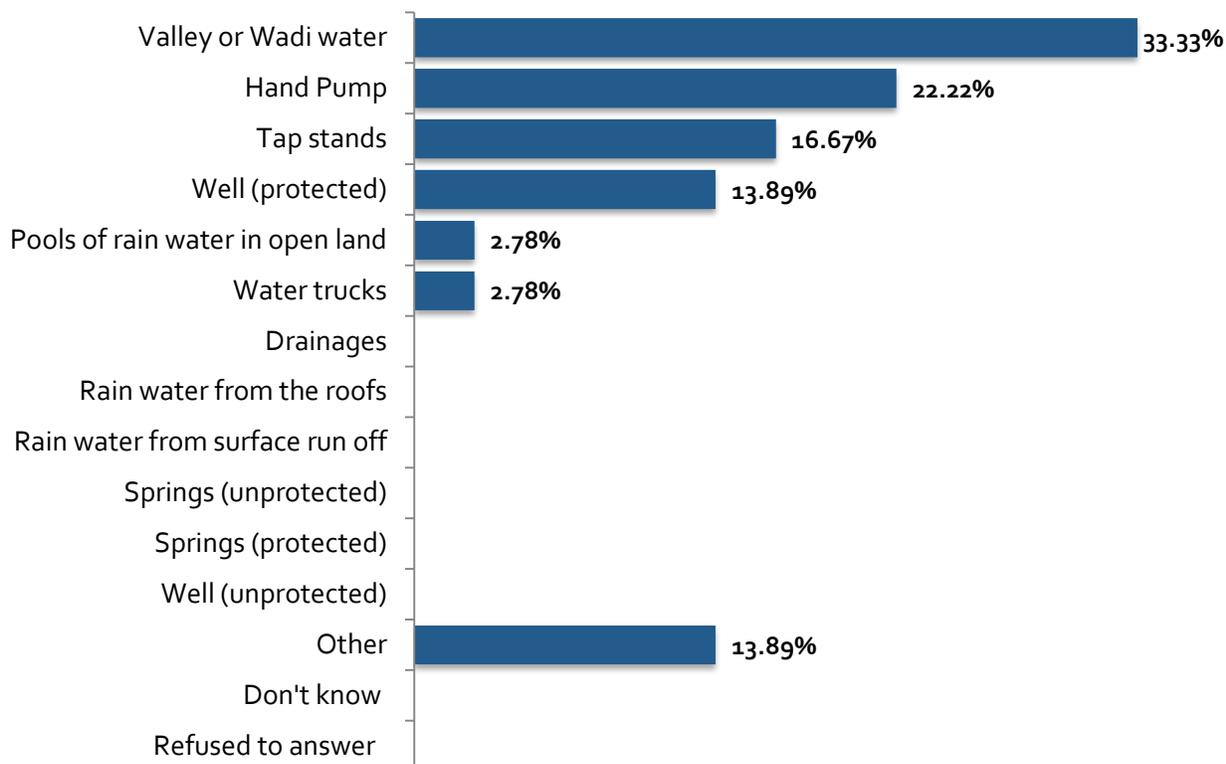
Young boy drinking from a tap stand in Kass

Overall, with the exception of Kass, respondents did not indicate using a second source for drinking water in the past 7 days. Respondents from Kass significantly more often indicated to use a different water source for laundry and cooking. These sources were mainly tap stands, hand pumps and river water. Considering the lack of flowing rivers in Darfur, river water is likely to refer to seasonal Wadi water. Overall, 12.12% (n=36) indicated that they had used such an additional source. The most used source for these household chores was river water, which does not appear to pose a direct health or safety risk to the respondents. We find that areas wherein respondents indicated they fetched water from pools of rain water are in need of possible drainage and vector control activities to mitigate risks.

¹ FGD with men. 3 December 2016. Yassin, East Darfur, Sudan; FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.



Figure 5: Use of second water sources for laundry and cooking (%), (n=36)



Respondents were also asked about who typically fetches water in their household, which differed significantly across the locations. In the IDP camps, a female in the household often did this: 52.54% (n=31) in Kass, 50.00% (n=30) in Kalma and 56.90% (n=33) in Kubum. This was slightly more diverse in Assalaya, where a male most frequently did this chore (33.33%, n=20), and in Yassin, by a male child (36.67%, n=22). In the IDP camps water is provided inside the camps, meaning community members do not have to travel outside the camps, but may face security risks if they do. In Assalaya and Yassin, people may walk outside the village to collect water if water points inside the village are not working, but may also face additional security risks when walking far. At this point, there is no evidence that certain types of households ask children to fetch water more than others.

The role of females in fetching water in the household is a traditional one, but continues to pose significant protection risks as women may encounter violence or generally unsafe situations on their way to the water point. While fetching water, women may not be able to find safe places to defecate and are inclined to fetch water at night, when the risk of assault or sexual harassment is higher. However, several women in the qualitative data indicated that despite this, they considered it safer for them to fetch water, as men traveling outside the villages would be at risk of attacks or violence. Men themselves did not elaborate on these possible risks, and no quantitative data was collected on the perceptions of safety and security during water fetching. However, it is not uncommon for men in South Darfur to be attacked due to an assumed affiliation to rebel movements. Furthermore, children responsible for fetching water usually find their education negatively affected by this responsibility. Respondents from Yassin illustrated this by saying:



"The community spends all their time in line for water, instead of doing their homework. This affects the education of children and the other work of men and women, and affects the financial situation."²

Children responsible for fetching water are more at risk of school drop out and poor school performance, considering that fetching water usually takes place during the day. The general availability of schools in the locations does not appear to impact the likelihood of children being responsible for fetching water, suggesting that there are other explanatory factors for this finding. For example, lack of public awareness and information about school enrolment, especially that of girls, or challenges at the schools such as overcrowding, high student to teacher ratios, or lack of WASH facilities at the school. Respondents did mention that not only do poor WASH facilities lead to displacement, but also that "many people are late for school or leave school early because they have to compete for water."³ Although this is not necessarily representative of the entire population, it is important to consider. Other respondents said that poor WASH facilities cause displacement of the communities, as competition for water leads to violence and creates problems between people.⁴ Competition for scarce resources such as water and WASH facilities can potentially escalate into larger unrest and conflict. It is suggested that these concerns are addressed in future programming. Although increasing the valuation of children's education in the population attitudes is important, improving the physical infrastructure is of key importance in reducing the effects of this chore for children.



Women in Kass doing laundry with a pool of water

² FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

³ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

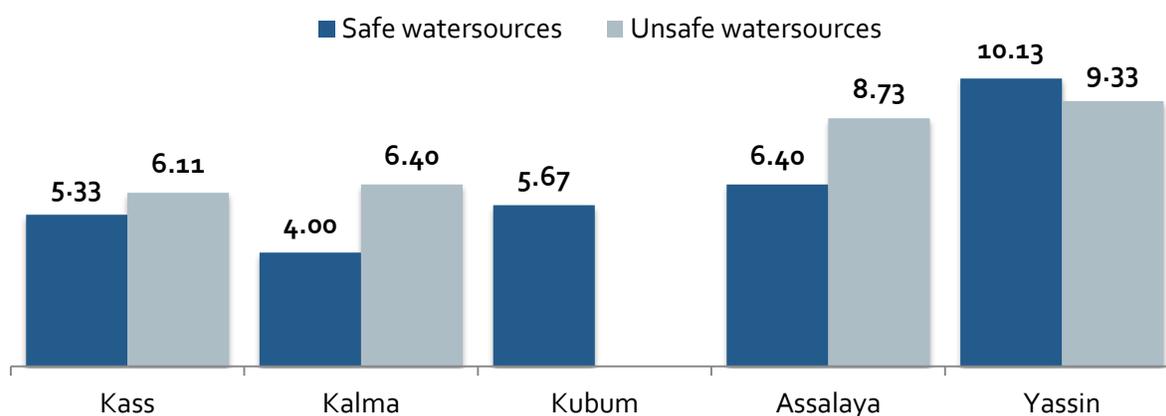
⁴ FGD with women. 1 December 2016. Assalaya, Assalaya, East Darfur, Sudan.



3.1.2 Water Consumption

In terms of water consumption, which was calculated by multiplying the number and size of water containers available to the household by the number of daily refills and dividing the total by the total number of household members, we find significant differences between locations. Considering that water consumption is not normally distributed, the median is used as a measure of central tendency. As such, we find that median water consumption per household member is 8 litres per day, well below the SPHERE standard of 15 litres per day. Overall, 70.41% (n=207) of respondents consumed less than 15 litres of water per day, while 65.32% (n=194) had access to safe water sources. We also found significant differences in consumption per location, as is illustrated in the figure below. For this graph, analysis was limited to respondents owning between one and six containers per household, which were all 16 litres in size, with the assumption that these were filled once per day. Eliminating the use of water for other purposes such as watering livestock was excluded. The results were checked against the observations of team leaders, who confirmed the likelihood of our findings.

Figure 6: Daily water consumption in litres from safe and unsafe water sources, in litres, by location (n=294)



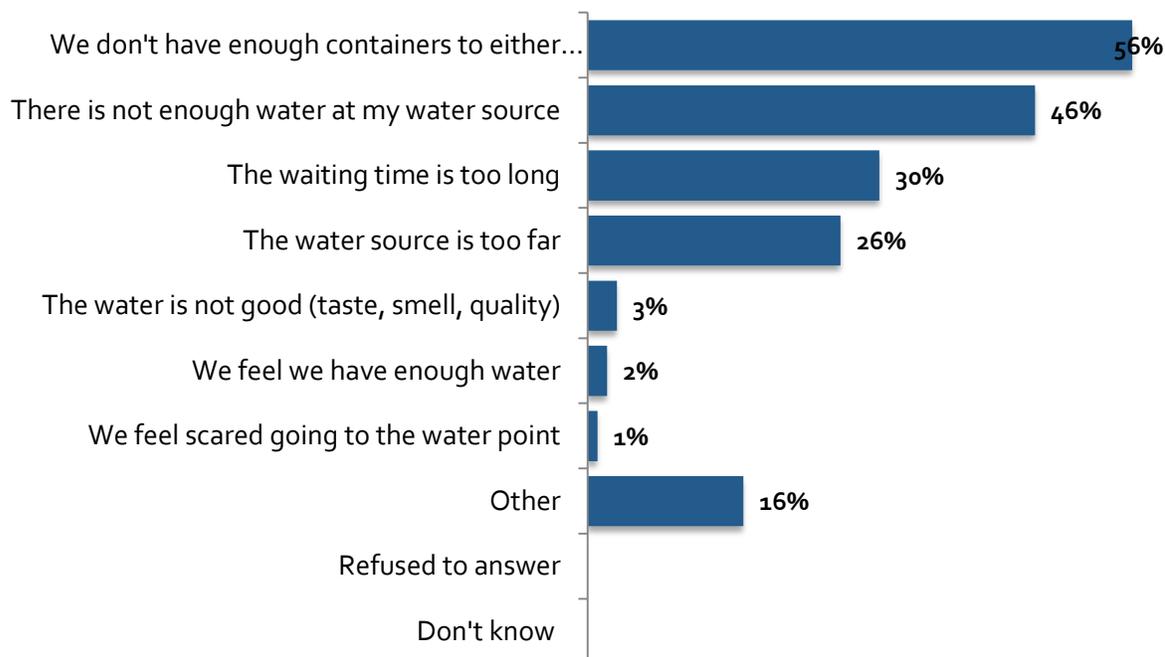
Households with daily water consumption per household member of less than 15 litres regardless of the source were asked about reasons for this low consumption. The most cited reason for low consumption was a lack of suitable containers for storing or carrying water, a reason that was significantly more cited by respondents residing in IDP camps than in host communities. Queue time was frequently cited as a reason, often being several hours. For respondents in the IDP camps, long waiting times were also often cited as an obstacle to collecting sufficient water for their households. This finding suggests that not only do IDPs in this sample lack suitable containers to collect and store water, but that they also face issues of long waiting times and possible overcrowding at the water points in the camp.

On the other hand, respondents from the host communities significantly more often cited the taste, smell or quality of the water as a reason for their households' low water consumption. This is in line with the earlier finding regarding the use of unsafe water sources in Assalaya and Yassin. The lack of containers was also mentioned several times during focus group discussions, as "people don't have



sufficient containers to keep the water for many days.”⁵ This finding is also supported by the quantitative data, and suggests that a relatively small investment – providing additional containers to store and carry water – could improve water consumption levels and decrease contamination risks. However, this would not increase the amount of water at the source itself. Providing households with the capacity to fetch more water in one go would likely lead to longer queue times.

Figure 7: Reasons for low water consumption (%), multiple response (n=100)



3.1.3 Water Treatment

By assessing existing practices, knowledge and attitudes regarding water treatment, we are able to enhance our understanding of the challenges that respondents face when consuming water. As such, respondents were asked whether they or somebody else in their household usually treated the drink water prior to drinking it. 65.32% (n=194) indicated they did not, while 34.01% (n=101) did. Again, significant differences are visible between the locations.

The three locations that had good access to safe water sources didn't generally treat their water. In Kass, 22.03% (n=13) treated their water, while 16.67% (n=10) in Kalma and 12.07% (n=7) did so in Kubum. In Assalaya and Yassin, where respondents had significantly less access to safe drink water sources, the percentage of respondents who indicated treating their water was much higher. In Assalaya, 68.33% (n=41) treated their drinking water, while 50.00% (n=30) did so in Yassin. This finding suggests that the respondents are generally somewhat aware of the safety and cleanliness of their water sources, and can identify and differentiate between different water sources. However, there is

⁵ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.



still a significant proportion of households that does not treat water from unsafe sources. While some lack the knowledge of how to do so, for others this is an attitude issue, as they do not believe it is necessary. Beyond this, water assumed as safe left untreated in the IDP camps may cause issues in cases of contaminations.

Those who indicated treating their water were subsequently asked how they treated their water. The most practiced method of water treatment was to filter it with a piece of cloth, a method that was practiced by 46.53% (n=47) of the respondents, but which is not the most effective. The second most practiced method was to let the water stand to get rid of sediments, which was practiced by 26.73% (n=27) of respondents, closely followed by boiling the water, which 25.74% (n=26) of respondents did.

Several ways of treating water were practiced more significantly in certain locations than others. Boiling was practiced significantly more often by respondents from Kass, Kalma and Kubum, while solar disinfection and letting water stand to get rid of the sediments were significantly more often practices in Assalaya and Yassin. In Assalaya, in addition to using cloth filters or leaving water to filter, residents also added salt and nutmeg to dirty water, which they believed reduced the health risks. While many respondents identified boiling water prior to drinking it as the most effective treatment method, they were often unable to practice this method as the cost of coal was simply too high.⁶

Figure 8: Common methods of drinking water treatment (%), multiple response, (n=101)



Respondents who treated the water were asked about the reasons why they treated the water. The most frequently cited reason was that the drinking water was contaminated with dirt (81.19%, n=82). Less obvious reasons than “dirty looking water,” were cited much less often. This suggests that respondents associate clear water with clean water, and dirt in the water with dirty water. This finding indicates a knowledge issue in this area. However, respondents from the East Darfur localities cited several reasons significantly more often than those from the South Darfur localities. Respondents from Assalaya and Yassin cited contamination with germs, bacteria and viruses; animals using the water; bad smell, and avoiding getting sick significantly more often as reasons to treat the water prior to drinking it. This suggests that more efforts to increase understanding of water contamination beyond visible issues such as dirt are needed, but also that alternative sources and treatment are needed. One FGD

⁶ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

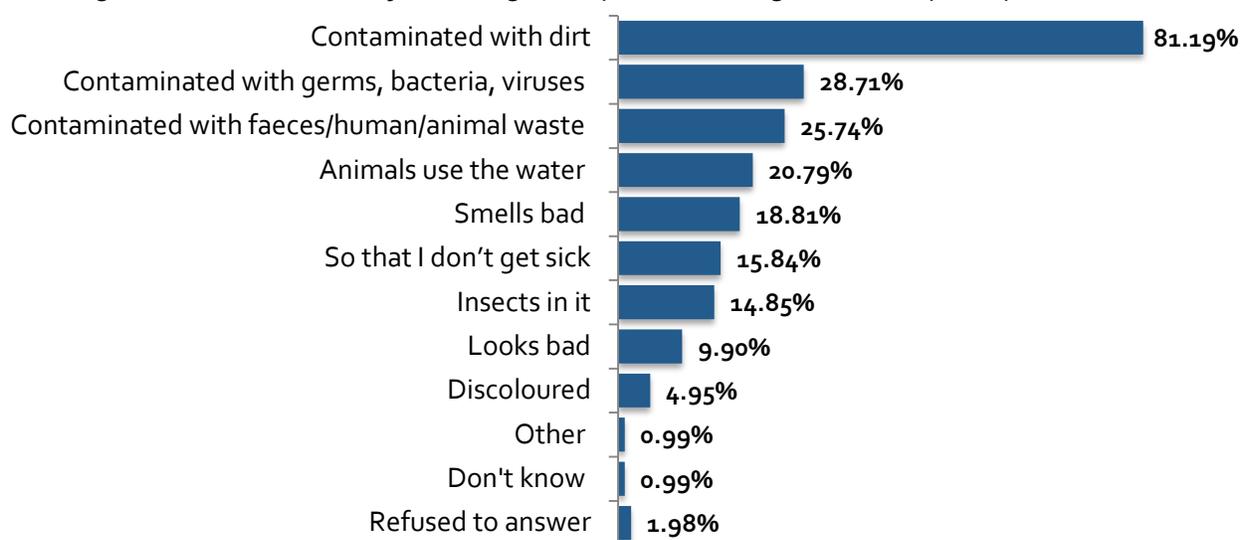


illustrates the earlier findings on knowing how to treat drinking water, but that this knowledge is difficult to translate into good practices due to strained resources:

*"The quality is very bad, the water is salty and heavy. The community knows what is bad and good water by testing the colour and the smell, but we don't have other high-quality sources to choose from. We know what can happen as a result of bad water, but we don't have any other options, especially during the summer."*⁷

Throughout the assessment we found that although respondents appeared to be aware of safe and unsafe water sources, potential treatment methods and associated health risks, they often simply had no other choice but to use the unsafe source as they lacked alternatives.

Figure 9: Common reasons for treating water prior to drinking it (%), multiple response, (n=101)



Similarly, respondents who did not treat their water were asked about their reasons why. The most frequently cited reason was that respondents believed that there was no need to do so, as they felt that the water they collected was clean and did not need to be treated. This reason was cited by 77.84% (n=151) of respondents, with no significant differences across locations. Considering the earlier findings on the safety of certain water sources, this is true for the respondents from South Darfur, who generally have better access to safe water sources. However, the earlier finding also suggests that the respondents from Assalaya and Yassin should be treating their water prior to drinking it, as their water sources are generally unsafe. This suggests that these localities could benefit from additional health and safety awareness trainings and messaging. A lack of materials for water purification or treatment was mentioned by 13.40% (n=26) of respondents, and significantly more often by respondents from the IDP camps in South Darfur. Not knowing any treatment methods was cited as a reason not to treat the water by only 7.22% (n=14) of respondents.

⁷ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.



These findings are surprising considering that a large number of respondents are able to identify appropriate ways of treating water. When asked “If you know that the water you are going to use for cooking or drinking is not safe or does not come from a safe source, what should you do?” 30.98% (n=92) said the water should be boiled first. Filtering the water with a piece of cloth was mentioned by 24.92% (n=74) of respondents, while adding chlorine or water standards was mentioned by 10.77% (n=32), and letting it stand and allow sediment to settle was mentioned by 10.44% (n=31).

Again, significant differences among locations are visible. IDP camp residents predominantly mentioned boiling, while those residing in host communities mostly mentioned filtering water with a cloth. The generally high frequency and penetration of health and hygiene messaging in IDP camps is a likely explanation for this difference, and suggests that additional awareness-raising activities in this particular area, as well as programming to overcome obstacles such as a lack of adequate resources, are necessary. However, here we find a discrepancy between knowledge and practice – although respondents are aware that boiling water is the most effective method, high costs of coal and fuel to actually boil water prevent them from translating this knowledge into practice.

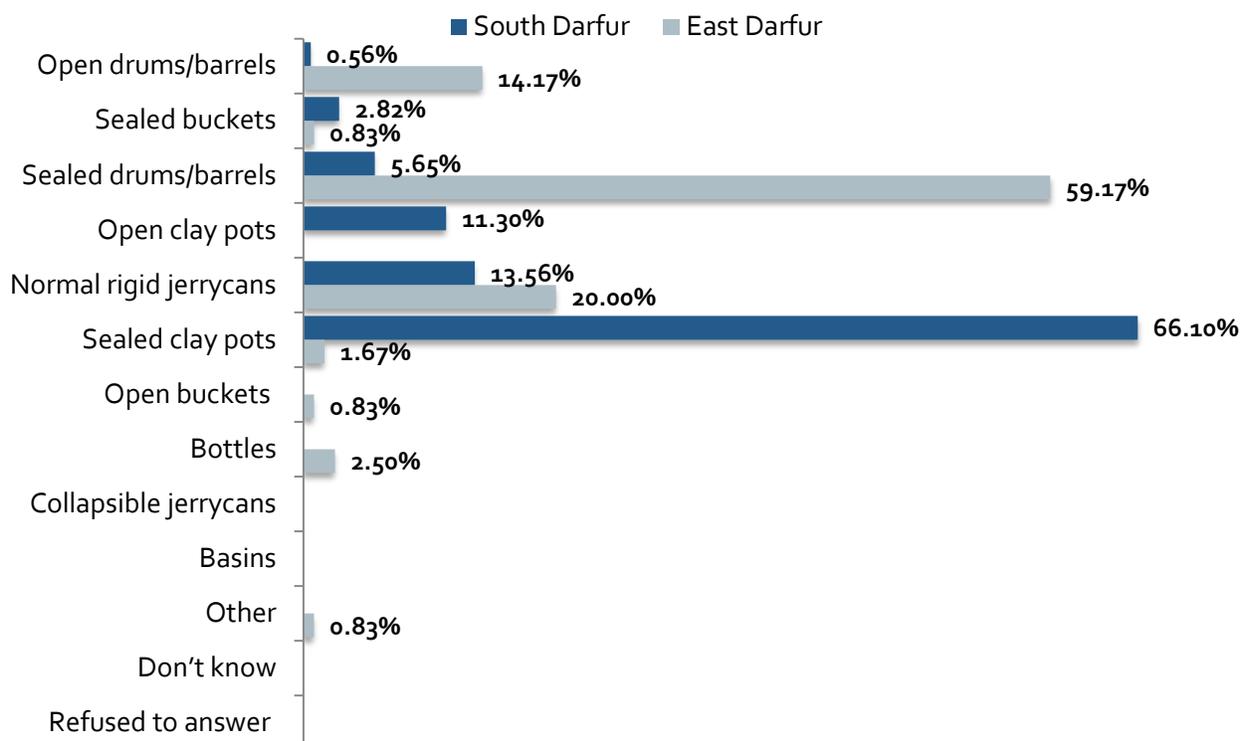
3.1.4 Water Storage and Containers

Aside from the possible health risks that arise from using various water sources and water treatment, water storage containers and methods of retrieving water from said containers can be a source of possible contamination and is a key element in hygiene promotion. For example, a clean, covered container should be used to store drink water, while using dirty containers or cups to dip or ladle water from a larger container, the chances for recontamination increase. Pouring water is considered a suitable and safe alternative, although using a container with an attached tap is the most preferred method.

We find that the majority of respondents use safe methods of storing water, being a jerry can, sealed bucket, pot, barrel or bottle. Overall, we find that there are significant differences in the storage methods in South and East Darfur: 88.14% (n=156) of respondents in South Darfur practice safe water storage methods, compared to 84.17% (n=101) in East Darfur. The figure below illustrates the different sealed and unsealed water storage containers used by respondents in the two states.



Figure 10: Most-used water containers for drinking water storage (%), by state, (n=297)



When asked about the method they used to get water from the storage container, there were no significant differences between the locations. 71.71% (n=213) of all respondents used a smaller container or cup to dip or ladle water from the storage container, meaning that they risk recontamination of their drink water. 22.90% (n=68) of respondents poured water from the container, while 4.71% (n=14) used a combination of pouring and dipping, and one respondent used a container with a tap. This suggests that only 23.23% (n=69) of respondents used a safe method of retrieving drink water from the storage container, while the other 76.77% (n=228) did not.

Another source of possible recontamination of otherwise clean water are dirty storage containers. In order to maintain the cleanliness of the containers, it is important to regularly clean the containers. 85.52% (n=254) of all respondents said they had cleaned their containers. However, again respondents from the South Darfur locations cleaned their container significantly more often: 90.40% (n=160) of them did compared to 78.33% (n=94) in East Darfur. There were no significant differences between the locations regarding the method of cleaning the containers: 87.01% (n=221) who cleaned their containers did so with water and soap. The most cited reason by respondents to not clean their containers is that they believe it is not necessary – this reason was given by 35.14% (n=13) of the respondents. Not having the materials for cleaning the container was mentioned by 27.03% (n=10) of respondents. Respondents from Assalaya and Yassin significantly more often gave these reasons. Other reasons included the fact that respondents believed that since their drinking water was fetched from a safe source, such as a hand pump, there was no need to clean the container. This finding signals that additional education and hygiene-related awareness training are necessary.



Residents in Kass fetching water at the water point

3.1.5 Water Management

Finally, respondents were asked several questions relating to the presence and functioning of a Water User Committee (WUC) in their community. Significantly more respondents in South Darfur were aware of a WUC operating in their community than in East Darfur: 46.89% (n=83) in South Darfur compared to 32.50% (n=39) in East Darfur. Respondents who indicated they were aware of a WUC operating in their community were subsequently asked follow-up questions regarding the functioning of said committee.

In South Darfur, 89.16% (n=74) of respondents considered the WUC to be either very useful or useful, which was comparable to East Darfur, where 89.74% (n=35) of respondents in East Darfur thought the same. There were no significant differences in the levels of respondents' satisfaction with the amount of information they had been given about the WUC: 68.86% (n=84) of respondents were either very satisfied or satisfied, while 13.11% (n=16) was neutral, and 16.39% (n=20) was either unsatisfied or very unsatisfied. Similarly, there were no significant differences across locations in the reported satisfaction with the way the WUCs were managed.

Responses were generally mixed, with 51.64% (n=63) of respondents being either very satisfied or satisfied with the management of the WUC in their community, 8.20% (n=10) feeling neutral, and 36.89% (n=45) feeling unsatisfied or very unsatisfied. Finally, 56.56% (n=69) indicated they contributed money to the WUC, with no significant differences across locations. This is contradicted by the qualitative data, which shows that respondents in several areas indicate that there is no such a committee in their community. It is possible that the WUC was confused with other committees operating in WASH areas in the various communities.



The qualitative data offers in-depth understanding of the functioning of the water management structures. For example, in Yassin there is no permanent WUC. Instead, ad-hoc committees form when a breakdown occurs. This temporary WUC then travels to Ed Deain to meet with representatives from the water administration and discusses maintenance and other needed services at the water point. FGD respondents from Assalaya and Kalma indicated that they were not aware of a WUC operating in their community, or only vaguely. For example, FGD respondents from Kalma said:

"Yes, there is a committee office, but we do not know if it is active or if it stopped working. Few people know the goals of this committee. We do not even know who the members of the committee are, but we have heard that there is a committee for water use."⁸

In other locations, including Kass, it appears that although there were WUCs in the past, they are currently not operating. For example, one person said: "Yes, we have such a committee and some of us are members in the committee. The community knows about it, but the committee has not trained for a long time, and now it is not active. This is because of the lack of logistics, and even health and nutrition committees are not active these days."⁹ Respondents in Kubum also expressed dissatisfaction with the way wherein tariffs were imposed and how the WUC operated, which illustrates several reasons for respondents to adopt a negative attitude:

"There is a committee and it is known to us. It is actively involved in the maintenance of water stations, and committee members are trained for the maintenance of water sources. A tariff has been imposed in order to contribute to the maintenance, but most people do not pay these contributions because the tariffs were imposed on them – we were not consulted about the imposition of the tariff. But if you do not pay the fee, you will not be allowed to take water. This hampers the work of the committee, but we do not believe that the money paid goes to maintenance."¹⁰

Difficulties collecting community contributions were mentioned multiple times during qualitative data collection. In cases wherein the responsibilities and functioning of the WUC is unclear or perceived as not transparent, it is not surprising that community members are reluctant to contribute money to the committees. Providing additional information about the WUC and its management could be the first step in increasing the community's involvement in water management. This difficult working relation between the WUC and the community is also visible in other locations, such as in Kalma, where an interviewee expressed that although community members were suspicious of the WUC, they saw its importance:

"The committee formed after the difficulty of meeting all the people and consultation. The committee was rejected at the beginning, but not it functions as an intermediary between the committee and the organization, and monitors the work of the organization. People were initially weary of the committee, but they knew its importance and its role in the maintenance, regulation and protection of the water sources."¹¹

⁸ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

⁹ FGD with men. 3 December 2016. Kass, Kass, South Darfur, Sudan.

¹⁰ FGD with women. 7 December 2016. Kubum, Kubum, South Darfur, Sudan.

¹¹ KII with Community Leader. 5 December 2016. Beleel, Kalma, South Darfur, Sudan.



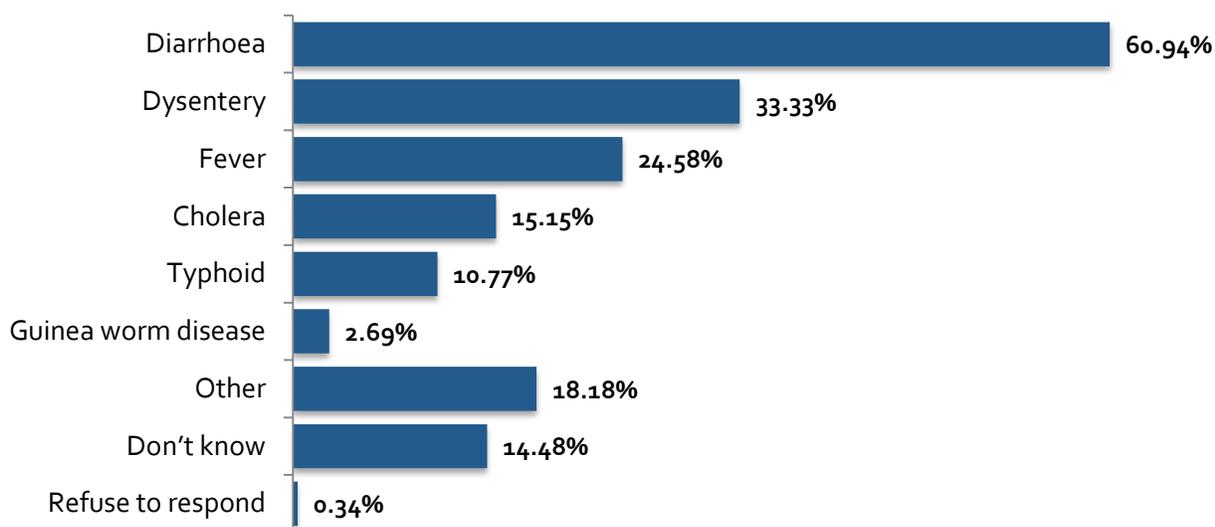
Although not representative of all locations where CIS supported these activities, the findings suggest that the various WUCs are not being optimally used. The fact that they are no longer functioning in several locations and struggling in others due to integration issues with the community, suggests that future programming should better account for these community sentiments. Ultimately, the success of these initiatives depends on the acceptance and embrace of the community.

3.1.6 Water-related Diseases

To assess the knowledge of respondents on the possible illnesses and diseases that one can contract from using or drinking unsafe water, respondents were asked whether they could name waterborne diseases and vector-borne diseases. We find that a lack of knowledge of the relationship between these diseases and water quality affects the earlier findings on practices. For example, the findings on poor cleaning and water storage habits are likely to be explained by a lack of awareness of the negative consequences for their health. Similarly, educating respondents on these issues may improve their hygienic habits.

Overall, 60.94% (n=252) of respondents named diarrhoea as a possible disease that one can get from water. The second-most named disease is dysentery, names by 33.33% (n=99) of respondents, followed by fever (24.48%, n=73). However, we also found significant differences in knowledge across the different locations. Differences in knowledge were observed regarding diarrhoea, dysentery, cholera and typhoid. For example, respondents from South Darfur significantly more often mentioned cholera and typhoid, while residents from East Darfur more often mentioned dysentery. Although knowledge of the link between water and diarrhoea was strong in all locations, it ranged from 48.28% (n=28) in Kubum until 76.67% (n=46) in Yassin. Despite these differences, the findings suggest that almost half of the households do not make a connection between poor quality water and dysentery.

Figure 11: Knowledge of common water-borne diseases (%), multiple response, (n=297)





A similar question was asked in regards to vector borne diseases. As part of a multiple response option, the overwhelming majority of respondents were able to name malaria as a vector borne disease. Without being prompted with response options, 77.10% (n=229) named malaria as a disease they could get from insects. The other diseases were mentioned by far less respondents, and significantly more often by respondents from South Darfur. For example, dengue fever and West Nile virus were both mentioned by 4.04% (n=12) – all by respondents from Kass, Kalma and Kubum. We find the same for the mentioning of Lyme disease (3.03%, n=9) and Tse Tse fly (1.35%, n=4). Other diseases that were mentioned include renal gallstones, giardiasis, schistosoma and anemia. These are in line with an expected higher messaging and awareness in IDP camps.

Surprisingly, when asked about the likelihood of a child getting diarrhoea from unsafe water, almost all respondents in East Darfur responded that this was “likely.” There are significant differences between the locations, suggesting that on average, respondents in South Darfur state considered this less likely. In fact, 85.83% (n=103) of respondents in East Darfur thought this was likely, while 7.50% (n=9) thought this was somewhat likely. This is significantly higher than in South Darfur, where 68.36% (n=121) thought this was likely, and 27.12% (n=48) thought this was somewhat likely. This suggests that respondents in East Darfur are more successful in linking unsafe water as a cause of diarrhoea among children, but also that, considering the previous question, respondents consider the consequences of diarrhoea to differ in severity between adults and children.

The same finding is visible when respondents were asked about the severity of getting sick from unsafe water. Again, the number of people from East Darfur who thought this was very serious was significantly higher compared to those from South Darfur: 84.17% (n=101) of respondents in East Darfur thought this was very serious, while only 54.24% (n=96) of respondents in South Darfur thought so. Instead, 44.07% (n=78) of respondents in South Darfur thought it was “somewhat serious,” which only 11.67% (n=14) of respondents in East Darfur thought so.

Respondents also highlighted that there are differences for children and adults, since “diarrhoea has a strong relationship with bad WASH practices and waste dumping. Children are weak when they become ill, but they play in bad (dirty) places because they don’t know about the risks.”¹² Indeed, during qualitative data collection, interviewees stressed the need for increased sensitisation of children on hygiene and sanitation habits and risks.¹³ Other FGD participants elaborated on this by providing examples of these risks, as “waste can be a reason for diseases and breeding insects, but also harm children because of glass shards, metal and bad materials such as hair dye. This also hurts the women and children who are responsible for water collection.”¹⁴

As such, we can conclude that there is room for improvement in these areas, especially as it comes to relating specific unsanitary conditions with specific diseases. Highlight the causality between the two may increase awareness of sources of disease, and motivate communities to practice safer WASH habits.

¹² FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

¹³ KII with Community Leader. 1 December 2016. Assalaya, Assalaya, East Darfur, Darfur.

¹⁴ FGD with women. 1 December 2016. Assalaya, Assalaya, East Darfur, Sudan.



3.2 Sanitation and Hygiene

In this section on sanitation and hygiene, the knowledge, attitudes and practices of respondents in South and East Darfur regarding these matters are discussed. Specifically, we focus on hand washing, latrine usage, hygiene promotion, and solid waste management.



Key informant interview with a community leader in Kass

The following section discusses various aspects of sanitation and hygiene, such as the use of hand washing and bathing facilities, as well as the health risks associated with poor hygiene practices in these areas. It also discusses the use and habits regarding latrines and communal solid waste disposal sites, and finds, for example, that IDP camp residents are more likely to mention key hand washing times, but that this knowledge does not always translate into good practices. Although this was in some cases inhibited by a lack of materials and the inability to afford soap, other times respondents did not appear to take this matter entirely seriously. Qualitative data in this area suggests that respondent in some cases adopted a passive attitude, awaiting distributions or attending workshops in the hope of receiving non-food items. Furthermore, we find that sanitation facilities and latrines are insufficient, and adverse affects of this are most felt by women who are exposed to protection risks. A lack of waste collection facilities and sanitary disposal areas in all location puts residents at risk of significant health and safety risks, and it is recommended that this receive sufficient attention in future programming.

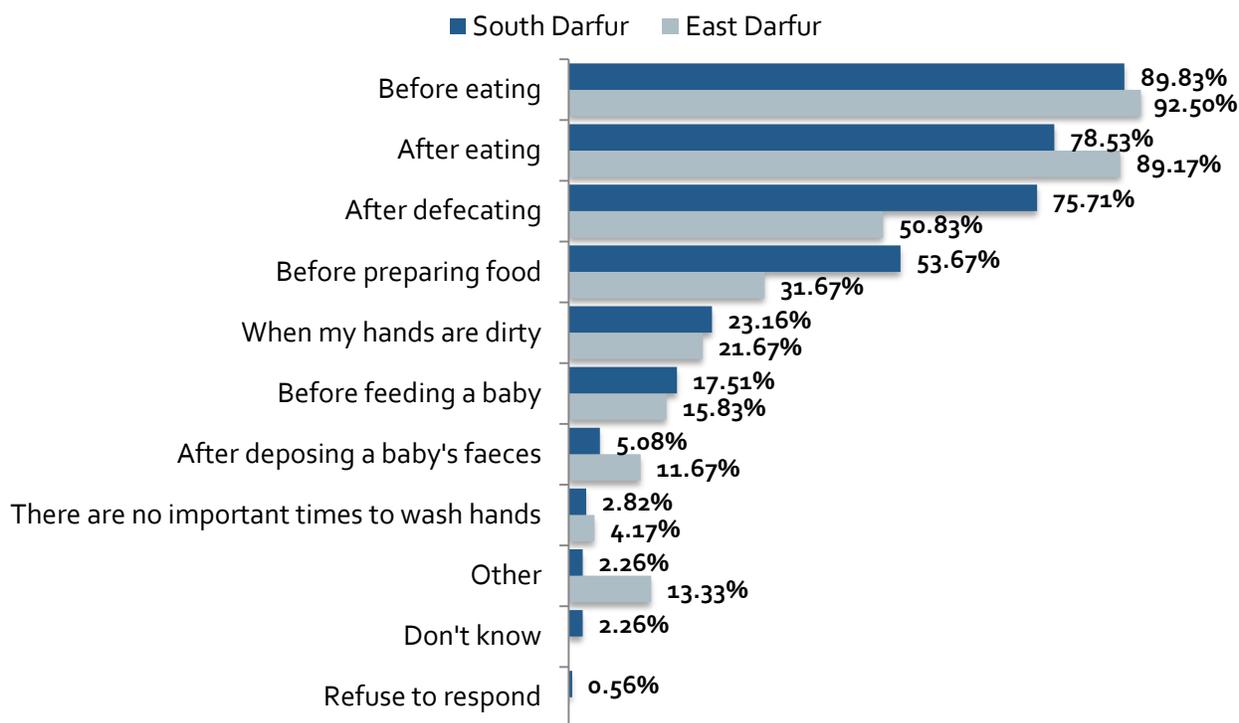
3.2.1 Hand washing

This section starts with asking respondents to name at least three crucial hand-washing times. For the purpose of this section, three key moments were considered as indicators of basic knowledge regarding hand washing: before eating, after eating and after defecating. These are considered basic as respondents named them most often. When restricting our attention to these three key times, we find that 55.56% (n=165) of respondents manage to name all three key times. Significantly more



respondents from South Darfur could name at least these three times (70.59%, n=120) than respondents from East Darfur (45.83%, n=55). This suggests that PoC residents from South Darfur are likely to have higher levels of knowledge than respondents from host communities in East Darfur, in line with what can be expected from more frequent health and hygiene messaging in IDP camps. Although knowledge of certain times differs between the locations, times related to infant care are low in both areas. The other key time for hand washing that was mentioned as being important was washing hands before praying. Respondents do highlight that poor WASH habits affect children differently, “because they don’t care about washing hands and are playing in the waste places.”

Figure 12: Knowledge of key hand washing times (%), by state, multiple response, (n=297)



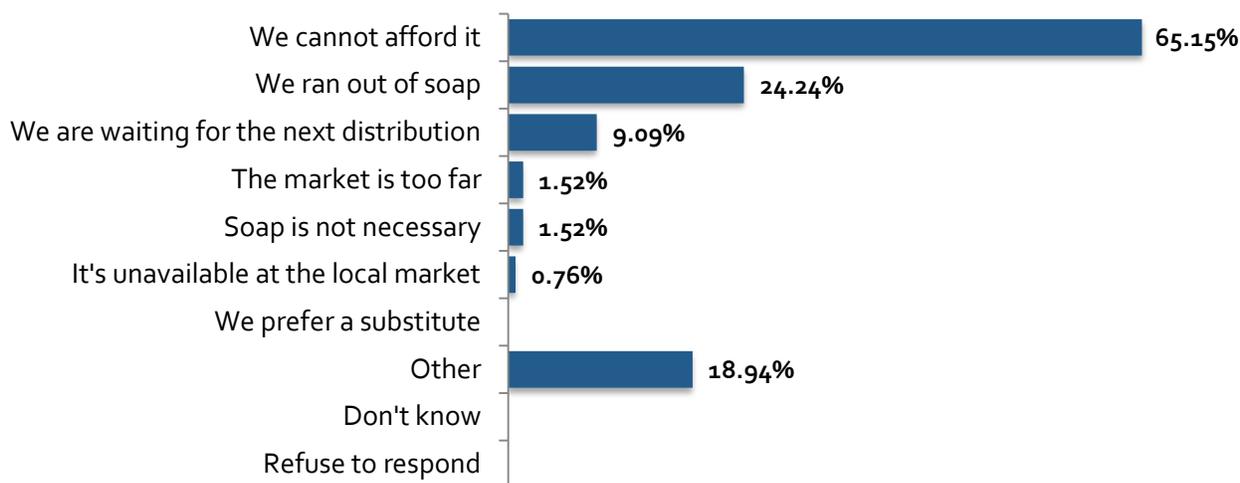
Regarding the use of rubbing agents when washing hands, there were again significant differences across locations in the various methods. However, in both locations the majority of respondents indicated they used water and soap to wash their hands: 72.88% (n=129) in South Darfur did so, while 70.83% (n=85) in East Darfur also did so. Other respondents used ash or sand to wash their hands. Despite these answers, not all respondents actually had soap in the household. When asked to show the enumerator the soap, only 35.59% (n=63) of respondents in South Darfur were able to do so, compared to 85.00% (n=102) in East Darfur. This suggests that respondents from East Darfur have better access to soap than respondents from South Darfur, but that a lack of knowledge, as was found in earlier sections, may be an obstacle to using the soap at the appropriate times.

When the respondents who did not have soap in their households were asked about the reasons why, being unable to afford it was the most cited reason, given by 65.15% (n=86) of all respondents. However, respondents from South Darfur significantly more often gave this reason (69.30%, n=79) than respondents from East Darfur (38.89%, n=7). The other answers given by respondents were



overwhelmingly financial reasons, where respondents cited that they did not have money for soap. This is in line with the earlier demographic findings, which suggested that respondents from South Darfur had lower incomes than respondents from East Darfur.

Figure 13: Commonly cited reasons for not having soap in the household (%), (n=132)



Respondents were also asked about their access to hand washing stations and ibriks and their use of these facilities. The majority of respondents did not have access to a functional communal hand washing station (91.92%, n=273), but 95.19% (n=283) did have access to an ibrik – although significantly more respondents from East Darfur had so. Of those who did have access to a hand washing station, two-thirds actually used the facility, and the majority used it every time they washed their hands, or often. Respondents who indicated that they did not use the hand washing station said that there was no need to use it. The respondents who indicated they had access to an ibrik also all used the ibrik. However, respondents from East Darfur used the ibrik significantly more often than respondents from South Darfur. We found that 100% (n=119) of respondents from East Darfur used the ibrik either every time they washed their hands or often, compared to 92.68% (n=152) of respondents in South Darfur. For future programming, providing respondents with ibriks or a similar container could be considered a suitable alternative or short-term solution for the installation of hand washing stations.

3.3.2 Latrine Usage

Information was also collected regarding latrine availability and usage. Respondents were asked about their access and use of latrines and whether they faced challenges in this area. For example, we find that although many respondents have access to latrines, these are often overcrowded and prevent vulnerable groups such as women from using them, posing further protection risks. It is recommended that these findings are considered in future programming efforts.

A majority of 85.19% (n=253) of all respondents had access to a functional latrine: 90% (n=108) of respondents from East Darfur, and 81.92% (n=145) of respondents from South Darfur. However, there were significant differences in the kinds of latrines that respondents had access to. The primary kind of latrine for respondents from East Darfur was private latrines within the house, to which 98.15% (n=106)



of respondents had access. Many others had access to a latrine that they shared with their neighbours. Meanwhile, private latrines within the house were only available to 55.17% (n=80) of respondents from South Darfur. A large group of residents from that area had access to communal latrines: 33.10% (n=48). Those who shared the latrine with other families did so on average with five other families. The sharing of one facility with many families suggests that there is an increased likelihood of contracting germs and bacteria from other people, as well as overcrowding or poor maintenance, which may add to an unsanitary environment as well as discourage usage. Despite this, only 1.19% (n=3) of all respondents with access to a latrine indicated that they did not use the latrine. These three respondents all resided in South Darfur.



Latrines in Kass

Reasons cited by respondents who did not use the latrines available to them included it being too dirty (9.68%, n=3), the waiting times being too long (9.68%, n=3), and a lack of privacy (6.45%, n=2). When the 48.39% (n=15) who cited other options were asked to specify these reasons, the majority of them came back on their answer and said they did use the latrines. However, those who did not use a latrine also did not dig and cover as an alternative: only 47.83% (n=22) did, with no significant differences across location and gender. Whether respondents had access to a functional latrine or not did not impact the presence of human faeces that enumerators observed around the household. Instead, 11.78% (n=35) of households showed evidence of human faeces in the living area. Other respondents cited that after efforts from several organizations to focus on household latrines instead of public latrines has led to overcrowding issues. During one FGD in Kalma men gave several examples:

"There are a lot of people within one family who need to use one toilet, and they fill quickly. Then people turn to another toilet, and it fills even faster than the first toilet. That's why people come



out to urinate and defecate in the valleys and creeks. Men suffer less than women in this regards, but children urinate and defecate without any difficulty.”¹⁵

Overall, FGD participants stressed the need for clean latrines and bathing facilities. Although many people had constructed bathing facilities in their homes, these were built with local materials that had many insects living inside, which they perceived as a health risk.¹⁶ Others said that due to the lack of latrines in the areas, people defecated outside around the village, which especially led to risks for women and children: “people don’t have the ability to construct latrines themselves, and their knowledge of bad WASH practices is very weak. When they have to go outside of the village, it is difficult for woman and children to go far from home.”¹⁷ If these findings are validated, it is worth exploring the possibilities of training residents on the construction and maintenance of latrines more in-depth so they may have more control over the facilities. Respondents who had to share the bathing shelters and latrines with their relatives and neighbours indicated they had to wait until nightfall before they were able to use the facilities to urinate or defecate, while the children are not embarrassed to relieve themselves “anywhere, anytime.”¹⁸ Besides having to wait long until they were able to go to the latrines, overcrowded bathing facilities also contribute to a feeling of insecurity.¹⁹ The findings suggest that these circumstances are extremely limiting to already vulnerable groups in the communities, and severely restrict their usage of these facilities.

3.3.3 Waste Collection

Information regarding the knowledge, practices and attitudes regarding waste collection and the receipt of health and hygiene messages was also collected. Questions were asked regarding waste disposal facilities and usage of the facilities, while also assessing the respondents’ attitudes regarding the severity of these issues. For example, we found that although services in these areas may be limited, respondents aware of its seriousness and potential health hazards, stressing the effects it can have on children. However, limited facilities in these areas leave respondents looking for alternatives, which for example have resulted in the creation of large landfills in close proximity to the communities. Furthermore, we found that the majority of respondents have heard health and hygiene messages, but that respondents in the IDP camps have heard these more frequently – although this does not always lead to better practices. As such, it is recommended that future programming emphasizes the importance of waste collection issues, and looks to rethink the delivery of health and hygiene messaging.

¹⁵ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

¹⁶ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan; FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

¹⁷ FGD with women. 1 December 2016. Umgerago, Assalaya, East Darfur, Sudan.

¹⁸ FGD with women. 4 December 2016. Beleel, Kalma, South Darfur, Sudan; KII with Community Leader. 5 December 2016. Beleel, Kalma, South Darfur, Sudan.

¹⁹ KII with Community Leader. 2 December. Kass, Kass, South Darfur, Sudan.



Example of inappropriate waste dumping next to a mosque in Kass

Baseline data was collected on the practices regarding waste disposal habits in the target areas. We found significant differences in respondents' access to useable communal garbage disposal boxes. While 75.00% (n=90) of respondents in East Darfur had access to such facilities, only 28.81% (n=51) of respondents in South Darfur had. Although it varied per locality, residents surveyed in Kubum appeared to have the least access to such facilities, with only 15.52% (n=9) indicating that they had access to such a box. Differences in usage of the garbage box were only significant at the 90% confidence level. There, we observed that of those who had access to the waste disposal facilities, 71.22% (n=65) of residents in East Darfur said they always used them, compared to 51.94% (n=27) of residents in South Darfur. This suggests that residents in East Darfur display more consistent usage of waste disposal facilities than the respondents sampled in South Darfur.

Respondents in East Darfur also significantly more often said waste was collected in their community on a regular basis. 92.50% (n=111) said so, compared to 79.66% (n=141) of respondents in South Darfur. However, the frequency of collection differed significantly between the two states. While the mean number of monthly collections was 16 overall, this was 18 times in South Darfur, and 14 times in East Darfur. This is possibly explained by increased availability of these resources in the IDP camps in South Darfur.

Considering these findings, we observe surprisingly significant differences in what respondents or their household members do with their trash. While 48.59% (n=86) of residents in South Darfur say they throw it away around the place where they live, only 41.67% (n=50) of respondents in East Darfur do the same. Instead, 50.00% (n=60) of respondents in East Darfur indicate they collect it and bring it to a central collection point: this is only 36.15% (n=64) of respondents in South Darfur. 11.78% (n=35) of all respondents say they do other things with it, which included burning it, throwing it away in the street, collecting it in sacks and dumping it in a nearby valley. This suggests that merely the presence of



facilities does not mean that respondents will be inclined to properly use them. Thus, additional education in this area is necessary.

During the FGD in Yassin, community members stressed the importance of waste collection, saying: “due to the seriousness of trash, people collect the waste and bring it out of their homes to dump inside a trash area to form a heap that they burn at night. Other people carry the trash out of the village and throw it around the street. But some people in the community still display poor behaviour – they need training and messaging on how harmful waste can be. Good trash disposal is needed in order to reduce the risk from insects and diseases that are caused by waste.”²⁰ In Kass, respondents indicated that waste collection facilities had decreased, as “in the past there was a car that collected our waste and then burned it, now we just throw it away in a valley. We’re doing that, and we know that it is wrong, but we don’t have a choice.”²¹ Closer examination of the data shows that valleys in close proximities to the IDP camps are being treated as landfills where children also play, an issue that came up in multiple locations. Designing specific programming to address these issues could be valuable for future efforts.

“The children play in the faeces in the landfill in the valley. After houses are cleaned, the dirt is dumped in the landfill, and the valley is a threat to society because of the smell. The valley is the source of water, and we must get rid of the dirt there. But we cannot burn the dirt close to the houses either. We can use carts to collect dirt so that we can dispose it outside the camp.”²²

As such, we find mixed evidence of attitudes regarding waste collection. Although there may be facilities, there might not be the attitude and/or the willingness to improve practices. Additional research into identifying the most effective way forward in this area could prove to be very valuable.

However, we also find that, despite limited services, facilities and messaging, significantly more respondents from South Darfur consider not collecting waste to be very serious. Reasons for this included the fact that a lack of waste collection can cause diseases; that it breeds insects, flies and mosquitoes; that it is dirty and causes germs, and that hygiene is important; that they believe it can cause malaria and typhoid; and that it can catch fire and burn. These answers demonstrate that respondents have a strong understanding of the health risks related to poor waste collection.

3.3.4 Hygiene Promotion

Hygiene promotion is an essential element of WASH activities. Data on how hygiene messages were received was also collected. Respondents were asked about their knowledge, and whether they had seen or heard any health and/or hygiene messages or received any training on these topics in the last twelve months. Overall, we do not find significant correlations between the receipt of particular messages and particular habits. For example, examination of the relations between the receipt of the message “dispose garbage properly” and garbage box usage, the seriousness of not collecting waste, or what respondents or their household members do with garbage, did not yield significant differences. Neither did we find correlations between the message to “clean and cover water containers” and the number of respondents using covered or sealed containers or actually cleaning water containers.

²⁰ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

²¹ FGD with women. 3 December 2016. Kass, Kass, South Darfur, Sudan.

²² KII with Community Leader. 5 December 2016. Beleel, Kalma, South Darfur, Sudan.



Possible explanations for this could be a lack of programmatic integration or follow-ups, wherein hygiene messages are insufficiently woven into the larger programming efforts, or when messages are delivered as a one-off event. Regardless, further research into how to most effectively deliver messages is highly recommended.



Focus Group Discussion with men in Yassin

Surprisingly, we found a significant difference between the two states, with respondents from the IDP camps in South Darfur indicating far less that they had received such messages than those from East Darfur. In fact, only 26.55% (n=47) of respondents in South Darfur said they had heard such messages, compared to 43.33% (n=52) in East Darfur. This suggests that no health and/or hygiene awareness messaging and campaigns have been conducted in IDP camps in South Darfur in the past year, or their coverage has been low. More specifically, Kass, where hygiene messaging was conducted by CIS, did not stand out. With 32.30% (n=19) of respondents there indicating they had recently heard messages, compared to 23.33% (n=14) in Kalma, 24.14% (n=14) in Kubum, 30.00% (n=18) in Yassin and 56.67% (n=34) in Assalaya.

Indeed, this is confirmed by the qualitative data. Respondents from Yassin in East Darfur emphasized that they needed messages and training on WASH, as these had not been given this year.²³ In fact, respondents said that: "the community's knowledge of WASH is good, but they need additional messages on the importance of WASH facilities. Their knowledge was developed from messages sent years ago by NGOs and health workers."²⁴ Others said that community members only attend workshops and trainings due to the distribution of non-food items during these events, something which may also be an issue in other locations:

²³ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

²⁴ KII with Health Committee Member. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.



"As hygiene promoters we have a good relationship with the community, but feel that they are not receptive of our messages. When we visit people in their homes, we don't find them being busy on the farms or in the markets – sometimes they refuse to listen to us and ask us to just distribute them materials like soap. They don't care about the messages we send them."²⁵

We find significant differences in the penetration of various messages. Respondents who indicated that they had heard such messages in the past year were asked which ones they could recall. For example, respondents from South Darfur significantly more often heard that they should clean and cover water containers, which corresponds with the earlier finding on the higher rate of safe storage practices in that area. They were also found to significantly more often have heard to dispose baby's faeces in the toilet, as well as using the latrine for defecation and preparing food hygienically. On the other hand, residents from East Darfur had significantly more often heard messages on general cleanliness, practicing proper waste disposal habits, and covering their food. This is in line with the earlier findings on use of the communal garbage boxes, demonstrating that such messaging and informational campaigns are effective. It would be valuable to assess the content of these messages in order to improve future programming.

During the qualitative data collection respondents also indicated that sometimes messages were not being well received, and that the impact could be improved: "most people do not understand a lot of what is being said. Others understand according to their different levels of knowledge."²⁶ Although this is not necessarily representative of the population, this may suggest that people have different degrees of existing knowledge regarding WASH practices, and that tailoring messaging and information campaigns to these differences could improve their effectiveness.

Respondents from Kass said that since people giving the trainings and workshops were members from the community, they could speak in the local languages. Knowing the local tongues was perceived as a large advantage, as it led to increased acceptance. This suggests useful recommendations for future programming.²⁷ However, several others in Assalaya felt that the community members were not as receptive, because "the hygiene promoters do not have much experience, or materials and tools that community members can use to improve their hygiene."²⁸ This could be related to how community members for these campaigns were selected and what kind of training they received prior to working on these issues. For example, from these findings it logically follows that it is preferable to recruit hygiene promoters from the local community, and that the recruitment and training procedures are transparent and clear to all members of the community. This opinion was not explicitly shared by community members from other locations during qualitative data collection.

²⁵ KII with Hygiene Promoter. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

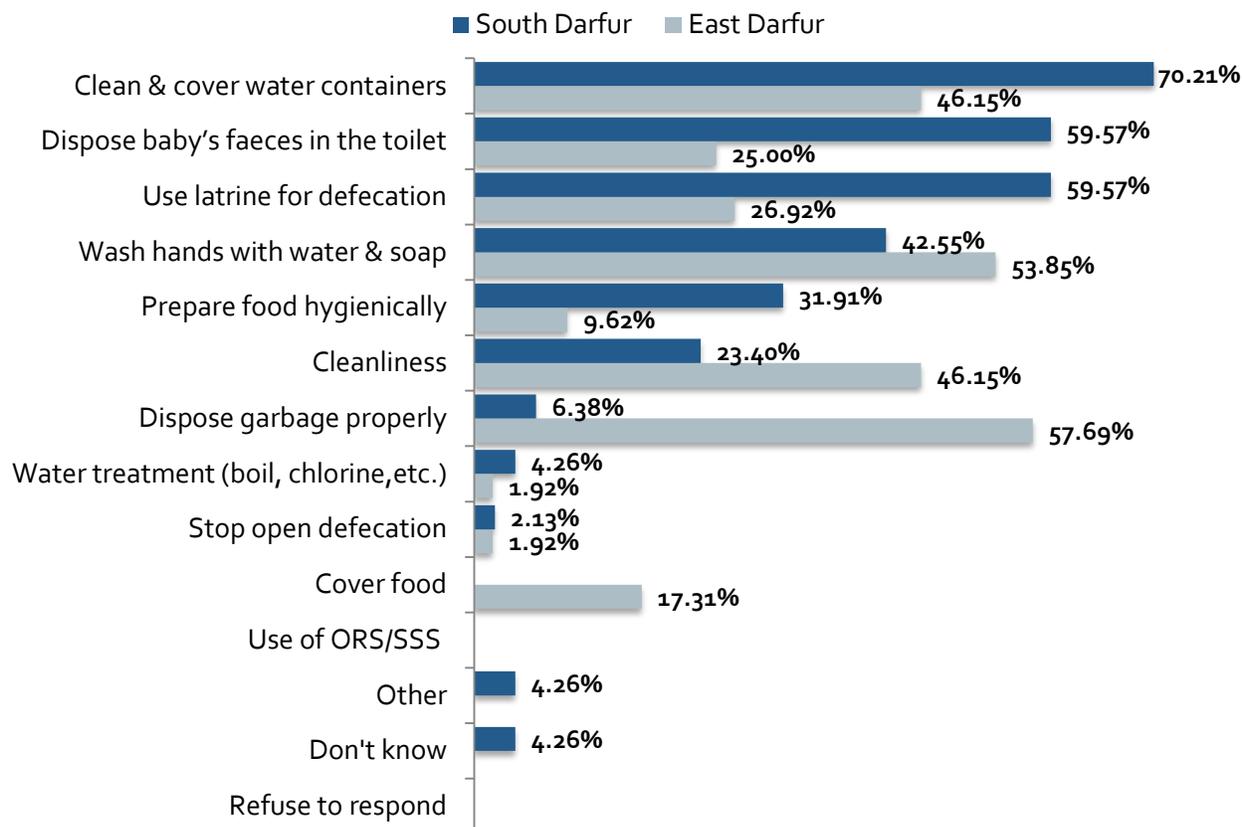
²⁶ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

²⁷ FGD with men. 3 December 2016. Kass, Kass, South Darfur, Sudan.

²⁸ KII with Hygiene Promoter. 2 December 2016. Umgrego, Assalaya, East Darfur, Sudan.



Figure 14: Recall rates of specific hygiene messages (%), by state, multiple response, (n=99)



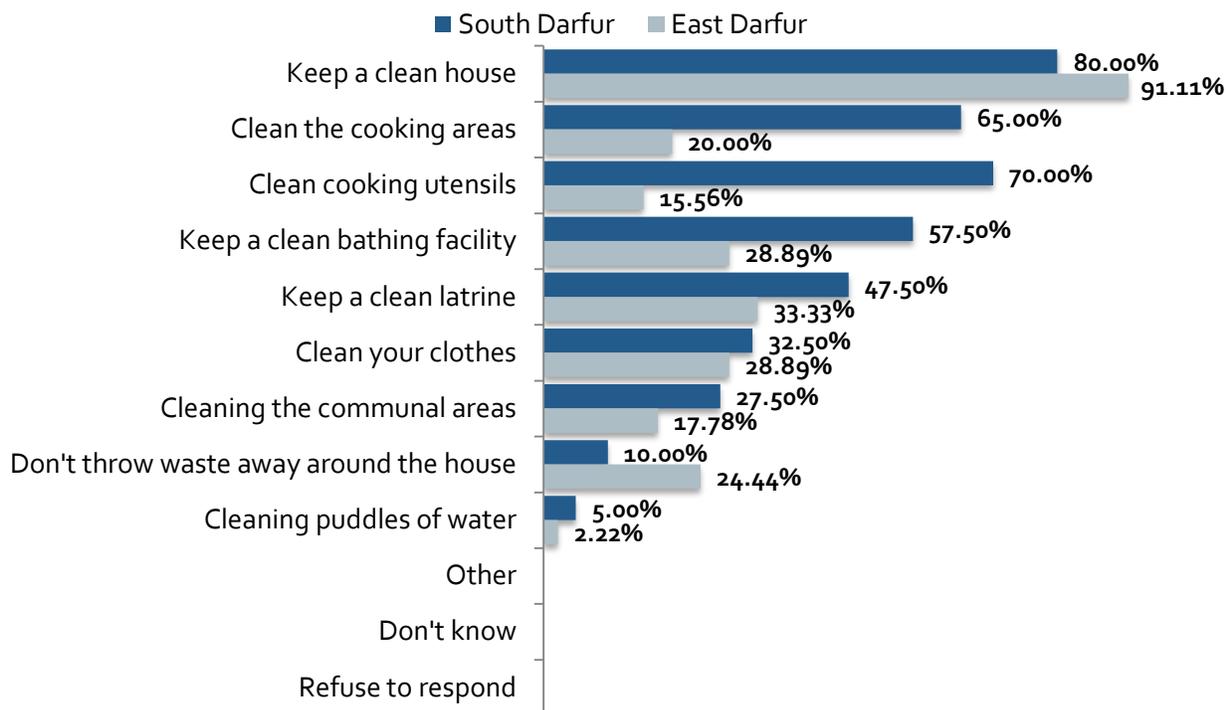
In a follow-up question, respondents were also asked where they had heard these messages. The four largest sources of information were community health volunteers (32.32%, n=32), government health workers (25.25%, n=25), NGO staff (25.25%, n=25) and the radio (23.23%, n=23). There are significant differences across locations regarding the source of information. Respondents from East Darfur heard far more messages from government health workers than those in South Darfur, which corresponds with the earlier finding of government health workers being one of the most preferred sources of health care. Similarly, residents from South Darfur heard significantly more messages from community health workers and NGO Staff. Only residents from East Darfur heard messages over the radio, despite respondents from both states indicated that they owned radios. We find that these differences are related to the availability of resources and facilities in these areas, and are reflected throughout the survey. For example, we see the same when respondents are asked who would be their first choice for health care. The data also suggests that certain sources for hygiene messages may provide different messages: washing one's hand with water and soap was a message more often recalled when spread by community health workers than by government health workers. However, hearing the message itself did not correlate with a higher percentage of respondents washing their hands with water and soap. This suggests

Respondents were also exposed to specific cleanliness and waste collection messages. Although respondents had been exposed to the messages in similar degrees, respondents from certain areas had significantly more often heard certain messages. In particular, residents from South Darfur appeared to have heard cleaning messages regarding cleaning the cooking areas, cleaning cooking utensils and



keeping a clean bathing facility. Similarly to early messages, government health workers were the largest source of information for most people in East Darfur, and community health volunteers were the largest source of information for residents in South Darfur.

Figure 15: Recall rates of specific cleaning messages (%), by state, multiple response (n=85)



In an attempt to understand the levels of knowledge respondents in these areas had about the relations between hygienic habits and health, respondents were also asked about the likelihood of becoming sick from not washing their hands regularly, for example getting stomach ache or diarrhoea. Overall, 77.10% (n=229) of respondents said that this was very likely, and 20.54% (n=61) said this was somewhat likely. Respondents who said this was somewhat likely were significantly more often from South Darfur. This is surprising, considering the high levels of health and hygiene messaging typically associated with IDP camps.

Respondents were then asked how serious they thought it was if they or their child became sick from them not washing their hands. Again, we found significant differences between the locations. 90% (n=108) of respondents from East Darfur considered this to be very serious, while 9.17% (n=11) considered this to be somewhat serious. In South Darfur, only 64.41% (n=114) considered this to be very serious, while 34.46% (n=61) considered this to be somewhat serious. This suggests that respondents from the host communities in East Darfur have a better understanding of the link between hygiene and health, and are also displaying higher levels of understanding of the severity of these issues, making this an area of improvement for the localities sampled in South Darfur.

When looking at these findings in combination with the hygiene messages that respondents received, we consider several messages in particular: washing hands with water and soap, water treatment, cover



food, and cleanliness. We consider whether hearing certain hygiene messages affected the reasons respondents could name for diarrhoea. Suggested reasons for diarrhoea were: contaminated food, water, unwashed hands, dirty cookware and dirty latrine. We found that hearing these messages did not affect the ability of respondents' ability to name sources of diarrhoea. For example, hearing messages on hand washing did not affect the number of respondents who named unwashed hands as a reason of diarrhoea, nor did hearing messages on water treatment affect naming contaminated water as a reason of diarrhoea, or hearing messages on covering or preparing food hygienically affect naming contaminated food as a reason for diarrhoea. This suggests that these hygiene messages did not achieve the desired result.

3.4 Health and Illnesses

Within the area of health, CIS in sought to reduce the number of communicable diseases, improve community health education and encourage behaviour change, as well as support health systems and clinics, provide pharmaceuticals and provide reproductive health services. The following section on illness assesses the knowledge, attitudes and practices as they relate to various aspects of health care and major challenges respondents face in accessing these services. Sections on the incidence of certain diseases, the knowledge of symptoms and treatment of diarrhoea, and the impact of community-health workers are discussed at length. Regarding health services, CIS only provided primary health care services and rural health care in Kass. Information on primary health care services found in the other locations refer to services provided by other government or non-government organisations.



Residents from Kass gather around a pool of water

We find that, among other things, respondents try treating simple illnesses themselves before visiting a clinic, as they do not have high expectations of the care they receive at the clinics. From all challenges



cited by respondents, a lack of medicines and available, qualified staff appear to be the most pressing issues that deter respondents from visiting clinics to address health needs. This problem appeared to be present in all localities. Unfortunately, disaggregation by locality was not possible as no quantitative data was collected on this topic, and at this point it is not possible to consider differences between locations where CIS provides health services, and locations where it does not. However, respondents, with significant differences between locations, do not consistently demonstrate sufficient knowledge to treat these illnesses themselves. Most concerning are the low numbers of respondents who are aware of adequate treatments of diarrhoea in terms of food and liquid intake, which could lead to severe health complications. The relatively limited role played by community health workers could potentially be expanded in future programming, for example by taking on a larger role in education and training, if they meet the standards of openness and transparency as stated earlier on in this report.

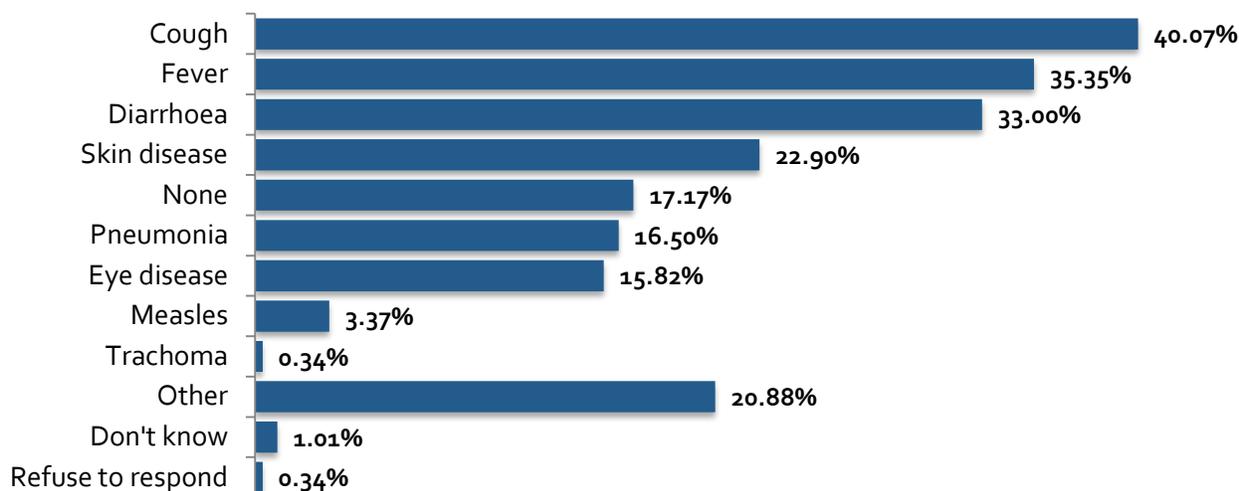
3.4.1 Incidence and Care

In order to understand what illnesses respondents deal with and how this impacts their daily life, this report provides baseline information on the perceived prevalence of certain diseases based the household survey. For example, we find that the majority of respondents' household members have been sick with a cough in the past month (40.07%, n=119), while 33% (n=98) had also had diarrhoea. Certain sicknesses displayed difference between locations. For example, significantly more residents from South Darfur indicated they had experienced fevers, skin diseases and eye diseases compared to residents from East Darfur. Other sicknesses reported by respondents in the graph below included malaria, fevers, heart diseases, renal diseases, respiratory and stomach diseases, giardia infection, typhoid, anaemia, and malnutrition.

There is a second drawback in calculating incidence rates based on household surveys. As respondents are often unable to self-diagnose illnesses, they may have the tendency to assume that minor symptoms indicate a serious disease. For example, respondents may easily assume a cough to be a sign of pneumonia, and a fever to be a sign of malaria. Reports from the treatment facilities provide more reliable estimates of these indicators and are preferable.



Figure 16: Household members with one or more common sicknesses in the last month (%), multiple response, (n=297)



To assess what regular health practices were in the event that a household member or child would fall sick, respondents were also asked what they would do in the event that their child became ill. Both groups of respondents indicated that they would take their child to a clinic, hospital or primary health care centre (PHCC): 58.33% (n=70) of respondents in East Darfur would do so, as would 50.85% (n=90) of respondents in South Darfur. However, there are significant differences in the second-most preferred option. For respondents from the IDP camps in South Darfur, visiting NGO staff would be the next option, cited by 29.38% (n=52) of respondents. Instead, 27.50% (n=33) of respondents from East Darfur would visit a government health worker. This suggests that there are currently no or very few services offered by NGOs in the localities sampled in East Darfur. It is suggested that future programming sufficiently maps the available resources in this area in order to provide the most needed and affected supplementary support and to support duplication of efforts. Most significantly, respondents from Kass, where PHCCs were supported, were the least likely to visit a clinic, hospital or PHCC if their child got sick. In fact, only 35.59% (n=21) would do so, compared to for example 58.33% (n=35) in Kalma and 66.67% (n=40) in Yassin. The following section elaborates on specific challenges residents face, but Kass residents often mentioned overcrowding at the clinic, as it appeared to be much used by residents from other villages and towns.

Respondents also highlighted specific challenges they face in seeking care at a treatment centre or community health centre. These challenges then subsequently deter them from visiting the health care centres. For example, respondents in Yassin said:

"Health care staff is helpful in cases of easy infections, when someone catches a cold or has diarrhoea, and for the follow-up treatment of pregnant women, but they are not helpful because they are often busy, and in cases of difficult diseases like kidney problems and stomach aches they are lacking qualified health workers, medicines and diagnoses."²⁹

²⁹ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.



Instead of seeking professional help, people usually try to treat the sick person at home or with the help of a religious man, while others travel to larger cities such as Nyala because the PHCC does not offer sufficient services.³⁰ Other respondents do not even try to get health care at the PHCC in the camp first – they head straight to the town to consult a doctor. The frequently unavailable medicine and staff discourages respondents.³¹ In some cases, respondents reported that medicine is only delivered twice a week, which does not meet the community's needs.³²

This leads us to conclude that the main barrier to visiting health centres is not a lack of knowledge, or a belief or attitude that formal medical care is undesirable, but rather that the capacity of the centres to provide the care is inadequate. This finding suggests that changing service provision of the centres, for example by reducing waiting times and increasing staff numbers, would encourage people to visit the centres. Respondents from Kalma, a location where CIS did not support the health systems and distribution of pharmaceuticals, also mentioned a lack of pharmaceuticals.

"We suffer from a lack of medicine. If the drug at the centre is not available, you receive a prescription on a piece of paper in order to go to a different pharmacy outside. But if you do not have enough money, you do not have any option. You can only stay there with your illness and consult the available treatment and herbs in the community."³³

Putting even more pressure on the limited health care facilities in the camps are people from outside the camps coming to seek treatment at the PHCC. For example, FGD participants from Kass indicated that people from Kass town visited the PHCC inside the camp: "Visiting the PHCC is not always helpful, because they only take two hundred cases per day. If you don't come early you may not have the chance to get treated, so some of them get tired and return home. Even people from the city come here."³⁴ PHCC staff from Assalaya also stressed the overcrowding and informational issues:

"In the centre, checks, medicine and food are provided to pregnant and lactating women, but we see barriers in the distance and the lack of awareness. Specific obstacles include the lack of experienced health workers, material support, health workshops and specialists for (pregnant and lactating) women and children. To improve this situation and provide good services to both IDPs and health communities we need additional centres as well as training the community on the importance of health practices."³⁵

Health committees and Community Health Workers (CHWs) can be valuable additions to community-based health care. However, several interviewees also highlighted issues with these organizations: "The health committee is only voluntary. The members have been trained, but they are not active. You can only take advantage of them by giving them incentives. These organizations work very differently on the group."³⁶ The lack of incentives for committee members and other community volunteers is

³⁰ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

³¹ FGD with women. 1 December 2016. Assalaya, Assalaya, East Darfur, Sudan.

³² FGD with women. 7 December 2016. Kubum, Kubum, South Darfur, Sudan.

³³ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

³⁴ FGD with men. 3 December 2016. Kass, Kass, South Darfur, Sudan.

³⁵ KII with Health Committee Member. 1 December 2016. Assalaya, Assalaya, East Darfur, Sudan.

³⁶ KII with Community Leader. 5 December 2016. Beleel, Kalma, South Darfur, Sudan.



mentioned multiple times throughout qualitative data collection. The issue of CHWs is further discussed in the following section.

Finally, baseline information was collected on the immunization rates of measles and PENTA (diphtheria, tetanus, whooping cough, hepatitis B and haemophilus influenza type B). Overall, 89.13% (n=369) of respondents indicated that their child had received immunizations. For those who did not, not having access to the facilities as mentioned by 21.05% (n=8). Other reasons mentioned included the belief immunization is unnecessary, and that nobody is sick yet, as well as the children being too young – implying the belief that children should receive immunizations once they reach school-going age. However, vaccination rates for measles and PENTA between different locations differed significantly. At the 90% confidence level, children from South Darfur were significantly more often vaccinated against measles, at a rate of 92.56% (n=199), compared to 91.56% (n=141) in East Darfur. The same is visible regarding PENTA vaccinations, where 87.44% (n=188) of children in South Darfur had received vaccines, compared to a significantly lower 83.12% (n=128) in East Darfur.

3.4.2 Symptoms and Treatment of Diarrhoea

Residents from the various communities showed significant differences in the ways they treated illnesses and how they practiced health care. Considering the high prevalence of diarrhoea and the significant health risks it poses, respondents who indicated that they or somebody in their family had been sick with diarrhoea in the past month were asked follow-up questions to determine respondents' knowledge of treating diarrhoea. Since diarrhoea is associated with an increased risk of dehydration and under nutrition, it is vital to maintain normal or even higher rates of water and food intake. However, we found that there were significant differences between the locations regarding the treatment of diarrhoea.

The figures below show that respondents from East Darfur were significantly more often able to suggest the appropriate amounts of liquid and food a person with diarrhoea should take in. While in East Darfur the majority of respondents correctly indicated that intake of liquids should increase during this period, respondents of South Darfur could not. This was especially the case in Kass and Kalma, where respectively 38.89% (n=7) and 40.00% (n=10) suggested people should get much less or somewhat less water. This suggests that when faced with a household member sick with diarrhoea, respondents in South Darfur face increased health risks as a result of this lack of knowledge. A similar pattern is visible when looking at the suggested food intake of people suffering diarrhoea: the majority of respondents from East Darfur suggested this should increase, while respondents from South Darfur did not. Respondents from Kalma (28.00%, n=7), Kubum (26.32%, n=5) and Kass (22.23%, n=4) instead said that people with diarrhoea should eat much less or somewhat less. The relative poor performance in this area by Kass residents is disappointing, considering CIS' programming in that area.



Figure 17: Knowledge of fluid consumption as treatment of diarrhoea compared to when someone is healthy (%), by state, (n=98)

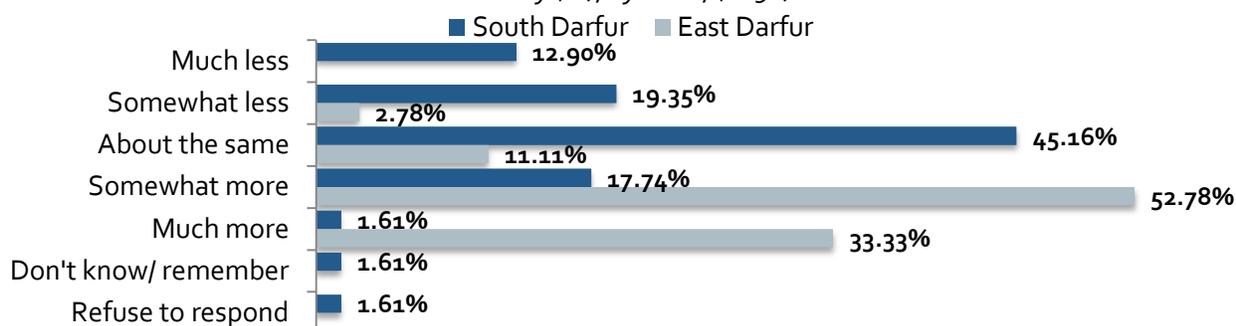
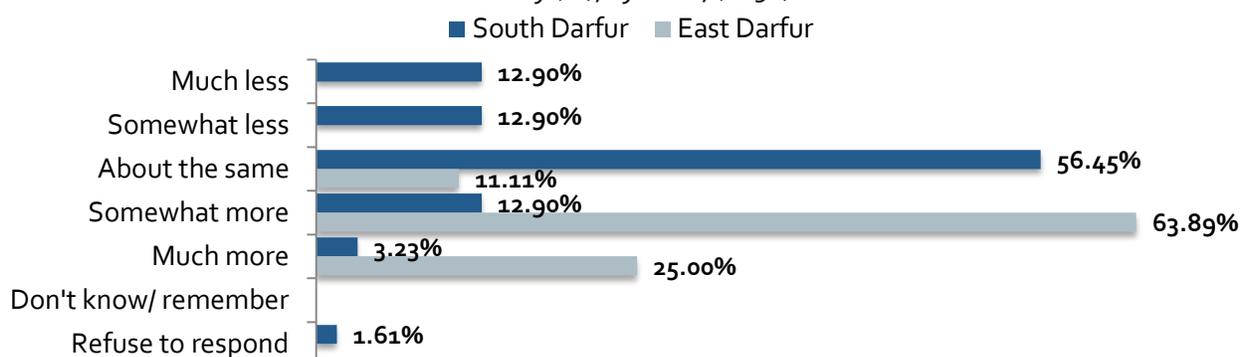


Figure 18: Knowledge of food consumption as treatment of diarrhoea compared to when someone is healthy (%), by state, (n=98)



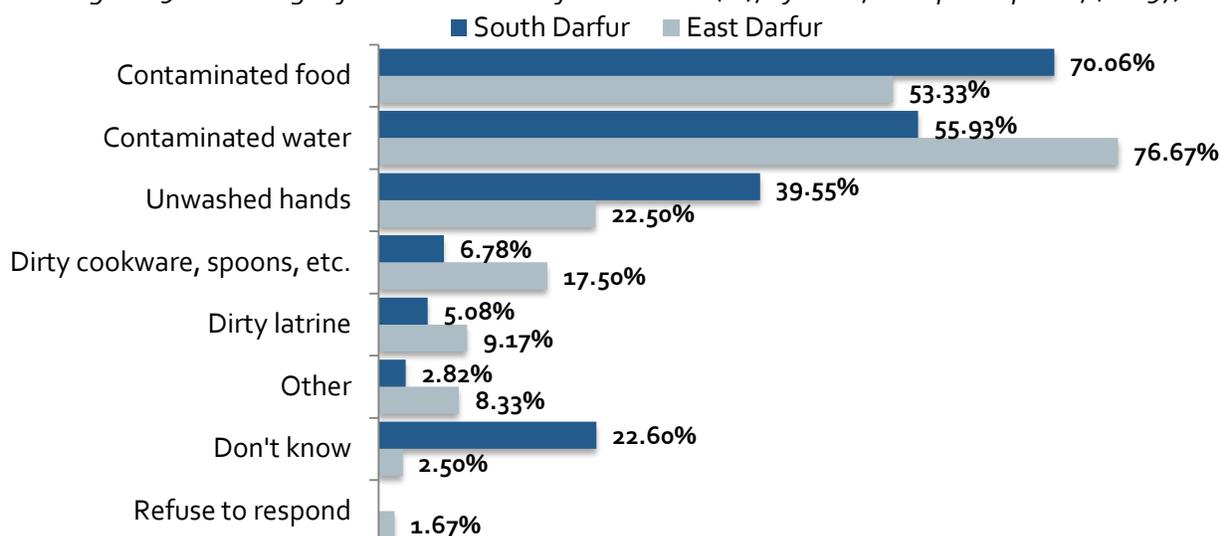
Children who are suffering from diarrhoea are especially vulnerable. Of the respondents who indicated that somebody in their household had had diarrhoea in the past month, 66.33% (n=65) indicated that there was a child among them. Of the children with diarrhoea, a majority of 58.46% (n=38) had acute watery diarrhoea (AWD), with a mean duration of 1.5 weeks. Acute watery diarrhoea with symptoms lasting longer than five to ten days poses a serious health risk. This means that the 36.84% (n=14) of recorded cases with AWD that lasted more than two weeks are at risk. There were no significant differences between locations in this area.

Assessing levels of knowledge is essential in order to specifically tailor programming efforts to certain target beneficiaries. As such, respondents were also asked to identify the reasons for diarrhoea. Overall, respondents were able to identify reasons related to food hygiene and hand washing as causes of diarrhoea, but did not identify dirty sanitary facilities as a cause. Furthermore, there were again significant differences between the locations. Respondents from South Darfur significantly more often identified contaminated food and unwashed hands as potential causes, while respondents from East Darfur significantly more often mentioned contaminated water and dirty cookware as possible causes. Other responses mentioned included: flies, air pollution, salt water, cow milk, waste, weather changes and a lack of food or bad food. These responses suggest that additional education in this area is needed. Furthermore, we found that similar to earlier findings regarding the attitudes of respondents towards the severity of certain illnesses, residents from East Darfur significantly more often considered diarrhoea to be more serious than respondents from South Darfur: 88.33% (n=106) compared to 70.06% (n=124). Again, despite health programming and messaging in this area, residents from Kass were not



able to name more reasons for diarrhoea than respondents from other areas. However, establishing direct causality regarding project impact is challenging, as there are likely other actors active in this areas in the various locations.

Figure 19: Knowledge of common reasons for diarrhoea (%), by state, multiple response, (n=297)



Poor health and illnesses in the household also impacts school attendance and education attainment of children. School-aged children of between 6 and 18 years old were present in 77.78% (n=231) of households. Of those children, 77.49% (n=179) visited school regularly. Schools also offer the opportunity to educate children on the importance of health and safety practices and habits. However, of the children attending school on a regular household, only 33.52% (n=60) of the respondents were aware of hygiene clubs within schools. This suggests that either the respondents were not aware of such activities at school, or that such activities were not present. In both cases, these are opportunities for future programming efforts. It should be noted that there was a significant difference in the awareness of such clubs between the locations, where respondents from East Darfur significantly more often indicated awareness: 48.65% (n=36) compared to 22.86% (n=24) in South Darfur.

3.4.3 Community Health Workers

CIS further operated with the objective to increase access to life-saving integrated primary and reproductive healthcare services in Kass. Community health workers (CHW) were trained to and supported to provide community health education and encourage behaviour change, as well as to specifically engage in public health surveillance. CHWs also provided messaging in regarding nutrition and WASH. CHWs would also communicate key messages encouraging mothers to seek antenatal and postnatal care during routine household visits. Concretely, this means that CHWs provide counselling, educate beneficiaries on service availability, follow up on cases and refer beneficiaries to other care facilities. CHWs were supported in their efforts by community resource people and change agents, who subsequently also supported the health committees.



The presence of CHWs in a community can fill certain gaps in health care services. CHWs may perform several tasks, which include messaging and awareness raising, anthropomorphic measurements, or referrals. Roughly half of the respondents indicated that CHWs were present in their communities (48.48%, n=144). From all IDP camps, Kass residents appeared to be most aware of CHWs present in their community: 50.85% (n=30) said a CHW was present in their community, compared to 36.67% (n=22) in Kalma and 43.10% (n=25) in Kubum. Considering CIS' activities in this area, this finding suggests that the activities in this area have positively impacted the awareness and knowledge of CHWs in Kass.

Despite their presence, only 15.97% (n=23) indicated that they had been visited by a CHW in the past month, largely for two reasons. 43.48% (n=10) indicated that the CHW had visited them for messaging, while another 43.48% (n=10) indicated they had visited to take anthropomorphic measurements. Respondents from South Darfur mentioned significantly more often that the CHW visited as part of an informational campaign and messaging. Other responses included CHWs visits on hygiene and hand washing. However, only 13.33% (n=4) of the respondents in Kass indicated that a CHW had visited them in the past month, suggesting a low frequency of routine household visits. These visits appeared to be concentrated predominantly on messaging and information. This is disappointing, considering CIS' presence and programming in Kass.

Overall, we found that respondents who indicated there was a CHW present in their community were able to mention significantly more hygiene and cleaning messages than those without a CHW. For example, of those who had heard hygiene messages, respondents with a CHW present could significantly more often recall messages concerning hand washing, preparing food hygienically, cleanliness and covering food. This finding suggests that the use of CHWs in messaging and campaigning is effective, as message-recall appears to be high. However, what respondents actually used to wash their hands or the frequency of hand washing was not affected by the presence of a CHW worker, casting doubt on their effectiveness. This difference was also visible for those who were visited in the past month, albeit to a smaller extent and on a smaller number of issues. There, we find that those with a CHW present could significantly more often recall messages to clean cooking areas, clean cooking utensils and keep clean bathing facilities.

In addition to this, the CHWs also provide a number of other services. In 19.44% (n=28) the CHWs provided medicines to respondents, albeit significantly more often in East Darfur than in South Darfur, and in 27.08% (n=39) CHWs provided treatment. In 47.22% (n=68) of the households visited by CHWs, they referred members of the household to the health centre. This happened significantly more often in South Darfur than in East Darfur. Other things that CHWs did during these visits included injections and vaccinations, lab tests, cleaning or waste collection, anthropomorphic measurements, food distribution, and informational and awareness-raising activities.

3.5 Nutrition

Within the area of nutrition, CIS focuses its efforts on infant and young child feeding behaviour change and improving the management of Moderate Acute Malnutrition and Severe Acute Malnutrition. This section on nutrition practices, knowledge of malnutrition, and respondents' attitudes regarding the treatment of malnutrition. We find that diets are generally bland and lack diversity, which especially negatively impacts groups including pregnant and lactating women. We also find that respondents



from South Darfur, especially in Kass and Kalma camps, are unable to supplement their diets with food from alternative sources, as their options to farm and produce food themselves are limited. A lack of employment and income limits their options of buying food. Concerning is the lack of knowledge of the symptoms of malnutrition, especially when it comes to identifying the less obvious symptoms such as lack of menstruation. This could lead to malnutrition being diagnosed far too late, an inability to treat malnutrition, and associated dire consequences for the child. As such, it is suggested that future programming considers efforts that support livelihood creations, even within the limitations of an IDP camps, in order to give residents the chance to supplement their nutritional intake with their own produce. It is also highly recommended that efforts be focused on education respondents on various, less obvious symptoms of malnutrition, as this could increase early detection of the condition and improve the chances of successful treatment.

3.5.1 Diet and Malnutrition

Although we find that respondents are aware of the importance of a diverse and nutritious diet, they face significant obstacles in practicing these habits and translating this knowledge into practice. Barriers include a lack of resources, knowledge and financial means, which affect the most vulnerable groups in the communities, such as the elderly and children. Respondents from Yassin described the nutrition situation more in-depth. However, since Yassin is not an IDP camp such as Kalma and Kass, the situation is likely different there.

"The main foods for people are sorghum and millet, which they produce on their farms in the rain season. They know the importance of good and diverse food – they buy meat and vegetables once or twice a week to enhance their food intake, but the elderly, children and pregnant women eat the same as the other people at home. The elderly, children and pregnant women should pay more attention to their food due to their weakness of body and higher need for food, but the community neglects these groups. They are not able to manage their food because of the lack of rain during the autumn season, lack of fertile farmland, shortage of seeds and the lack of farming tools. To solve these problem the community needs support in seeds, livelihoods, fertilizers and training of agricultural techniques."³⁷

Indeed, the need for livelihood strengthening was emphasized multiple times. Small yields, weak production and high prices of food in the market make it difficult for people to save food year-round. Instead, they use the food they cultivated within four to six months.³⁸ The long stays in the IDP camp render it practically impossible for residents to manage their own food, as they often lack land rights, tools and farmland.³⁹ Instead, they see increasing the quotas of food distributions by the World Food Programme (WFP) as the solution, or an increased role for women in gathering food, as "men cannot work outside the camp out of fear for themselves. We can do so because the women have few enemies."⁴⁰ Although women venturing outside the camps by themselves pose significant protection risks, they are often left with no choice, as they have not been able to receive WFP rations for several

³⁷ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

³⁸ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

³⁹ FDG with women. 1 December 2016. Assalaya, Assalaya, East Darfur, Sudan.

⁴⁰ FGD with women. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.



months. As one respondent said: “there are no clear solutions, but it increases the burden on women.”⁴¹ Several male FGD participants from Kalma indicated they attempt to share this burden with their wives. When asked about the role of men taking care of children in their community, they said:

“I myself do not have a problem with it. I can wash my baby and feed him, as it better to help the mother taking care of the children. But some people consider a man who cares about the children not to be a good social look. As for me, I can even cook and clean the house for my wife. Because life is cooperation and working together.”⁴²

However, views like these are not common throughout Darfur. Another respondent said: “at events, meals are provided to men first. After the men finish, women start eating.”⁴³ These cultural barriers stand in the way of providing support to the most vulnerable and the most needy in the community.

Nutrition support provided to communities is often limited, as the lack of a health or nutrition centre, such as in Assalaya, hinder a nutrition worker’s abilities: “due to the non-existent health centre and lack of food materials, the pregnant and lactating women and even children have not been provided with any services, except advice on how to deal with their case.”⁴⁴

It should be noted that throughout the assessment, but especially evident during the nutrition-related elements, it became clear that Kubum’s status as an IDP is different than that of Kass and Kalma. Researchers reported that Kubum residents are allowed to farm land and keep small livestock, contrary to residents from Kass and Kalma. Residents from Kass and Kalma indicated they never intended to stay for longer than one month, but then did not have any other choice. These findings should be considered when designing programming for these places, as these attitudes affect the options for achieving successful behavioural change in the communities. A respondent who arrived at a camp with the intention to remain there for several years is likely to have a different attitude than a respondent who arrived at a camp with the plan to only stay for a month or two, but ended up staying longer.

To understand the full extent of health and nutrition risks as they pertain to children, a set of questions was asked to respondents who indicated that they had children of five years old or younger. We find that there are 414 children under five years old living among the surveyed households, with a mean age of two years old. Of these, 51.45% (n=213) were boys, and 48.55% (n=201) were girls.

By asking respondents about the intake of various food groups of the children, a better understanding is created of nutritional needs and gaps. The figure below provides a detailed overview of the different food groups consumed by children on a daily basis. Although children across both locations consume a relative monotonous diet of grains, usually in the form of porridge, there are several notable differences in East and South Darfur. For example, the daily consumption of milk in various forms is significantly higher in East Darfur, as is that of legumes and nuts, suggesting a more diverse diet. This is in line with the earlier findings on food sources, and an expected one-sided diet commonly associated with distributed rations in IDP camps. Finally, we found that the breastfeeding rate is significantly higher in

⁴¹ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan; KII with Community Leader. 5 December 2016. Beleel, Kalma, South Darfur, Sudan.

⁴² FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

⁴³ FGD with women. 7 December 2016. Kubum, Kubum, South Darfur, Sudan.

⁴⁴ KII with Nutrition Worker. 2 December 2016. Umgrego, Assalaya, East Darfur, Sudan.

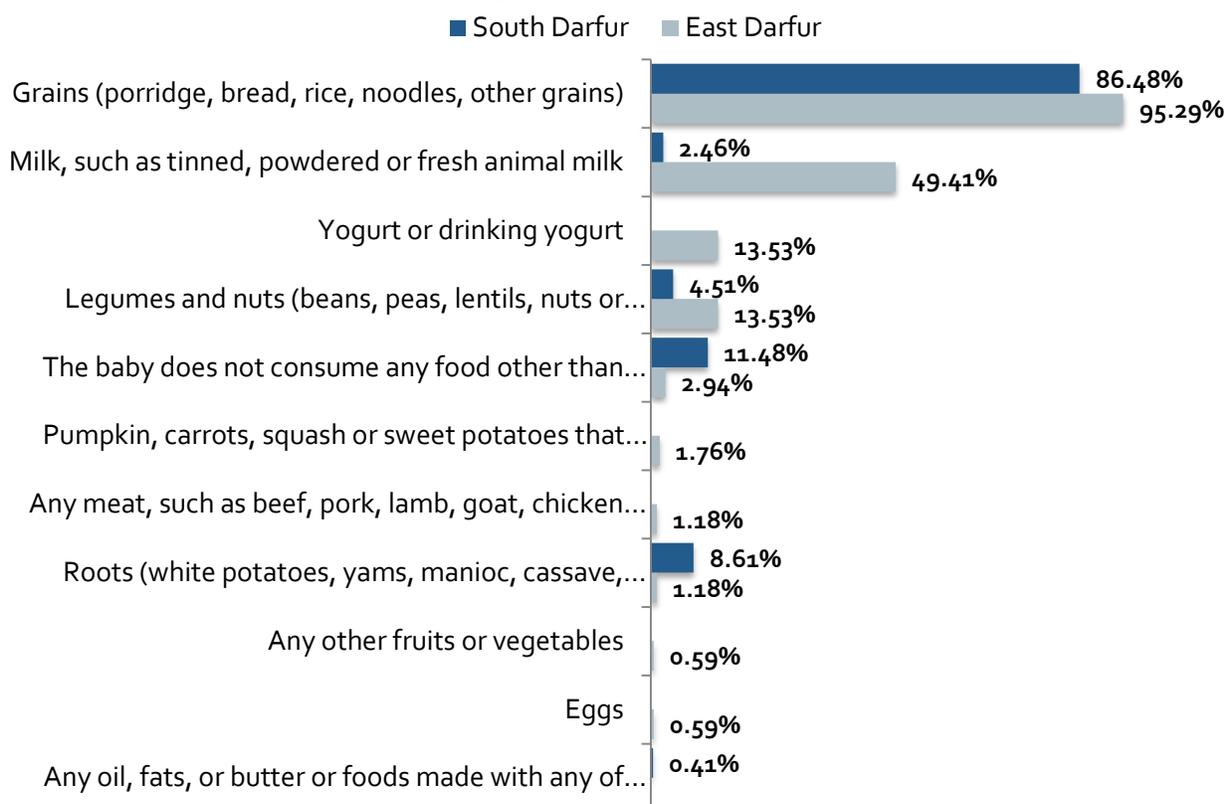


South Darfur (65.66%, n=65) than in East Darfur (46.30%, n=50). This is surprising, considering that the mean age in South Darfur is 2.7 years old, compared to 1.7 years old in East Darfur. The higher breastfeeding rate is likely attributable to the nutrition programme operated by CIS in South Darfur, which encouraged breastfeeding. Women also discussed specific difficulties that they face in breastfeeding, which appear to be centred on a lack of food for mother and child. For example, women in Yassin said:

"The women commonly breastfeed their children until six months, but if they don't have enough milk, they will apply solid feeding to the children from four months old. In normal situations they breastfeed for two years in combination with solid food. The barriers for lactating women are getting pregnant soon after delivering a baby, a lack of nutritious food for lactating women in order to produce enough milk for the child, good solid food for the child itself and a shortage of breastfeeding and child feeding care."⁴⁵

Providing inclusive breastfeeding until the child reached six months old is challenging for many women, as they often face food shortages during and after pregnancy, which affects lactation. Without enough breast milk to feed the child, mothers have no choice but to feed the children solid foods much earlier, sometimes as young as two months.⁴⁶

Figure 20: Consumption of common food groups on a daily basis (%), by state, multiple response, (n=412)



⁴⁵ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.

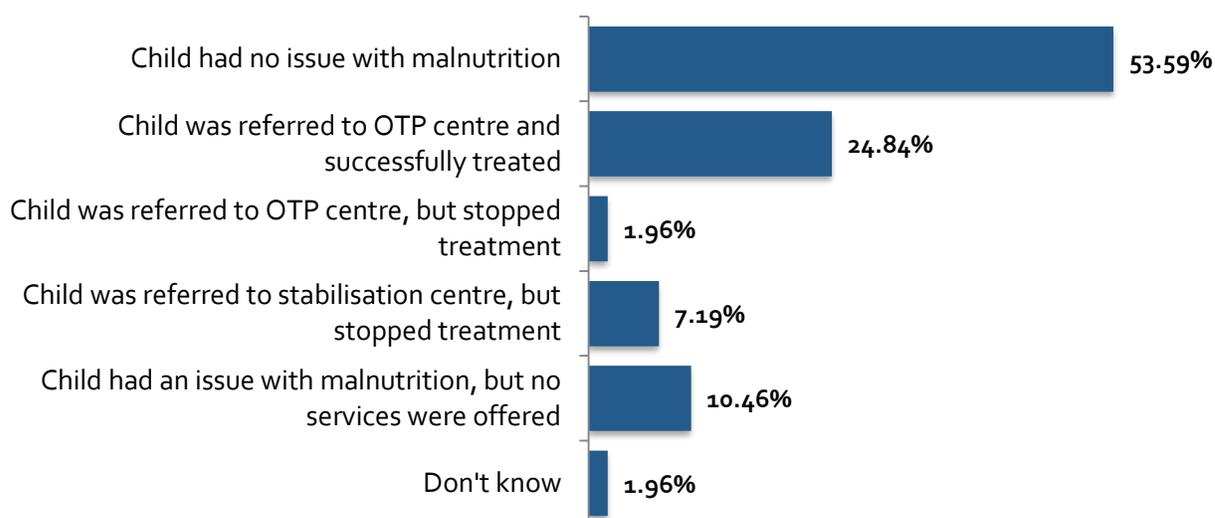
⁴⁶ FDG with women. 4 December 2016. Beleel, Kalam, South Darfur, Sudan.



Further information was collected on the frequency of screenings conducted with the children, and possible treatment or follow-ups after such screening, as well as information on immunizations. We found that 36.96% (n=153) of children were screened. However, statistically significant differences were evident in the frequency wherein these screenings were conducted. The data suggest that respondents in South Darfur, in particular Kalma and Kubum, had recently been screened, as 32.18% (n=28) indicated that their child had been screened in the past seven days. This is much higher than the 7.58% (n=7) of respondents in East Darfur. A possible explanation for this is the higher frequency with which screenings are conducted. Screenings are furthermore conducted by various entities, either community-based organizations; nutrition service providers from the government or nutrition service providers from non-governmental organizations. We find that these differ significantly between locations, as primarily governmental and non-governmental nutrition service providers conduct screenings in East Darfur, while the role for governmental organizations is much smaller in South Darfur. Instead, community-based organizations are much larger there. Again, this is in line with the earlier findings on overall service provisions and the role of different actors.

Respondents whose children had recently been screened were subsequently asked about the results of the screening. A majority of 53.59% (n=82) reported that their children were found to have no issues with malnutrition – a finding that does not yield statistically significant differences across locations. This is surprising, considering that 95% of all respondents that they would need more food in order to properly feed everyone in their household.

Figure 21: Results of children's nutrition screenings (%), (n=153)



Furthermore, 17.65% (n=27) of respondents also indicated that their children were currently receiving treatment for malnutrition at a feeding or treatment centre. Reasons for children to not receive children differed significantly across locations – respondents from East Darfur indicated that they could not afford to do so. Although treatment in the centres is in principle free, the costs associated with traveling to the clinic such as transportation and missing a day of work, are considered to be high.



Possible expensive follow-up treatment and frequent lack of medicines or food at the centre further deter people from seeking help.

Baseline information was collected on safe motherhood, including prenatal and antenatal care. We found that a majority of 90.14% (n=265) of respondents agree that there is a time wherein a baby should be exclusively breastfed. 84.91% (n=225) of them believe that this should start the moment the baby is born, and 67.34% (n=200) believes this should last until the baby is two years old. Qualitative data also suggests that although respondents believe pregnant women should take additional care in staying healthy, they are often unable to do so:

"The pregnant women should behave differently from others in terms of eating, drinking and working, but here most of the community doesn't care about pregnant women due to their lack of knowledge and their lack of money (...) We can overcome these barriers by teaching people about the importance of visiting clinics, by teaching people which food types pregnant women need, and by providing them with money to buy nutritious food for pregnant women."⁴⁷

3.4.1 Symptoms and Treatment

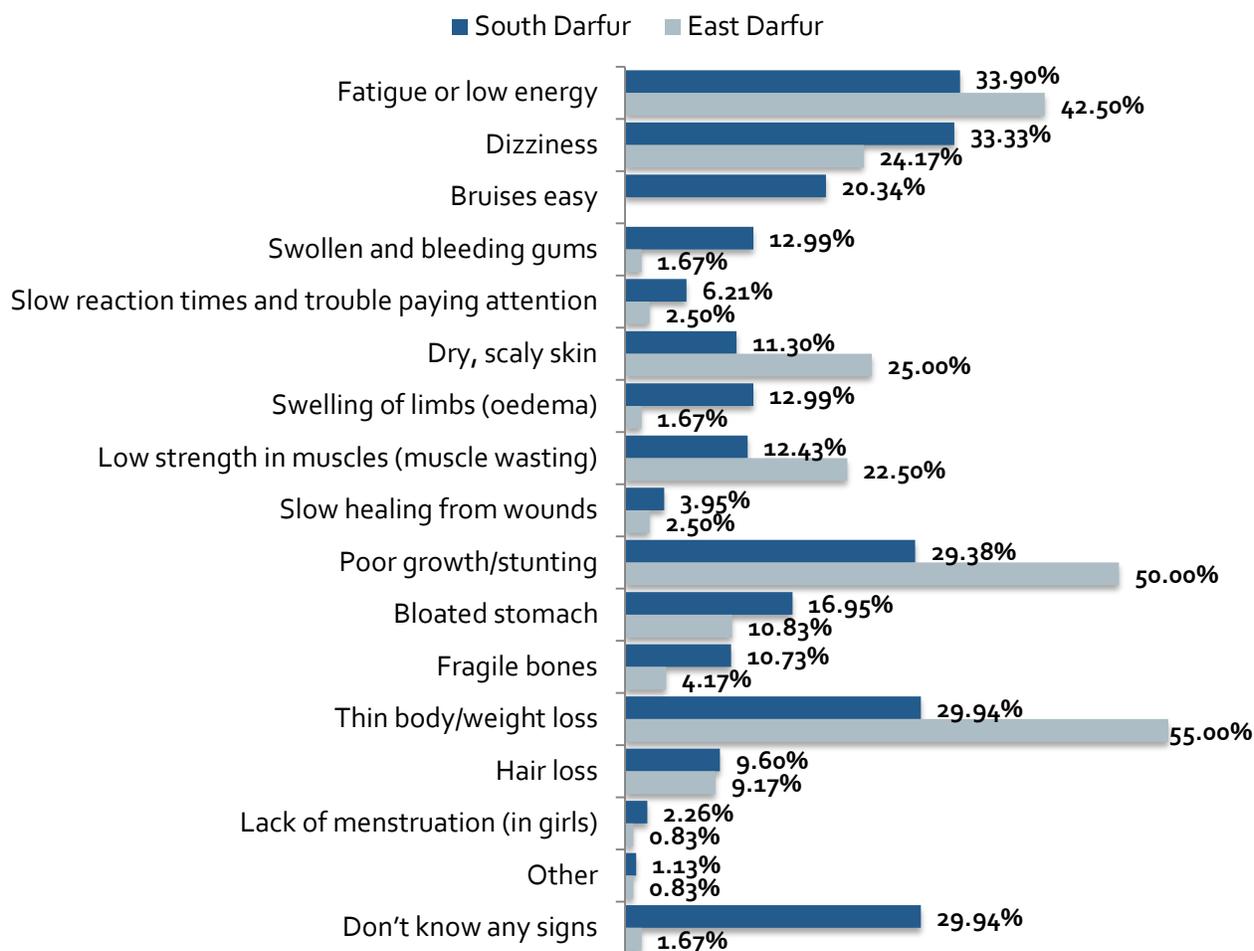
In order to assess current knowledge levels and identify areas for future programming, respondents were surveyed about their knowledge of malnutrition. Although most respondents were able to correctly identify several symptoms, respondents from various locations tended to mention specific symptoms significantly more often than others. Other symptoms that were mentioned included running a fever and still having the ability to eat. For example, respondents from South Darfur mentioned easy bruising, swollen and bleeding gums, oedema and fragile bones more often than respondents from East Darfur. On the other hand, respondents from East Darfur significantly more often mentioned dry and scaly skin, muscle wasting, growth stunting and weight loss. Very few respondents from both locations were able to identify less obvious symptoms, including concentration issues, slow healing, hair loss and lack of menstruation. This suggests that by providing additional information on recognizing these symptoms, malnutrition could be detected and treated earlier on, reducing the case fatality numbers. Indeed, this issue was mentioned consistently throughout the qualitative data collection, as parents who were lacking knowledge on how to identify symptoms of malnutrition and who were unaware of the severity, often left their children untreated.⁴⁸

⁴⁷ FGD with men. 3 December 2016. Yassin, Yassin, East Darfur, Sudan.

⁴⁸ KII with Hygiene Promoter. 2 December 2016. Umgergo, Assalaya, East Darfur, Sudan.



Figure 22: Knowledge of malnutrition symptoms (%), by state, multiple response, (n=297)



Respondents were also asked what they would do if they had a child that was malnourished. With significant differences, most respondents from South Darfur would reach out to a CHW (25.42%, n=45), while 35.00% (n=42) of respondents from East Darfur would buy higher quantities of food. This is unsurprising, considering that significantly more respondents from South Darfur had access to, and were aware of a feeding or treatment centre operating in their facility (86.44%, n=153 versus 56.67%, n=68 in East Darfur). As such, this appears to be an infrastructure issue rather than a knowledge issue, as enumerators observed that only in 20.83% (n=25) of the observations in East Darfur, a nutrition centre was operating, compared to 70.06% (n=124) in South Darfur.

These findings are supported by interviews conducted across the states. One health committee member said: "there are problems in the communities outside of Assalaya due to lack of information on how to diagnose and treat malnutrition, as well as on its seriousness. These problems exist because not enough messages are sent to the villages surrounding Assalaya."⁴⁹ Quantitative data confirms that enumerators observed more OTP/feeding centres in South Darfur than in East Darfur, again likely due to the generally higher availability of such services in the vicinity of IDP camps.

⁴⁹ KII with Health Committee Members. 1 Decemver 2016. Assalaya, Assalaya, East Darfur, Sudan.



Usage of the feeding or treatment centre also differed significantly among those who were aware of it. While 60.78% (n=93) of respondents in South Darfur said they used it sometimes, and 3.27% (n=5) said they used it frequently, 50.00% (n=34) of respondents in East Darfur said they used it sometimes, while 14.72% (n=10) said they used it frequently. This suggests that respondents in East Darfur have a stronger need for these facilities compared to those from South Darfur.

Reasons for respondents to not use the centres included a lack of treatment, presumably due to overcrowding or waiting times, a lack of supplies, and distance. However, respondents who did visit the centre also frequently ran into issues. In both states, a lack of food in stock at the centre is the main reason they do not receive service. In addition to this, respondents in South Darfur also cite being refused service by staff as a reason, while those in East Darfur said the centre was closed. In Kubum, pressure on existing facilities has increased as two entire villages have moved to the camp after heavy flooding in 2012 ago: "In the past, there was only a small number of people. After the floods, displaced residents from Milolh and Mkarorh moved towards us, and so the number of people has increased, as has the competition for resources."⁵⁰

3.6 *Safe Motherhood and Family Planning*

Providing suitable and timely health care to pregnant and lactating mothers is essential in ensuring safe motherhood and reducing the risks of illnesses during pregnancy. As such, we assessed the knowledge, attitudes and practices regarding antenatal care, breastfeeding and family planning methods. We find that pregnant women are often unable to meet their specific needs, which affects their ability to breastfeed their children. Furthermore, although there are skilled birth assistants present in several communities, women are found to be wary of enlisting their help, and prefer to deliver their child at home, or when possible in a hospital. Although both men and women demonstrated an awareness of providing specialist care to pregnant women, they often said they felt like they did not have the luxury to do so, as their help was needed in the household. This suggests that the opportunity costs of seeking antenatal care were perceived as too high, as it would cost too much time and take away from other household chores. Finally, we find that these challenges in breastfeeding also affect the ability of respondents to practice safe family planning methods. Considering that breastfeeding as a family planning method is only effective when it is practiced frequently and regularly, this is challenging when lactation is low due to nutritional deficiencies. It is suggested that future programming take this into account when providing support to family planning and reproductive health.

⁵⁰ KII with Hygiene Promoter. 6 December 2016. Kubum, Kubum, South Darfur, Sudan; KII with Nutrition Worker. 7 December 2016. Kubum, Kubum, South Darfur, Sudan.



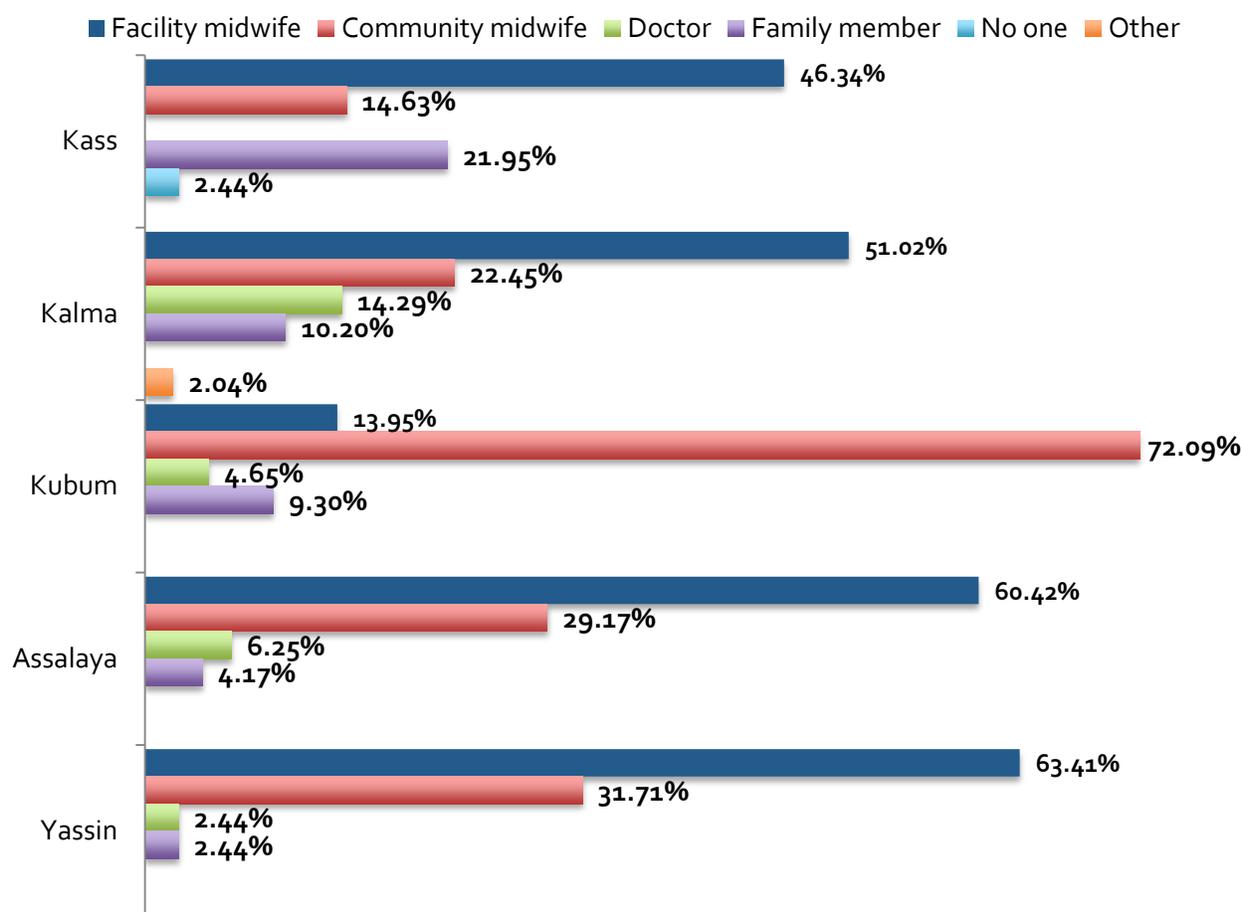
Focus Group Discussion with women in Assalaya

The majority of respondents indicated that their youngest child was born at home (74.77%, n=166), while others indicated their youngest child was born at a hospital (18.02%, n=40). However, there were significant differences in the help that respondents indicated they or their wives had received when giving birth. More important than the location of the birth is the presence of a skilled birth attendant during the birth. We found that of respondents with young children, in 47.30% (n=105) of the cases, their youngest child was born with the help of a facility midwife. Another 33.78% (n=75) of them were born with the help of a community midwife. Although large numbers of respondents received help from community or facility midwives, family members played a significantly larger role in deliveries for respondents from South Darfur (13.53%, n=18) than in East Darfur (3.37%, n=3).

Kass specifically stood out, where 21.95% (n=9) of respondents said a family member aided them during the birth of their youngest child. The assistance from a community midwife was highest in Kubum (72.09%, n=31), and significantly lower in all other location, where it ranged from 14.63% (n=6) in Kass and 31.71% (n=13) in Yassin. Significant differences in the use of facility midwives was also evident. Usage in Yassin stood out with 63.41% (n=26). While facility midwife assistance was similar in Kass, Kalma and Assalaya, Kubum's use of facility midwives was lowest as it stood at 13.95% (n=6). Despite the reproductive health intervention in Kass, this area did not show significantly higher levels of assisted childbirth than other areas.



Figure 23: Frequency of childbirths assisted by skilled birth attendants (%), by location, (n=222)



Overall, 14.14% (n=42) of respondents indicated that a pregnant woman was living in the household at the time of survey. Of them, only two were currently in the third trimester, and neither of them had received a delivery kit. Both were residing in households in South Darfur. Considering that pregnancies are not detected until after missing one or two menstruations, analysis was limited to respondents who indicated they were pregnant for two months or more (n=11). From them, 72.73% (n=8) had visited a health centre or hospital during the pregnancy. 75% (n=6) of them had done so twice, and 25% (n=2) had done so three times. Of the women currently two or more months pregnant, 54.55% (n=6) planned to deliver the baby at home, and 27.27% (n=3) planned to deliver the baby at the hospital.

Asked about what women took into consideration when making these decisions, women from Yassin indicated that “pregnant women do not eat enough diverse foods, but also don’t get enough specialist medical attention. Some pregnant women refuse to come to the healthcare centre in time for delivery because the midwives at the centre are little girls.”⁵¹ This response suggests that the targeted beneficiaries do not feel at ease receiving care from certain people, or that they are perceived as being unfit to provide this care. Participants in the same FGD emphasized that there was a need specialist

⁵¹ FGD with women. 4 December 2016. Selea, Yassin, East Darfur, Sudan.



female doctors. Although, these are not areas where CIS provided care, and it is difficult to draw conclusions from these statements, these are valuable so that possible future risks can be mitigated.

Throughout the FGDs, women indicated that although pregnant women are actively seeking medical attention, they face barriers in doing so. For example, female FGD participants said: “you have to walk to the health care centre many time, and there they give you very long waiting times and dates, for example fifteen days, depending on the pain and the period. These long waiting times can result in a dead foetus in the abdomen.”⁵² In other cases, women do not have a choice but to take risks during their pregnancy. For example, when male FGD participants in Kalma were asked about reproductive health and whether women should do things differently during their pregnancy:

“Yes, if there were not considerable need for them to work, we wouldn’t let them to. Even if they were not pregnant or breastfeeding, they shouldn’t. Pregnant women need to be healthy and they need special care. But of course, these are special circumstances, because men cannot go outside the camp to work, so some women ask their men not to go out to work, because the lack of work is better than completely losing them.”⁵³

As such, we find that pregnant women face numerous barriers in seeking and receiving adequate health care. Not only does the lack of services available to them increases the risks of complications during pregnancy for both mother and child, but the economics and societal pressure exerted on them by family and community members further limits their options.

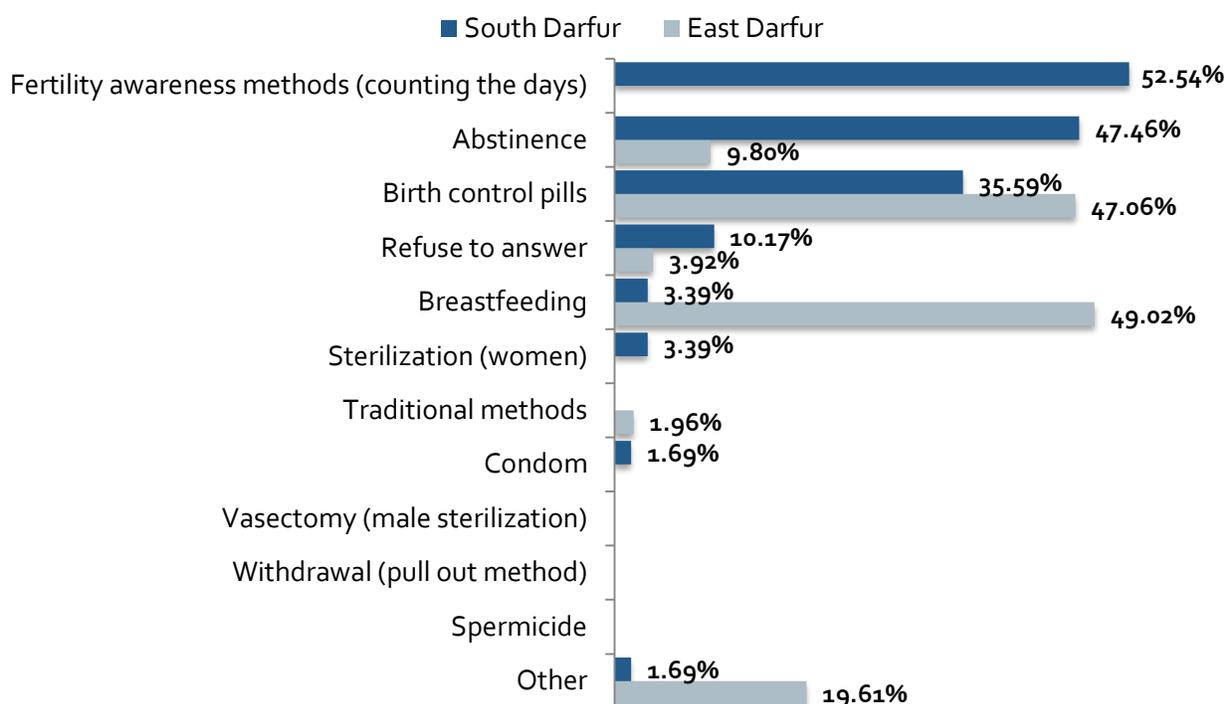
Of all respondents, only 37.04% (n=110) said they were aware of family planning methods. However, asking subsequent questions only to respondents who had indicated they were aware creates a selection bias, as they are subsequently more likely to correctly identify such methods. Keeping this in mind, respondents indicated they were aware of several family planning methods, as can be seen below, with a single respondent saying that they were aware of an injectable contraceptive.

⁵² FGD with women. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.

⁵³ FGD with men. 4 December 2016. Beleel, Kalma, South Darfur, Sudan.



Figure 24: Awareness of family planning methods (%), by state, multiple response, (n=110)

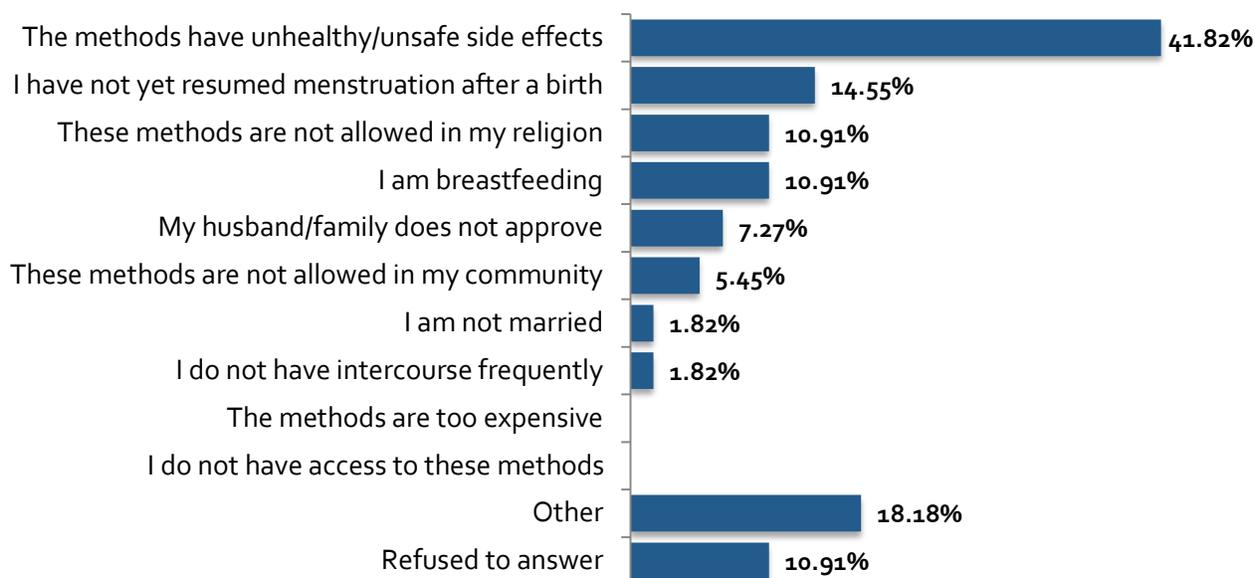


Regardless of their awareness of family planning methods, only 45.45% (n=50) of respondents said they practiced such methods. Abstinence (48.00%, n=24) and counting the days (44.00%, n=22) were the most popular followed by birth control pills (16.00%, n=8) and other methods such as breastfeeding. The reported use of birth control pill is uncharacteristically high for Sudan, especially in these regions. From these, only fertility awareness methods were practiced with significant differences across locations: only respondents from South Darfur practiced this method. However, frequent and regular breastfeeding as a form of contraception is usually only effective when the baby is younger than six months old.

Both men and women were asked why they did not practice family methods. The main factor in deciding not to use family planning methods was a belief that these methods have unhealthy or unsafe side effects. Although these reasons did not differ significantly between men and women, we observe statistically significant difference between different locations. For example, respondents from South Darfur indicated more often that they did not use family planning methods because these methods are not allowed in their religion and in their community.



Figure 25: Reasons for not using family planning methods (%), multiple response, (n=55)



The findings suggest that most cited reason for not using family planning methods can be addressed by providing additional training and awareness in this area. By informing women and men about the use, risks and side effects of family planning methods in a way that is acceptable to members of the community, it is likely that usage of such methods will increase in the future. It is extremely likely that this reason is associated with modern family planning methods, on which members of the community may not have much access to.



4. Conclusions and Recommendations

Issue Area	Conclusion	Recommendation
Water Sources and Collection	<p>K: Respondents are aware of the importance of fetching water from safe sources, and will often go to great efforts to achieve it. However, respondents tend to assume water from sources perceived as safe is always safe, which makes them vulnerable to in cases of contaminations.</p> <p>A: Respondents generally valued safe drinking water, but due to a lack of sufficient safe water sources were at times forced to drink from unsafe sources. Attitudes can thus be seen as a supportive influence for increased programming.</p> <p>P: Overall, 65.66% of respondents had access to safe water sources. Respondents in IDP camps in South Darfur had better access to safe and protected water sources, while unsafe sources were the primary sources for drinking water for residents in East Darfur. Residents in South Darfur show better water practices, but residents from East Darfur are inhibited from doing so due to limited access to safe water sources. Challenges include breakdowns, distance, overcrowding and waiting times, as well as sharing resources with livestock. As women and children are mostly responsible for water collection, these challenges result in protection risks and hinder educational attainment.</p>	<ul style="list-style-type: none">• Improve access to and quantity of safe water sources in South Darfur by increasing installation of such sources, and protecting existing sources, for example by covering wells.• Ensure that water committees have the capacity and resources to test for chlorine residue at water points so cleanliness is monitored.• Promote stricter separation of sources for livestock and sources for human consumption by educating communities on the hygiene implications. When planning construction of water points, plan for livestock use.• Consider the safety of women and children who fetch water by accounting for the distance and the route to the water point when planning construction. This could be by giving more consideration to the routes from the communities to water points used by women and children.
Water Consumption	<p>K: Respondents demonstrate moderate knowledge of safe water sources, and high knowledge of the importance of sufficient water consumption from safe sources.</p> <p>A: High water consumption in areas with predominantly unsafe sources suggests the belief that quantity of water is more important than quality of water.</p>	<ul style="list-style-type: none">• The most straightforward way to increase water consumption is to provide respondents with additional containers to fetch and store water. Containers must be sealable and easily to clean, have a tap to allow for easy retrieval, and preferably be multifunctional to also allow for solar disinfection.• In addition, the constructions and



P: Although respondents are aware of the importance of sufficient water consumption from safe sources, they face obstacles in translating this knowledge into practice due to insufficient access to safe sources. Overall, only 36.70% of all respondents had access to safe water sources and consumed at least 15 litres of water per day. In locations where consumption was higher, consumption predominantly existed of low-quality water consumption. The main reason for this is a lack of suitable containers to carry and store water, followed by poor water quality.

Water Treatment

K: Knowledge of water quality is limited to what is directly observable, so colour and smell of the water, rather than unseen causes of poor water quality. Knowledge of alternative, cheaper methods such as solar disinfection is generally low, indicating a knowledge gap. This subsequently feeds into a gap in practices, where respondents practice cheap and insufficient cleaning methods such as pouring water through a cloth. More effective methods such as boiling water is known, but prohibitively expensive due to the high cost of coal.

A: Not all respondents thought they had to treat their water prior to drinking it, especially when they considered the water to be clean based on a purely visual inspection, and if it came from a source perceived as safe.

P: Respondents with limited access to safe water sources treated their drinking water more, and demonstrated the necessary knowledge to do so. However, their options to do so were often limited due to lack of resources, such as coal to boil water.

rehabilitation of further water points is important to enable the increased consumption by households.

- As promoting effective water treatment at the household level is severely constrained by resources, the highest contributions on water quality may be found by ensuring safe water at the collection points by maintaining sufficient numbers of water sources with a monitoring system to detect contaminations.
- However, in addition low-cost but more effective methods for water treatment should be promoted at the household level – for instance solar disinfection and sand filtration. Suitable materials for enabling these practices need to be more widely available for them to be adopted widely. Since knowledge of water treatment is present, this will help communities to translate this knowledge into effective practices.
- Additionally, solar disinfection at the household level may be an accessible water treatment method. Informing communities about this method could be done by CHWs and would fit into the larger role envisioned for CHWs.



Water Storage and Containers	<p>K: Respondents lack knowledge of the importance of storing drinking water in safe storage containers and regularly cleaning the containers. Residents lack knowledge of hygienic storage containers and the potential consequences of using dirty containers.</p> <p>A: The lack of knowledge of this topic suggests that it is not a priority for many respondents and that it might not be taken seriously.</p> <p>P: The majority of respondents store their drinking water in safe, sealed containers, but risk recontamination of the water due to dipping or ladling water from the container with dirty cups or smaller containers. While most of the respondents also regularly cleaned the containers, those who did not, did not do so due to a belief that it was not necessary because the water itself was clean. This leads to many respondents practicing unsafe storage and water retrieval habits.</p>	<ul style="list-style-type: none">• When providing communities with containers it is recommended that these containers can service multiple purposes: that they are simultaneously suitable for solar disinfection, but that they also allow for safe retrieval. For example, containers should not be too big so that they are still manageable, and should have a tap to allow for pouring.• Knowledge of the importance of safe methods to retrieve water from storage containers is low, and thus in need of additional awareness raising. For example, when using a cup to ladle water, the cup must be clean as to not contaminate the water. The importance of using clean tools or a safe method in this step must be emphasized in during trainings.• Regular cleaning of water containers must be emphasized in trainings and workshops. Because the water itself is clean does not mean that the container remains clean over time.
Water Management	<p>K: Overall, we found that respondents showed limited knowledge of the WUCs and their responsibilities, and had a mixed, slightly negative attitude towards the WUCs. WUCs as water management systems were generally considered to be useful, despite mixed levels of satisfaction. WUCs were perceived to lack structure and consistency, were ineffective due to a lack of training.</p> <p>A: Most importantly, the community did not always accept the WUCs, demonstrating a negative attitude. Lack of acceptance was mostly because its role and responsibilities were often unclear, but they also lacked the materials, such</p>	<ul style="list-style-type: none">• In order to fill the identified knowledge gap, communities must be made aware of the roles and responsibilities of the WUC in order for them to be effective. This will in turn support the cultivation of a positive towards to the WUCs and their work.• Enhancing transparency of the appointment procedure of WUC members could help, for example by introducing a town-hall style meeting to confirm appointments, and set standard meeting times and places, for example with an open-door policy where



as spare parts, to fulfil their roles. Mixed satisfaction with the WUCs led to community members not fully using the WUCs to their advantage. Addressing the knowledge and attitude gap is likely to advance the practice of using the WUC as an intermediary for water management issues.

P: Due to the aforementioned issues, residents did not often make use of the services offered by the WUC, if present in their community.

Water-related diseases

K: Respondents across all locations demonstrated weak knowledge in linking poor water quality to diseases. They displayed insufficient good practices to mitigate these risks.

A: Respondents did not consider water-related diseases such as diarrhoea to be very serious.

P: In addition to displaying poor cleaning and storage habits, respondents insufficiently linked these habits to water-related diseases, most notably diarrhoea and dysentery. Respondents did recognize that risks were higher for children than for adults, and although they considered getting sick from water to be serious, they were unable to tie this to poor hygiene practices.

Hand washing

K: Knowledge of hand washing practices was moderate, but did not translate into actual habits. Knowledge of key hand washing times varied per location, but was found to be higher in South Darfur IDP camps. Knowledge was strongest of the most obvious key times, such as before eating.

A: Respondents generally appeared to be receptive of messaging and campaigning, but indicated that lack of soap and resources prevented them from practicing good habits. However, others had only attended workshops due

community members can express their grievances.

- WUC members must subsequently receive training on water source maintenance and community engagement, making the needs of the most vulnerable a priority. This will also address the attitude issue, and enhance their legitimacy.
- Respondents must be educated about the final missing link between poor hygiene habits and poor health or sicknesses. This may then also increase the perceived severity of poor practices, and motivate community members to take these issues more seriously.

- Overall knowledge of hand washing times is moderate, but in need of providing the last missing link in several areas, for example hand washing when taking care of infants.
- Considering the high cost of soap and limited distribution options, strengthening distributions or supporting market chains for soap, or introducing acceptable alternative rubbing agents to the communities, is recommended.



to the item distribution.

P: Despite having the theoretical knowledge of hand washing, few respondents were able to frequently practice this.

Latrine usage

K: Respondents demonstrated sufficient knowledge of latrine usage, but human faeces and public defecation was observed in all locations. Respondents were unable to consistently use latrines as lack of resources prevented them from doing so.

A: Attitudes indicated that although they were aware of negative consequences, this did not always deter them from unhygienic defecation. This suggests that, although aware of the consequences, they did not go to great lengths to avoid it.

P: The majority of respondents had access to latrines, but faced challenges including overcrowding, dirty facilities and poor maintenance. This mostly impacted women, as they were forced to defecate outside the village or at night. Respondents lacked the necessary materials and knowledge to construct latrines themselves, creating a dependence on other actors and organizations to provide them to them. This led to unsanitary conditions.

- Introducing gender-separated latrines can reduce the protection risk for women, as they won't have to go into the bush at dark.
- To enhance sustainability and self-sufficiency, educating communities on the independent construction and maintenance of latrines is recommended. This will provide them with greater agency and responsibility.

Waste collection

K: Throughout the assessment, respondents demonstrated high levels of knowledge of the importance of waste collection and positive attitudes towards change.

A: Despite limited facilities, respondents generally considered poor waste collection a health hazard and stressed the importance of addressing this issue. Respondents considered this a truly harmful issue.

- Considering the high knowledge and positive attitudes towards waste collection, enhancing communities in this area is recommended. For example, programming may include a community-based approach to waste collection, for example by introducing waste collection committees, providing training on how to run collection services and how to safely dispose of or burn large



	<p>P: However, practices were inconsistent as facilities were lacking. Disposal boxes and frequent collection were lacking, leading to communities dumping waste in nearby valleys, which turned into landfills with serious health risks, especially for children.</p>	<p>amounts of garbage.</p> <ul style="list-style-type: none">• Additional facilities, such as additional waste boxes are necessary. The existing landfills should be monitored closely to prevent the spread of diseases in the area.
<p>Hygiene Messages</p>	<p>K: Respondents demonstrated moderate knowledge of hygiene messages, but this did not translate seamlessly into improved hygiene practices. The link between hygiene knowledge, attitudes and practices and diarrhoea was found to be extremely weak.</p> <p>A: Attitudes were mixed as previous NFI distributions had led to people attending trainings solely to receive incentives. Respondents recalled hygiene messages to varying degrees, but this had extremely limited, if any, effect on behavioural change. Respondents were reportedly present at workshops and information meetings because they were aware of non-food items such as soap being distributed. This led to varying levels of knowledge of WASH practices.</p> <p>P: Actually translating messages into practices was mixed. Effectiveness of hygiene messages appears to depend on its overall integration in the intervention, the use of local languages, the recruitment and training process of the community members active as hygiene promoters.</p>	<ul style="list-style-type: none">• Enhance the overall integration of hygiene messages in the intervention, making it an integral part of programming. Current perception of workshops as a source of free non-food items is unsustainable as this promotes a negative attitude.• Increase effectiveness of hygiene messages by employing additional local staff and local language, but also enhance community acceptance by maintaining a transparent recruitment and training process.
<p>Illnesses, Health Care, CHW</p>	<p>K: Respondents, despite being aware of PHCCs and knowledgeable about the services offer there, did not attend these much.</p> <p>A: Due to obstacles at the clinics, respondents preferred to treat illnesses themselves, and had an overall negative outlook regarding the health services. Simple illnesses such as cough, fever and diarrhoea are most prevalent, and</p>	<ul style="list-style-type: none">• Health care centres must be better equipped to deal with rapidly increased demand. It is recommended to explore ways for programming to be more flexible in order to meet varying and changing needs, for example in the case of the recent rain floodings, or other communities using the facilities. This could take the shape of an



respondents prefer to treat these themselves.

P: However, respondents were more likely to seek formal health care in the event a child fell sick. Respondents faced significant barriers to health care: rather than a lack of willingness to visit formal health centres, long waiting times and lack of medicines at the locations deterred them from seeking treatment. This partially due to people from outside the target area seeking treatment at already limited facilities. CHWs currently play a limited role, which could be expanded in the future if they are provided adequate training and are not overloaded. Although their messages are generally well recalled by respondents, this does not yet result in the desired behavioural change.

emergency or flexible funding that maybe allocated on an ad-hoc basis.

- It is recommended that regular needs assessment or monitoring are conducted in order to spot changing demand, where for example visitors and waiting times are tallied on set times of the week, so a rapid response can be implemented to meet the surge in demand. Similarly, stock taking of medicines and drugs should be conducted more frequently as to avoid the disappointment at the centre.
- A structural solution must be found to address the visitors from outside the location, as this increases pressure on the facilities. This can be by branching out, or limiting services to the community only.
- The role of CHW may be expanded in order to be a temporary fix to meet increased demand. Providing additional training so they may take on smaller tasks, relieving pressure from PHCC staff, can do this.
- The severity of diarrhoea, especially among children, must be underlined among caretakers. It is recommended that diarrhoea be specifically addressed at workshops and trainings.
- Simple treatment of diarrhoea, especially an increased intake of fluids, must be emphasized. This can be done by allowing caretakers of sick community members to pick up additional jerry cans of drinking water at a PHCC or elsewhere.

Symptoms and Treatment of Diarrhoea

K: Knowledge and practices of how to treat diarrhoea varied strongly but were generally weak. This poses a serious threat to children, especially as caretakers are unable to identify causes of diarrhoea and link these to their own health and hygiene habits. For example, not all respondents were able to link diarrhoea to poor water quality, nor were they knowledgeable about the treatment of diarrhoea, such as the need to provide higher amounts of water and food. However, diarrhoea, especially among children, was considered to be serious. This indicates a positive attitude that is receptive of behaviour change.



A: Despite a lacking knowledge of treatment and symptoms, respondents do consider diarrhoea to be serious, especially when it concerns children.

P: A lack of knowledge as well as a disregard for the severity of various diseases contributes to the previously mentioned unsanitary and unhygienic conditions.

Diet and Malnutrition

K: Respondents were highly knowledgeable of the importance of a varied diet, but unable to translate this knowledge into practices due to limited food resources.

A: Similar to knowledge, respondents demonstrated a positive attitude regarding the importance of a varied diet, and we found no significant obstacles in this area.

P: Diets fed to children were found to lack diversity and nutrition, partially due to the lack of options for respondents to supplement food distribution with agricultural produce. Again, children are found to be most vulnerable, as especially young children and infants suffer when their mothers are unable to feed them properly. Children who were eventually diagnosed with malnutrition were often referred to an OTP centre and successfully treated, but challenges such as lack of food at the centre were not uncommon.

- Agricultural opportunities should be supported to improve self-sustained food security and resilience, also within IDP camps so that communities may supplement their diets themselves. This may be done by supporting farming community gardens or small patches of land, even within the IDP camps.
- Nutritional supplements for pregnant and lactating women could be emphasized, as this continues to affect young children and infants. Supplying nutrition centres must be prioritized. For example, food rations could be tailored to pregnant and lactating women.

Symptoms and Treatment Malnutrition

K: Knowledge of the symptoms of malnutrition was found to be low, especially of less obvious symptoms such as lack of menstruation and hair loss. This poses a significant risk for, for example, young girls.

A: No negative attitudes regarding this issue were recorded.

P: Services were significantly more limited in East Darfur,

- In order to fill the knowledge gap in malnutrition, additional messaging and information is necessary. Offering education on the least visible symptoms of malnutrition may enhance the early warning and detection of malnutrition among children, and increase successful early treatment.
- Treatment centres in East Darfur are severely lacking, and it is recommended that specific



limiting the treatment options for residents there. Those who did have access to treatment centres reported lack of food in stock, limited opening times, services being refused, overcrowding, waiting times, and distance as common challenges. This is found to deter respondents from seeking care and treatment, problematizing the translation from knowledge into practice.

Safe Motherhood and Family Planning

K: Awareness and use of family planning methods was generally strong, although reasons to not too were predominantly related to lack of awareness of safety and side effects. The most common family planning method – breastfeeding – is unsafe when it is practiced irregularly and inconsistently. The same applies to counting the days – malnutrition can lead to infrequent menstrual cycles, making this an unreliable method.

A: Respondents displayed a strong positive attitude towards antenatal care as they believed this was necessary to keep mothers and babies healthy. However, a large group was found to be unable to translate this knowledge into practice. Furthermore, respondents were wary of the abilities of midwives and birth attendants who had recently been trained, mostly due to their young age.

P: The opportunity costs of antenatal visits were found to be high, although belief that it is necessary is strong. Resources within the household are often so limited that respondents chose to not seek help, but also because respondents faces challenges including waiting times, lack of staff, and distance at the centre. This means that many pregnant women do not have their needs met, and in the long run can affect lactation and breast-feeding. Many women did chose for an assisted delivery.

research into the nutrition needs and available services be conducted in that area in order to gain a better understanding of the challenges. Specifically, research into cases of service refusal requires additional attention.

- Opportunity cost to antenatal care may be overcome by providing relatively low-cost services to pregnant women, as well as increased messaging on the benefits of such care. For example, if distance or transportation is an issue, a regular shuttle service from a central point in the community to the PHCC or hospital may be considered. This will also enhance the ability of vulnerable groups such as the elderly and people with disabilities to access health care.
- Training and recruitment of skilled birth attendants and midwives must be made more transparent in order to enhance acceptance and usage. This can also be done by PHCC staff actively encouraging use of their services from a point of knowledge and professional authority. Alternatively, selection criteria can be discussed and agreed upon with community members.
- Education on the limited effectiveness of breastfeeding as a family planning method must be continued. Additional education on the side effects of family planning methods is needed in order to reduce suspicion and false information among the community.

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