DOCUMENTATION OF THE IMPLEMENTATION AND PERFORMANCE OF THE MAM FOOD VOUCHER PROGRAM IN THE FAR NORTH REGION OF CAMEROON

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The Chairperson
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Dear Chairperson

Application for Ethical Approval

Protocol Title: **Documentation of the implementation and performance of the MAM food voucher program in the Far North region of Cameroon**

I wish to submit to you the above-named protocol and essential documents for approval by the National Ethics Committee.
The Far-North of Cameroon has been trying to cope with undernutrition for several years now. Many projects implemented thus far have focused on reducing the burden of severe acute malnutrition (SAM) rather than moderate acute malnutrition (MAM) which is an intermediate state before SAM. The HKI have put in place the Food voucher approach funded by of USAID/OFDA and in collaboration with the Government of Cameroon to fight against MAM. The overall objective is to document the delivery of the food voucher program and its effectiveness in improving the diets and contributing to the recovery of MAM children 6-59 months and the feasibility of wider replication.

I look forward for your evaluation and approval.

Thank you for your co-operation.

Yours sincerely

_____
Dr Ismael TETA

Enclosed:

1. Cover letter from principal investigator
2. Participants information notice
3. Protocol Consent Form
4. Research Protocol
5. Work Plan
6. Budget
7. Questionnaire/Instrument
8. CVs of PIs and Co-PIs

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List of abbreviations

ACF :	Action Contre la Faim
ANOVA :	Analysis Of Variance
ASF :	Animal Source Food
BCC :	Behavior Change Communication
CAR :	Central Africa Republic
CHV :	Community Health Volunteers
CHW :	Community Health Workers
CRF :	Common Results Framework
DHS :	Demographic and Health Survey
ENA-EHA :	Essential Nutrition Actions-Essential Hygiene Actions
FAO :	Food and Agriculture Organization of the United Nations
GAM:	Global Acute Malnutrition
HKI:	Helen Keller International
IRB:	Institutional Review Board
IYCF:	Infant and Young Child Feeding
MAM:	Moderate Acute Malnutrition
MOH:	Ministry Of Health
MSP:	Multi-Stakeholder Platform
MUAC:	Mid-Upper Arm Circumference
OFDA:	Office of U.S. Foreign Disaster Assistance
oPT:	occupied Palestinian Territories
OTP:	Out-patient Therapeutic Programme
PI:	Principal Investigator
PLW:	Pregnant and Lactating Women
SAM:	Severe Acute Malnutrition
SUN:	Scaling Up Nutrition
TSFP:	Targeted Supplementary Feeding Programmes
UNICEF :	United Nations Children's Fund
USAID :	United States Agency for International Development

Abstract

The Far North Region of the Cameroon has been facing an emergency in the last few years resulting from insecurity linked to Boko Haram. This has led to an increase in nutrition related problems such as undernutrition. Children under the age of 5 years are among the most affected, with a prevalence of general acute malnutrition (GAM) of 4.3% nationally and 10.3% in the Far North Region in 2018. Many projects implemented thus far have focused on reducing the burden of severe acute malnutrition (SAM) rather than moderate acute malnutrition (MAM) which is an intermediate state with a prevalence of 2.7% in Cameroon and 6.9% in the Far North Region in 2018 before SAM. The HKI has put in place the Food voucher approach funded by USAID/OFDA in collaboration with the Government of Cameroon to fight against MAM.

The HKI Food Voucher Research Project has been initiated to document and evaluate the implementation and performance of the food voucher approach used in the Far North Region of Cameroon. It is an interventional and longitudinal study using a mix of qualitative and quantitative methods which will be conducted in the health district of Kaele (Far North Region). A total of 190 children under the age of five years and diagnosed with MAM will be enrolled in the study and followed up during the 11 months duration of the project. Data will be obtained by interviewing people involved in the food voucher program such as health workers, community health workers (CHW), food vendors, opinion Leaders, and project staff. The study will focus on delivery, utilization and coverage of the food voucher, as well as MAM recovery of child and the feasibility of wider replication.
In a short term, the project expects shed light on: the delivery of the food voucher program, its effectiveness in improving the diet and contributing to the recovery of MAM children 6-59 months, and the feasibility of a wider replication.
Key-words: Documentation, Far-North Cameroon, MAM, food voucher program, performance.

Résumé

La région de l'Extrême Nord du Cameroun est confrontée à une situation d'urgence au cours des dernières années en raison de l'insécurité liée à Boko Haram. Ce qui a créé une situation d'insécurité alimentaire avec pour corollaire la persistance des problèmes nutritionnels notamment la sous nutrition. Les enfants de moins de 5 ans en sont les plus touchés, avec une prévalence accrue de malnutrition aiguë générale (GAM) de 4,3% au niveau national et 10,3% à l'Extrême-Nord en 2018. De nombreux projets mis en œuvre jusqu'à présent sont focalisés sur la réduction de l'incidence de malnutrition aiguë sévère (MAS) plutôt que sur la malnutrition aiguë modérée (MAM), qui est pourtant l'état intermédiaire avant la MAS avec une prévalence de 2,7% à l'échelle nationale et de 6.9% à l'Extrême-Nord en 2018. HKI a mis sur pied l'approche des coupons alimentaires, financée par USAID / OFDA et en collaboration avec le Gouvernement camerounais pour lutter contre la MAM.

Le présent projet de recherche a donc pour but de documenter et d'évaluer la mise en œuvre et la performance de l'approche des coupons alimentaires implémenté dans la région de l'Extrême-Nord du Cameroun par HKI. Il s'agit d'une étude interventionnelle et longitudinale, utilisant des méthodes qualitatives et quantitatives, qui sera menée dans le district de santé de Kaele (Extrême-Nord). Au total, 220 enfants de moins de cinq ans souffrant de MAM seront inclus dans l'étude et suivis pendant 09 mois. Les données seront obtenues en interrogeant les personnes impliquées dans le programme de coupons alimentaires, tels que les agents de santé, les Agents de santé communautaires, les vendeurs d'aliments, les leaders d'opinion et le personnel HKI du projet. L'étude portera sur la livraison, l'utilisation et la couverture du coupon alimentaire, ainsi que sur le rétablissement de la MAM pour les enfants et la faisabilité d'une reproduction à grande échelle.

À court terme, le projet devrait apporter des éclaircissements sur : la mise en œuvre du programme de coupons alimentaires, son efficacité à améliorer le régime alimentaire et à contribuer au rétablissement des enfants de MAM âgés de 6 à 59 mois, et la faisabilité d'une reproduction à grande échelle.

Mots-clés : Documentation, Extrême Nord du Cameroun, MAM, programme de coupons alimentaires, performance.

Introduction

The emergency in Cameroon and surrounding countries has both contributed to an increase in the prevalence of MAM and put an enormous strain on supplies of specially formulated foods for MAM treatment. In addition, numerous studies have found that the current management practice for MAM is associated with low coverage, high default rates, high program delivery costs and logistical challenges, and suboptimal recovery rates. In Cameroon, the supply of specially formulated foods is insufficient to meet the need in the Far North Region. The World Health Organization recommends that, "The dietary management of moderate acute malnutrition should normally be based on the optimal use of locally available nutrient-dense foods to improve the nutritional status of children" (WHO, 2012). HKI's food voucher approach is designed to minimize the nutrient gap of children in families with children suffering from MAM.. Administrative data from a pilot food voucher approach suggested it was effective in promoting recovery and was appreciated by families and health workers; but further rigorous research is needed to document the delivery of the intervention and its outcomes.

Interventions using cash and fresh food vouchers have consistently demonstrated measurable increases in children's consumption of protein-rich foods, particularly animal source foods (ASF), which are also rich in vitamin A, vitamin B12, riboflavin, calcium, iron, folate and zinc (Dunn, 2009). Evidence suggests that food vouchers that limit purchases to fresh foods and animal proteins increase consumption of these foods (Hedlund and McGlintchy, 2010). Evidence from at least two projects that distributed vouchers through health centers showed higher usage of health facilities, increased immunization rates (CRS, 2006) among children of beneficiaries, and increased parental interest in growth and growth monitoring (Sibson, 2011). Less evidence exists about whether food vouchers targeting households with MAM children improve nutrition outcomes relative to other supplementary feeding strategies, or whether the foods fed to children in these households are nutritionally adequate.

The proposed research will be undertaken for a nutrition program to be implemented in four Districts aimed at reducing the high burden of Moderate Acute Malnutrition (MAM) in Far North Cameroon. The program is to be implemented by the HKI, in close collaboration with Government of Cameroon, as well as local partners operating in these districts. The goal of the program is to reduce the burden of acute malnutrition in children under 5 and PLW by filling gaps in coverage in MAM treatment in Cameroon's Far-North Region in this complex emergency. The approach will be via the delivery of a highly nutritious products available on the local market to children 6-59 months, complemented by other key interventions such as nutrition and breastfeeding education, behavior change communication (BCC), and cooking demonstrations. The target is to reach about 7,000 children under five with suffering from Acute Malnutrition in the four districts by the end of the program. The main rationale for conducting this study is to be able to examine whether the program is effective and to provide more detailed information regarding future program scale up and expansion.

Objectives

This research study is an evaluation of the effectiveness of a nutrition program implemented by Helen Keller International (HKI) and funded by USAID/OFDA in collaboration with the Government of Cameroon. The HKI program is to be implemented in four districts (Kaele, Guidiguis, KarHay, Moulvouday) of the Far North Region.

The overall objective of this study is to document the delivery of the food voucher program and its effectiveness in improving the diets and contributing to the recovery of MAM children 6-59 months and the feasibility of wider replication.
The evaluation has the following specific objectives:

- Document the delivery of the food voucher program
- Evaluate its effectiveness in improving the diets of children 6 – 59 months.
- Evaluate its contribution to the recovery of MAM children 6-59 months
- Assess the feasibility of wider replication

I. Literature review

1. Malnutrition status in Cameroon

Cameroon is facing under-five malnutrition. In 2014, the national prevalence of overweight in the under-fives was 6.7%, which has increased slightly from 6.4% in 2011. The national prevalence of under-five stunting is 31.7%, which is higher than the developing country average of 25%. Conversely, Cameroon's prevalence of under-five wasting, at 5.2%, is lower than the developing country average of 8.9% (Unicef, 2014). The double burden of malnutrition is still prevailing in 2 forms: the coexistence of overweight and stunting (2.1%) and the overlapping of wasting and stunting (2.1%) (Unicef, 2019).
In Cameroon, 28% of infants under 6 months are exclusively breastfed. In Cameroon, the prevalence of low birth weight in 2015 (12%) decreased slightly compared to 13.1% in 2000 (Unicef, 2014).
While a 2015 SMART survey confirmed the stabilisation of the nutrition situation in regions affected by the Central Africa Republic (CAR) refugee crisis, the prevalence of global acute malnutrition (GAM) and severe acute malnutrition (SAM) continued to deteriorate significantly in the northern regions affected by the conflict in northeast Nigeria, reaching 13.9% GAM and 2.2% SAM, compared to 9% and 2% respectively in the 2014 SMART survey (Ngwenyi et al., 2019).

2. Nutrition interventions and programmes overview

Low coverage of targeted supplementary feeding programmes (TSFP) to treat moderate acute malnutrition (MAM), rising acute malnutrition rates and capacity limitations catalysed a strategic shift to a prevention-oriented programme in 2016, piloted by WFP and the Government of Cameroon in the Far North and East and Adamaoua regions. The new approach uses the blanket supplementary feeding programme as an operational platform to deliver multiple services, including household food assistance, specialised nutritious food, social and behaviour change communication, and health and water, sanitation and hygiene services. The programme targets all children aged 6 to 24 months to prevent malnutrition and treats uncomplicated MAM cases, complicated MAM cases (where referral services are not available) and recovering severe acute malnutrition cases to prevent relapse among children aged 6 to 59 months. In 2017 the programme was decentralised for better integration, access and coverage. The number of children reached has doubled since 2015; total cost per beneficiary is half that of TSFP; and prevalence of acute malnutrition in target regions has fallen. MAM admissions match estimated caseload and recovery rate is high. Programme success is attributable to well-informed decision-making, strong government leadership and coordination, community engagement, ongoing learning and implementation adjustments, cross-sectoral engagement and communication and adequate sustained external funding (Ngwenyi et al., 2019).
The prevention platform was designed to ensure that children aged 6-59 months with MAM could also receive treatment. MAM children aged 6-23 months receive a monthly ration of 3 kg of Super Cereal Plus (the same ration provided to non-malnourished children in this age group) and MAM children aged 24-59 months receive a monthly ration of 6 kg of Super Cereal Plus. MAM children

also receive systematic medical treatment provided by UNICEF through health facilities. In this way, the programme both protects the nutritional status of healthy children and promotes recovery of children with MAM. Among a total of 35,522 MAM children enrolled in the programme during 2018, 25,253 had recovered by the end of December 2018, with a recovery rate among those discharged of 96.7% (Ngwenyi et al., 2019).
The future transition strategy will require a continued focus on geographic areas with high GAM, based on MUAC screening, and will involve expanding the programme to focus on stunting prevention, with the possibility of using locally produced fortified nutritious foods, distributed in kind or made available and accessible through cash and vouchers (Ngwenyi et al., 2019).

3. Nutrition governance

❖ *Multisectorial platform*

The Inter-ministerial Committee to Combat Malnutrition, established within the Office of the Prime Minister, has continued its work. A food and nutrition guide has been produced and validated. The multi-sectoral and multi-stakeholder platform (MSP) that brings the different SUN networks together needs re-energising, to strengthen the current mechanism and mitigate the absence of certain sectors in monthly meetings. This would also enable the four working groups formed in the regions most affected by malnutrition to be strengthened. The civil society, donor and UN networks have been established while the private sector network is in the process of being formalised. The parliamentarian network to combat malnutrition would be more effective if it had a more detailed road map. Thus, Cameroon is still at 33% of bringing together stakeholders into a shared space for action (SUN, 2017).

❖ *Policy and legal framework*

The nutrition policy has been revised to ensure it is in line with new evidence that stresses the need for a multi-sectoral approach and the scaling up of cost-effective interventions to speed up the reduction of malnutrition. The nutrition situation analysis and legal framework were updated prior to developing the common results framework and operational plan for policy implementation. Tracking missions are conducted to ensure the implementation of food fortification and the International Code of Marketing of Breast-milk Substitutes. Parliamentarians are challenging the Government at all parliamentary sessions to make nutrition a national priority. The coherent policy and legal framework is still at 40% (SUN, 2017).

❖ *Aligning programs around a common common results framework*

UNICEF's support to the development of the common results framework (CRF) commenced in May 2016 on the basis of the new multi-sectoral food and nutrition policy, with the involvement of all nutrition stakeholders. The areas of intervention selected within this CRF enabled the development of a multi-sectoral operational plan. These documents is to be submitted for the approval of the Inter-Ministerial Committee by the end of 2017. A national workshop was organised in June 2017, to evaluate and strengthen the capacity of plan implementers this plan nationally. Once these instruments have been adopted, there is to be more concrete and efficient policy and planning coordination between ministries. Thus, aligning action around a common results framework is still at 39% (SUN, 2017).

❖ *Financial tracking and resource mobilization*

The CRF was to be costed by the end of 2017. The Ministry of Health allocates specific funds to nutrition and advocacy work is continuing within Parliament for a specific budget line to be established in 2018. The World Bank has agreed to finance a health programme that includes nutrition activities and the finalisation of the programme's operational plan, which sets out the mechanisms for resource mobilisation, will enable donors to align resources. Financial tracking weighs 26% of the target goal (SUN, 2017).

4. Food Vouchers

Vouchers play a critical role in response to crises or shocks when farmers and pastoralists no longer have the ability to purchase food, agricultural inputs or livestock because their assets have been damaged or depleted (FAO, 2016). Voucher programmes are now considered standard programming options in emergency food security/livelihoods programs to increase household assets and flexibility in adapting to shocks. While there is evidence and considerable best practice documentation to demonstrate the effectiveness of conditional and unconditional vouchers, there is less evidence demonstrating the impact specifically on nutrition outcomes (Global Nutrition Cluster, 2014).

ACF commissioned a meta-evaluation of 5 of its fresh food voucher programmes implemented between 2009-2011 during emergencies in Bolivia, Dadaab refugee camps in Kenya, Haiti, Pakistan and the occupied Palestinian Territories (oPT). The programmes were all paper cash-vouchers exchanged for fresh foods1 in local markets. In the case of Bolivia, Dadaab and Haiti, the fresh food voucher was designed to complement a general food distribution. In Pakistan, the voucher replaced general food distribution after markets demonstrated some degree of recovery. In oPT, the voucher initially targeted those vulnerable to food insecurity who presumably had sufficient economic resources to meet staple food needs. Fresh food vouchers increased dietary diversity in all programmes, but with mixed degree of result largely resulting from faults in design and implementation that can be better managed in the future (ACF, 2012).

A review of 38 primary studies explore how low-income pregnant women use food vouchers from the UK's Healthy Start programme. This review showed that some low-income pregnant women may use Healthy Start vouchers to increase their consumption of fruits and vegetables and plain cow's milk, whereas others may use them to reduce food expenditure and save money for other things (Ohly et al., 2017). McFadden et al. (2014) discovered that apart from improving nutrition for women and young children living on low income, some factors have the potential to compromise food voucher impact such as: erosion of voucher value relative to the rising cost of food, lack of access to registered retailers and barriers to registering for the programme. Addressing these issues could inform the design and implementation of food subsidy programmes in high income countries.

Conclusion of the State-of-the-art

The above review clearly depicted that acute malnutrition is still a serious issue especially in the northern part of Cameroon affected by the conflict in the northeast Nigeria. Some progress has been made to address under-five stunting and wasting. Exclusive breastfeeding is still on course, and no progress was observed against under-five overweight and low birthweight. To tackle this issue, Cameroon has committed to the nine SUN targets. So far, progress to date is simply not good enough (35% globally) even though the country is well equipped to end malnutrition. The 2018 Global Nutrition Report highlights that solutions already exist but finding effective ideas are not being adopted at scale. However, Cameroon has been putting significant efforts to challenge malnutrition. A new approach was even developed, the blanket supplementary feeding programme, in partnership with NGOs, the private sectors. This programme displayed significant improvement in MAM children recovery (96.7%). It highlighted that, for the next step, emphasize

should be put on geographical areas with high GAM based on MUAC screening with the possibility of using vouchers, among many other options. It is well-known that vouchers are considered standard programming options in emergency food security/livelihood. Although, conditional and unconditional vouchers have been shown to increase dietary diversity in low- and high-income countries, there is less evidence demonstrating the impact specifically on nutrition outcomes. Thus, documenting its implementation and performance in the Far North of Cameroon will surely give a tremendous insight for the next step of expanding the blanket supplementary feeding programme. While planning such a project, it is important to keep in mind some factors that can compromise food voucher impact namely: erosion of voucher value relative to the rising cost of food, lack of access to registered retailers and barriers to registering for the programme.

II. METHODOLOGY

i. Description of the study

This is a longitudinal study using a mix of qualitative and quantitative methods that will take place from November 2019 to July 2020.
The recruitment of child will be done through MAM community screening by CHW at the point of active screening. A child diagnosed with MAM will be referred to the health center, where he/she will be assessed (using both MUAC and weight-for-height) to confirm the diagnosis by the nurse in charge and enrolled in voucher program. Among the ten villages that capture a range of contexts, population size, distance from health center, and other health service indicators selected, about 10-15 children between 6-59 months of age who have been identified as MAM for a total of 220 subjects will be enroll in this study. If a household has more than one child enrolled, the youngest child will be selected for the study.

ii. Costing methodology

In addition to the qualitative and quantitative data, the study will apply the costing methodology developed by the University of California at Davis, a study partner of HKI's on vitamin A supplementation. The cost of all activities associated with the voucher program will be considered. The study team will identify all actors involved in the program: HKI teams, MOH managers and facility personnel at all relevant levels of the health system, CHVs, community actors, vendors. For each group of actors, the amount of time they spend on the program will be quantified. Other costs such as transport and supplies will also be collected and quantified. The costing study will provide key information on the main cost drivers of each program component and will provide information on the cost of treating each child.

iii. Participants

Inclusion Criteria

Will be included in the study population:

- Children between from 6 to 59 months of age who have been identified as MAM defined as weight-for-height between -3 and -2 Z-scores of the WHO Child Growth Standards or and/or a mid-upper-arm circumference (MUAC) greater or equal to 115 mm and less than 125 mm through community screening and confirmed by health center staff. A qualified member of the research team will confirm the diagnosis with independent MUAC and anthropometric measurements.

- For a household with more than one child with MAM enrolled in the Food voucher Program, the youngest child will be selected for the study.

Exclusion Criteria

- Child with SAM will not be included in the study
- Child whose caretakers will not give their approval for the study.
- Child who will not attend the 4 months project.
- Severely ill children.
- Children who are likely to stay at the study area/community throughout the period of the study

iv. Sample size calculation

Based on total population of Kaele of 30609, 8.3% the prevalence of MAM (SMART, 2018) in the Far North Region, 1.5% as margin of error, 2 as the design effect and 5% significant level; we need to select 2 494 children. If we anticipate a non-response rate of 10%; we will have screen 2743 children. Based on the MAM prevalence (8.3%), a total of 228 children under 5 years old will be enrolled for the longitudinal study.
We will interview health workers (n=10), CHW (n=20), food vendors (n=10), Key Opinion Leaders (n=10), and project staff (n=5).

v. Study procedures

For the **quantitative** data, we will purposively select 10-15 villages that capture a range of contexts, population size, distance from health center, and other health service indicators. In each village we will select 15-20 children between the ages of 6-59 months who have been identified as MAM through community screening, for a total of 190 subjects (see sample size estimation above). If a household has more than one child enrolled, we will select the youngest child for the study. All households will be asked to give informed consent to enroll in the study.
An independent research team will visit the households of study children just prior to their enrollment in the voucher program, monthly for the three months of treatment, and one month after completion of the program. At enrollment in the study, consenting households will be administered a survey covering household demographic and socioeconomic characteristics, gender-disaggregated asset ownership, agricultural production, food security, health knowledge, child's recent illness and treatment, and IYCF knowledge and practices. A 24-hour dietary recall will be administered for the enrolled child and the mother, and the child's age, sex, height, weight and MUAC will be recorded.

At the three subsequent monthly visits, the research team will administer a 24-hour dietary recall for the child, collect data on the occurrence and content of household visits by the CHW, whether and when vouchers were redeemed, how food was used by the household, attendance at monthly screening events, cooking demonstrations and/or ENA-EHA discussions. At the follow-up visit, all data collected at study enrollment will be collected again with the exception of the demographic, sociodemographic and asset characteristics.
The **qualitative** data will be collected in the same villages, using key informant and in-depth interviews with a subset of caretakers from enrolled households (n~20 or until saturation is reached), CHW (n~20), vendors (n~10) and community leaders (n~10) as well as health workers serving those villages (n~10). The interviews will probe for insights into the quality and effectiveness of implementation to understand the experiences of participants at all levels, the challenges and benefits of the program, perceptions about the long-term feasibility of dietary recommendations and demonstrated recipes, and to document the implementation process for

possible replication.
Questionnaires will be pretested in both English and French. For respondents speaking neither English nor French, a local translator will be employed to translate the interview guide in the appropriate local language (Foufoulde, Moundang, Toupouri, …)

vi. Data Custody, Security and Protection of Subject Confidentiality

All data will be linked by identifiers and will be treated with strict confidence throughout and beyond the duration of the study, with identifier-linked data available only to study investigators and the research firm hired for collecting data. All analyses and papers will report results in aggregate so as to prevent individual disclosure. The PI will be responsible for all data security.
The source data will be preserved for 3 years after the close-out of the field data collection period, and then destroyed by shredding. Shredded forms will be dissolved by a local paper mill under the supervision of study personnel to produce recycled paper.
Once all data collection is complete, and data are fully analyzed to address the research questions/impact evaluation objectives, the data will be deidentified of personal names and addresses.

vii. DATA ANALYSIS

Categorical data will be presented in the form of percentage (number) and quantitative ones in percent (95% CI), mean±standard deviation for normally distributed data, and Median (interquartile range) otherwise. Univariate comparisons for quantitative outcomes will be done using repeated measures ANOVA for normal data and Friedman test (non-parametric test) for non-normal data. Marginal homogeneity tests will be used for comparison of categorical outcomes.
For multivariate analysis, Generalized linear mixed models will be used to adjust for potential prognostics factors and/or others independent variables.

For qualitative data, detailed field notes about non-verbal expressions and other observations will be taken during and after each interview. Audio recordings will be transcribed verbatim and field notes incorporated into the transcriptions. This will be done on a daily basis in the field. Any uncompleted transcriptions will be transcribed at a later date. Due to the semi-structured nature of the data collection instruments, a codebook will be developed to reflect key themes and sub-themes from the transcripts. These codes will be applied to each interview and focus group transcript and outputs will be produced by individual, group and by code. Qualitative data analysis software Atlas-Ti will be used in the process of data management and analysis.

III. ETHICAL CONSIDERATIONS

HKI will seek ethical approval from the Cameroon IRB

i. Consent process and documentation

A process of oral informed consent (translated into the local language) will be employed for the household screening visit at the household level, and written consent will be obtained from parents of children and pregnant and lactating women. Parents of children and pregnant and lactating women eligible to be enrolled in the study will be consented in their homes by a member of the data collection team. This will be done each time during the cross-section surveys. The study objectives, procedures, and all associated potential risks and benefits will be explained. Participants will have opportunity to have their questions answered or to refuse any part of the study procedure, or question. There will be no compensation for participation in the survey.

ii. Risks, Benefits and Confidentiality

Risks: Subjects participating in this study will be exposed to no greater than minimal risks (slight fatigue and slight compression of the arm by the MUAC tape), and not exceeding those accompanying normal interview. In some households where all three type of participants (child 6-23 months, pregnant and lactating woman) are present, the interview may last for 1-1.5 h, but the time taken per participant will still be lower. Standard anthropometric measurements being proposed in the study are safe and have been used globally for assessing infant/child and maternal nutritional status.

Benefits: All the participants in the study will be from District A district and will receive the services being provided as part of the HKI-implemented nutrition program. If any child has severe malnutrition (weight for length < -3 Z score), we will arrange to refer the child to the nearest health center.

Confidentiality: Survey participant identity will not be disclosed in any way to those outside the project organization without their specific permission. Data will not be used for any other purposes than for the research it was carried out for. The results issued from this study will be presented by investigators publicly in conferences, newspapers and scientific reviews and shall never constitute a marketing object. When survey results are reported, they are always aggregated—that is, individual survey results are combined together and presented as a group. Comments are reported verbatim in lists sorted alphabetically. Your submission data will be kept in HKI servers indefinitely, unless they violate our terms of use.

iii. Plan for reporting unanticipated problems/adverse events

Any problems that occur or adverse events that might take place in the study site will be responded to by the field supervisor at first with the assistance and support of the key personnel of the research team. A record of the proceedings will be maintained and sent to the HKI investigators. Any issues that arise will be brought to the investigators notice within a week (at most) of its occurrence, and the investigators will then file a report with the IRB.

IV. INFORMATION SHEET

TITRE:
DOCUMENTATION OF THE IMPLEMENTATION AND PERFORMANCE OF THE MAM FOOD VOUCHER PROGRAM IN THE FAR NORTH REGION OF CAMEROON

Principal Investigator: Dr Ismael Teta, PhD

1- Objectives of the study

The overall objective of this study is to document the delivery of the food voucher program and its effectiveness in improving the diets in the district of Kaele and contributing to the recovery of MAM children 6-59 months and the feasibility of wider replication.
The evaluation has the following specific objectives:

- Document the delivery of the food voucher program,
- Evaluate its effectiveness in improving the diet and contributing to the recovery of MAM children 6-59 months,
- Assess the feasibility of a wider replication.

2- Period and study population

The project is to be conducted from November 2019 to July 2020. The target population is MAM children 6-59 months, mothers, key informants, vendors and community leaders, as well as health workers living and/or serving in the district of Kaele.

3- Procedure

The following procedure shall be respected:

- ***Phase 1: Consent of Households and Enrollment***

Once the child is identified, the household will be asked to give an informed consent to enroll in the study. The Consenting household will be geolocated, given a unique identifier (code of 4 digits), and the contact listed (phone number). Participants will have the opportunity to have their questions answered or to refuse any part of the study procedure, or question.

- ***Phase 2: Baseline assessment***

After enrollment and for the first three months, a questionnaire-based survey in French or English, if needed with a local translator, will be conducted in the household to capture gender-disaggregated asset ownership, agricultural production, food security, health knowledge, child's recent illness and treatment, and Infant and Young Child Feeding (IYCF) knowledge and practices. Demographic and socioeconomic characteristics will only be recorded during the first month. The 24-hour dietary recall/seven days dietary recall, using a predefined list of commonly consumed food, will be administered to the enrolled child and the mother, and the child's age, sex, height, weight and Mid-Upper Arm Circumference (MUAC) will be recorded. The occurrence and content of household visits by Community health workers (CHW), how

food was used by the household, attendance at monthly screening events, cooking demonstrations and/or Essential Nutrition Actions-Essential Hygiene Actions (ENA-EHA) discussions will be investigated.

- ***Phase 3: Follow-up assessment (4 to 6 months)***

All data collected at the baseline assessment will be collected again with the exception of the demographic, sociodemographic and asset characteristics.

- ***Phase 4: Endline assessment***

One month after the end of the program, data collected during the follow-up visits will be recorded with the exception of the demographic, sociodemographic and asset characteristics.

- ***Phase 5: Interview of other stakeholders***

Face-to-face interviews will be conducted with key informants, a subset of caretakers from enrolled households, CHW, vendor and community leaders as well as health workers serving those villages. The interviews will probe for insights into the quality and effectiveness of implementation to understand the experiences of participants at all levels, the challenges and benefits of the program, perceptions about the long-term feasibility of dietary recommendations and demonstrated recipes, and to document the implementation process for possible replication.

4- Participation

Participation in the study is voluntary. Anyone is free to accept or refuse. Once engaged in the study, you are free to leave at any moment without any retaliation.

5- Benefits

All the participants in the study will receive the services being provided as part of the HKI-implemented nutrition program. If any child has severe malnutrition (weight for length < -3 Z score), we will arrange to refer the child to the nearest OTP.

6- Confidentiality

Survey participant identity will not be disclosed in any way to those outside the project organization without their specific permission. Data will not be used for any other purposes than for the research it was carried out for. The results issued from this study will be presented by investigators publicly in conferences, newspapers and scientific reviews and shall never constitute a marketing object. When survey results are reported, they are always aggregated—that is, individual survey results are combined together and presented as a group. Comments are reported verbatim in lists sorted alphabetically. Your submission data will be kept in HKI servers indefinitely, unless they violate our terms of use.

7- Potential risks

Subjects participating in this study will be exposed to no greater than minimal risks (slight fatigue, slight compression of the arm by the MUAC tape), and not exceeding those accompanying normal interview. In some households where all three type of participants (child 6-23 months, pregnant and lactating woman) are present, the interview may last for 1-1.5 h, but the time taken per participant will still be lower. Standard anthropometric measurements being proposed in the study are safe and have been used globally for assessing infant/child and maternal nutritional status.

8- Reporting unanticipated problems/adverse events

Any problems that occur or adverse events that might take place in the study site will be referred to the field supervisor at first with the assistance and support of the key personnel of the research team. A record of the proceedings will be maintained and sent to the HKI investigators. Any issues that arise will be brought to the investigators notice within a week (at most) of its occurrence, and the investigators will then file a report to the National Ethics Committee.

9- Compensation

The participation in this study is free. There will be no compensation for participation in the survey.

10-Address of the Principal investigator

Country Director of Helen Keller International (HKI), Postal address: Derrière Usine Bastos, 1771 Nouvelle Route Bastos, Yaoundé, Cameroon, Tel: +237 691526134, Email: iteta@hki.org

11-Address of the National Ethics Committee

Email: cnethique_minsante@yahoo.fr and Tel: 243 67 43 39 / 690 99 67 81.

V. NOTICE D'INFORMATION

TITRE:

DOCUMENTATION DE LA MISE EN ŒUVRE ET PERFORMANCE DU PROGRAMME DE COUPONS ALIMENTAIRES CHEZ LES ENFANTS SOUFFRANT DE MALNUTRITION AIGÜE MODEREE DANS LA RÉGION DE L'EXTREME NORD-CAMEROUN

Investigateurs Principaux :

- **Ismael Teta**, PhD: Directeur-Pays d'Helen Keller International (HKI), adresse postal : Derrière Usine Bastos, 1771 Nouvelle Route Bastos, Yaoundé, Cameroun, Tel : +237 691526134, Courriel : iteta@hki.org

1- Objectifs de l'étude

L'objectif général de cette étude est de documenter l'exécution du programme de coupons alimentaires et son efficacité à améliorer les régimes alimentaires dans le district de Kaélé et à contribuer au rétablissement des enfants souffrant de malnutrition aigüe modérée (MAM) âgés de 6 à 59 mois et à la possibilité de la reproduire à plus grande échelle.
Spécifiquement, il s'agira d'(e):

- Documenter la prestation du programme de coupons alimentaires,
- Évaluer son efficacité à améliorer les régimes alimentaires et à contribuer au rétablissement des enfants souffrant de MAM âgés de 6 à 59 mois,
- Évaluer la faisabilité d'une réplication à plus large échelle.

2- Période et population d'étude

Le projet se déroulera de novembre 2019 à juillet 2019. La population cible est constituée d'enfants de 6 à 59 mois, mères ou tutrices, informateurs clés, commerçants et dirigeants communautaires, ainsi que d'agents de santé résidant ou travaillant dans le district de Kaélé.

3- procédure

La procédure suivante sera utilisée:

- ***Phase 1 : Consentement des ménages et enrôlement***

Une fois l'enfant identifié, le ménage sera invité à donner son consentement éclairé pour participer à l'étude. Le ménage consentant sera géolocalisé, se verra attribuer un identifiant unique (code de 4 chiffres) et son contact sera répertorié (numéro de téléphone). Les participants auront la possibilité d'obtenir des réponses à leurs questions ou de refuser toute partie de la procédure de l'étude ou des questions.

- ***Phase 2: Evaluation de référence***

Après l'enrôlement et pendant les trois premiers mois, une enquête effectuée à l'aide d'un questionnaire, si nécessaire avec un traducteur local, sera menée dans le ménage pour documenter les actifs, la production agricole, la sécurité alimentaire, les connaissances en

matière de santé, maladies récentes et traitement, connaissances et pratiques en matière d'alimentation du nourrisson et du jeune enfant (ANJE). Les caractéristiques démographiques et socio-économiques ne seront enregistrées que pendant le premier mois. Le rappel des 24 heures/hebdomadaire, utilisant une liste prédéfinie d'aliments couramment consommés, seront administrés à l'enfant enrôlé et à sa mère ou tutrice. Son âge, son sexe, sa taille, son poids et son périmètre brachial (MUAC) seront enregistrés. L'occurrence et le contenu des visites de ménage par l'Agent de santé communautaire, l'utilisation de la nourriture par le ménage, la participation à des événements de dépistage mensuels, des démonstrations culinaires et/ou des discussions ENA-EHA feront l'objet d'une enquête.

- ***Phase 3: Evaluation de suivi***

Mensuellement, toutes les données collectées lors de l'évaluation de référence le seront à nouveau, à l'exception des caractéristiques démographiques, socioéconomiques et des actifs.

- ***Phase 4: Entretiens avec d'autres parties prenantes***

Des entretiens en face à face seront menés avec des informateurs clés, un sous-groupe de mères ou tutrices, des ASC, des marchands et leaders de communautés, ainsi que des agents de santé desservant ces villages. Les entretiens permettront de recueillir des informations sur la qualité et l'efficacité de la mise en œuvre afin de comprendre les expériences des participants à tous les niveaux, les défis et les avantages du programme, la perception de la faisabilité à long terme des recommandations diététiques et des recettes culinaires, et de documenter le processus de mise en œuvre pour une possible réplication.

4- Participation

La participation à l'étude est volontaire. Tout le monde est libre d'accepter ou de refuser. Une fois engagé dans l'étude, vous êtes libre d'y mettre un terme à tout moment sans aucune représailles.

5- Avantages

Tous les participants à l'étude recevront les services fournis dans le cadre du programme de nutrition mis en œuvre par HKI. Si un enfant souffre de malnutrition sévère (Indice de poids pour taille < -3 z-score), nous nous chargerons de le référer au centre de santé le plus proche.

6- Confidentialité

L'identité des participants ne sera en aucun cas divulguée à des personnes extérieures à l'organisation du projet sans leur autorisation expresse. Les données ne seront utilisées à aucune autre fin que celle pour laquelle elles ont été effectuées. Toutefois, les résultats de cette étude seront présentés publiquement par les investigateurs principaux lors de conférences, sous forme d'articles dans des revues scientifiques et ne constitueront jamais

un objet de marketing. Lorsque les résultats d'une enquête sont rapportés, ils sont toujours agrégés, c'est-à-dire que les résultats d'une enquête individuelle sont combinés et présentés en groupe. Les commentaires sont rapportés textuellement dans des listes triées par ordre alphabétique. Vos soumissions seront conservées indéfiniment sur les serveurs de HKI, à moins qu'ils ne violent nos conditions d'utilisation.

7- Risques potentiels

Les sujets participant à cette étude ne seront exposés qu'à des risques minimes (légère fatigue, légère compression du bras par le mètre-ruban MUAC) qui sont ceux des entretiens normaux. Dans certains ménages où les trois types de participants (enfants de 6 à 23 mois, femmes enceintes et mères allaitantes) sont présents, l'entretien peut durer de 1 à 1,5 heure, mais le temps pris par participant sera toujours inférieur. Les mesures anthropométriques standard proposées dans l'étude sont sûres et ont été utilisées dans le monde entier pour évaluer l'état nutritionnel du nourrisson/de l'enfant et de la mère.

8- Signaler des problèmes / événements indésirables imprévus

Tout problème rencontré ou tout événement indésirable susceptible de se produire sur le site de l'étude sera tout d'abord référé au superviseur de terrain avec l'aide et l'appui du personnel clé de l'équipe de recherche. Un compte rendu de la procédure sera conservé et envoyé aux enquêteurs de HKI. Les problèmes éventuels seront signalés aux enquêteurs dans un délai d'une semaine (au maximum), et les enquêteurs soumettront un rapport au Comité national d'éthique du Cameroun.

9- Compensation

La participation à cette étude est libre et gratuite. Il n'y aura aucune compensation pour la participation à l'enquête.

10-Address of the Principal investigator

Directeur-Pays de Helen Keller International (HKI), adresse postal: Derrière Usine Bastos, 1771 Nouvelle Route Bastos, Yaoundé, Cameroun, Tel : +237 691526134, courriel : iteta@hki.org

11-Address of the National Ethics Committee

Courriel: cnethique_minsante@yahoo.fr and Tel: 243 67 43 39 / 690 99 67 81.

VI. PARENTAL CONSENT

I, the undersigned, Mr./Ms/Mrs_____
have been invited to participate in the research work entitled "Documentation of the implementation and performance of the MAM food voucher program in the Far North region - Cameroon" whose principal investigators are: Ismael Teta, PhD, Country Director of Helen Keller International (HKI), Postal address: Derrière Usine Bastos, 1771 Nouvelle Route Bastos, Yaoundé, Cameroon, Tel : +237 691526134, Email : iteta@hki.org.

- I understand the information notice that was given to me about the study
- I have read and was explained the information notice for this study
- I received all the answers to the questions I asked
- Risks and benefits were presented to me and explained
- I understand that I am free to accept or refuse to participate
- I am free to withdraw at any time from the study without any other form of procedure
- My consent does not relieve the investigators of their responsibilities; I retain all my rights guaranteed by law

As a parent or guardian, I freely agree that my child and I will be enrolled in this study, according to the conditions specified in the information sheet. I therefore agree to submit to the survey questionnaire and to provide information about my family and the health status of my child.

- That anthropometric measurements be made on my child.

I agree that the survey data be used in subsequent studies.

Date……

Principal Investigator **Participant**

VII. CONSENTEMENT PARENTAL

Je soussigné, M./Mlle/Mme_____

avoir été invité à participer au travail de recherche intitulé « Documentation de la mise en œuvre et performance du programme de coupons alimentaires chez les enfants souffrant de malnutrition aigüe modérée dans la région de l'Extrême Nord – Cameroun » dont l'investigateur principal est : Ismael Teta, PhD, Directeur-Pays d'Helen Keller International (HKI), adresse postal : Derrière Usine Bastos, 1771 Nouvelle Route Bastos, Yaoundé, Cameroun, Tel : +237 691526134, Courriel : iteta@hki.org.

- ☐ J'ai bien compris la notice d'information qui m'a été remise concernant l'étude
- ☐ Ou bien on m'a lu et expliqué la notice d'information relative à cette étude
- ☐ J'ai reçu toutes les réponses aux questions que j'ai posées
- ☐ Les risques et bénéfices m'ont été présentés et expliqués
- ☐ J'ai bien compris que je suis libre d'accepter ou de refuser d'y participer
- ☐ Je suis libre de me retirer à tout moment de l'étude sans tout autre forme de procédure
- ☐ Mon consentement ne décharge pas les investigateurs de leurs responsabilités ; je conserve tous mes droits garantis par la loi

En ma qualité de parent ou tuteur, J'accepte librement que mon enfant et moi soyons enrôlés dans cette étude, selon les conditions précisées dans la notice d'information. J'accepte donc de me soumettre au questionnaire prévu par l'enquête et de communiquer des informations sur ma famille et sur l'état de santé de mon enfant.

Que les mesures anthropométriques soient faites sur mon enfant.

Je donne mon accord pour que les données de l'enquête soient utilisées dans les études ultérieures.

Fait le……

Investigateur principal **Participant**

VIII. Baseline Survey Questionnaire

I. Identification of the site of study

N°	Location and date	Response
1	Village name	
2	Zone or quarter	
3	Interviewer ID	
4	Supervisor ID	
5	Date of survey	
6	Geolocalisation (GPS Coordinate)	Longitude_____ Lattitude_____

II. Consent, language and time of interview

N°	Consent, interview language	
6	Consent has been read and obtained	Yes=1, No= 2, if no, End
7	Interview language (to be precise)	
8	Time of interview Started at…… ended at……	Total time (minutes)

III. DEMOGRAPHIC AND SOCIO-ECONOMIC DATA of the household

N°		
9	**Household ID**	
10	**Household head sex** (1=Male 2=Female)	
11	**Number of household members :**	
12	**How many children live in your household :**	
13	**Number of children in the family :**	
14	**Number of children under 5 years old :**	
15	**What is your ethnic group :**	
16	**What is your marital status** : (1=Married (monogamy) 2=married (polygamy) 3=Single 4=Separated/Divorced 5=Widowed)	

17	**What is the highest level of education of the mother**: (1=No formal education, 2=primary school not attended, 3= primary school completed, 4=first cycle of secondary school 5= second cycle of secondary school 5= College/university completed)	
18	**What is the highest level of education of the father**: (1=No formal education, 2=primary school not attended, 3= primary school completed, 4=first cycle of secondary school 5= second cycle of secondary school 5= College/university completed)	
19	**Main occupation of the mother:** (1=Salaried employee 2=Farmer 3=Self-employment 4=Casual laborer 5=Housewife 6=Unemployed 7=student, 8=Others (specify))_____	
20	**Main occupation of the father:** (1=Salaried employee 2=Farmer 3=Self-employment 4=Casual laborer 5=Housewife 6=Unemployed 7=student, 8=Others (specify))	
21	**What is the household's main source of income (Livelihood)?** (1=Salaries 2=Animal and animal product sales, 3=Casual labour, 4=Begging, 5=Gifts, 6=Trade, 7=Crop sale, 8=Remittances, 9=Other (specify))	
22	**What is the household's average monthly income?** (cfaF)	
23	**Household ownership**	
	Did the household have any of the following goods? (yes=1, no=2)	

23a	Radio,	
23b	Television,	
23c	Refrigerator,	
23d	Bicycle,	
23e	Car	
23f	Motorcycle	
23g	Telephone	

24	**Name the type of flooring material of your house** (1=sand, 2= cement, 3=ceramic, 4=soil, 5 other (specify)	
25	**Give your main cooking fuel source** (1= firewood, 2=charcoal, 3=kerosene, 4=gas, 5= other (speficy)	
26	**What is your main source of light** (1=electricity supply of ENEO, 2=kerosene lamp, 3=generator supply, 4=solar lamp, 5=candle, 6=oil lamp, 7=other (specify)	
27	**Did your household have animal farming?** (1=yes, 2= no)	
28	**If yes specify** (1= poultry, 2=livestock, 3= other (specify))	
29	**Did the household have a farmland?** (1=yes, 2=no)	
30	**If yes, which types of crop are there?** (1=cereals, 2=tubers, 3=vegetables, 4=pulse, 5=fruits, 6=specify)	

IV. IDENTIFICATION OF CHILD AND CAREGIVERS

N°	**Child informations**	Response
31	**Child voucher number**	
32	**Child name**	
33	**Date / Month of birth and year**	
34	**Age of the child.**	
35	**Sex** (1=Male 2=Female)	
36	**Position of the child in the family** (1st, 2nd, 3rd child…)	
	Caregiver informations	
37	**Caregiver code number**	

38	**Name of the caregiver**	
39	**Age of the caregiver** (years)	
40	**Relationship with the child** (1= Mother, 2= Father, 3= Aunt/uncle, 4=grand- parent, 5= adoptive)	
41	**Religion** (1=Muslim, 2=christian, 3=faithless, 4=animist)	
42	**Phone number of the caregiver or person to be contacted**	
43	***Participation to previous food voucher program***	
44	**Did your child take part for the past food voucher program last year?** (1= Yes, 2=No)	
45	**If yes during which period?** (specify the month)	
46	**Did he/she attended the end of the 4 months project?** (1= Yes, 2=No)	

V. BREASTFEEDING AND FOOD SUPPLEMENTATION INFORMATIONS

N°		
47	**Did you ever breastfeed the child?** (1= Yes 2= No 3=Don't know)	
48	**Are you still breastfeeding the child? (**1= Yes, 2= No) If no, go to question 49 and 50 , if yes, go to questions 51-53	
49	**If no, you stop breastfeeding your child at what age?** (weeks or months)	
50	**Why? (**1= No more milk, 2= Did not want to breastfeed, 3= it was a good age to stop breastfeeding, 4=mother illness, 5= traditional beliefs, 6=Had to go back to work or school, 7= Child separated from mother)	
51	**If yes, are you giving the child any foods in addition to breast milk?** (1=Yes, 2=No)	
52	**At which age did you stated food supplementation to your child**? (weeks or months)	
53	**Why ? (**1= No more milk, 2= child was crying, 3= it was a good age to introduce supplementation, 4=mother illness, 5= traditional beliefs, 6=Had to go back to work or school)	
54	**What is the type of food and what is the frequency of feeding?**	

Type of food	Frequency of feeding					
	Less than once a week	Once a week	2-3 times a week	Once a day	Twice a day	3 or more times a day
Gruel / porridge						
Rice						
Cooked pulses						
Mashed vegetables / fruits						
Top milk						
Any other (specify)						

VI. Vaccinal situation and vitamin A supplementation of the child

55	**Did the child received any vaccine?** (1=yes, 2=no)	
56	**Has child received BCG?** (1=Yes (card) 2=Yes (recall) 3=Yes (scar) 4=NO 5=Don't know)	
57	**Has child received Penta 1?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
58	**Has child received Penta 2?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
59	**Has child received Penta 3?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
60	**Has child received vit A at 6 months age?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
61	**Has child received Measles immunization?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
62	**Has child received deworming treatment in the last 6 months?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
63	**Has child received Vitamin A in the last 6 months?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
64	**If yes how many times in the last 12 months? (**1=once 2=twice 3=more than twice)	
65	**In case that the child didn't completed he/her immunization schedule, give the reasons (1=** Fear of side effects, 2= Postpone till next time, 3=Time not convenient, 4= Lack of confident/Trust, 5= Unfriendly attitude of vaccinator, 6= Long waiting period)	

VII. Past and current disease situation of child

N°		
66	**Is your child currently suffering from any disease?** (1=yes, 2=no) If yes, go to questions 67-70; if no, go to questions 71-77	
67	**If yes, which disease? (**1=Diarrhea (acute) 2= Measles 3=Fever (acute) 4= Malaria 5=Difficult breathing 6= Vomiting 7=Diarrhea (chronic) 8=Coughing 9=Skin infection 10=Others (Specify))	
68	**Since how many days?**	……..days
69	**Did the child visiting the doctor or nurse?** (1=yes, 2=no)	
70	**Did the child received any treatment now?** (1=yes, 2=no)	
71	**If yes, who did the prescription?** (1=medical doctor or health worker, 2= automedication, 3= a parent or relative (non-health worker), 4= traditional doctor, 6= others (specify))	
72	**Give the nature of treatment:** (1= modern medicine, 2=traditional medicinal plants, 3= both, 4= others (specify))	
73	**If the child is not currently sick, give the last time that he/she was ill** (weeks or months)	
74	**Precise the nature of illness**: **(**1=Diarrhea (acute) 2= Measles 3=Fever (acute) 4= Malaria 5=Difficult breathing 6= Vomiting 7=Diarrhea (chronic) 8=Coughing 9=Skin infection 10=Others (Specify))	

75	**Did the child visiting the doctor or nurse?** (1=yes, 2=no)	
76	**If yes, who did the prescription?** (1=medical doctor or health worker, 2= automedication, 3= a parent or relative (non-health worker), 4=traditional medicine or plant, 5= traditional doctor, 6= others (precise))	
77	**Give the nature of treatment:** (1= modern medicine, 2=traditional medicinal plants, 3= both, 4= others (specify))	

VIII. Water source and hygiene of the household

	Washing hand	
78	**Did you washing your hand after toilet use?** (1=yes, 2=no)	
79	**Did you washing hand before eating** (1=yes, 2=no)	
80	**Did you washing hand before feeding child** (1=yes, 2=no)	
81	**Did you washing hand before breastfeeding** (1=yes, 2=no)	
82	**Did you washing hand after cleaning baby's bottom** (1=yes, 2=no)	
83	**On what occasions do you usually use soap when washing hands?** (1= Before eating 2=After defecating 3=Before feeding the baby 4=Before breastfeeding 5=After cleaning baby's bottom 6=others (specify))	
	Water source	
84	**What is your main current water source for household use?** (1= River 2= Water tap 3= unprotected well 4=protected well 5=Borehole 6=others specify)	
85	**How long does it take to go there, get water, and come back ?** (in minutes)	
86	**What is your main current water source for drinking?** (1= River 2= Water tap 3= unprotected well 4=protected well 5=Borehole 6=others specify)	
87	**How long does it take to go there, get drinking water, and come back ?** (in minutes)	
88	**Who usually goes to this source to fetch the water for your household?** (1=adult man, 2= adult woman; 3=under 15 years old boy/girl)	
89	**Do you treat water before giving to the child?** (1=yes, 2=no)	
90	**If yes, how do you treat your drinking water?** (1=boiling, 2=expose it to the sun, 3=use chemicals (Add bleach/chlorine), 4=filters/sieves (ceramic, sand, composite), 5= Strain it through a cloth 6= Let it stand and settle, 7=other (specify).)	
	Toilet use	
91	**Did your household have a toilet ?** (1=yes, 2=no)	
92	**If no, what are you doing when you are in need?** (1=go to your neighbor's, 2=in the nature, 3=……..)	
93	**If yes, what type of toilet do you have?** (1=Bucket 2=Traditional pit latrine 3=Flush toilet)	
94	**Is there hand washing facility near the toilet?** (1=yes, 2=no)	

IX. Seven days food frequency of child

95. During the past 7 days, did the child eat any of the following foods ? if yes how many days ?

Groups of Foods	**89.a. During the past 7 days, did the child eat any of the following foods ?** (Yes=1, No=2)	**89.b. If yes how many days ?** (1= not eat, 2=1–2 days per week, 3= 3–4 days per week, 4= Daily)	**89.c. Number of times/day**
Cereals (maize, wheat, sorghum, rice, fonio, millet, noodle)			
Tubers (cassava, irish potatoes, white potaotes, white sweet potato yam, taro, cocoyam..)			
Meat (beef, sheep, pork)			
Poultry (chicken, duck, guinea fowl, pigeon, bird)			
Fish (fresh, dry, steam)			
Eggs			
Green leaves vegetables, (baobab, moringa, Klenkleng, folere ….)			
Vit A rich vegetables (tomatoes, carotts, ….)			
Others vegetables (cucumber, okro, Eggplant,			
Vit A rich fruits, (mangoes, papaya, yellow Pumpkin)			
Others fruits (water melon, orange, guava, citron, lemon, jujube, desert-palm)			
Dairy products (Infant formula, tinned, powdered Milk or fresh animal milk, Yogurt, others dairy products)			
Fats (oil, fats, or butter or foods made with any of these)			

Sweets (sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits)			
Spices and Condiments (spices, herbs, ….)			

X. 24h recall food frequency of child

96. Yesterday, during the day and night did your child receive any of the following fluids?

items	Breast milk	Infant formulae milks	Cow's milk	Other milks	Sweetened juices	ORS	Tea/Coffee	Plain water	Thin porridge (made of cereals +sugar)	Enriched porridge (cereals, proteins, sources…)
1= Yes 2= No										
If yes, how many time ?										

97. Yesterday, during the day and night did your child receive any of the following solid/semi-solid ?

items	Eggs	Flesh meats (chicken, Beef, Kidney, Liver, Goat, Mutton, Fish)	Legumes and Nuts (beans, Cowpeas, Pigeon peas, green grams, Lentils, Ground nuts)	Dairy Products (Milk, Cheese, …)	Grains, Roots & Tubers (Pasta, Rice, Bread, Potatoes)	Vitamin A Rich fruits &Vegetable (pawpaw, melon, carrots, cowpeas leaves, spinach, avocado)	Other Fruits and Vegetables (onions, tomatoes, cabbage, oranges, bananas)	Oils, Fats, butter	Vitamins and mineral supplements
1= Yes 2= No									

If yes, how many time ?									

98. Yesterday (during the day and night), How many times did the child eat solid/semi solid foods to make he/she full?.....

99. Is it any food that the child eat which is not mentioned here ? (1=yes, 2=no,)…….

100. If yes what else did you eat?

XI. 24h recall food diary of child

101. Name all foods that was given to the child yesterday

Hours of meal (precise hours)	**Type of food or meal**	**Description of the meal (composition)**
Morning		
Noon		

Evening		
Night		

XII. Food insecurity of the household of the MAM child (USDA, 2012)

For these statements, please tell me whether the statement was often true, sometimes true, or never true for your household in the last 30 days.

102	**Which of these statements best describes the food eaten in your household in the last 30 days** : (1=Enough of the kinds of food we want to eat, 2=Enough but not always the kinds of food we want, 3=Sometimes not enough to eat, 4=Often not enough to eat, 5=dont'know or Refused)	
103	**we worried whether our food would run out before we got money to buy more :** (1=Often true, 2= Sometimes true, 3=Never true, 4=5=dont'know or Refused)	
104	**The food that we bought just didn't last, and we didn't have money to get more :** (1=Often true, 2= Sometimes true, 3=Never true, 4=5=dont'know or Refused)	
105	**we couldn't afford to eat balanced meals :** (1=Often true, 2= Sometimes true, 3=Never true, 4=5=dont'know or Refused)	
106	**Did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?** (1=yes, 2=no,)	
107	**If yes, how many days did this happen** ……days	
108	**Did you ever eat less than you felt you should because there wasn't enough money for food?** (1=yes, 2=no,)	
109	**Were you every hungry but didn't eat because there wasn't enough money for food?** (1=yes, 2=no,)	
110	**Did you lose weight because there wasn't enough money for food?** (1=yes, 2=no,)	
111	**Did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?** (1=yes, 2=no,)	

112	**If yes, how many days did this happen?** .....days	

Responses of 3 days or more are coded as "affirmative" responses.

XIII. Assessment of the nutritional and health knowledges of the caregivers

113	**For you, what is a quality of a good meal?**	
114	**What is a balanced diet?**	
115	**What are the sources of proteins?**	
116	**What are the most important food items your child should eat every day?**	
117	**What are the food items that are culturally reputed dangerous for the child (that you will never give to the child)?**	

XIV. Anthropometric measurements of child

118	Age of the child (months)	
119	Height/lenght (cm)	
120	Weight (kg)	
121	MUAC (mm) 1st measurement	
	2nd measurement	
	Mean of 2 measurements	

XV. Conclusions

122	**IS the child MAM**? (Yes=1, No=2)	
123	**If yes, was he/she referred to the health** center (Yes=1, No=2)	
124	**Was the child qualified to be enrolled in voucher program** (Yes=1, No=2)	
125	**If No why?**	

XVI. Concerning the food voucher program?

126	**Name the ingredients of the food voucher basket which are available in your household?** (1= eggs, 2= fruits, 3=vegetables, 4=sugar, 5=oil, 6=milk, 7=flour)	

IX. Follow-up Survey Questionnaire

I. Identification of the site of study

N°	Location and date	Response
1	Village name	
2	Zone or quarter	
3	Interviewer ID	
4	Supervisor ID	
5	Date of survey	
6	Geolocalisation (GPS Coordinate)	Longitude_____ Lattitude_____

II. Consent, language and time of interview

N°	Consent, interview language	
6	Consent has been read and obtained	Yes=1, No= 2, if no, End
7	Interview language (to be precise)	
8	Time of interview Started at…… ended at……	Total time (minutes)

III. IDENTIFICATION OF CHILD AND CAREGIVERS

N°	**Child informations**	Response
31	**Child voucher number**	
32	**Child name**	
33	**Date / Month of birth and year**	
34	**Age of the child.**	
35	**Sex** (1=Male 2=Female)	
36	**Position of the child in the family** (1st, 2nd, 3rd child…)	
	Caregiver informations	
37	**Caregiver code number**	
38	**Name of the caregiver**	
39	**Age of the caregiver** (years)	
40	**Relationship with the child** (1= Mother, 2= Father,	

	3= Aunt/uncle, 4=grand- parent, 5= adoptive)	
41	**Religion** (1=Muslim, 2=christian, 3=faithless, 4=animist)	
42	**Phone number of the caregiver or person to be contacted**	
43	***Participation to previous food voucher program***	
44	**Did your child take part for the past food voucher program last year?** (1= Yes, 2=No)	
45	**If yes during which period?** (specify the month)	
46	**Did he/she attended the end of the 4 months project?** (1= Yes, 2=No)	

IV. BREASTFEEDING AND FOOD SUPPLEMENTATION INFORMATIONS

N°		
47	**Did you ever breastfeed the child?** (1= Yes 2= No 3=Don't know)	
48	**Are you still breastfeeding the child? (**1= Yes, 2= No) If no, go to question 49 and 50 , if yes, go to questions 51-53	
49	**If no, you stop breastfeeding your child at what age?** (weeks or months)	
50	**Why? (**1= No more milk, 2= Did not want to breastfeed, 3= it was a good age to stop breastfeeding, 4=mother illness, 5= traditional beliefs, 6=Had to go back to work or school, 7= Child separated from mother)	
51	**If yes, are you giving the child any foods in addition to breast milk?** (1=Yes, 2=No)	
52	**At which age did you stated food supplementation to your child**? (weeks or months)	
53	**Why ? (**1= No more milk, 2= child was crying, 3= it was a good age to introduce supplementation, 4=mother illness, 5= traditional beliefs, 6=Had to go back to work or school)	
54	**What is the type of food and what is the frequency of feeding?**	

Type of food	Frequency of feeding					
	Less than once a week	Once a week	2-3 times a week	Once a day	Twice a day	3 or more times a day
Gruel / porridge						
Rice						
Cooked pulses						
Mashed vegetables / fruits						
Top milk						
Any other (specify)						

V. Vaccinal situation and vitamin A supplementation of the child

55	**Did the child received any vaccine?** (1=yes, 2=no)	
56	**Has child received BCG?** (1=Yes (card) 2=Yes (recall) 3=Yes (scar) 4=NO 5=Don't know)	
57	**Has child received Penta 1?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
58	**Has child received Penta 2?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
59	**Has child received Penta 3?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
60	**Has child received vit A at 6 months age?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
61	**Has child received Measles immunization?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
62	**Has child received deworming treatment in the last 6 months?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
63	**Has child received Vitamin A in the last 6 months?** (1=Yes (card) 2=Yes (recall) 3=No 4=Don't know)	
64	**If yes how many times in the last 12 months?** (1=once 2=twice 3=more than twice)	
65	**In case that the child didn't completed he/her immunization schedule, give the reasons (1=** Fear of side effects, 2= Postpone till next time, 3=Time not convenient, 4= Lack of confident/Trust, 5= Unfriendly attitude of vaccinator, 6= Long waiting period)	

VI. Past and current disease situation of child

N°		
66	**Is your child currently suffering from any disease?** (1=yes, 2=no) If yes, go to questions 67-70; if no, go to questions 71-77	
67	**If yes, which disease? (**1=Diarrhea (acute) 2= Measles 3=Fever (acute) 4= Malaria 5=Difficult breathing 6= Vomiting 7=Diarrhea (chronic) 8=Coughing 9=Skin infection 10=Others (Specify))	
68	**Since how many days?**	…….days
69	**Did the child visiting the doctor or nurse?** (1=yes, 2=no)	
70	**Did the child received any treatment now?** (1=yes, 2=no)	
71	**If yes, who did the prescription?** (1=medical doctor or health worker, 2= automedication, 3= a parent or relative (non-health worker), 4= traditional doctor, 6= others (specify))	
72	**Give the nature of treatment:** (1= modern medicine, 2=traditional medicinal plants, 3= both, 4= others (specify))	
73	**If the child is not currently sick, give the last time that he/she was ill** (weeks or months)	
74	**Precise the nature of illness**: **(**1=Diarrhea (acute) 2= Measles 3=Fever (acute) 4= Malaria 5=Difficult breathing 6= Vomiting 7=Diarrhea (chronic) 8=Coughing 9=Skin infection 10=Others (Specify))	
75	**Did the child visiting the doctor or nurse?** (1=yes, 2=no)	

76	**If yes, who did the prescription?** (1=medical doctor or health worker, 2= automedication, 3= a parent or relative (non-health worker), 4=traditional medicine or plant, 5= traditional doctor, 6= others (precise))	
77	**Give the nature of treatment:** (1= modern medicine, 2=traditional medicinal plants, 3= both, 4= others (specify))	

VII. Water source and hygiene of the household

	Washing hand	
78	**Did you washing your hand after toilet use?** (1=yes, 2=no)	
79	**Did you washing hand before eating** (1=yes, 2=no)	
80	**Did you washing hand before feeding child** (1=yes, 2=no)	
81	**Did you washing hand before breastfeeding** (1=yes, 2=no)	
82	**Did you washing hand after cleaning baby's bottom** (1=yes, 2=no)	
83	**On what occasions do you usually use soap when washing hands?** (1= Before eating 2=After defecating 3=Before feeding the baby 4=Before breastfeeding 5=After cleaning baby's bottom 6=others (specify))	
	Water source	
84	**What is your main current water source for household use?** (1= River 2= Water tap 3= unprotected well 4=protected well 5=Borehole 6=others specify)	
85	**How long does it take to go there, get water, and come back ?** (in minutes)	
86	**What is your main current water source for drinking?** (1= River 2= Water tap 3= unprotected well 4=protected well 5=Borehole 6=others specify)	
87	**How long does it take to go there, get drinking water, and come back ?** (in minutes)	
88	**Who usually goes to this source to fetch the water for your household?** (1=adult man, 2= adult woman; 3=under 15 years old boy/girl)	
89	**Do you treat water before giving to the child?** (1=yes, 2=no)	
90	**If yes, how do you treat your drinking water?** (1=boiling, 2=expose it to the sun, 3=use chemicals (Add bleach/chlorine), 4=filters/sieves (ceramic, sand, composite), 5= Strain it through a cloth 6= Let it stand and settle, 7=other (specify).)	
	Toilet use	
91	**Did your household have a toilet ?** (1=yes, 2=no)	
92	**If no, what are you doing when you are in need?** (1=go to your neighbor's, 2=in the nature, 3=……..)	
93	**If yes, what type of toilet do you have?** (1=Bucket 2=Traditional pit latrine 3=Flush toilet)	
94	**Is there hand washing facility near the toilet?** (1=yes, 2=no)	

VIII. Seven days food frequency of child

95. During the past 7 days, did the child eat any of the following foods ? if yes how many days ?

Groups of Foods	**89.a. During the past 7 days, did the child eat any of the following foods ?** (Yes=1, No=2)	**89.b. If yes how many days ?** (1= not eat, 2=1–2 days per week, 3= 3–4 days per week, 4= Daily)	**89.c. Number of times/day**
Cereals (maize, wheat, sorghum, rice, fonio, millet, noodle)			
Tubers (cassava, irish potatoes, white potaotes, white sweet potato yam, taro, cocoyam..)			
Meat (beef, sheep, pork)			
Poultry (chicken, duck, guinea fowl, pigeon, bird)			
Fish (fresh, dry, steam)			
Eggs			
Green leaves vegetables, (baobab, moringa, Klenkleng, folere ….)			
Vit A rich vegetables (tomatoes, carotts, ….)			
Others vegetables (cucumber, okro, Eggplant,			
Vit A rich fruits, (mangoes, papaya, yellow Pumpkin)			
Others fruits (water melon, orange, guava, citron, lemon, jujube, desert-palm)			
Dairy products (Infant formula, tinned, powdered Milk or fresh animal milk, Yogurt, others dairy products)			
Fats (oil, fats, or butter or foods made with any of these)			

Sweets (sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits)			
Spices and Condiments (spices, herbs, ….)			

IX. 24h recall food frequency of child

96. Yesterday, during the day and night did your child receive any of the following fluids?

items	Breast milk	Infant formulae milks	Cow's milk	Other milks	Sweetened juices	ORS	Tea/Coffee	Plain water	Thin porridge (made of cereals +sugar)	Enriched porridge (cereals, proteins, sources…)
1= Yes 2= No										
If yes, how many time ?										

97. Yesterday, during the day and night did your child receive any of the following solid/semi-solid ?

items	Eggs	Flesh meats (chicken, Beef, Kidney, Liver, Goat, Mutton, Fish)	Legumes and Nuts (beans, Cowpeas, Pigeon peas, green grams, Lentils, Ground nuts)	Dairy Products (Milk, Cheese, …)	Grains, Roots & Tubers (Pasta, Rice, Bread, Potatoes)	Vitamin A Rich fruits &Vegetable (pawpaw, melon, carrots, cowpeas leaves, spinach, avocado)	Other Fruits and Vegetables (onions, tomatoes, cabbage, oranges, bananas)	Oils, Fats, butter	Vitamins and mineral supplements
1= Yes 2= No									

If yes, how many time ?									

98. Yesterday (during the day and night), How many times did the child eat solid/semi solid foods to make he/she full?.....
99. Is it any food that the child eat which is not mentioned here ? (1=yes, 2=no,)…….
100. If yes what else did you eat?

X. 24h recall food diary of child

101. Name all foods that was given to the child yesterday

Hours of meal (precise hours)	**Type of food or meal**	**Description of the meal (composition)**
Morning		
Noon		

Evening		
Night		

XI. Food insecurity of the household of the MAM child (USDA, 2012)

For these statements, please tell me whether the statement was often true, sometimes true, or never true for your household in the last 30 days.

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105	**we couldn't afford to eat balanced meals :** (1=Often true, 2= Sometimes true, 3=Never true, 4=5=dont'know or Refused)	
106	**Did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?** (1=yes, 2=no,)	
107	**If yes, how many days did this happen** ……days	
108	**Did you ever eat less than you felt you should because there wasn't enough money for food?** (1=yes, 2=no,)	
109	**Were you every hungry but didn't eat because there wasn't enough money for food?** (1=yes, 2=no,)	
110	**Did you lose weight because there wasn't enough money for food?** (1=yes, 2=no,)	
111	**Did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?** (1=yes, 2=no,)	

112	**If yes, how many days did this happen?** .....days	

Responses of 3 days or more are coded as "affirmative" responses.

XII. Assessment of the nutritional and health knowledges of the caregivers

113	**For you, what is a quality of a good meal?**	
114	**What is a balanced diet?**	
115	**What are the sources of proteins?**	
116	**What are the most important food items your child should eat every day?**	
117	**What are the food items that are culturally reputed dangerous for the child (that you will never give to the child)?**	

XIII. Anthropometric measurements of child

118	Age of the child (months)	
119	Height/lenght (cm)	
120	Weight (kg)	
121	MUAC (mm) 1st measurement	
	2nd measurement	
	Mean of 2 measurements	

XIV. Conclusions

122	**IS the child MAM**? (Yes=1, No=2)	
123	**If yes, was he/she referred to the health** center (Yes=1, No=2)	
124	**Was the child qualified to be enrolled in voucher program** (Yes=1, No=2)	
125	**If No why?**	

XV. Concerning the food voucher program?

126	**Name the ingredients of the food voucher basket which are available in your household?** (1= eggs, 2= fruits, 3=vegetables, 4=sugar, 5=oil, 6=milk, 7=flour)	

X. Expected duration of the study

Field work for the study is expected to begin in November 2019 and end in July 2020.

	November 2019	December 2019	January 2020	February 2020	March 2020	April 2020	May 2020	June 2020	July 2020
Writing and validation of project Proposal	X								
Identification of research area and first contact with project actors	X								
Screening and enrollment of MAM child	X	X	x	x					
Data collection	X	X	x	x	x	x	x		
Data analysis			x	x	x	x	x	x	
Drafting of manuscripts						x	x	x	
submission of manuscript for peer review								x	x
Final report of the project									x

XI. DISSEMINATION OF THE RESULTS

To ensure wide dissemination of findings from the study, the following strategies will be used: participation and presentation of data in appropriate conferences and meetings, organization of workshops or research seminars, use of electronic media such as websites (HKI, …) and social media, and peer reviewed publications including summary report of the research, Open access publications as well as lay papers.

XII. OFDA RESEARCH BUDGET

				Objective Two: Research		TOTAL COSTS		
Object Class Category	Qty	Unit (Days, Mos., Trips, Etc.)	Unit Amt (US$)	No. of Units	Amt (US$)	No. of Units	Amt (US$)	Amt (FCFA) $1=585 FCFA
8. Research Activities								
8.1. Inception Meeting at regional level								
Inception meeting at regional level								
Perdiem DRSP	1	Daily rate	34	2	69	2	69	40,149
Transport DRSP	100	Daily rate	0	2	29	2	29	16,863
Perdiem HKI staff (Ismael & Jules)	2	Daily rate	34	4	275	4	275	160,598
Perdiem Health District participants (CSSD, CBS & PF Com)	12	Daily rate	43	3	1,544	3	1,544	903,363
Logding HKI staff	2	Daily rate	34	3	206	3	206	120,448
Perdiem research coordinator	1		34	4	137	4	137	80,299
Lodging research coordinator	1		34	3	103	3	103	60,224
Conference room renting	1		86	2	172	2	172	100,374
Renting of vehicle	1		120	4	480	4	480	281,046
Fuel of renting vehicle	250		0	2	72	2	72	42,157

				Objective Two: Research		TOTAL COSTS		
Object Class Category	**Qty**	**Unit (Days , Mos., Trips, Etc.)**	**Unit Amt (US$)**	**No. of Units**	**Amt (US$)**	**No. of Units**	**Amt (US$)**	**Amt (FCFA) $1=585 FCFA**
Transportation from Yaoundé-Maroua (Avion)	2		377	1	755	1	755	441,644
Transport DS concernés	12		17	2	412	2	412	240,897
Coffee break	20		14	2	549	2	549	321,196
Stationery of participants	20		3	1	69	1	69	40,149
Stationery of training	1		17	2	34		34	20,075
Total			-		**4,905**	**0**	**4,905**	**2,869,483**
8.1 – SUBTOTAL - Inception meeting at regional level			**69**	**8**	**4,905**	**8**	**4,905**	**2,869,483**
8.2 District Planning meeting								
Perdiem of reginal level facilitators	4		43	4	686	4	686	401,495
Transport of regional level facilitators	4		17	2	137	2	137	80,299
Perdiem District Management Team	12		43	2	1,029	2	1,029	602,242
Transport District Management Team	12		17	2	412	2	412	240,897
Perdiem HKI staff (Ismael-Jules-Driver)	3		34	4	412	4	412	240,897

				Objective Two: Research		TOTAL COSTS		
Object Class Category	**Qty**	**Unit (Days , Mos., Trips, Etc.)**	**Unit Amt (US$)**	**No. of Units**	**Amt (US$)**	**No. of Units**	**Amt (US$)**	**Amt (FCFA) $1=585 FCFA**
Logding HKI staff (Ismael-Jules-Driver)	3		34	3	309	3	309	180,673
Perdiem research coordinator	1		34	4	137	4	137	80,299
Lodging research coordinator	1		34	3	103	3	103	60,224
Transport research coordinator	1		17	2	34	2	34	20,075
Perdiem Enumerator	5		34	4	686	4	686	401,495
Lodging Enumerator	5		34	3	515	3	515	301,121
Transport Enumerator	5		17	2	172	2	172	100,374
Conference room renting	1		86	2	172	2	172	100,374
Renting of vehicle	1		120	4	480	4	480	281,046
Fuel	600		0	2	173	2	173	101,177
Coffee break	25		9	2	429	2	429	250,934
Stationery of participants	25		3	1	86	1	86	50,187
Stationery of training	1		17	2	34	2	34	20,075
8.2 – SUBTOTAL - District Planning meeting					**6,007**		**6,007**	**3,513,882**
8.3 Village and Health Sensitization Meeting								

				Objective Two: Research		TOTAL COSTS		
Object Class Category	Qty	Unit (Days , Mos., Trips, Etc.)	Unit Amt (US$)	No. of Units	Amt (US$)	No. of Units	Amt (US$)	Amt (FCFA) $1=585 FCFA
Village and Health Sensitization Meeting	245		3	4	3,363	4	3,363	1,967,325
Incentives for CHW's	1		2,574	1	2,574		2,574	1,505,605
8.3 – SUBTOTAL - Village and Health Sensitization Meeting					**5,937**		**5,937**	**3,472,930**
8.4 Research results dissemination meeting, Yaoundé								
Perdiem DRSP	1		69	4	275	4	275	160,598
Transport DRSP (Avion)	1		377	1	377	1	377	220,822
Perdiem Health District Management Officer	4		69	4	1,098	4	1,098	642,392
Perdiem research coordinator	1		34	4	137	4	137	80,299
Lodging research coordinator	1		34	3	103	3	103	60,224
Conference room renting	1		172	2	343	2	343	200,747
Renting of vehicle	1		120	4	480	4	480	281,046
Fuel of renting vehicle	200		0	2	58	2	58	33,726
Transportation from Maroua-Yaoundé-Maroua (Avion)	4		377	1	1,510	1	1,510	883,289

				Objective Two: Research		TOTAL COSTS		
Object Class Category	**Qty**	**Unit (Days , Mos., Trips, Etc.)**	**Unit Amt (US$)**	**No. of Units**	**Amt (US$)**	**No. of Units**	**Amt (US$)**	**Amt (FCFA) $1=585 FCFA**
Coffee break	20		21	2	824	2	824	481,794
Stationery of participants	20		3	1	69	1	69	40,149
Stationery of training	1		17	2	34	2	34	20,075
8.4 – SUBTOTAL - Dissemination Meeting at Yaoundé					**5,308**	0	**5,308**	**3,105,161**
	4							
8.5 Monitoring & Evaluation								
Supportive supervision visits (once every two month)								
Renting of vehicle	8		120	6	5,765	6	5,765	3,372,556
Fuel	500		1	6	3,088	6	3,088	1,806,727
Perdiem HKI staff	2		34	42	2,883	42	2,883	1,686,278
Lodging HKI staff	2		34	36	2,471	36	2,471	1,445,381
Supervision of Health facilities by MoH staff	5		69	6	2,059	6	2,059	1,204,484
Total				0	**16,266**		**16,266**	**9,515,427**
Baseline/Endlines survey data collection								
Baseline	5		69	20	6,863	20	6,863	4,014,948
Endline	5		69	20	6,863	20	6,863	4,014,948

				Objective Two: Research		TOTAL COSTS		
Object Class Category	**Qty**	**Unit (Days , Mos., Trips, Etc.)**	**Unit Amt (US$)**	**No. of Units**	**Amt (US$)**	**No. of Units**	**Amt (US$)**	**Amt (FCFA) $1=585 FCFA**
Total				0	**13,726**		**13,726**	**8,029,896**
Steering Committee Meetings (once per quarter)								
Perdiem HKI national level	2		34	24	1,647	24	1,647	963,588
Lodging HKI national level	2		34	20	1,373	20	1,373	802,990
Fuel	250		0	24	865	24	865	505,883
Transportation HKI Staff (Airplane)	2		377	4	3,020	4	3,020	1,766,577
Renting of vehicle	1		120	24	2,883	24	2,883	1,686,278
Research coordinator transportation	1		17	4	69	4	69	40,149
Total					**9,855**		**9,855**	**5,765,465**
				0				
8.4 – SUBTOTAL - Monitoring & Evaluation					**39,848**	0	**39,848**	**23,310,788**
				0				
TOTAL: RESEARCH COSTS				**128**	**62,004**		**62,004**	**36,272,244**

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McFadden A., Green J. M., Williams V., McLeish J., McCormick F., Fox-Rushby J. and Renfrew M. J. 2014. Can food vouchers improve nutrition and reduce health inequalities in low-income mothers and young children: a multi-method evaluation of the experiences of beneficiaries and practitioners of the Healthy Start programme in England. *BMC Public Health*, 14 (148): 1-13.

Ngwenyi E., Jenkins M., Joannic N. and Patricia C. 2019. Addressing acute malnutrition in Cameroon during an emergency: Results and benefits of an integrated prevention programme. Consulted on: https://reliefweb.int/report/cameroon/addressing-acute-malnutrition-cameroon-during-emergency-results-and-benefits

Ohly H., Crossland N., Dykes F., Lowe N., Hall-Moran V. 2017. A realist review to explore how low-income pregnant women use food vouchers from the UK's Healthy Start programme. *BMJ Open*, 7: 1-10.

Sibson, V. 2011. Review of the Impact of Cash Transfers on Child Nutrition in the Delta of Myanmar: April 2011. Save the Children UK.

SUN. 2017. Scaling up Nutrition: Cameroon strategic objectives. Consulted on: https://scalingupnutrition.org/sun-countries/cameroon/

Unicef. 2014. Global databases Infant and Young Child Feeding of Cameroon. Consulted on: https://data.unicef.org/country/cmr/

Unicef. 2019. UNICEF Global Databases: Overlapping Stunting, Wasting and Overweight in Cameroon. Consulted on: https://data.unicef.org/country/cmr/

World Health Organization. 2012. Technical note: supplementary foods for the management of moderate acute malnutrition in infants and children 6–59 months of age.

Annexes

Annex 1: Research Team

Principal Investigator : Ismael Teta, PhD

Lead conceptualization of the research design, obtain funding for study, manage the project, lead project team meetings and oversee staff hiring, recruitment, data collection and analysis, and report writing.

HKI Advisory Team: Rolf Klemm, PhD; Jennifer Nielsen, PhD; RO: Volkan Cakir, CO: Jules Guintang, Alex Ndjebayi.

As key personnel of the project implementation arm, they will advise the research team on progress in the implementation, partake in all the research activities and ensure the research remains align with the project implementation at all time.

Other investigators: Oben Julius, PhD (UYI), Nguefack George, PhD (UYI); Saha Brice, PhD (UCB)

Collaborate in designing the research questions and methodology, data collection and analysis, and disseminating the findings. Influence topics of interview discussions and provide specific insights on the cultural competence of the research endeavors and analytical interpretations. Contribute to report writing and peer-review papers.

Research Coordinator: Ntentie Raissa, PhD (Univ of Maroua)

Oversee and coordinate the daily activities of the research, assist with conceptualization of research questions, development of research tools, recruitment and selection of project staff. Coordinate the overall data management of a research study, ensure accurate and timely data entry in electronic databases. Work closely with the PIs and Advisors to ensure that all protocol required procedures occur according to protocol specified guidelines. Manage participant enrollment and ensure compliance with the protocol and other applicable regulations. This includes but is not limited to; participant recruitment, obtaining informed consent, educating participants on the details of the research study, assessing participant eligibility, facilitating participant care and follow-up per protocol, creating source documentation. Drafting or editing the protocol document and submitting new protocols, protocol amendments. works with the other research team members to organize and help with daily study tasks.

Research assistant – Data Clerk: TBH (Full time)

Assist with participant recruitment, data collection and analysis, and report writing. Attend all project meetings and assist with project communications.

Research assistants (monitors): TBH (Grad Students)

Assist the research coordinator in all the aspects of the research

Interns: TBH (Grad Students)

Research Interns will be final year students from HKI collaboration with Cameroon Universities. They will assist with research tasks, helping with information management, drafting documents, and completing other tasks as required by the research team. They will use the internship for their thesis assignment.

	Research Advisor (Prof Oben)	Research Coordinator (Dr Ntentie)	Research Collaborator - Qualitative (Dr Saha)	Research Collaborator Quantitative (Dr Nguefack)	Research Collaborator Costing - TBD	Research assistants (enumerators *5) - Monthly lumpsum	Data clerk - Monthly lumpsum	Interns (2) - Monthly lummpsum
Protocol and tools development	5	10	5	5	2			
Data collection	2	25	15	10	5			
Data analysis	5	15	10	10	5			
Report writing	5	15	10	5	2			
Peer-review manuscripts	5	10	10	10	5			
Miscellenous								
TOTAL	22	75	50	40	19	0	0	0

Annex 2: Tools and questionnaires development

Data collection tools and questionnaires will be developed to capture answers to the following questions.

i. Service provision – barriers and facilitators to implementation:
- How did implementing stakeholders (health facility workers, CHVs, vendors, etc.), local authorities and community member perceive this voucher program? Which components of the intervention (food voucher, ENA/EHA counseling, cooking demonstration etc.) did they like or dislike? – To be assessed through key informant interviews.
- What are the challenges or constraints faced by each implementing stakeholder (health facility workers, CHVs, vendors, family and community members)? What are their suggestions for how these can be resolved? – To be assessed through key informant interviews.
- Are the participating food vendors providing the full range of prescribed foods in acceptable vicinity of the beneficiary families? If not, why not?
- Did the voucher program influence any behaviors among vendors and health workers? For example, did the voucher food basket influence vendors to ensure they have such food items on their shelves? - To be assessed through key informant interviews.

ii. Service utilization/adherence – food voucher:
- Are families enrolling in the voucher program, returning every two weeks as instructed, receiving and redeeming vouchers per the program design, and utilizing the foods to prepare enriched meals for the target child? – Assessments will be conducted using mixed-methods research approaches, including review of historical records of beneficiary child in notebooks of CHVs and health facility workers (monitoring data). These will be complemented by structured interviews with health workers, vendors and mothers and observations at health facilities, vendor shops and households (for a sub-sample of the n=190 children who will be followed).
- Are there other needs for the foods in the household resulting in sharing of the rations? If so, which specific foods and in what proportions? - We will use definitions and methods from Food Aid Quality Review studies to assess behaviors around use of supplementary rations[1]. Structured interviews with caretakers will be used to assess reported diversion, defined as – "anyone other than the beneficiary child ate the food purchased with the voucher the last time it was served, or normally eats the food, usage of the food for family meals, or giving the food away". Research staff will undertake in-home observations in some households to document observed sharing defined as: "consumption of any of the foods purchased by the voucher by anyone other than the beneficiary child".
- Conversely, is the voucher or nutrition education influencing households to purchase similar foods for other family members? What are the contextual influences on household food access? Did the voucher program affect household food insecurity? – This will be measured through structured interviews with caretakers (including multiple food frequency recalls on the study child). Household food insecurity will be assessed using FANTA tools.

iii. Service Utilization/Adherence – ENA and EHA

[1] Langlois B, Cliffer I, Suri D, Shen Y, Nikiema L, Webb P and Rogers B. Behaviors surrounding ration use in a blanket supplementary feeding program in Burkina Faso. Food Aid Quality Review (FQAR) Field Research. Website:
https://foodaidquality.org/sites/default/files/publications/ASNposterBurkinaRationUseBehaviors.pdf

- Are caretakers attending the monthly screenings, ENA-EHA discussions and/or cooking demonstrations? If not, why not? – Will be assessed through structured interviews with caretakers, and key informant interviews with CHVs.
- Are families using knowledge gained and adopting recommended practices? If so, which practices? If not, why not? – Will be assessed using structured interviews and focus group discussions with caretakers.

iv. Adequacy of food vouchers:

- Do dietary intake data indicate that enrolled children are receiving sufficient calories, protein and key nutrients critical for recovery and to meet nutritional needs? – Assessed through a quantitative 24-hour recall conducted in the second month of treatment plus 24-hour food frequency recalls at baseline and during the four months of monitoring plus open-ended and structured interviews with caretakers.
- Are the children who fully participated and adhered to the program recovered to normal height-for-weight and MUAC? – For the research sub-sample of children, MUAC, weight and height will be measured bi-weekly.

v. Program costs, and factors influencing potential uptake:

- What is the total cost of delivering the program per recovered child?
- What are the relative costs of the various components?
  What factor could influence the scale-up this program? What factors could influence integrating this voucher approach into regional or national CMAM protocols/guidelines and tools? - documenting lessons learned from program implementation.

Annex 3: Curriculum vitae of investigators

Ismael NGNIE TETA, PhD iteta@hki.org (237)698950705

EDUCATION

PHD. NUTRITION, Faculty of Medicine, ***2005***
University of Montreal, Canada

MSc. in NUTRITION, Faculty of medicine, ***2002***
University of Montreal, Canada

BSc. in Biochemistry, Faculty of sciences ***2000***
University of Dschang, Cameroon

CONTINUED EDUCATION

LIFE COACHING AND MINDFULNESS DIPLOMA
UK Newskills academy ***2019***

MANAGEMENT AND LEADERSHIP: Dynamic Leadership Certificate Programme (DLC2)
Harvard Business School / UNICEF
2013

Monitoring and Evaluation: ***International Program for Development Evaluation Training (IPDET)***
World Bank and Carleton University (Canada)
2009

Certificate in law
ongoing
University of Laval, Canada

Professional degree in Orthotherapy
2008
Academy of Orthotherapy, Gatineau Canada

Nutrition Leadership Programme (ANLP)
2007 IUNS/IMF/VLAG - Ouarzazate, Morocco

PROFESSIONAL EXPERIENCES

Helen Keller International (HKI): Country Director, Cameroon 2018 - present
UNICEF: Chief Nutrition, Harare, Zimbabwe 2016 – 2018
UNICEF - Chief Nutrition, Guinea-Conakry 2014 – 2016
UNICEF - Senior Nutrition Specialist P5, Yemen (Stretch assignment) Feb–Apr 2016
UNICEF - Nutrition specialist, Ndjamena, Chad 2012 – 2014
UNICEF - Nutrition specialist (Micronutrients and IM), Port-au-Prince Haiti 2010 – 2012

UNIVERSITY OF OTTAWA - Faculty of Health Sciences – Professor of Nutrition and International Health 2006 – 2011 and Adjunct professor and Associate Researcher 2011- now
MICRONUTRIENT INITIATIVE - Senior Nutritionist, M&E. HQ, Ottawa, Canada 2008 – 2010
Canadian Institutes of Health Research (CIHR) - Health Research Analyst, 2007-2008
PATH CANADA (HEALTHBRIDGE) - Nutrition and Health Specialist 2005 - 2008
QUEBEC MINISTRY OF HEALTH – Consultant Nutritional epidemiology 2002-2006

Current professional membership

- ✓ Visiting lecturer, University Gamal Abdel Nasser, Guinea, Universite Samaritaine, Chad
- ✓ Chair, Research Ethics Board, Healthbridge Foundation of Canada (www.healthbridge.ca)
- ✓ Founding president of the Student Network for Health Research and Promotion in Africa. www.africasum.org
- ✓ Chair of the Research Committee of the African and Caribbean Health Network of Ottawa (ACCHNO)
- ✓ Active member of African Nutrition Societies (ANS), International Union for Scientific Study of the population (IUSSP), Canadian Coalition for Global Health and Research (CCGHR), Canadian Evaluation Society, IDEAS.

PUBLICATIONS

Book and book chapter:

- ✓ **Ngnie-Teta I**. BOOK L'anémie en Afrique de l'Ouest (Anemia in West Africa). Editions universitaires europeennes (2010), 204 pages.
- ✓ Sanou D, **Ngnie-Teta I.** BOOK CHAPTER Risk factors for anaemia in preschool children in Sub-Saharan Africa Intech Open Access Publisher "Anemia", ISBN 979-953-307-014-7. (2012)
- ✓ **Ngnie-Teta I.** Autour du feu – Editions Afrolivresques (2017) – 80 pages –
- ✓ **Ngnie-Teta I.** Reminiscences – Editions Dedicaces (2015) – 60 pages

Peer Reviewed papers:

- ✓ Kodish, Simen-Kapeu, Beauliere, **Ngnie-Teta I.,** B. Jalloh, Pyne-Bailey. Consensus building around nutrition lessons from the 2014–16 Ebola virus disease outbreak in Guinea and Sierra Leone. PlosOne, Oct 2018.
- ✓ Kodish SR, Rohner F, Beauliere J-M, Daffe M, Ag Ayoya M, Wirth JP, et **Ngnie-Teta I.** (2018) Implications of the Ebola virus disease outbreak in Guinea: Qualitative findings to inform future health and nutrition-related responses. PLoS ONE 13(8): e0202468. https://doi.org/10.1371/journal.pone.0202468
- ✓ **Ngnie Teta I**, James P. Wirth, Bradley A. Woodruff, Daffe Mamady, Jean Max Beauliere, Mohamed Ayoya, Fabian Rohner, Nutrition trends in the past fifteen years in Guinea: secondary analysis of cross-sectional data on children, adolescent girls and women.
- ✓ Bradley A Woodruff 1, James P Wirth 1, **Ngnie Teta** I, Jean Max Beauliere, Daffe Mamady, Mohamed Ag Ayoya, Fabian Rohner. Determinants of stunting, wasting, and anemia in Guinean preschool-age children: An analysis of DHS data from 1999, 2005, and 2012. FNB 17. 0077
- ✓ Stephen R. Kodish, Fabian Rohner, Jean-Max Beauliere, Mamady Daffe, Mohamed Ag Ayoya, James P. Wirth, **Ngnie-Teta I.** Nutrition lessons from the Ebola virus disease outbreak in Guinea: qualitative findings to make future 2 responses more effective. (submitted)
- ✓ **Ngnie-Teta I,** Ag Ayoya M, Favre R, Mamadoultaibou A, Saint-Fleur J, Marhone J, Dos-Santos P (2012). Iodine content in imported table salt in Haiti on the eve of mandatory salt iodization bill. IDD Newsletter 39:12-14.
- ✓ **Ngnie-Teta I,** Sanou D (2013) Visibility of nutrition research and dissemination challenges in French speaking sub-Saharan Africa: a bibliometric analysis. IJCHN vol 2
- ✓ Kung'u J, Owolabi O, Neufeld L, **Ngnie-Teta I** (2013) Promotion of zinc bundled withand ORS through Maternal, Newborn and Child Health Week improves caregiver Knowledge Attitude and Practice on treatment of diarrhoea in Osun State Nigeria: Results of an operational research study
- ✓ Ayoya A, **Ngnie-Teta I**, Séraphin M, Mamadoultaibou A, Boldon E, Saint-Fleur J, Koo L, Bernard S Prevalence and Risk Factors of Anemia among Children 6–59 Months Old in Haiti. *Anemia. 2013; 2013: 502968.*

- ✓ Ayoya MA, Heidkamp R, **Ngnie-Teta I**, Mamadoultaibou A, Daniel EF, Durandisse EB, Saint-Fleur JE, Beaulière JM, Koita Y, M'mbakwa BE, Stoltzfus RJ, Pierre JM. Précis of nutrition of children and women in Haiti: analyses of data from 1995 to 2012. Ann N Y Acad Sci. 2014 Feb;1309:37-62. doi: 10.1111/nyas.12373.
- ✓ Ayoya A, Golden K, **Ngnie-Teta I**, Moreaux M, Mamadoultaibou A, Koo L, Boyd E, Beauliere J, Lesavre C, Marhone J. (2013) Protecting and improving breastfeeding practices during a major emergency: lessons learnt from the baby tents in Haiti. *Bull World Health Organ. 2013 August 1; 91(8): 612–617.*
- ✓ Heidkamp RA, Ngnie-Teta I, Ayoya MA, Stoltzfus RJ, Mamadoultaibou A, Durandisse EB, Pierre JM. Predictors of anemia among haitian children aged 6 to 59 months and women of childbearing age and their implications for programming. Food Nutr Bull. 2013 Dec;34(4):462-7
- ✓ Sanou D, O'Reilly, **Ngnie-Teta**, Batal, Mondain, Andrew, Newbold, Bourgeault (2014). Acculturation and Nutritional Health of Immigrants in Canada: A Scoping Review *J Immigr Minor Health. 2014; 16: 24–34.*
- ✓ **Ngnie Teta I,** Siekmans K, Ndiaye B & Berti P (2011), Direct digital entry of national iodine survey data in Senegal. IDD Newsletter 39:12-
- ✓ **Ngnie-Teta I**, O Receveur B Kuate-Defo. Multilevel modelling of sociodemographic predictors of various levels of anaemia among women in Mali. *Public Health Nutr. 2009 Sep;12(9):1462-9.*
- ✓ **Ngnie-Teta I**, B Kuate-Defo, O Receveur. Risk factors of anemia among children in Benin and Mali: Insight from multilevel analysis. *Food and Nutrition Bulletin, 2007; 28(1) 76-89*
- ✓ **Ngnie-Teta I,** Koloko M., Kamga-Youmbi C. Fumthchum G., Les Comités d'Éthique de la Recherche en Afrique La décentralisation est-elle une solution. Cahiers de Recherche Sociologique. Vol 64, 2009.
- ✓ Berti PR, **Ngnie-Teta I**. Interindividual and intraindividual variability in hemoglobin levels: The implications for anemia prevalence estimates. J Nutr submitted.
- ✓ **I Ngnie-Teta.** Strengthening Canada's Contribution to a Community of Practice for Better MTCT Monitoring in Cameroon, Tanzania and Malawi. Tech report to Health Canada, March, 2007
- ✓ **I Ngnie-Teta,** P Berti, O Receveur, Review of the efficacy of Insecticide Treated Nets in reducing or preventing anemia among pregnant women in sub-saharan Africa. *International Journal of Tropical Medicine and International Health (In process)*
- ✓ **I Ngnie-Teta**. AIDS in developing countries: Between patents and health system. Université de Montréal Graduate Studies Journal. June 2003. www.ficsum.qc.ca/dire.
- ✓ **I Ngnie-Teta**. Facteurs de risque de l'anémie chez les femmes et les enfants au Bénin et au Mali. PhD dissertation, Université de Montréal, Canada, Dec 2005.
- ✓ **I Ngnie-Teta**, J Torrie. Breastfeeding and weaning practices in Crees communities. Impact of Head Start Program. Technical report to the Cree Board for Health and Social Services, Montreal, June, 2004.
- ✓ **I Ngnie-Teta**. Secular trends in growth of young crees since 1950s. Technical Report to the Cree Board of health and Social Services, Montreal, Canada. Nov 2002.

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University of Yaoundé I
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EDUCATION

- PhD in Statistics (October 2003-February 2006), University of Goettingen, Institute for Statistics and Econometrics, Center for Statistics, Goettingen, **Germany**
- Master in Statistics : September 2000-June 2001, University of Namur, **Belgium**
- Applied Statistics Engineer (September 1994-June 1997), Sub-Regional Institute of Statistics and Applied Economics (ISSEA), Yaoundé, **Cameroon**
- Bachelor in Mathematics , University of Yaoundé 1, **Cameroon**

EMPLOYMENT RECORD

- **University of Yaoundé I**: Since January 2008; Lecturer; Senior Lecturer; and Associate Professor of BioStatistics, Department of Public Health, Faculty of Medicine and Biomedical Sciences, Cameroon. **Cameroon National Institute of Statistics (INS):** June 2006-December 2007; Sample survey, Data monitoring and analysis from survey.
- **University Carlos 3 de Madrid (Spain)**: Sept 2001-Sept 2003; September 2001-September 2003: Teaching Assistant, University Carlos 3 of Madrid, **Madrid, Spain.**
- **Cameroon National Institute of Statistics (INS):** June 1997- September 2000; and 2006-2008: Sample survey, Data monitoring and analysis from survey.

A) NUTRITION RELATED-PUBLICATIONS

1. **Nguefack-Tsague G.**, Tanya N.K.A., et Fokunang C. (**2013**). Using weight-for-age for predicting wasted children in Cameroon**.** *Pan African Medical Journal*; 14:96 https://www.ncbi.nlm.nih.gov/pubmed/23717712
2. de Onis M., Martinez-Costa C., Nunez F., N**guefack-Tsague G.**, Montal A., et Brines J. (**2013**). Association between WHO cut-offs for childhood overweight and obesity and cardiometabolic risk. *Public Health Nutrition;* 16 (4): 625-630 https://www.ncbi.nlm.nih.gov/pubmed/23110804
3. ***Nguefack-Tsague G.*** *and Dapi N. L. (2011).* Multidimensional nature of undernutrition: a statistical approach. *Journal of Medicine and Medical Sciences* Vol. 2(2) pp. 690-695 http://dhsprogram.com/publications/article-results.cfm?p_id=315&jr=Journal%20of%20Medicine%20and%20Medical%20Sciences
4. Azabji-Kenfack M., Edie Dikosso S., Loni E.G., Onana E.A., Sobngwi E., Gbaguidi E., Ngougni Kana A.L, **Nguefack-Tsague G**., Von der Weid G. D., Njoya O. and Ngogang J. (**2011**). Potential of *Spirulina Platensis* as a nutritional supplement in malnourished HIV-infected adults in Sub-Saharan Africa: a randomised, single-blind study. *Nutrition and Metabolic Insights* 4 pp. 29–37 https://www.ncbi.nlm.nih.gov/pubmed/23946659

B) NUTRITION RELATED-SUPERVISED THESIS

1. Nutritional status and related factors in children and adolescents living with HIV / AIDS monitored at the Chantal Biya Foundation's Mother and Child Center (2019); with Moguon Fondjo Eulanie Landrine and Chelo David
2. Predictors of malnutrition in patients with chronic renal insufficiency without dialysis (2014); with Nsounfon Abdou Wouoliyou and Gloria Ashutantang
3. Wasting, underweight and stunting growth response to antiretroviral therapy in HIV-infected children under 5 years in Yaoundé (2012); with Ndjitoyap Ndam Antonin Wilson and Tanya Agatha
4. Determination of the nutritional status, dietary practices and prevalence of hypertention among retired workers in Bamenda (2011), with Ngu Gideon Ndenge and Pr TANYA NK Agatha.
5. Anthropometric measurements and dietary practices of adolescents school children aged 12-15 in Bafoussam (2011), with Kamanyi Youmbu Arnold and TANYA NK Agatha.
6. The prevalence of overweight and obesity among students of the university of buea, Cameroon (2010), with Besong Eric, MBANYA Jean Claude, and TANYA NK Agatha.
7. Risk factors of undernutrition for under 5 years at *Centre Mère et Enfant de la Fondation Chantal Biya-Yaoundé* with Ngone Henriette, Koki Ndombo, and Dongmo Felicité

PUBLICATIONS

Total=58

http://orcid.org/0000-0002-3847-3490

https://www.ncbi.nlm.nih.gov/pubmed/?term=georges+nguefack+tsague+or+nguefack+tsague

Google scholar : https://scholar.google.com/citations?user=nJHYNbcAAAAJ&hl=en

MAIN RESEARCH INTEREST

Quantitative methods, Statistical Data Analysis, Research Methods

SOFTWARE: ENA for SMART and EpiInfo, STATA, IBM-SPSS, SAS, R

INTERNATIONAL CONSULTANCIES

WHO, UNICEF, UNDP, Expertise France, Global Fund

PROJECTS

Principal Investigator:

-World Bank: Programmatic mapping of female sex workers in Cameroon (2015)

-KfW: Prevalence of contraceptive methods in Cameroon: a household survey (TRaC, 2017)

- FHI 360-LINKAGES(USAID): A qualitative assessment of unique identifier code for the HIV cascade for key populations and transgender in Cameroon (2016)

CO-investigator:

-Evaluating the Community of Performance Based Financing (PBF); Wold Bank; 2014

- Evaluation of the Situational Analysis for Integrating Prevention of Mother-to-Child Transmission of HIV in Providing Service Care in Cameroon (PEPFAR, 2012)

ADVISORY BOARD

1- UNICEF, WHO, and the World Bank (WB) Joint Malnutrition Estimates Working Group (JME WG) technical consultation on a country-level model for SDG 2.2 (stunting and overweight)
2- International Ebola Data Access Committee
3- General Coordinator of the HELINA (Pan African Health Informatics in Africa)'s Working Group "*Data Mining and Big Data Analytics*"
4- Cameroon 100 core WHO indicators

REFERENCES

1-SHE ETOUNDI, Deputy General Director (INS); 677-366-816, sejgb@yahoo.fr
2-NGHOGUE VOUFO, Director National Account (INS), 677-248-135, nghogue@gmail.com
3-Prof. Claude TAYOU TAGNY, University of Yaoundé 1, 693-060-083, Email : tayouclaude@gmail.com

CURRICULUM VITAE

Name : NTENTIE Françoise Raïssa, epse MOUNTAPBEME
Born the 21th/12/1984 at Foumban, Cameroonian,
Married with four children
Senior Lecturer (2016)
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franc_ntentie@yahoo.fr/ ntentifr@gmail.com

ACADEMIC QUALIFICATIONS

Degree	Year obtained	Discipline	Institution
Baccalauréat D	2003	Science	GBHS SIN Foumban
Bachelor	2006	Biochemistry	University of Yaounde I
DEA	2008	Biochemistry	University of Yaounde I
Ph.D	2016	Biochemistry- Nutrition	University of Yaounde I

RESEARCH INTERESTS

- Epidemiology of nutritional related diseases
- Use of local foods and plants in the management of nutritional diseases.

PROFESSIONAL EXPERIENCE

December 2016 until date	Senior Lecturer at the University of Maroua
March 2012- November 2016	Lecturer at the University of Maroua

COMPETENCES

- Writing, coordination and execution of reseach projects and protocols.
- Knowleges in epidemiology, nutrition, pharmacology, bioethic, and public health
- Data analysis (qualitative and quantitative) on SPSS for Windows sofware.
- Organisation of scientific events (workshop, conference).

SCIENTIFIC PUBLICATIONS

a) Thesis

DEA Ethnicity and metabolic complications of obesity : comparative study between obeses originated from Noun and Mbam living in Yaounde

Ph.D Nutritional transition and cardiometabolic risk factors among Cameroonian adults

b) Journal Articles

1. **Ntentie FR,** Tchuente TBR, Nguedjo WM, Dama G, Mboindi MO, Azantsa KBG, Ngondi JL and Oben EJ. (2019). A silent killer in the Far North Region of Cameroon: Increasing prevalence of hypertension among Kaele dwellers. *Int Res J Med Biomed Sci* 4 (2) : 13-22.

2. Yangoua, H.C.M., Azantsa, B.G.K., Kuate, D., **Ntentie, F.R**., Nguedjo, M.W., Nkougni, J.T., Tchuente, B.R.T., Ngondi, J.L. and Oben, J. (2019) Characterization of dyslipidemia and assessment of atherogenic risk amongst Cameroonian living in Yaounde: A Cross Sectional Study. *Journal of Biosciences and Medicines* 7 : 35-50

3. **Ntentie FR**, Ngondi JL, Azantsa KBG, Santy EV, Dimodi HT, Mbong AM-A, Chakokam NRM, Nguimkeng SB, Zambou and Oben EJ. (2014) Urbanization and Metabolic Syndrome in Cameroon: Alertness on less urbanised areas. *Endocrinol Metab Synd* 3: 137.

4. Mbong AM-A, Djiokeng PG., **Ntentié FR.**, Dimodi HT, Ngondi JL. & Oben EJ. (2014) Protective effect of hydroethanolic extracts of solanum scabrumand cola verticillata against cyclophosphamide induced toxicity in female rats. *Journal of Food Research* ; 3 (3) : 18-30

5. Dimodi HT, Etame SL, Nguimkeng SB, Essouman MEF, Essola NN, Nkougni TJ, Abega EJ, **Ntentié FR**, Azantsa KBG, Mbong AM-A, Djiokeng PG, Kouanfack C, Ngondi JL, Oben EJ. (2014). Prevalence of metabolic syndrome in HIV-Infected Cameroonian patients. *World Journal of AIDS*, 4, 85-92.

6. Azantsa KBG, **Ntentié FR,** Mbong AM-A, Kengne NAP, Kuaté D, Dakam W, Yangoua MCH, Ngondi JL and Oben J. (2013) Body mass index, blood pressure and hypertension Subtypes among untreated hypertensive Cameroonians. B*ritish Journal of Medicine & Medical Research.* 3(4): 2119-2131.

7. Yangoua MCH, Azantsa KGB, **Ntentié FR,** Ngondi JL. and Oben J (2010). Prevalence of insulin resistance in obese Cameroonian women. *Journal of Diabetes and Endocrinology* Vol. 1 (2) : 19-26.

c) Abstracts

1. **Ntentié FR.**, Tchuente Tonou BR., Nguedjo WM., Damo KJL., Dama G, Ngondi JL, Oben JE. Hypertension , prevalence and risk factors in Kaélé, a locality of the Far North Region, Cameroon. Oral communication, nutritional national conference, CNSS 2017, Yaounde, Cameroon.

2. **Ntentié FR,** Azantsa KBG, Tchuenté TB, Nguedjo M, Edoun F, Ngondi JL, Oben JE. Nutritional transition among dwellers of some secondary cities in Cameroon : Comparative study. Oral communication, Scientific days of the department of ELS/HTTC, University of Maroua, February 2017, Maroua, Cameroon.

3. **Ntentié FR**, Azantsa KBG, Tchuenté T, Nguedjo M, Edoun F, Ngondi JL, Oben JE. Nutritional transition and cardiometabolic risk factors among Cameroonian adults. Oral communication, Scientific Days of the Faculty of Science, University de Maroua, February 2016; Maroua, Cameroon.

4. Azantsa KGB, Yangoua MCH, Kuaté D, **Ntentié FR**, Ngondi JL, Oben J. Obesity induced hypertension among Cameroonian young adults. Poster Communication, ANDI/TDR/WHO conference, Nairobi, Kenya; 10-13 October 2010.

5. **Ntentié F. R.,** Azantsa K.G.B., Yangoua M. C. H., Kuaté D., Ngondi J. L., Oben J. Ethnicity and metabolic complication of obesity : comparative study between obeses originated from Noun and Mbam living in Yaounde. Poster, Nutrition and Natural Products International Conference. November 2008 ; Yaounde, Cameroon.

CONFERENCES AND WORKSHOPS, AND MEMBERSHIP IN PROFESSIONAL ORGANISATION

October 2017	National Nutrition Conference, University of Yaounde I., Cameroon
April 2016	Scientific Days of the Faculty of Science, University of Maroua, Maroua-Cameroon.
August 2010	Courses on modelisation of microbial growth and inhibition using primary and secondary models. Yaounde-Cameroon.
Jan-Feb 2010	Online Bioethic Course TRREE level 1 and 2.
November 2009	Regional workshop on nutrition and VIH/ AIDS. Yaounde-Cameroon.
September 2009	International Training workshop on bioethic evaluation of biomedical reseach. Yaounde-Cameroon.
March 2009	International conference of the african society of human genetic under the topic : “human origin, genetic diversity and health”, Yaounde-Cameroon.
November 2008	International Conference on nutrition and natural products under the topic : Natural products for quality and health » Yaounde. (LOC member)
January 2008	Nutrition Scientific Days, “Nutrition and Health: A crucial partnership”. University of Yaounde 1, (LOC member).
	Member of the Cameroon Nutritional Society since 2008.

LANGUAGES

	Read	**Speech**	**Writing**
English	Very good	Good	Good
French	Excellent	Excellent	Excellent

CURRICULUM VITAE AND STUDIORUM

Brice Ulrich SAHA FOUDJO
Lecturer in Clinical Biochemistry, Food Science, Human Nutrition, Biostatistics, Epidemiology
Catholic University of Cameroon, PO Box 782 Bamenda, Cameroon Date of birth: 17/08/1984 à Yaoundé, Cameroon
Tel: +237 699262269 ; Email: sahabrice@yahoo.fr

ACADEMIC PROFILE

2010 – 2015: Doctorate/PhD in Biochemistry, specialty: **Food Sciences and Nutrition**. University of Yaoundé I, Cameroon. Grade: **Dean Special Honor**.

2008 - 2009: Master (with thesis) in Biochemistry, specialty: Microbiology. University of Yaoundé I, Cameroon. Grade: **Fairly Good.**

RESEARCH AREAS

- Modeling and optimization of food process performance;
- Determination of risk factors in the management of Non-communicable diseases;
- Micronutrient intervention modeling.

EXPERTISE

Operational Skills	Managerial Skills
• Microbiological techniques	• Project/programme planning
• Micronutrient fortification	• Monitoring & Evaluation
• Food engineering	• Organizational management
• Nutritional status assessment	• Decision making strategies
• Epidemiological survey	• Transformational leadership
• Experimental design and quality control	• Advocacy and lobbying
• Data analysis and statistical modeling	• Report and information dissemination

ACHIEVEMENTS

1. Inventory on the dietary assessment methods available and needed in Cameroon for setting up a common methodological research infrastructure for nutritional surveillance, research and prevention of diet-related non-communicable diseases in Africa;
2. Fortification of a local beverage in iron to champion micronutrient deficiency;
3. Definition of optimal conditions of aqueous oil extraction to help Cameroon avocado farmers face *post*-harvest losses and reduce their fingerprint on greenhouse gas effect.

PROFESSIONAL EXPERIENCE

2019 – Present: International Consultant specialized in developing Food-based dietary guidelines and national food recommendations for Gabon. FAO sub-regional office of Central Africa.
2019 – Present: Junior Researcher in the Micronutrient Intervention Modeling Project (MINIMOD), Cameroon. Helen Keller International, Ethiopian Public Health Institute and Johns Hopkins University Bloomberg School of Public Health.
2018 – Present: Review Board Expert of food-related norms for the Standards & Quality Agency (ANOR), Cameroon.
2017 – Present: Expert in Microsoft Tools Learning for Microsoft AEP, Cameroon.
2017 – Present: Expert in Biochemistry and application review for WorldwideSGTC – Africa.

2016 – Present: Lecturer in Clinical Biochemistry and Nutrition at the School of Health and Medical Sciences, Catholic University of Cameroon.
2011-2014: **Country Representative** for the formulation of new research strategies and targeted regional prevention guidelines to reduce cancer incidence in Africa (ASPADAM Project). International Agency for Research on Cancer (IARC/WHO).
2011-2012: Junior Faculty Member in assisting the development of future leaders by enhancing their team building, communication and understanding of nutrition issues in a broader context. African Nutrition Leadership Programme (ANLP).

PROFESSIONAL AFFILIATIONS

Africa Evidence network **(AEN),** Cameroon Nutrition Society**,** Cancer Epigenetics Society **(CES),** Nutrition & Food Safety and Wholesomeness, Prevention, education and Research Network **(NOODLES.onlus),** and African Nutrition Leadership Programme **(ANLP).**

PEER-REVIEWED COMMITTEE

April – July 2014: African Nutrition Epidemiology Conference (ANEC).

FELLOWSHIPS AND SCHOLARSHIPS

Les Offices jeunesse Internationaux du Québec (**2017**), Otto Bayer Scholarship **(2013),** Eugen Ionescu Scholarship **(2012),** African Nutrition Leadership Programme **(2011)**, Clive West Micronutrient Fund (CWMF) (**2010).**

AWARDS

First photo prize winner for hitting the toxicological risks from the field to the table, NOODLES.onlus (**2018**); **Second platform prize winner** for developing an "innovative approach for breaking the walls of malnutrition" at the Falling Walls Lab 2016 Cameroon, DAAD (**2016**); **Second poster prize winner** for the "innovative method for extracting avocado oil" organized by the Bayer Science & Education Foundation Alumni Meeting, Germany (**2013**); **Third prize winner** at the Transfer 2.1 training on the "Writing and management of a publication online", "Agence universitaire de la Francophonie (AUF)" (**2012**); **annual awards of academic Excellency** awarded by the Ministry of Higher Education, Cameroon (**2010-2015**); **Prize of the best student in English** at the British Council, Cameroon (**2006**).

INTERNATIONAL INTERNSHIPS

SUNLEAD Africa Master Trainer Programme, *African Nutrition Leadership Programme*, South Africa (**2015**) ; Food and Analytical Chemistry, *Hohenheim University*, Germany (**2013**) ; Biological Agriculture, *Bayer CropScience Corporation*, Belgium (**2013**); Food Chemistry and Engineering, *Vasile Alecsandri University*, Romania (**2012**); African Nutrition Leadership Programme (ANLP), South Africa (**2011**); Advanced Food Analysis, *Wageningen University*, Netherlands (**2010**).

PERSONAL DEVELOPMENT

Monitoring & Evaluation with Project/Programme Planning, *International Federation of Red Cross and Red Crescent Societies* (**2016**); Management in Health, *World Bank Health, Nutrition and Population Global Practice* (**2015**); Performance planning and assessment, *UNICEF* (**2015**); The challenges of global poverty, *Massachusetts Institute of Technology* (MIT) (**2013**); Clinical and public health research, *Harvard School of Public Health* (**2013**); Descriptive statistics and Probabilities, *University of California* (**2013**).

OTHERS

Participation to 13 conferences and meetings (Cameroon, Germany, Romania and Canada) and supervision of 5 professional Bachelor theses.

SCIENTIFIC PUBLICATIONS

R. B. Kuagny Mouafo, M. B. Achu Loh, **B. U. Saha Foudjo**, G. Kansci, S. Domkem, G. Medoua Nama, E. Nya, P. Kuitekam and E. Fokou. Physicochemical characteristics and anti-nutritional factors of some underutilized tubers (*Dioscorea spp* and *Coleus esculentus*) grown in Cameroon. *International Journal of Advanced Research*, 7 (9), 795-806. (**2019**).

Saha Foudjo Brice Ulrich, Kansci Germain, Fokou Elie, Genot Claude. Prediction of critical times for water-extracted avocado oil heated at high temperatures. *International Journal of Biological and Chemical Sciences*, 12 (5), 2053-2064. (**2018**).

Guy B. Pouokam, **B. U. Saha Foudjo**, Chi Samuel, Philomina Fankam Yamgai, A. Kamda Silapeux, Joel Taguemkam Sando, G. Fankam Atonde and Chiara Frazzoli. Contaminants in Foods of Animal Origin in Cameroon: A One Health Vision for Risk Management "from Farm-to-Fork"– A review. *Frontiers in Public Health*, 5, Article 197, 11p. (**2017**).

Ange-Patrice Takoudjou Miafo, Benoit Bargui Koubala, Germain Kansci, **Brice Ulrich Foudjo Saha**, Elie Fokou. Optimizing the extraction of dietary fibres from sorghum malt spent grain using response surface methodology. *International Journal of Agricultural and Food Science*, 6 (2), 37-43. **(2016)**.

Ange-Patrice Takoudjou Miafo, Benoit Bargui Koubala, Germain Kansci, **Brice Ulrich Foudjo Saha**, Elie Fokou. Optimizing the extraction of dietary fibers from sorghum bran using response surface methodology. *Journal of Food Processing*, 8p. DOI:10.1155/2015/609703. (**2015)**.

Pisa Pedro T, Margetts Barrie, Vorster Esté, Friedenreich Christine M, Huybrechts Inge, Landais Edwige, Martin-Prével Yves, Branca Francesco, Lee Warren, Jerling Johan, Zoster Francis, Amuna Paul, Aderibigbe Olaide Ruth, Anderson Cheryl AM, Aounallah-Skhiri Hajer, Atek Madjid, Benhura Chakare, Chifamba Jephat, Covic Namukolo, Dary Omar, Delisle Hélène, El Ati Jalila, El Hamdouchi Asmaa, El Rhazi Karima, Faber Mieke, Kalimbira Alexander, Korkalo Liisa, Kruger Annamarie, Ledo James, Machiweni Tatenda, Mahachi Carol, Mathe Nonsikelelo, Mokori Alex, Mouquet Claire, Mutie Catherine, Nashandi Hilde Liisa, Onabanjo Oluseye Olusegun, Rambeloson Zo, **Brice U Saha Foudjo**, Ubaoji Kingsley Ikechukwu, Zaghloul Sahar Saad, Slimani Nadia. Inventory on the dietary assessment methods available and needed in Africa: a prerequisite for setting up a common methodological research infrastructure for nutritional surveillance, research and prevention of diet-related non-communicable diseases. *Critical Reviews in Food Science and Nutrition*, DOI: 10.1080/10408398.2014.981630. **(2014).**

Sorina Zirnea, Iuliana Lazar, **Brice Ulrich Saha Foudjo**, Traian Vasilache, Gabriel Lazar. Cluster Analysis based on geochemical properties of phosphogypseum dump located near Bacau city in Romania. *APCBEE Procedia*, 5, 317 – 322. **(2013).**

Brice Ulrich Saha Foudjo, Germain Kansci, Iuliana Mihaela Lazar, Gabriel Lazar, Elie Fokou, François-Xavier Etoa. ATR-FTIR characterization and classification of avocado oils from five Cameroon cultivars extracted with a friendly environmental process. *Environmental Engineering and Management Journal*, 12 (1), 97 – 103. **(2013).**

Brice Ulrich Saha Foudjo, Germain Kansci, Elie Fokou, Iuliana Michaela Lazar, Pierre-Yves Pontalier, François-Xavier Etoa. Multi-response optimization of aqueous oil extraction from five varieties of Cameroon-grown avocados. *Environmental Engineering and Management Journal*, 11 (12), 2257 – 2263. **(2012).**

Vincent Ngouana, Patrick Valère Tsouh Fokou, **Brice Ulrich Saha Foudjo**, Sylver Ngouela, Fabrice Fekam Boyom, Paul Henri Amvam Zollo. Antifungal activities and acute toxicity of stembark extract of *Drypetes gossweileri* S. Moore – Euphorbiaceae from Cameroon. *African Journal of Traditional, Complementary, and Alternative Medicine*. 8 (3), 328 – 333. **(2011).**

_Carole Debora Nounkeu, M.D., M.S., Ph.D. student

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dcnounke@uncg.edu

EDUCATION

Ph.D. Major: Nutrition 2018 - Present GPA: 4.0	Department of Nutrition University of North Carolina at Greensboro, Greensboro, NC Dissertation: "Water insecurity at the household level: How to measure it and can it be reduced by improving access to water needed for daily use?" Advised by Dr. Jigna Dharod Committee Members: Dr. Lauren Haldeman, Dr. Seth Armah, Dr. Sharon Morrison, Dr. Kenneth Gruber Expected graduation date: May 2020
M.S. 2015-2017 GPA: 4.0	Department of Nutrition University of North Carolina at Greensboro, Greensboro, NC Major: Nutrition Sciences Thesis: "Assessment of the relationship between water insecurity, hygiene practices, and the incidence of diarrhea among children from rural households of the Menoua Division-West Cameroon" Advised by Dr. Jigna Dharod Committee Members: Dr. Lauren Haldeman, Dr. Seth Armah
M.D. 2005- 2012 GPA: 3.35	Faculty of Medicine and Biomedical Sciences University of Yaoundé 1, Yaoundé, Cameroon Major: General Medicine Dissertation: "Epidemiological Study of Human African Trypanosomiasis in the Bipindi Focus" Advised by Pr. Roger Somo Moyou Committee Members: Pr. Fidele Binam, Pr. Joseph Kamgno, Pr. Francois Kaze

WORK EXPERIENCE

Research Intern Hellen Keller International 2019-Present	Research Intern
Graduate assistant UNC at Greensboro Department of Nutrition 2015 – 2018	Teaching Assistant Research assistant

General Physician Awae District Hospital Cameroon 2013-2015	Responsible for out-patient consultations, following-up hospitalized patients, overseeing public health activities in the hospital etc.
General Physician Medico-surgical Clinic of Douala, Cameroon 2012-2013	responsible for out-patient consultations, following-up hospitalized patients, company doctor for some societies, overseeing public health activities in the hospital etc.
Clerkship in Integrated Medicine CDC Cottage Hospital, Tiko, Cameroon 2011	Follow-up of hospitalized patients at the CDC Cottage Hospital in Tiko Active member in the management of the cholera outbreak that arose in the area
Internship rotations Faculty of Medicine and Biomedical Sciences Yaoundé, Cameroon 2008-2011	Oto-Rhino-Laryngology, Dermatology, Pneumology, Ophtalmology, Pediatrics, Surgery, Obstetrics and Gynecology, Internal Medicine Units

RESEARCH EXPERIENCE

Ph.D. Dissertation Research UNC at Greensboro 2018 - Present	Supervised by Dr. Jigna Dharod • Developed interviews model and local community partnerships to reach low income populations • Completed and submitted IRB documentation for approval for an international nutrition research • Built and finalized a focus group discussion guide for dissertation research • Trained community interviewer to conduct interviews in local dialect • Conducted focus group discussions in Bafou, West-Cameroon • Developing an experiential household water insecurity scale
Master's Thesis Research UNC at Greensboro 2015-2017	Supervised by Dr. Jigna Dharod • Developed interviews model and local community partnerships to reach low income populations • Completed and submitted IRB documentation for approval for an international nutrition research • Built and finalized a semi-structured questionnaire for thesis research

- Trained community interviewer to conduct interviews in local dialect
- Conducted recruitment and interviews with ~150 women, West-Cameroon
- Entered and managed data using SPSS 23.0
- Analyzed data using bivariate and multivariate tests
- Compiled data into manuscripts for thesis research and for publication

M.D. Dissertation Research
2011-2012

Supervised by Pr. Roger Somo Moyou

- Completed and submitted IRB documentation for approval
- Built and finalized a questionnaire for dissertation research
- Conducted recruitment and interviews as well as lymph node puncture and parasitological exams for dissertation research
- Compiled data into manuscripts for dissertation research

PUBLICATIONS

Nounkeu, C., Kamgno, J., & Dharod, J. (2019). Assessment of the relationship between water insecurity, hygiene practices, and incidence of diarrhea among children from rural households of the Menoua Division, West Cameroon. *Journal of Public Health in Africa*, *10*(1).

Nounkeu, C. D., & Dharod, J. M. (2019). Status on the Scale Development to Measure Water Insecurity Experiences at the Household Level: A Narrative Review. *Advances in Nutrition*.

Nounkeu D, Dharod J. (2018). Water insecurity among rural households of West Cameroon: lessons learned from the field. Journal of Water Sanitation and Hygiene for Development, washdev2018148.

Peer Review

Advances In Nutrition

HONORS & SCHOLARSHIPS

2019-2020	Mildred Davis Scholarship
	Sue R. Ferguson Scholarship
	Stedman Scholarship
Summer 2019	UNCG Graduate Students Summer Assistantship
2018 - 2019	Lula Martin McIver Scholarship
	Rev. and Mrs. Albanese Scholarship
Summer 2018	UNCG Graduate Students Summer Assistantship
2017-2018	Sarah and David Stedman Fund Scholarship

Summer 2017	UNCG Graduate Students Summer Assistantship
2016-2017	D. Elizabeth Williams International Scholarship
Summer 2016	UNCG Graduate Students Summer Assistantship
2009-2012	Excellency Prize of the Cameroon's President Paul Biya
2005-2007	British American Tobacco scholarship

TEACHING EXPERIENCE

Student NTR 645 Teaching Practicum in Nutrition	Supervised by Dr. Dharod - Spring 2018, UNCG Presented three classes for NTR 421 International Nutrition/Cultural Foods course: • Common infectious diseases and impact on nutritional status • High impact interventions existing in the field of nutrition and health • Water insecurity
Teaching Assistant NTR 421 International Nutrition/Cultural Foods	Supervised by Dr. Dharod - 4 semesters, UNCG • Proctored exams • Graded assignments and tests • Co-ordinated and supervised students' use of food lab for preparation of dishes/presentation of ethnic food presentations • Advised students on assignments during office hours • Guest Lecturer: Infectious disease in Cameroon (Fall 2016) Food and water security (Fall 2015)
Teaching Assistant NTR 213 Introductory Nutrition	Supervised by Dr. Keith Erickson – 1 semester, UNCG • Proctored exams • Graded assignments and tests • Advised students on assignments during office hours • Managed the Wiley Learning System supported by the textbook
Teacher "Ecoles Préparatoires Scientifiques"	Yaoundé, Cameroon - Summer 2006-2008 • Teaching biology to students preparing for medical school entrance exam • Mentoring students to prepare for the oral section of Cameroon medical school entrance's exam

SERVICE

2015-Present	Participant in the rehabilitation of a group organized for Congolese Refugees Women living in Greensboro

2012-Present	International Red Cross Volunteer-Red Cross Department Committee of Mfoundi-Cameroon
2005-Present	West Region Medical Students Association

SKILLS DEVELOPED

Data Analysis Software:	SPSS, CSPro
Reference Managers:	Endnote
Literature Review Search Engine:	Pubmed, WorldCat, Google Scholar, EBSCO, JSTOR
Microsoft Software:	Word, PowerPoint, Excel, Publisher
Webpage Development:	Google Sites- https://sites.google.com/a/uncg.edu/tobacco-interventions/ Weebly- http://deboranounkeu.weebly.com
Languages:	Fluent in English and French, Learning Spanish

REFERENCE

Dr. Jigna Dharod, Associate Professor
Director of Graduate Studies
Department of Nutrition
University of North Carolina at Greensboro
Email: jmdharod@uncg.edu

Pr. Joseph Kamgno, Professor
Director CRFilMT
Deputy Dean
Faculty of Medicine and Biomedical Sciences
University of Yaounde 1, Cameroon
Email: kamgno@crfilmt.org