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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

Integrating WASH, nutrition and health programmes to tackle malnutrition in Eastern Chad

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While more and more research is conducted to assess the impact of WASH related interventions on the health and nutritional status of under-five children, Concern Worldwide is implementing an integrated programme aiming at reducing malnutrition rates in Eastern Chad. This intervention, Community Resilience to Acute Malnutrition (CRAM), involves a high level of coordination between different sectors including WASH, Health and Nutrition, Livelihoods and Disaster Risk Reduction. The present article analyses the preliminary results of this programme. It assesses the impact of the WASH intervention on the prevalence of diarrhoea and on Severe Acute Malnutrition (SAM) and Global Acute Malnutrition (GAM) rates. Although the GAM rate rose from 12.9% to 13.9%, the SAM rate decreased from 3% to 2.5% and the number of cases of diarrhoea was significantly reduced during the rainy season in 2014. This paper shows that while more research is needed, the preliminary results are encouraging.

Background

In 2013, 17,000 under-five children died every day around the world and nearly half of these deaths was attributable to malnutrition (WHO, 2014). Malnutrition is caused by a wide range of factors such as food insecurity and lack of dietary diversity; social habits; gender inequality; living in unhygienic conditions, and no access to potable water. Recent studies proved that improving the access to potable water and improved sanitation, as well as adopting key hygiene practices, plays a fundamental role in improving the nutritional status of children. According to Dangour et al. (2013), “*While there are some important shortcomings in the available evidence base, we estimate that clean drinking water and effective hand washing could reduce the prevalence of stunting in children under the age of five up to 15%*”. One of the well documented links between the lack of access of improved WASH services and under-nutrition is the prevalence of diarrhoeal diseases and their negative consequences on child growth. Indeed, WHO estimates that 88% of all diarrhoea cases are due to a poor WASH environment. Under-five children living in poor sanitation and hygiene conditions are at risk of ingesting faecal bacteria which can cause irreversible damage to the intestines. These environmental enteropathies lead to a reduced capacity to absorb nutrients and long term stunting (Humphrey, 2009).

However, improving environmental conditions at household level is not enough to improve children’s nutritional and health status: ensuring the access to basic health services is also fundamental. The implementation of adequate health systems should be conducted in close collaboration with the WASH sector as WASH underpins human health and is a key factor in reaching Universal Health Coverage (Action for Global Health and Water Aid, 2014).

In a country like Chad where malnutrition remains endemic, improving WASH in households and in health care facilities is therefore essential to tackle malnutrition. In the Sila region in the east of the country, during the peak of the food crisis in 2012, Global Acute Malnutrition (GAM) rates were of 16.3% and Severe Acute Malnutrition (SAM) rates of 2.5% (compared to emergency threshold levels of 15% and 2.5% respectively), primarily due to a combination of a lack of food, the absence of adequate health services, unimproved watersupply and poor environmental sanitation..

Concern's integrated intervention

In 2012, Concern Worldwide, in partnership with Tufts University, launched an integrated programme to build Community Resilience to Acute Malnutrition (CRAM). This programme is based on the delivery of a range of activities which address multiple needs through coordination and integration across a variety of sectors (health, nutrition, food security, gender, WASH and disaster risk reduction) to achieve common goals. Since the area is subject to regular humanitarian crisis, the approach also incorporates an early warning / early action component allowing the delivery emergency responses when necessary while continuing the long term development activities.

The WASH specific strategy

The WASH component of this programme aims to improve the supply of and access to potable water, increase the access to improved sanitation and increase the adoption of improved hygiene practices at household level. Water access is ensured by the drilling of new boreholes since the potable water coverage in the project area remains under Chadian national standards. In line with national standards, a community based management approach was developed to sustain these infrastructures (i.e. training and support to water committees). Sanitation promotion is conducted through the use of a mixed approach integrating the CLTS (Community Led Total Sanitation) and the PHAST (Participatory Hygiene And Sanitation Transformation) methodologies. After two Barrier Analyses, a hygiene promotion strategy based on the BCC (Behaviour Change Communication) methodology (CORE GROUP, 2012) was designed to trigger the adoption of hand washing with soap at the two key moments and the promotion of the safe water chain (i.e. the prevention of water contamination from the collection to the point use). The first component of this strategy aims to increase health awareness and an understanding of diarrhoeal disease prevention through trainings and support delivered to the hygienists, who are members of the Water Committees. The second component of the strategy aims to trigger behaviour change through the diffusion of non-health related messages circulated through workshops with community leaders and through hygiene campaigns at community level.

The health and nutrition specific strategy

The health and nutrition component focuses on improving the quality of health and nutrition services and increasing access to them through a twofold strategy. The first part, focuses on training 280 Community Health Workers (CHW) in the prevention of malnutrition and related illnesses as well as the screening of acute malnutrition cases. The second part focuses on strengthening the existing government health system to improve the quality of its services, including community management of acute malnutrition (CMAM). Concern is supporting four health centres in the Sila region, and their 16 outreach sites, while working closely with the Regional Health Delegation to build the capacity of the health staff.

The WASH in health strategy

Concern is installing new water infrastructures and building latrines for the four health centres. The organisation is also currently conducting hygiene promotion training with the health staff working in the centres and the CHWs in charge of the 16 outreach posts. This set of activities aims to improve hygiene practices during consultations and treatments.

The hygiene strategy designed by the WASH programme is implemented in close collaboration with the Health and Nutrition programme. For instance, the CHWs were trained by the WASH team on improved hygiene practices during a joint training with the Health team on diarrhoea prevention and management.

The two teams are also working closely with the villages leaders to obtain their support in changing targeted behaviour (such as hygiene and feeding practices) amongst the community.

Methodology for monitoring and evaluation

To assess the impact of this integrated approach, a randomised controlled trial was set up in partnership with Tufts University. A wide range of indicators was selected and an impact evaluation methodology was developed, with a baseline survey carried out in 70 villages in 2012. The CRAM programme is being implemented in 35 villages, which were randomly selected by Tufts among the 70 villages. The 35 remaining villages represent a control group which enables to assess the impact of the programme through comparisons in time and comparisons between the intervention and the non-intervention groups of villages.

The baseline was followed by a midline survey conducted in late 2014 and the final impact of the programme will be assessed by an endline in late 2015. The surveys involve questionnaire-based interviews with 1,400 randomly selected women (20 women representing 20 households per village) each year. They were both carried out in all control and intervention villages.

The statistics on diarrhoeal cases presented in this paper comes from data collected by Concern staff and from the 4 health centres supported by Concern. Diarrhoea was defined as the passage of a minimum of three loose or liquid stools per day.

In order to evaluate the impact of the hygiene promotion activities conducted, the WASH programme also assessed the level of faecal contamination through the water chain. This assessment is possible thanks to water quality analysis conducted on a quarterly basis. Samples from points of collection (borehole), points of transport (transport container) and points of use (storage container) were taken from the 35 intervention villages and analysed from November 2013. The indicator used for assessing the presence of faecal contamination is the number of faecal coliforms (i.e. *E. Coli*) in a sample of 100ml of water analysed, as per WHO international standards.

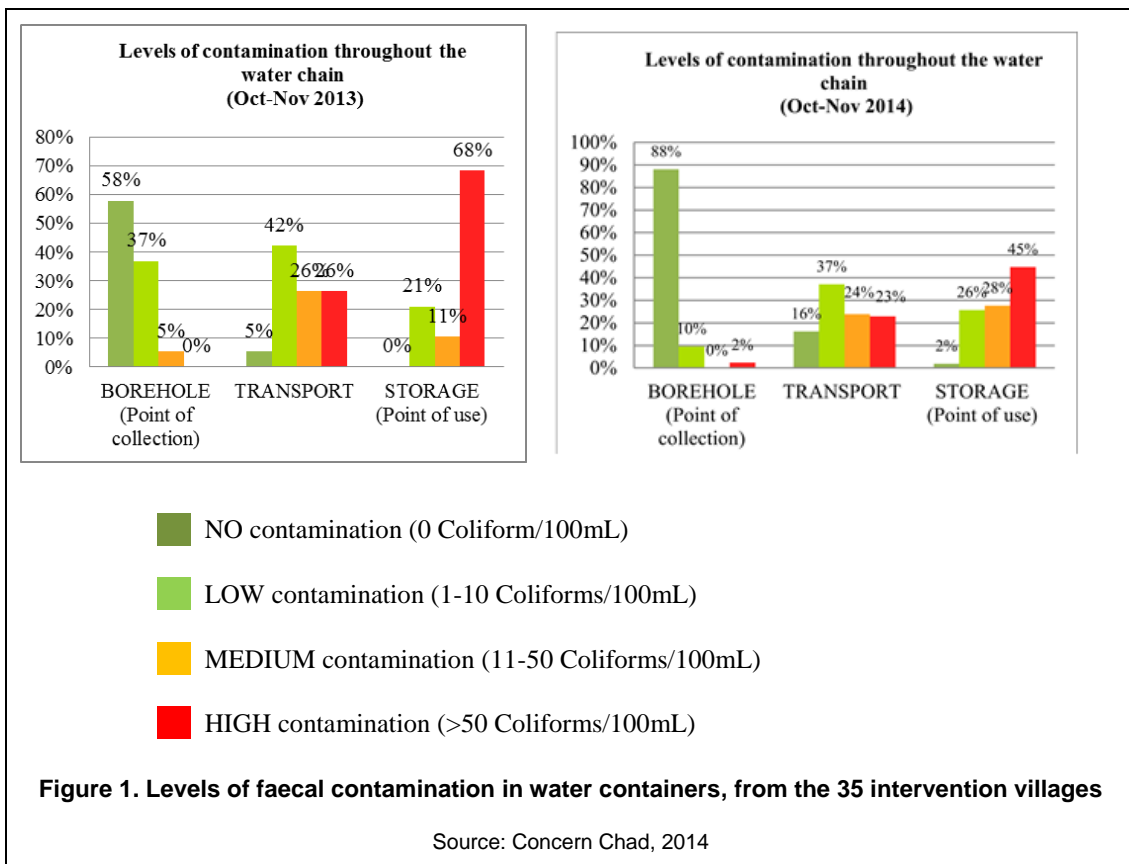
Results

With the aim of improving the WASH services in the 35 villages, the programme has achieved the following results:

- The percentage of households having access to 15L of potable water per person per day increased from 11% (baseline, 2012) to 51% (midline, 2014).

In terms of reducing open defecation practices, the data collected actually showed an increase from 47% in 2012 to 53% in 2014 in the intervention villages. However, the open defecation rate increased to 75% in the control villages over the same period, showing an overall deterioration of the sanitation conditions in the area. Over the course of the CRAM programme Concern recorded a total of 1,758 latrines built by the beneficiaries themselves in the intervention villages. However, most of these latrines as well as the latrines present in the control villages collapsed during the last rainy season. Due to the poor quality of the latrines built, they did not resist to the heavy rains that occurred between June and September 2014 and when the midline was conducted, from October 2014, the households had returned to open defecation.

- The knowledge of the two most critical moments of hand washing with soap (i.e. after being in contact with excreta and before handling food) increased from 18% in the baseline to 53% in the mid-line. However, the actual practice of hand washing with soap did not improve since the percentage of household having a hand washing station provided with soap and water remained stable, from 35% in 2012 to 33% in 2014. Nevertheless, it is important to notice that this indicator worsened in the non-intervention villages since only 19% of interviewed households could present a hand washing station with soap and water in 2014 showing that Concern's programme again managed to avoid the deterioration of the situation the intervention villages.
- Water contamination through the water chain decreased: the proportion of the water storage containers presenting a high level of bacterial contamination (i.e. > 50 coliforms/100ml of water) decreased from 68% to 45%. However, both low and medium contaminations increased. These rises can be explained by the fact that behaviour change takes time. Even if the households are now washing their containers more regularly than at the beginning of the programme, the behaviour is probably not practiced often enough to reach a total absence of contamination. Therefore, high contamination is decreasing thanks to the adoption of improved hygiene practices related to the water chain but efforts are still needed to attain a complete absence of contamination. These initial improvements can be linked to the two sets of hygiene promotion activities conducted between October 2013 and November 2014. The first one was trainings delivered to Hygienists and Community Health Workers in June and October 2014. The second activity was a workshop conducted with the Community leaders in September 2014.



The impact of the programme on the human health status in the area was assessed through the analysis of the number of diarrhoea cases registered in the four health centres supported by Concern. This figure dramatically decreased from the month of May 2014 when 15 boreholes drilled under the programme became fully functional (the remaining 20 villages already had boreholes, many drilled in 2013 or 2012 by Concern) and when Concern conducted a workshop in general hygiene promotion and diarrhoeal disease prevention with the hygienists of the villages. The peak of diarrhoea usually occurring during the rainy season was absent this year contrary to what observed in 2013. However, the number of diarrhoea cases increased in December of both years. This increase matches with the beginning of the harvesting period when most of the communities settle in their fields with their children far from their home to protect their crops. They no longer have access to latrines and boreholes located in the centre of the villages. They are, therefore, fetching water from natural ponds and traditional wells which are highly contaminated.

To assess the impact of the programme on the nutritional status of under-five children, two indicators were analysed. The first indicator is the GAM rate which rose from 12.9% in December 2012 to 13,9% at the end of 2014 in intervention villages and to 15% in non-intervention villages. The second indicator is the SAM rate which decreased from 3% in December 2012 to 2.5% in December 2014 in the intervention villages, while increasing in the control group to 4.1%. Although these results appear positive, they are not statistically significant and therefore it is too early yet to determine if there has been an impact on the nutritional status of the under-fives.

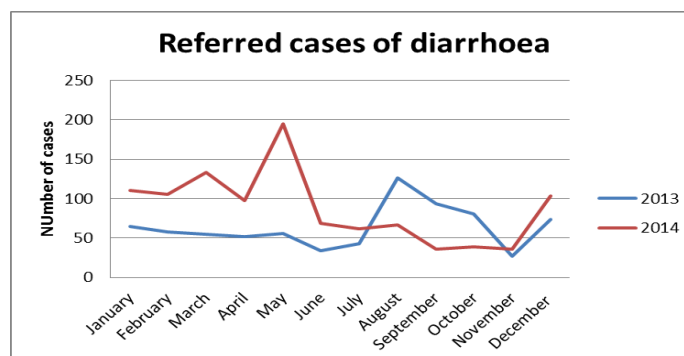


Figure 2. Referred cases of diarrhoea in the 4 health centres

Source: Concern Chad, 2015

Discussion / lessons learnt

There are some limitations to our review. First, as the programme is still on-going, the results presented are not definitive. Further investigations need to be conducted few years after the end of the project to assess its long term impact and the sustainability of the achievements discussed in this paper.

Furthermore, the number of diarrhoea cases is collected through the monitoring system in place in the four health centres supported by Concern, therefore directly collected and provided by the Regional Delegation of the Ministry of Public Health. With respect to the low capacity of the health workers in data management and the difficulties to get the necessary resources for managing correctly this data, the results presented here should be treated with caution. Furthermore, it was not possible to distinguish the number of diarrhoea cases of under-five children from the total number of cases recorded (the data collected in 2014 was disaggregated by age but the data from 2013 was not). This indicator was therefore analysed at a global level without specifying the age of the patients.

Nevertheless, it is possible to impute several important lessons from the results currently available.

On a practical basis, implementing an integrated programme is a challenging approach, which requires the different programmes to work in strict symbiosis with integrated approaches, and methodologies, sharing knowledge and resources. Constraints to integration are to be observed not only in the day-to-day implementation of activities but also in the establishment of an integrated dialogue with the relevant sectorial counterparts who should be brought together to a common table of discussion. For instance the vocabulary used by the WASH professionals for describing the children age groups differs from the vocabulary and acronyms used by the health professionals.

Once integration is effective, it allows financial, logistical and human resources savings, while increasing the impact of integrated actions. For example, joint trainings (such as a training targeting both Community Health Workers and Hygienists from the Water Committees) allow a more efficient use of resources on several levels (HR, transport, materials etc), while increasing the impact of the messages diffused. It also increases the likelihood of sustainability as the Hygienists are integrated within the national CHW system.

The reduction of the number of cases of diarrhoea in 2014 is an encouraging result and shows a positive impact of the WASH intervention on the human health status in the area. Although the GAM and SAM results appear positive, it should be noted that the difference in the GAM rates between the two populations is not statistically significant. However, given the time lag between the reduction in diarrhoeal diseases and the improvement in nutritional status, the results in the SAM rate changes are very encouraging. SAM and GAM rates are subjected to many factors other than WASH related ones such as the availability of food or feeding practices. Tackling malnutrition is therefore a very complex process and reaching significant improvements on nutritional status on the under-fives is challenging. Sustaining them is even more challenging; however, the preliminary results achieved by this integrated approach to tackle malnutrition appear to be promising.

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References

- Action for Global Health and Water Aid (2014), *Making Health a right for All: Universal Health Coverage and Water, Sanitation and Hygiene*, Discussion paper, May 2014
- Dangour A.D, Watson L, Cumming O, Boisson S, Che Y, Velleman Y, Cavill S, Allen E, Uauy R (2013) *Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children*. Cochrane Database of Systematic Reviews 2013.
- CORE GROUP (2012) *Designing for Behaviour Change, Water Sanitation and Hygiene*
- Humphrey JH. (2009) *Child undernutrition, tropical enteropathy, toilets, and handwashing*. The Lancet 2009, 374: 1032–35
- WHO (2011), *Guidelines for drinking water quality – 4th edition*
- UNICEF, WHO, World Bank, UN-DESA Population Division , (2014), *Levels and trends in child mortality, report 2014*
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