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PUBLISHER

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VERSION

VoR (Version of Record)

PUBLISHER STATEMENT

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REPOSITORY RECORD

Eyrard, Julien, and Julien Chalimbaud. 2019. “An Attempt to Demonstrate the Link Between WASH and Malnutrition: The Nutrition Causal Analysis (burkina Faso)”. figshare. https://hdl.handle.net/2134/30896.

36th WEDC International Conference, Nakuru, Kenya, 2013

DELIVERING WATER, SANITATION AND HYGIENE SERVICES
IN AN UNCERTAIN ENVIRONMENT

An attempt to demonstrate the link between WASH and malnutrition: The Nutrition Causal Analysis (Burkina Faso)

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BRIEFING PAPER 1692

The NCA (Nutrition Causal Analysis) is a tool developed by ACF (Action Contre la Faim), the IRD (Institut de Recherche pour le Développement) and the Tufts University during these last three years. It aims to investigate and present a multi-sectorial' overview of the contributing factors affecting nutritional status within a given community based on the UNICEF framework of under-nutrition. Within this multi-sectorial overview, WASH issues are often among the leading causes of under-nutrition. This paper will present the first results of a NCA conducted in Burkina Faso in 2012 – 2013. Based on this research, this paper will advocate for the central role of Water, sanitation and hygiene services in the fight against malnutrition in uncertain environments.

WASH and nutrition

Among the various hypotheses leading to under nutrition, WASH related hypothesis focus on water quality and quantity, sanitation and hygiene practices. Based on the existing literature (Fewtrell 2005, Cairncross 2010, Classen 2006…) we can assume that there is a direct link between lack of sanitation, poor hygiene practices and water quality. Since this poor quality water is used by people, there is a second link between water quality and health. There is a third link between poor water quality (and / or inadequate water quantity) and under-nutrition: poor water quality will lead to diarrhea and diarrhea will lead to under-nutrition (this link is also true in the other way: under-nutrition will lead to diarrhea in a vicious circle). There is also a link between poor hygiene practices and lack of proper child care and / or degradation of the mother and child relation, which also may lead to under nutrition.

The Nutrition Causal Analysis (NCA)

A NCA is a tool based on existing literature, the ACF (another actors) experience in the field of WASH or fight against malnutrition and the UNICEF framework of under-nutrition. NCA can be defined as "*A structured, participatory, holistic study, to build a case for nutrition causality in a local context"* (NCA handbook, ACF).

By "*structured*", we mean that the methodology's steps are precisely defined and have all been tested in the field. All NCA should follow the same methodology, with a certain degree of flexibility and adaptation to the local context. Any uncertain environment or context can be considered, in humanitarian situation such as conflict, displaced population, natural disaster etc. leading to potential or existing under-nutrition situation.

By "*participatory*", we mean that the process is providing a real opportunity to national or local technical experts as well as women and mothers from the community to express their opinion on under-nutrition causality, and also to discuss, review and finally validate the conclusions of the study. Men are also included in some steps of the field work, but women are the primary focus as they are the ones involved in children care and most of the time in WASH related activities.

By "*holistic*", we mean that under nutrition is here studied as a whole to avoid a sectorial approach and to be able to pinpoint inter-relations between risk factors such as sanitation or hygiene practices and caring practices for example.

The main outcome of the NCA is the identification and a ranking of under-nutrition proposed causes in a given local context – it is not a purely statistical approach (as it is a multi-tool and multi-sectorial approach) and therefore the results are context specific and cannot be generalised to national or international level. The results may also be time bounded as seasonality is often very different from one livelihood zone to another.

To achieve this objective, the NCA team will use and analyse a wide range of information such as:

- Scientific and grey literature review
- National or local experts knowledge
- Perception of women/mothers from the community
- Results from the household survey (interviews + visual observation)
- Interpretation of the seasonal calendar

Regarding data collection for WASH, the NCA is using a standard set of indicators and observations:

- For water supply / water quality, the NCA is using a set of visual observation known as "sanitary inspection" (ACF 2006 pages 640-645). Based on the score obtained by each water point, it can be qualified as "safe" or "unsafe" (if 2 or more observations out of 10 are unsatisfactory).
- For household water management, the NCA is using a scoring based on visual observation of collection and storage containers as well as point of use water treatment. Observations include evidence of cleaning, handles for transportation, cover, etc.
- Water quantity available for household consumption is calculated by adding all the water used by the household divided by the number of people. Scores are based on Sphere standard.
- For sanitation the NCA is focusing on availability of latrines and other sanitation items as well as their environmental safety. The tool used is the FANTA (Food and Nutrition Technical Assistance) developed in 1999 by USAID. In addition, a specific observation grid was developed for the NCA, with a focus on stool separation and their treatment or outlet of the toilet if there is any, anal cleaning material, hand washing station, presence of flies or other insects and a specific focus on babies and children stools.
- Hygiene and care practices are focusing on hand washing and presence of soap in the house.

The final validation and ranking of the proposed causes will be done by the NCA experts and women from the community in a participatory exercise. All conclusions, ranking and hypotheses are accepted and validated by this panel in a consensual way.

Beside a few technical and context arrangement, a typical NCA is always organised as follow:

Sequences	**Objectives**
Defining the survey (objectives, location…) and developing candidate hypothesis for under-nutrition	Narrow down the possibilities of causality
Develop data collection strategy Household qualitative and quantitative surveys	Gather evidence
Analyzing the evidences Defining highest priority causes and actions	Bring consensus among stakeholders regarding highest priorities.

NCA in Burkina Faso

The survey conducted in November / December 2012 in the Tapoa district of the East region of Burkina Faso also revealed another unexpected link (which is context specific): most of the women and mothers interviewed reported having difficulties to conciliate long walking distances and work load to collect water with proper children care, which can also contribute to decline of the mother to child relation.

All these observations are supported by sets of questions and / or visual observations linked with a ranking and scoring system which will highlight quantitative prevalence of selected hypotheses. This quantitative approach is crosschecked and validated by the qualitative approach, during which women and mothers gathered in focus group discussion review and discuss each hypotheses and link in order to finally rank them.

The survey was conducted on 430 households selected using the cluster sampling methodology for both quantitative and qualitative approaches. Each household interview is divided in 6 parts, depending on the presence or not of babies and under 5 years old children in the family:

- Household questionnaire addressed to the person in charge of food preparation.
- Anthropometric questionnaire for under 5 years old children (including under arm measurement).
- One questionnaire for 0 to 23 months young child, addressed to the mother.
- One questionnaire for 24 to 59 months children, addressed to the mother.
- Household visual information conducted with household leader.
- Caretaker questionnaire.

The acute under-nutrition rates were as follow:

Acute under-nutrition, NCA 2012 - Burkina Faso / Tapoa	**N (population sample) = 692 observations**
Prevalence of global under-nutrition (<-2 Z-score* and / or oedema)	(86) **12.4%** *(9.8-15.7 95% CI)*
Prevalence of moderate under-nutrition (<-2 Z-score and > = -3 z-score, no oedema)	(71) **10.3%** *(7.9-13.3 95% CI)*
Prevalence of severe under-nutrition (<-3 z-score, and / or oedema)	(15) **2.2%** *(1.4-3.4 95% CI)*

And the chronic under-nutrition rates were as follow:

Chronic under-nutrition, NCA 2012 - Burkina Faso / Tapoa	**N (population sample) = 687 observations**
Prevalence of stunting (<-2 Z-score)	(305) **44.4%** *(39.7-49.2 95% CI)*
Prevalence of moderate stunting (<-2 Z-score and > = -3 z-score)	(200) **29.1%** *(25.9 – 32.6 95% CI)*
Prevalence of severe stunting (<-3 z-score)	(105) **15.3%** *(12.0 – 19.3 95% CI)*

*Z-score is referring to the optimal height per weight ratio of under 5 years old children.

After the field work and data collection phase, the research team builds a set of 24 hypotheses or possible causes to explain these relatively high rates. These causes were then discussed, agreed and ranked by two panel groups of women from the area (poor / medium and better off/rich) gathered by the team for this final exercise. Among these 24 causes, 5 were ranked as “high”:

1. At household level, women lack money / cash to buy diversified food or diet.
2. At household level, women lack money / cash to access basic services: water, health and education.
3. No or not enough birth spacing
4. Difficulty to access drinkable water (due to distance to water point or other factors)
5. Pregnant and lactating women are facing heavy workload

The 19 remaining hypotheses were classified as “important”, “low” and “rejected”. Among the 9 “important” hypotheses, 2 were related to WASH, namely: inadequate hygiene practices among under 5 children and mothers (due to lack of time, heavy workload, too many children…) and lack of sanitation (no latrines, no waste management…). Among the 6 “low” hypotheses nothing was related to WASH and among the 2 hypotheses rejected by the panel, one was related to WASH: “social and cultural brakes to proper hygiene and sanitation practices”. This hypothesis was not accepted by the women and expert panel, who agreed to say that the constraints in accessing latrines and hygiene practices were on the side of economical capacities and political weakness rather than cultural barriers.

Discussion

Among 5 hypotheses ranked as "high", 2 are directly linked with WASH. The first one (lack of money to access basic services) is highlighting the importance of water and health, this fact being supported by the high prevalence of diarrhea recorded by health authorities in the area. The second hypothesis is highlighting the burden of water collection in terms of walking distance and in terms of workload – an idea which is also present in the last hypothesis as well as one "important" hypothesis, which is the lack of time for proper care. If we also consider that the "cultural barrier" hypothesis was rejected, we can see that, in Tapoa, Burkina Faso, a leading cause of under-nutrition is the lack of WASH infrastructures. Because of this lack of infrastructures, women (and specially pregnant and lactating women) have to spend time and energy to collect water (or performs good sanitation and hygienic practice) and cannot provide adequate care to young infants, despite the fact that they know the importance of proper hygiene and sanitation.

Conclusion

This type of survey can be used in other unsecured environments to advocate towards policy makers and development agencies for better support to WASH infrastructures and soft components.

Acknowledgements

The authors would like to extend thanks to the women of Tapoa who took time to participate to the NCA and the various panels.

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