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A Sustainable Model for the Prevention and Treatment of Malnutrition in Three Countries of the Sahel

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Introduction and Overview

The Sahel continues to have prevalence rates of acute malnutrition that far exceed the WHO cut-off point for high public health significance. These rates of acute malnutrition would warrant emergency interventions in most settings, and it is imperative that we accelerate action. At the same time, programs must be implemented in ways that build capacity to sustain them. One of the key challenges in addressing undernutrition in these countries is combining urgency and development. OFDA's investments have been the strongest expression of the U.S. Government's recognition of this challenge and of the centrality of nutrition to development in this region. This project will build on the platform established over the past three years to improve the model of Community-based Management of Acute Malnutrition (CMAM) integrated into an Essential Actions in Nutrition (ENA) framework in Burkina Faso Mali and Niger. The gains achieved in capacity building and institutionalization among national, regional and community government partners will be reinforced and lessons learned from the last three years will be applied to refine the model and address weakness in supervision, quality assurance and coverage. The program is also embedded in the wider regional context.

The CMAM model will be tested, improved, documented and evaluated in reference areas in three countries. The model will include all levels of care from the district hospital down to the community.

Training will mix classroom exercises and live practicum treating malnourished children at all stages of treatment, and will provide coaching to improve skills. More rigorous **formative supervision** and follow-up discussions at periodic meetings will improve the quality of service provision at all levels. **Data collection, analysis and its use** will be emphasized during supervision and periodic staff meetings to provide ongoing feedback and motivate staff to improve their performance and continually raise the bar. Missed opportunities and ineffective methods for counseling caretakers will be reduced by **enhanced supportive supervision** for both health and community agents, including the **modeling of appropriate counseling techniques** and mini lessons conducted by project supervisors during staff and volunteer meetings. **Coverage and utilization of services** will be increased by intensified and more structured community-based strategies in all countries providing a plan for systematic follow-up of no-shows and drop-outs in the focus areas. **Advocacy** will be continued to persuade local leaders to view nutrition as a priority for the development of the country.

After a prolonged search, HKI has hired a seasoned expert as our **regional CMAM coordinator**, who is now providing technical support to this project. Issahka Diop comes to HKI from Valid International, where he has worked to support CMAM projects and policies since 2006; he also has a doctorate in Human Nutrition from the University Cheikh Anta Diop in Senegal. We also expect Dr. Diop's arrival to lead to a closer partnership between HKI and **Valid International**, particularly in testing strategies for expanding CMAM program coverage and impact. HKI will begin testing Valid's SQUEAC management tool (semi-quantitative evaluation of access and coverage), which is intended to ensure ongoing monitoring of coverage during implementation and provide feedback to improve program design.

Project Monitoring Indicators							
Data are presented for	Burkina Faso	Target	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total to date
	Mali						
	Niger*						
Coverage rate in target zones (for MAM)		50%	34.3 %	32.0%			33%
			17%	12.5%			15%
			33%	40%			37%
Coverage rate in target zones (for SAM)		N/A	--	--			--
		25%	8%	7%			8%
		50%	33%	49.4%			41%
Children with severe acute malnutrition with complications treated		272	89**	46			135
			75	35			110
			189	208			397
Children with severe acute malnutrition without complications treated		1,540	719**	476			1,195
			581	550			1,131
			960	1,706			2,666
Children with moderate acute malnutrition treated		6,185	7,428**	1,739			9,167
			3,097	2,279			5,376
			11,267	13,306			25,573
Mothers accompanying children with severe and moderate acute malnutrition counseled in ENA and nutritional rehabilitation		8,657	7,036	8,686			15,722
			ND	799			799
			22,200	17,957			40,157
Adults receiving information on ENA through radios		147,323	0	151,962			151,962
			ND	ND§			--
			137,666	74,774			212,440
Default rate in Outpatient Therapeutic Care Programs in target zones		< 15%	38.2%	32.7%			35%
			16%	15%			15%
			12%	8.5%			10%
Death rate in Outpatient Therapeutic Care Programs in target zones		< 10%	5.3%	2.8%			4%
			0	0			0
			2.2%	2.6%			2%
Number of health facilities providing treatment of acute malnutrition		45	45	45			45
			162	162			162
			224*	194			194
Number of communities conducting regular screening for malnutrition		50	30	30			30
			36	36			36
			94	200			200
Health center based care providers trained in CMAM and other Essential Nutrition Actions		45	13	45			58
			0	20			20
			202	164			366
Community resource persons providers trained in CMAM and other Essential Nutrition Actions		126	121	30			151
			0	0			0
			476	610			1,086
# of supervision visits of health facilities with onsite training carried out		544	86	159			245
			0	73			73
			19	439			458
# of supervision visits of communities carried out		462	113	94			207
			0	0			0
			8	264			272
# of documents prepared to share results and lessons learned		1	0	0			0
			1	1			2
			0	1			1

*Quarter 1 data reflected support to all three districts of the Diffa region; beginning April 1 HKI covers only the district of Diffa.

**The previous report presented only new cases for Burkina instead of all cases treated; these data have been corrected here.

§Contract will be signed with 22 radios in July so adults will begin receiving information on ENA through radios.

Accomplishments and challenges in Burkina Faso (Fada and Gayéri districts)

Project/program planning

The project coordinator participated in monthly coordination meetings with other NGOs intervening in the field of nutrition at the national level and in June the field coordinator for Fada participated in a regional meeting with other technical partners intervening in nutrition. In particular, staff are vigilantly monitoring the global increase in SAM and MAM in the target region.

In June, HKI staff met with Action Contre la Faim (ACF), a partner NGO implementing similar interventions in the Fada region. The meeting focused on project achievements and on the collaboration between the organizations.

Training and capacity building

In May-June, the health staff of Fada and Gayéri Health Districts participated in the first ever “Nutrition Days.” Staff received training in the prevention of nutrition and on the use of data collection tools for growth monitoring and acute malnutrition management. A competition was launched in these districts to elect the center with the strongest performance in nutrition. Selection criteria are based on the performance indicators from the national CMAM protocol.

Formative supervision is ongoing in the health-centers of the two assisted health districts. HKI supervisors provided additional support to head nurses for the drafting of their monthly reports, helping them to compile nutrition data.

At the community level, 30 community health workers were trained on the use of tools for collecting data on growth monitoring and the management of moderate acute malnutrition, which have recently been translated into local languages. In addition about 150 grandmothers (elder women) were trained in the techniques of negotiation for behavior change they will use to promote optimal nutrition practices among mothers of children less than 2 years. We have found these grandmothers to be very committed to fighting malnutrition in their communities.

Mobilization, awareness and community-based activities

The “Grandmother Approach” and the community-based management of malnutrition activities are being implemented in the 50 targeted villages, as planned. Grandmothers have been organizing group discussions and individual counseling with mothers.

In April, communities in Gayéri celebrated “Grandmothers’ Night” highlighting grandmothers’ efforts to improve maternal and child nutrition and health in their respective communities. At least 830 people participated in these events.

CMAM activities continued in the 30 villages. This quarter, the number of new cases of SAM in HKI intervention villages decreased compared to last year (although this number increased globally in the district health centers). However, there are still many children under 5 who are moderately underweight in our target zone.

The project team decided not to renew HKI's MOU with WFP for the management of MAM cases because new shipments of WFP food commodities are expected to arrive until after the project is in phase-out. This quarter, HKI used the supplies on-hand for treating children with MAM.

Thirty radio broadcasts were translated in the three main languages of the area (Gulmacema, Fulfuldé and Mooré) by the region's three local radio stations. Those broadcasts address the topics of optimal breastfeeding, complementary feeding and sick child feeding. HKI is currently developing a new radio broadcast describing on the CMAM treatment regime in hopes that this will help caregivers understand the importance of completing treatment and thereby reduce the default rate.

In April, with technical support from HKI the Health District of Fada organized a mass screening for malnutrition in all villages. The screening was performed by community health workers. In total, 73,021 children under 5 were screened, among whom 7,177 cases of MAM (9.8%) and 2,179 cases of SAM (2.9%) were identified.

Monitoring and evaluation

The M&E officer designed a database in Excel to track the project indicators.

The "default rate in outpatient therapeutic care programs" indicator remained problematic this quarter in Fada health district (33%), since it was significantly above the maximum acceptable rate (<15%). To address this issue, HKI and UNICEF agreed to provide the outpatient cases of SAM with a 2-week ration of Plumpy'Nut during the rainy season instead of the usual weekly ration. Moreover WFP food commodities have not been delivered to health centers over the last 3 months, and this has coincided with the significant increase in default rates among children with MAM. To attract mothers, the health agents in a few health centers organized cooking sessions for mothers of children to demonstrate how to enrich porridge using local ingredients.

The health district-level nutrition focal points are frequently not available to participate in the planned formative supervisions at health-centers due to many conflicting demands on their time. Nevertheless, project staff continued these supervision visits and the project coordinator supervised project activities every month during the reporting period.

Two impact surveys were conducted this quarter:

- One will measure the effects of the "Grandmother Approach" on the nutrition knowledge, attitudes and practices of beneficiaries.
- The other one aims to measure the influence of the formative supervisions on the quality of nutrition activities in the health centers.

The data are currently being analyzed and the reports should be available next quarter.

Conclusion

The activities are continuing in accordance with plans and HKI has begun planning of our phase-out strategy.

Accomplishments and challenges in Mali (Koulikoro region)

Project/program planning:

Two internal coordination meetings were held. These meetings allowed the project staff to get to know one another and to develop a regional team responsible for improving CMAM activities. HKI also supported and participated in the National Nutrition Forum held in June 2010. Among other things, the forum raised awareness of senior level government officials about the funding needs for CMAM programs.

Training and capacity-building:

HKI successfully recruited a high level nutritionist to strengthen the existing CMAM programming. She conducted a brief consultancy in May to observe and provide feedback on the CMAM training and will return in July to assist the project for one year.

The Centre of Excellence – a training center for improving the capacity of CMAM implementation -- was launched in June 2010. A senior HKI training coordinator has worked with MOH and local health staff to train 9 HKI staff together with 16 medical doctors and 13 nurses who currently work as inpatient rehabilitation (URENI) center coordinators. Several trainings per month are scheduled through the end of the year followed by on site supervisory visits to verify understanding and application of new capacities.

Reports provided by health centers show very few cases of SAM treated. For this reason, coverage rates remain low. Based on field observations, this is due in great part to poor reporting and missed opportunities. In order to address these weaknesses, HKI recruited supervisors to assist health centers in the daily operations of CMAM and in data collection. They started routine formative supervision followed by monthly meetings in May and June so we expect to see improvements in coverage rates in the next quarter.

Two training of trainers sessions were organized for the HKI nutrition support agents in Fana. These TOT sessions were organized to increase HKI field agents' capacity in interpersonal communication and negotiation for behavior change. Participants learned how to negotiate with mothers for specific, doable changes in current practices to improve breastfeeding and complementary feeding practices. The training based on a module developed by Nancy Keith, a consultant, was delivered by the coordinator and the new Senior Nutritionist.

Mobilization and awareness:

Mobilization and awareness activities continue through the Ministry of Health structure region wide. Community health center agents organize information and communication (IEC) sessions for caretakers attending routine care visits; in particular, immunizations and antenatal care. Several topics are usually addressed but with HKI support there has been a notable increase in the number of nutrition topics covered. Data on this activity are not very well collected; however, health information system records indicated that 799 women of reproductive age participated in an IEC session on at least one of the ENA topics during the reporting period.

Monitoring and evaluation

During this quarter project staff undertook several monitoring and evaluation activities. Project supervisors were able to supervise 73 community health centers (of a total of 172). The supervised centers are those providing care for MAM. The project deputy coordinator supervised 9 of the 13 community health centers of the health district of Nara. During this supervision the Ministry of Health monitoring guidelines were used.

The purpose of supervision was to identify gaps in CMAM at the community health center level and develop a strategy for addressing these. Community health agents continue to demonstrate weaknesses in case management, registration and reporting. Also few screenings are conducted at health centers, thus key opportunities for identifying malnourished children are missed. These weaknesses are being addressed through careful formative supervision provided by the 10 project supervisors.

Accomplishments and challenges in Niger (Districts of Diffa, Tanout, Matameye, Communauté Urbaine de Zinder and Dogondoutchi)

Background on the target zones:

In Diffa region HKI is now covering only one district (Diffa); Save/UK has assumed responsibility for the districts of Maine and N'Guigmi. HKI is thus supporting: the district hospital of Diffa that provides care to complicated cases of SAM; 18 integrated health centers (IHCs) that provide treatment for MAM and uncomplicated SAM; 57 health posts that provide treatment for MAM; and five villages with community growth promotion teams that perform screening for acute malnutrition, treatment for MAM and referral of SAM to the closest capable facility. In addition the project currently supports 24 community groups that promote ENA and will be training an additional 52 volunteers in 26 new villages to promote ENA in those communities.

In the region of Zinder, the project has trained 40 community volunteers to promote ENA and screen for malnutrition in 20 urban communities (reaching a population of 236,381). In addition, nine new health posts in Tanout and 13 in Matameye have been opened with trained staff to provide treatment for MAM, along with seven centers serving the urban community with the treatment of both MAM and SAM. This year HKI has passed the supervision of the district hospitals of Tanout and Matameye to partner NGOs (French Red Cross and Save the Children) and thus no longer oversees the treatment of complicated SAM in these jurisdictions.

In the Dosso region, HKI has been supporting the district hospital of Dogondoutchi and 23 IHCs and 74 villages across 10 communes of this district (covering a population of 662,051). In this quarter the project provided support to an additional 13 IHC (treating cases of MAM and uncomplicated SAM), 21 health posts (treating MAM), and five villages (treating MAM at the village level). In addition, ENA teams in 73 villages promote ENA.

Project/program planning:

In all target regions, HKI staff participated regularly in meetings of the Inter-Agency Nutrition Cluster, the CORE group, and the network of NGOs intervening in Niger (OIREN). HKI supported the implementation of the National Nutrition and Child Survival Survey, which has revealed a significant increase in the prevalence of GAM throughout the country compared to one year ago. A copy of that report is included.

In addition, HKI/Diffa staff participated in coordination meetings with the staff of the Regional Health Directorate (DRSP), the U.N. Office for the Coordination of Humanitarian Affairs (OCHA), the World Food Program, Care, Save the Children, Counterpart International and the Nigerien Red Cross. HKI also participated in the meetings to review progress to date in implementing the district's 2010 action plan and to begin to draft the 2011-2015 health development plan. In Dogondoutchi HKI participated in the first of what will be quarterly coordination meetings among the district health teams, the IHC heads, the DRSP and community

health committees, and were able to address logistical challenges we face implementing project activities. And in Zinder project staff participated in a series of regional and district meetings to improve referral systems.

Supervision meetings of project coordinators and field agents in all three target regions are now regular and include performance reviews and planning. The discussions included strategies for tracking children diagnosed, referred and followed up; tracking households covered by ENA teams; and strategies for strengthening community-level screening and ensuring that identified children do indeed receive necessary treatment.

Training and capacity-building:

In Diffa, 41 community health agents serving in health posts were trained in the revised National CMAM protocol (which adopts the new WHO growth standards) together with one HKI field supervisor.

In Zinder, 40 health agents from the urban community were trained in the CMAM protocol, 20 community health agents were trained in ENA/BCC and in community-based screening for malnutrition using mid-upper arm circumference (MUAC).

In Doutchi, 14 health agents were trained in the CMAM protocol (completing the training of all IHC staff in the region); 21 community health agents were trained in the management of MAM and SAM; 72 distribution agents were trained in anthropometric measures, identification of acute malnutrition, and preparation of food rations in support of activities at IHC and community levels; and 15 health agents and 42 community volunteers were trained in ENA with special emphasis on negotiation for behavior change and community awareness raising.

Mobilization and awareness:

Regular education and discussions sessions on nutrition themes are held at health centers and in targeted communities. Growth promotion is organized monthly by village-based committees followed by a community discussion of optimal ENA practices. In addition, at each of these activities vitamin A supplements, iron-folic acid and deworming medications are distributed to appropriate women and children 6-59 months of age.

In Diffa, the community activities occur in each health facility and in 24 emphasis villages and are reinforced by radio messages via private, community and government radio stations. In addition, building on HKI's experience in Mali, a mass screening for acute malnutrition was incorporated into the polio/vitamin A distribution days. The effort reached 57,048 children and detected 4,211 cases of GAM (7.38 percent).

In Zinder, cases of MAM in Matameye and Tanout are treated by the Positive Deviance-Hearth methodology, and cases of SAM are referred to the nearest health center. ENA messages are reinforced by broadcasts from one public radio, one private station and three community stations. In urban Zinder, community teams have just completed training.

In Doutchi HKI is finalizing contracts with a total of eight radio stations for the broadcast of ENA messages.

Equipment:

All new rehabilitation centers have now been provided equipment for anthropometric screening (scales, measuring boards, MUAC tapes, as appropriate) and for cooking demonstrations; communications materials have also been distributed. Palettes for safe storage of food rations have also been supplied. Supplies for data collection have also been provided, along with training in their correct use. Supplementary food is supplied by WFP and therapeutic foods by UNICEF, and HKI helps with delivery to health facilities. In Urban Zinder 20 donkey carts were provided to communities to support the transport of children to appropriate care; in Diffa and Doutchi 21 and 8 carts, respectively are being procured.

Monitoring and evaluation:

HKI's National Nutrition Advisor made supervisory visits to each project region this quarter, to supervise the integration of mass screening for acute malnutrition into the polio/micronutrient days in June and to review performance of the project at the field offices. In addition, a mission from OFDA's regional office in Dakar visited HKI programs in Zinder and Diffa, in order to meet with government counterparts, and evaluate the food emergency and the adequacy of the international response. The visitors were able to observe different levels of training, correct management of cases of GAM, adequate supplies of equipment and the plan for supporting the response to the current emergency. Weaknesses noted were the inadequacy of supplies of Plumpy'Nut and of medications (latter due to the government's policy on providing free health care to pregnant women and children under 5 without an adequate system for reimbursing clinics in a timely manner for services rendered), lack of sheltered waiting areas for families awaiting treatment in Zinder and Diffa, and staff shortages. Recommendations by the visitors included that HKI submit an application to modify the current grant agreement to expand its response to the crisis. HKI continues advocacy with the Ministry to solve the system of health clinic reimbursement.

At each of its three sub-offices, project staff are making two formative supervision visits to each health facility per quarter and one general supervision visit. Utilization of CMAM services is high, the health center-community linkages are strong, but comprehensive screening of all children for acute malnutrition is not yet systematic and HKI still must provide significant technical support for accurate and timely data collection. Shortages of Plumpy'Nut are being resolved in coordination with UNICEF and HKI is able to make some orders directly from the local Nutriset affiliate, STA.

Attachment: Executive Summary of 2010 Niger's National Nutrition and Child Survival Survey (*Note de synthèse_Enquete_Nutrition_2010*)

Données récapitulatives préliminaires

Entre le 24 mai et le 16 juin 2010, le Gouvernement du Niger, avec l'appui du Fonds des Nations Unies pour l'Enfance (UNICEF), du Programme Alimentaire Mondial (PAM), de Helen Keller International (HKI), du Centre Agrhymet et de la Croix Rouge Française, a conduit une enquête sur la nutrition des enfants de 6 à 59 mois dans les huit régions administratives du Niger. Le but de cette enquête était d'évaluer l'état nutritionnel des enfants et d'apprécier l'évolution de la situation en cette période de soudure. Les résultats de cette enquête donnent des informations représentatives au niveau régional et précises permettant la planification des interventions nutritionnelles. Ces résultats préliminaires seront suivi d'un rapport plus détaillé et sera diffusé à tous les acteurs qui interviennent dans la nutrition.

Dans chaque région, un échantillon représentatif d'enfants de 6-59 mois a été sélectionné de façon aléatoire. Au total, les informations de 8.011 enfants de 6 à 59 mois appartenant à 7.249 ménages ont été inclus dans l'enquête.

Il convient de rappeler que pour la région d'Agadez la collecte a été réalisée seulement dans les centres urbains d'Agadez, de Tchirozérine et d'Arlit pour des raisons d'insécurité résiduelle dans le milieu rural.

Au niveau national

Le taux de malnutrition aiguë globale s'élève à 16.7% selon les standards OMS sur le plan national. Ce taux est au dessus du seuil d'urgence (15%). Ce taux a fortement augmenté depuis la dernière enquête de juin 2009, passant de 12.3% à 16.7% sur l'ensemble du territoire. Cette augmentation pourrait être liée à la situation alimentaire difficile que vivent les populations suite à la mauvaise campagne agricole 2008-09 qu'à connu le Niger. Le taux de malnutrition aiguë sévère a également augmenté de 2.1 à 3.2%.

Le taux de malnutrition aiguë est significativement plus élevé chez les enfants de 6 à 35 mois (21.7%) que chez les enfants de 36 à 59 mois (9.5%) comme l'indique le tableau 1 ci-après. Cela montre que la situation des enfants de 6 à 35 mois est très préoccupante et appelle à la prise de mesures urgentes afin de préserver la vie de cette population particulièrement vulnérable. Par ailleurs, la répartition de la malnutrition aiguë par sexe, montre que les garçons sont plus touchés que les filles (Tableau 2).

Le taux de mortalité des enfants de moins de 5 ans est supérieur à 1 décès/10.000/j (1.22), mais est en deçà du seuil d'alerte de 2 décès/10.000/j. Ceci traduit une évolution probablement récente de la dégradation de l'état nutritionnel non encore reflété par les taux de mortalité (tableau 3).

Au niveau régional

Situation critique

Pour les régions de **Diffa**, **Maradi**, **Zinder**, et **Tahoua**, les taux caractérisent une situation d'urgence, avec respectivement **22.1%**, **19.7%**, **17.8%**, et **15.8%** de malnutrition aiguë globale. Dans ces 4 régions, les enfants de moins de 36 mois sont encore plus fortement touchés par la malnutrition aiguë globale que ceux qui sont plus âgés. Les faibles taux de mortalité infantile dans les régions de Diffa, Maradi et Tahoua indiquent une **dégradation récente** de la situation nutritionnelle qui ne se traduit pas encore en termes de mortalité accrue. Toutefois, **la région de Zinder, quant à elle, enregistre un taux de mortalité infantile de plus de 2 décès/10.000/j.**

Situation sérieuse

Les régions d'Agadez, **Dosso**, Tillabéri et Niamey ont enregistré des hausses importantes par rapport à 2009, et atteignent respectivement des taux préoccupants de 13.9%, **14.3%**, 14.8% et 13.3%. Ces taux sont au dessus du seuil d'alerte de 10% et proche du seuil d'urgence de 15%.

Ces résultats indiquent que la situation nutritionnelle des enfants est préoccupante dans l'ensemble des 8 régions du pays.

Analyses par tranche d'âge

Sur le plan national, les enfants de moins de 3 ans sont environ 2 fois plus touchés par la malnutrition aiguë globale que leurs aînés de 3 ans et plus. Les enfants de moins de 3 ans représentent donc une population à risque. Ceci est vrai dans toutes les régions mais aussi pour la malnutrition aiguë sévère sauf à Diffa où les enfants de plus de 3 ans sont aussi fortement touchés par la malnutrition aiguë sévère comme leurs aînés de 36 à 59 mois.

Sur le long terme

Le taux de sous nutrition chronique global est de 48.1% pour l'ensemble du territoire, variant de 16.6% à Niamey à 61.8% dans la région de Zinder. Le taux de sous nutrition chronique sévère est de 20.6%. Malgré la hausse du taux de malnutrition chronique globale aussi bien sur le plan national que régional, ces taux sont très comparables à ceux de l'enquête de juin 2009, et confirment que la situation de la sous nutrition des enfants est un problème de long terme menant à un fort retard de croissance, principalement dans les régions de Diffa, de Maradi et de Zinder.

Analyse

Sur la base du taux de sous nutrition aigue global, le nombre d'enfants en situation de malnutrition aiguë s'estime à **455.000 enfants**, dont 86,800 sévères. La campagne agricole tardant à s'installer dans certaines régions et la période de soudure particulièrement difficile cette année pourrait aggraver davantage cette situation si des actions immédiates ne sont engagées.

Les résultats sur la mortalité et la malnutrition sont détaillés dans les tableaux ci-après.

**Enquête nutrition et survie des enfants de 6 à 59 mois
Niger, Mai – Juin 2010**

**Gouvernement du Niger
(Institut National de la Statistique, INS et Direction Nutrition
du Ministère de la Santé)**

Tableau 1 - Prévalence de la sous nutrition aiguë et chronique chez les enfants de 6 à 59 mois par région et par tranche d'âge

Région	Tranche d'âge	N	Malnutrition Aiguë Globale	Malnutrition Aiguë Sévère	Malnutrition Chronique Globale	Malnutrition Chronique Sévère
			Poids/Taille <-2 ET et/ou œdème	Poids/Taille <-3 ET et/ou œdème	Taille/Âge <-2 ET et/ou œdème	Taille/Âge <-3 ET et/ou œdème
Agadez*	6 -35 mois	300	15.8 (12.1-20.3)	3.8 (2.1-6.8)	33.0 (26.6-40.1)	11.4 (9.0-14.3)
	36-59 mois	189	10.9 (6.9-16.9)	1.2 (0.4-4.1)	29.3 (21.7-38.4)	8.4 (5.9-11.8)
	Total	489	13.9 (11.6-16.5)	2.8 (1.6-4.7)	31.6 (26.5-37.1)	10.2 (8.1-12.8)
Diffa	6 -35 mois	439	27.3 (22.8-32.4)	4.1 (2.5-6.6)	54.5 (49.1-59.8)	24.8 (20.5-29.7)
	36-59 mois	288	14.0 (10.2-19.0)	4.0 (2.7-5.9)	50.6 (44.7-56.4)	15.8 (11.8-20.8)
	Total	727	22.1 (18.4-26.4)	4.1 (2.9-5.6)	53.0 (48.6-57.3)	21.3 (17.5-25.5)
Dosso	6 -35 mois	730	19.5 (15.7-23.7)	4.4 (3.0-6.4)	48.9 (44.7-53.1)	18.2 (15.1-21.8)
	36-59 mois	480	6.6 (4.2-10.2)	1.0 (0.4-2.6)	44.4 (39.4-49.5)	12.6 (9.8-16.1)
	Total	1210	14.3 (11.6-17.5)	3.0 (2.1-4.4)	47.1 (43.8-50.4)	16.0 (13.7-18.7)
Maradi	6 -35 mois	730	26.2 (22.6-30.2)	5.7 (4.2-7.7)	61.0 (56.6-65.2)	29.2 (24.4-34.5)
	36-59 mois	522	11.1 (8.2-14.9)	1.5 (0.8-2.7)	55.1 (50.0-60.1)	25.8 (21.0-31.3)
	Total	1252	19.7 (16.6-23.2)	3.9 (2.9-5.3)	58.5 (54.8-62.0)	27.8 (23.8-32.1)
Tahoua	6 -35 mois	809	20.3 (16.9-24.2)	4.1 (2.7-6.1)	45.2 (39.7-50.9)	19.0 (15.5-23.2)
	36-59 mois	603	10.0 (7.6-13.0)	1.1 (0.6-2.3)	37.0 (32.8-41.5)	10.3 (7.9-13.5)
	Total	1412	15.8 (13.4-18.5)	2.8 (1.9-4.1)	41.7 (37.8-45.6)	15.3 (12.9-17.9)
Tillabéri	6 -35 mois	850	18.5 (15.9-21.4)	4.1 (2.8-6.0)	39.9 (35.8-44.2)	14.0 (11.6-16.9)
	36-59 mois	548	9.1 (6.9-12.0)	0.4 (0.1-1.6)	33.5 (29.4-37.9)	10.7 (8.7-13.0)
	Total	1398	14.8 (12.7-17.2)	2.7 (1.8-3.9)	37.4 (34.1-40.8)	12.7 (10.8-14.9)
Zinder	6 -35 mois	790	22.9 (20.2-25.8)	5.3 (3.7-7.5)	67.5 (61.7-72.8)	37.7 (32.7-42.9)
	36-59 mois	441	9.3 (7.1-12.1)	0.9 (0.3-2.1)	52.5 (47.4-57.5)	24.9 (20.5-30.0)
	Total	1231	17.8 (15.8-19.9)	3.6 (2.6-5.1)	61.8 (56.8-66.6)	32.9 (28.4-37.7)
Niamey	6 -35 mois	169	18.6 (10.9-29.8)	2.2 (0.8-5.7)	17.7 (12.3-24.7)	4.5 (2.3-8.7)
	36-59 mois	123	5.8 (2.9-11.4)	1.7 (0.4-6.7)	15.2 (9.4-23.6)	1.7 (0.4-6.2)
	Total	292	13.3 (8.4-20.5)	2.0 (0.9-4.1)	16.6 (12.3-22.1)	3.4 (1.9-5.8)
Niger	6 -35 mois	4817	21.7 (20.2-23.3)	4.6 (3.9-5.4)	51.3 (49.1-53.6)	23.5 (21.6-25.5)
	36-59 mois	3194	9.5 (8.3-10.7)	1.1 (0.8-1.6)	43.3 (41.2-45.5)	16.5 (14.9-18.3)
	Total	8011	16.7 (15.6-17.9)	3.2 (2.7-3.7)	48.1 (46.3-49.9)	20.6 (19.1-22.3)

ET: Ecart type

* : Les données de cette région sont représentatives des zones enquêtées uniquement et ne peuvent pas être extrapolés à la région d'Agadez dans son intégralité.

**Enquête nutrition et survie des enfants de 6 à 59 mois
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**Gouvernement du Niger
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Tableau 2 - Prévalence de la sous nutrition aiguë et chronique chez les enfants de 6 à 59 mois par région et par sexe

Région	Sexe	N	Malnutrition Aiguë Globale Poids/Taille <-2 ET et/ou œdème	Malnutrition Aiguë Sévère Poids/Taille <-3 ET et/ou œdème	Malnutrition Chronique Globale Taille/Âge <- 2 ET et/ou œdème	Malnutrition Chronique Sévère Taille/Âge <- 3 ET et/ou œdème
Agadez*	Filles	234	10.8 (7.9-14.6)	2.5 (1.2-5.1)	28.7 (22.7-35.5)	7.6 (5.5-10.3)
	Garçons	255	16.7 (12.7-21.7)	3.0 (1.5-6.0)	34.3 (27.7-41.5)	12.6 (9.6-16.4)
	Total	489	13.9 (11.6-16.5)	2.8 (1.6-4.7)	31.6 (26.5-37.1)	10.2 (8.1-12.8)
Diffa	Filles	371	20.3 (15.5-26.0)	4.8 (3.4-6.8)	52.3 (46.4-58.1)	21.6 (17.6-26.2)
	Garçons	356	24.1 (20.0-28.7)	3.4 (1.8-5.8)	53.7 (48.8-58.6)	20.9 (16.3-26.3)
	Total	727	22.1 (18.4-26.4)	4.1 (2.9-5.6)	53.0 (48.6-57.3)	21.3 (17.5-25.5)
Dosso	Filles	603	11.6 (8.6-15.4)	1.9 (0.8-4.6)	44.0 (39.8-48.3)	13.8 (11.2-17.0)
	Garçons	607	17.1 (13.9-20.9)	4.1 (2.8-6.1)	50.1 (45.4-54.8)	18.1 (14.9-21.9)
	Total	1210	14.3 (11.6-17.5)	3.0 (2.1-4.4)	47.1 (43.8-50.4)	16.0 (13.7-18.7)
Maradi	Filles	589	17.6 (14.1-21.8)	3.4 (2.2-5.1)	51.8 (47.0-56.6)	26.9 (22.2-32.1)
	Garçons	663	21.6 (18.2-25.5)	4.4 (3.0-6.3)	64.5 (60.5-68.3)	28.6 (24.3-33.3)
	Total	1252	19.7 (16.6-23.2)	3.9 (2.9-5.3)	58.5 (54.8-62.0)	27.8 (23.8-32.1)
Tahoua	Filles	676	12.4 (9.1-16.8)	1.3 (0.7-2.5)	38.9 (34.3-43.8)	12.8 (10.2-15.8)
	Garçons	736	18.8 (15.4-22.8)	4.1 (2.7-6.0)	44.1 (39.4-48.8)	17.5 (14.3-21.1)
	Total	1412	15.8 (13.4-18.5)	2.8 (1.9-4.1)	41.7 (37.8-45.6)	15.3 (12.9-17.9)
Tillabéri	Filles	666	13.4 (11.2-16.0)	2.4 (1.4-4.0)	37.5 (33.7-41.6)	12.5 (10.2-15.2)
	Garçons	723	16.1 (13.4-19.2)	2.9 (1.8-4.7)	37.2 (33.4-41.3)	12.9 (10.4-15.9)
	Total	1398	14.8 (12.7-17.2)	2.7 (1.8-3.9)	37.4 (34.1-40.8)	12.7 (10.8-14.9)
Zinder	Filles	625	14.5 (11.9-17.7)	3.0 (1.8-5.0)	62.7 (57.8-67.4)	30.8 (25.8-36.4)
	Garçons	606	21.2 (18.4-24.2)	4.2 (2.9-6.1)	61.0 (53.6-67.9)	35.0 (29.8-40.6)
	Total	1231	17.8 (15.8-19.9)	3.6 (2.6-5.1)	61.8 (56.8-66.6)	32.9 (28.4-37.7)
Niamey	Filles	144	14.8 (8.7-24.0)	2.5 (0.9-7.0)	15.5 (10.7-22.0)	3.2 (1.3-7.6)
	Garçons	148	11.8 (6.0-21.9)	1.4 (0.4-5.0)	17.8 (12.3-25.0)	3.5 (1.4-8.5)
	Total	292	13.3 (8.4-20.5)	2.0 (0.9-4.1)	16.6 (12.3-22.1)	3.4 (1.9-5.8)
Niger	Filles	3908	14.4 (13.0-15.9)	2.6 (2.0-3.2)	45.9 (43.9-48.0)	19.3 (17.5-21.2)
	Garçons	4103	19.0 (17.6-20.5)	3.8 (3.2-4.5)	50.1 (47.9-52.2)	21.9 (20.1-23.8)
	Total	8011	16.7 (15.6-17.9)	3.2 (2.7-3.7)	48.1 (46.3-49.9)	20.6 (19.1-22.3)

* : Les données de cette région sont représentatifs des zones enquêtées uniquement et ne peuvent pas être extrapolés à la région d'Agadez dans son intégralité.

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Tableau 3 : Mortalité rétrospective sur 3 mois

Région	Taux de mortalité brut /10.000/j	Taux de mortalité des enfants de moins de 5 ans /10.000/j
Agadez*	0.29	0.44
Diffa	0.59	0.70
Dosso	0.40	1.67
Maradi	0.55	1.03
Tahoua	0.20	0.29
Tillabéri	0.60	1.34
Zinder	0.70	2.05
Niamey	0.26	1.23
Niger	0.48	1.22

* : Les données de cette région sont représentatifs des zones enquêtées uniquement et ne peuvent pas être extrapolés à la région d'Agadez dans son intégralité.