

## **A follow-up study of Mother's participation to learning and nutritional rehabilitation centers (LNRC) and malnourished child care in Côte d'Ivoire: Lesson from a pilot project in a countryside**

**Z. E. Guehi<sup>1</sup> and O. Howélé<sup>2</sup>**

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<sup>1</sup>Zagocky Euloge Guehi, Assistant Professor, Faculty of Anthropology and Sociology, Peleforo Gon Coulibaly University of Korhogo (Côte d'Ivoire) BP 1328 Korhogo.  
Email: eulogemomo@yahoo.fr

<sup>2</sup>Ouattara Howélé, Assistant Professor, Faculty of Animal Biology, Peleforo Gon Coulibaly University of Korhogo (Côte d'Ivoire). Email: ouattarahowe@gmail.com

\*Corresponding author: Guehi Zagocky Euloge [eulogemomo@yahoo.fr](mailto:eulogemomo@yahoo.fr) BP 1328 Korhogo

### **ABSTRACT**

**Aim:** *The object of this study is to check the hypothesis that there is a correlation between mothers participation to learning and nutritional rehabilitation and the evolution of weighing gain of their children diagnosed with malnutrition in five villages in the suburbs of Korhogo.*

**Methods:** *The study integrated 644 children aged from 6 to 59 months and their mothers supported by a tribal care based upon learning and nutritional rehabilitation centers. The Statistical analyzes included Kruskal-Wallis comparison tests, Nemenyi's post-hoc tests (Tukey and Kramer) and Spearman's rank correlation test.*

**Results:** *The outcomes show a serious participation of mothers (62%) in the 12 training and sensitization sessions and a median increase gain of malnourished children between 80 and 300g during the care taking. Spearsman correlation test show that weighing gain are deeply linked to ( $p$ -value<0,05) mothers participation to LNRC.*

**Conclusion:** *Mothers nutritional training and community sensitization are possible conditions on the improvement in the weight status of children suffering from under-nutrition in countrysides.*

**Key-words:** *malnutrition- child-rehabilitation-mother-countryside-Côte d'Ivoire*

## INTRODUCTION

In Côte d'Ivoire, child malnutrition is a major public health issue. It affects several parts of the country, mainly rural areas and contributes to 33% of infant mortality, an estimated loss of life of 128,354 deaths of children under five each year (Liu *et al*, 2012).

The latest national data from demographic and health Surveys (INS, 2017; MSLS-INS-ICF, 2013) provide insight into the extent of this phenomenon with details on stunting, acute malnutrition, underweight and anemia: 34% in 2006 according to NCHS standards, the prevalence of stunting increased to 29.8% in 2012 in accordance with WHO standards. Despite a downward trend in every regions, rates remain at the limit of the "critical" threshold of 40% in the Northern (Northeast, North, Northwest) and the Western country.

These surveys also reveal that the national prevalence of acute malnutrition or wasting has stagnated for more than ten years at around 7%. It affected 7.5% of children under 5 years old in 2012. However, it has been stabilized below the alert threshold (10%) in northern nutritional emergency regions. This situation remains fragile and requires, according to the recommendations of the national surveys, increased surveillance.

The under-weight data shows that it went from 21% in 2006 to 14.9% in 2012 without reaching the "acceptable" threshold of 10%. Prevalence is considered serious in some areas of the North.

According to the 2012 Demographic and Health Survey (MSLS-INS-ICF, 2013), the prevalence of anemia among children is also worrying. It affects 75% of children between 06 and 59 months and is higher with children between 6 and 23 months or reaches levels of 80% to 93%.

In order to provide an adequate response in rural areas, the national authorities, with the support of development partners, have opted for the establishment of programs closely linked to the various causes of child malnutrition, but with the belief in the participation of local communities as a guarantee of sustainability and success.

The approach of Learning and Nutritional Rehabilitation Centers (LNRC), highlighted in recent years, is based on a critique of food and drug distribution policies made by community members agents and not actors caring for malnourished children (Aubel 2001, Franco *et al*. 2013, Hawkins and Kim, 2012). The activities of the LNRC implemented at the level of community health structures or in a family area. They consist in activities of nutritional recovery (curative dimension) and a sharing of knowledge by the mothers for a change in behavior (preventive dimension) (Faye B. *et al*, 2016). This approach solicits the community to help its members finding sustainable solutions to the issues of malnutrition (Lung'aho and Stone-Jiménez ,2009 ; Mukandoli, 2009).

Literature on community participation in the case of the LNRC further emphasizes qualitative data on its attractiveness to promoting local development by strengthening citizenship and improving awareness (Fournier *et Potvin*, 1995; Franco *et al*, 2013). On the other hand, in Côte d'Ivoire, we hardly find literature, particularly with quantitative data,

allowing to evaluate the genuine impacts of LNRC in tribal mobilization, management and improvement of children and families malnutrition status.

This study puts to fill this gap. It tackles the effectiveness of this type of approach and is questions a pilot project of community management of malnourished children based on learning and nutritional rehabilitation. Its purpose is to test the hypothesis of a correlation between mothers' participation in this pilot project of learning and nutritional rehabilitation and the evolution of the weight gain of their malnourished screened children in five villages in the suburbs of Korhogo.

## **METHODOLOGY :**

### **1) Site and framework of the study**

This study took place in the suburbs of the city of Korhogo in northern Côte d'Ivoire, in five (5) villages (Zanakaha, Nissoukaha, Kpatarakaha, Pindjakaha and Fandjakaha) covered by the Baptist Hospital of Tioroniaradougou.

These villages participated in a community nutrition pilot project of the National Nutrition Program of Côte d'Ivoire (PNN) based on the Learning and Nutritional Rehabilitation Homes (LNRH) to the benefit of mothers of children diagnosed with malnutrition.

### **2) Study participants**

The study involved 54 children aged from 6 to 59 months identified as moderate malnourished (ie children whose weight / height ratio expressed in Z-score and reported at the reference median is  $<-2$  (WHO, 1995)) and their mother benefiting from a community care project for malnourished children based on the LNRC (Learning and Nutritional Rehabilitation Centers). These children were identified according to an anthropometric survey conducted by teams from the National Nutrition Program of Côte d'Ivoire (PNN) among 644 children from five (5) villages in Tioro Baptist hospital's area of responsibility.

### **3) Procedure of data collection**

The data of this study were collected by teams of investigators trained for this purpose by the National Nutrition Program (PNN). These teams performed five (05) weighings to measure the weight of each of the 54 malnourished children on the 7th, 14th, 28th, 35th and 62nd days after screening and management. These different measurements were made for the 54 children at these different times with a SALTER balance one hour before and after a meal during the period from December 2016 to March 2017. The study was also interested in the participation of the 35 mothers of malnourished children at the 12 sessions of cooking demonstrations and sensitization in the LNRC piloted and installed among women respected by the community and volunteers, whom they trust and who have experience in health programs.

Availability of water and latrine, access by all (less than one kilometer course), sufficient resource with shade to accommodate twenty people, were important criteria for the choice of the installation of LNRC.

An attendance list was held at each cooking and awareness demonstration session to monitor the actual presence of each mother at the Learning and Nutritional Rehabilitation Center in each village.

After detected malnourished, the 54 children participating in this study were instantly submitted to a treatment with mebendazole (one 500 mg tablet for children aged 12 to 59 months) and vitamin A according to the age of the subjects.

Mothers previously signed a consent form for the participation of their children in the study. This consent was obtained after informing mothers about the purpose of the study. The confidentiality and anonymity of the participants in the study have been guaranteed.

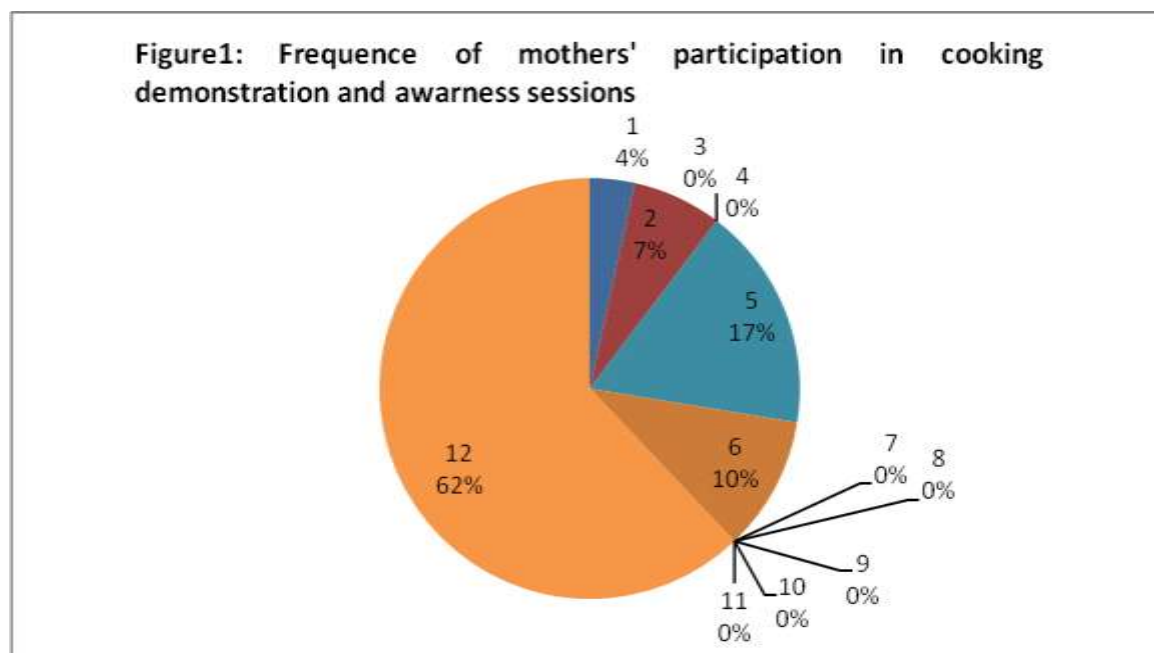
#### 4) Data processing and analysis

The data were previously processed on Excel 2007 and transferred to R for analysis purposes. Statistical analyses included Kruskal-Wallis comparison tests, Nemenyi's post-hoc tests (Tukey and Kramer) and Spearman's rank correlation test.

### RESULTS:

#### 1) Mothers' participation in cooking and awareness demonstration sessions

The data collected show that more than half of women (62%) actually participated in the 12 training and sensitization sessions planned by the project for mothers of children diagnosed with malnutrition compared to the remaining 38% (Figure 1) who attended irregularly the 12 nutrition and awareness training sessions.

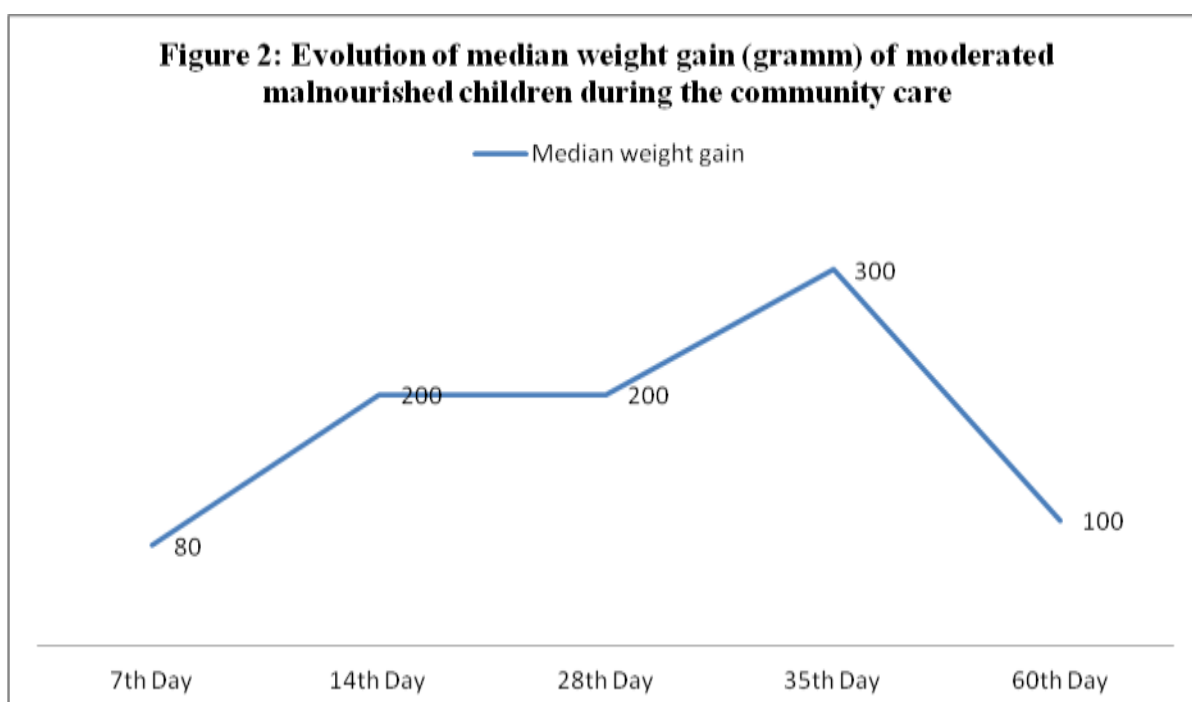


4% and 7% of women participated respectively in one (1) and two (2) training and awareness sessions while 17% attended 5 sessions and 10% in 6 sessions.

## 2) Weight gain of malnourished children in care: A follow up

Graph 2 shows the follow up information of children's weight gain during the weighings at the 7th, 14th, 28th, 35th and 62nd day after the screening and the management by the LNRC of the village. The presence of outliers in the data made it necessary to look at the median values of each weighing for the analysis of children's weight change instead of their averages.

During the first weighing of the 7th day, a median weight gain of 101.1g was observed. A median weight gain of 200g was noted on the 14th day during the second weighing after the start of care. This weight gain of the 14th day remains constant (200g) until the third weighing on the 28th day. From the fourth weighing on the 35th day, we observe a new peak of the median weight gain at 300g. Thereafter, the median weight gain at 62nd day (about 2 months) increased only by 100 g.



## 3) Statistical correlation between children's weight gain and the frequency of mothers' participation in food and awareness demonstrations *Kruskal-Wallis comparison test*

The Kruskal Wallis test is a non-parametric alternative to one-way analysis of variance (ANOVA). Due to the presence of outliers in the data, the ANOVA test can not be used to compare growth gains at different stages of longitudinal follow up of our subjects. It is precisely in this type of situation that non-parametric tests are useful.

The Kruskal-Wallis test makes it possible to decide between the two following hypotheses:

- H0: Growth gains at all stages studied are identical
- H1: There are at least two stages of evolution with different growth gains

It is important to emphasize that the purpose of the test is to allow one to choose, from the two previous hypotheses, the one that is most likely given the data available. The result of the test carried out with R at the threshold of 5% (error of the first fixed species) is given in the following (Table 1):

**Table 1: Kruskal-Wallis test result**

<b>Kruskal-Wallis rank sum test</b>
<b>data: dbfinal\$croissance by dbfinal\$stade</b>
<b>Kruskal-Wallis chi-squared = 30.819, df = 4, p-value = 3.333e-06</b>

It can be seen that the p-value of the test is almost equal to 0, therefore less than the fixed first-order error (0.05). Therefore, we deduce that the most likely hypothesis is the alternative hypothesis (H0). This means that with regard to the available data, it can be said that there are at least two stages of evolution with different growth rates, with a margin of 5% error.

**Nemenyi post-hoc test**

The fact that at least two stages of evolution give different growth gains induces additional questioning, namely, which of the five stages studied (7days, 14 days, 28 days, 1 month and 2 months), which stages are responsible for the difference (s) observed?

A post-hoc test was used to answer this question. Here, a post-hoc test compatible with the Kruskal-Wallis test known as the Nemenyi test was performed. The Nemenyi test compares two by two, taking into account the overall structure of growth gains. For each evolution stage pair (Si, Sj), it allows us to test the following hypotheses:

- H0: Growth gains observed between Si and Sj are identical

H1: Growth gains observed between Si and Sj are different

The results of this test obtained with our data under R are as follows (Table 2):

**Table 2: Nemenyi post-hoc test result**

Pairwise comparisons using Tukey and Kramer (Nemenyi) test with Tukey-Dist approximation for independent samples				
data: dbfinal\$croissance by dbfinal\$stade				
P value adjustment method: none				
	Day 7	Day14	Day 28	Month1
Day 14	6.5e-05	-	-	-
Day 28	0.0081	0.8055	-	-
Month1	4.6e-05	0.9983	0.6645	
Month 2	0.5768	0.2244	0.7615	0.1567

The p-values recorded in the table show that the growth gains observed on the 14th day, the 28th day and the 30th day are different from the 7th day (p-value <5%). However, the growth gains between these different non-initial stages are the same (p-value > 5%).

### **Spearman correlation test**

Spearman's rank correlation test is a non-parametric test to investigate the existence or absence of correlations between two numerical variables. It was used here to check if there is a correlation between the growth gains and the mother's interest in the LNRC measured by the number of times she participated in the cooking and awareness demonstration session. The following hypotheses were tested with Spearman test:

- H0: There is no correlation between the growth gains observed and the frequency of mothers' participation in the LNRC
- H1: There is a correlation between the growth gains observed and the frequency of mothers' participation in the LNRC

The results of the test with R are as follows (Table 3):

**Table 3: Spearman Correlation Test Results**

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#### **Spearman's rank correlation rho**

**data: dbfinal\$jmere and dbfinal\$croissance**

**S = 392640, p-value = 0.003126**

**alternative hypothesis: true rho is not equal to 0**

**sample estimates: rho ;0.2429761**

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These results show that the p-value (0.003) is lower than the fixed-type error (5%). We can therefore conclude with error margin of 5%, that the growth gains observed are significantly correlated with mothers' frequency of participation in LNRC.

## **DISCUSSION**

The results of this study showed a high rate (62%) in the frequency of mothers' participation in the twelve (12) LNRC cooking and awareness demonstration sessions.

Since the participation of women in the centers was voluntary and free, these data indicate the acceptance of the centers and the program by communities and particularly by mothers. The interest of mothers in this study for learning and nutritional rehabilitation centers (LNRC) and their participation in the community nutrition program was also mentioned in LNRC evaluation reports in Côte d'Ivoire (ACF, 2015). ). Their implementation is inexpensive because based on locally available resources, requires little time constraint for mothers, enhances local food, respects local cultures and knowledge, and also builds on the discovery of existing solutions in the community. They also facilitate the distribution of vitamin A and reduce distance to health service. These centers allow women to occupy a valuable place in the community and is thus a way to consolidate their esteem (Diouf, 2014).

These results partly match those of Braley et al. (2012) who showed in Ethiopia that good practices of community participation have a positive influence on the results of the programs for which they are mobilized. They are also superposable to those obtained at Mbacké in the region of Diourbel, Senegal. Unlike Côte d'Ivoire, the centers of Mbacké benefited from a rather restrictive nutritional model of care and menus (B. Faye et al, 2016). These community participation practices have had a negative influence on centers attendance in Mbacké .

The discontinuities observed in LNRC attendance (36%) by some mothers of malnourished children can be imputed to the preferential use of populations to therapeutic itineraries marked by self-medication and treatments among healers and marabouts in the region as also showed Guehi and Mazou (2017).

The study also revealed in these malnourished children a median weight gain of 85g and 200 g, respectively 7 days and 14 days after the start of treatment. This equates to an average of 14.44g per child and per day of the two-week median weight gain. These data are around 10 to 20 g / child per day, recommended by the WHO (DE Onis et al, 2000) and 12.9 g / child per day, suggested by Halidou (2008) for good nutritional rehabilitation of the child in undernutrition. The weight gain per child and per day (14.44g / child / day) reported during the two weeks in this study is, however, on the sidelines of those reported in Senegal (7.6 g / kg / day) with Sall MG et al. (2000) and Congo-Brazzaville (8.8 g / kg / day) by Mouko A. et al. (2007). It remains close to those obtained by Nguetack F. et al. (2015) in Cameroon (10 g / kg / day on day 7) and Van Roosmalen-Wiebenga M.W. et al (1987) in a study conducted in Tanzania (15.0 g / kg / day).

The first regular increase in weight gain up to the 35th day could be explained by an increase in the nutrition of malnourished children of nutritional factors in the new food formulas formulated and served compared to the old ones. However, nutritional needs of the subjects participating in the study are not all satisfied so that from the 60th day, this insufficiency begins to really manifest by a decrease of the gain of weight. The deficit should therefore be bridged by a much larger supply.

Several studies have already pointed out that the mother-child relationship during the child's growth and pathological events permitted to predict the type of development of the nutritional state of the child (Bouville , 2003; Bouville , 2005; Guehi et al, 2017). The results highlight a correlation between mother's frequency of participation in the Learning and Nutritional Rehabilitation Centers (LNRC) and the median weight gain observed in screened malnourished children.

Mothers participating in LNRC benefit from cooking demonstrations with local inputs; which allows to highlight the possibilities of diversification of child menus. They are also sensitized on several proven factors that can prevent, cause and / or maintain child malnutrition such as exclusive breastfeeding, food hygiene, food diversity, hand washing, malaria, diarrhea, vaccination etc. .

The implementation of this declarative and procedural knowledge can certainly help mothers to improve the nutritional care and accordingly affect the weighing quality of malnourished



children. These studies blend thoroughly with Sackou Kouakou JG (2016), Mariatou Koné (2008), WHO (2013), GON (2012), Collins S et al (2005) in Africa, in Asia underlying the importance of mothers' nutritional education for the care taking of undernourished children particularly its dimensions linked to food security, resilience, hygiene, health, exclusive breast-feeding.

### **CONCLUSION:**

This study mainly shows a correlation between the improvement in the weight status of children suffering from undernutrition and the frequency of their mother's participation in learning and nutritional rehabilitation centers (LNRC). ) settled in the villages. It also highlights the relevance and usefulness of LNRC, which not only presented as an effective instrument for the management of child malnutrition in rural areas, but also as a space to valuing populations through the recognition of local knowledge. They are also a reflection of the will and ability of communities, especially women, to organize with a little help to cope with their social responsibilities.

### **REFERENCES**

ACF, 2015, Une approche communautaire pour la réhabilitation nutritionnelle et le changement des comportements alimentaires en Côte d'Ivoire. Evaluation externe. ACF, 10p

Aubel J., Tandia M., Lazin K., Diagne M., Toure I., Faye Y., Sene E.H., 2001, Strengthening grandmother networks to improve community nutrition: experience from Senegal. *Gender and Development*, 9 (2): 62-73.

Bradley H., Byam P., Alpern R., Thompson J.W., Zerihun, A., Abeb Y., Curry L.A. (2012). A Systems Approach to Improving Rural Care in Ethiopia. *PLoS ONE*, 7(4).

Bouville Jean-François, 2003, Etiologies relationnelles de la malnutrition infantile en milieu tropical , *Devenir*, (1) 15 : 27-47

Bouville Jean-François, 2005, la malnutrition infantile en milieu urbain africain. Etude des etiologies relationnelles, l'harmattan, 352 p.

Collins S, Sadler K, Dent N, Khara T, Guerrero S, Myatt M, et al., 2005, Key Issues in the success of community-based management of severe malnutrition. Technical background paper for WHO Consultation. 2005. Available from: [http://www.who.int/nutrition/topics/Backgroundpapers\\_Key\\_issues.pdf](http://www.who.int/nutrition/topics/Backgroundpapers_Key_issues.pdf).

DE Onis M, Edward. A, Frongillo et Monika. B, 2000 :la malnutrition est – elle en regression,analyse de l'évolution de la malnutrition de l'enfant depuis 1980. WHO. 1222 – 1233.

Diouf N.T, 2014, L'implication des bénéficiaires dans la mise en œuvre du programme de renforcement de la Nutrition du Sénégal : les femmes de Vélingara, un exemple plein d'espoir. Mémoire de Maîtrise en Santé communautaire, Université Laval, Québec, Canada, 131 p

Fournier, P. et Potvin, L., 1995, Participation communautaire et programmes de santé: les fondements du dogme. *Sciences sociales et santé*, 13 (2): 39-59. DOI : [10.3406/sosan.1995.1326](https://doi.org/10.3406/sosan.1995.1326)

Franco M. R., Ferreira M. L., Ferreira P. H., Maher C. G., Pinto R. Z., et Cherkin D. C., 2013, Methodological limitations prevent definitive conclusions on the effects of patients' preferences in randomized clinical trials evaluating musculoskeletal conditions. *Journal of Clinical Epidemiology*, 66(6), 586-598. DOI : [10.1016/j.jclinepi.2012.12.012](https://doi.org/10.1016/j.jclinepi.2012.12.012)

Faye B., Mendy F T. et Ndoye T., 2016, Quand les mères « résistent » aux foyers d'Apprentissage, de Réhabilitation Nutritionnelle et d'éveil (FARNE) à Mbacké (Diourbel, Sénégal), *Face à face* [En ligne], 13 | 2016, mis en ligne le 09 avril 2016, consulté le 12 avril 2018. URL : <http://journals.openedition.org/faceaface/1055>

Government of Nepal GON. Multi-sector nutrition plan for accelerating the reduction of maternal and child under-nutrition in Nepal: 2013-2017 2023. Kathmandu: GON; 2012. Available from: [http://scalingupnutrition.org/wp-content/uploads/2013/02/Nepal\\_MSNP\\_2013-2017.pdf](http://scalingupnutrition.org/wp-content/uploads/2013/02/Nepal_MSNP_2013-2017.pdf)

Guehi Z. E., Kouassi K.F., Mazou G. H., 2017, Environnement socioculturel, lien socio-affectif familial et état nutritionnel des enfants du département de Mayahi (Niger), *le journal des sciences sociales*, 16 : 85-98

Guehi Z. E., Mazou G. H., 2017, Soins de santé et malnutrition infantile au Niger: Barrière à l'utilisation des centres de santé et itinéraire thérapeutique, *Cahiers congolais d'anthropologie et d'histoire*, 18 : 338-353

Halidou D. M., 2008 : Recupération nutritionnelle des enfants au CRENI. In Impact d'une supplémentation en spiruline chez des enfants malnutris dans le cadre de la réhabilitation nutritionnelle. Université libre de Bruxelles. (Belgique). Thèse médecine. 90 – 107.

Hawkins, R. L. et Kim, E. J., 2012, The Socio-economic Empowerment Assessment: Addressing Poverty and Economic Distress in Clients. *Clinical social work Journal*, 40, (2) : 194-202. OI : [10.1007/s10615-011-0335-4](https://doi.org/10.1007/s10615-011-0335-4)

INS, 2007, Enquête à Indicateurs Multiples, Côte d'Ivoire 2006 (MICS-2006), Rapport Final. Abidjan, Côte d'Ivoire: Institut National de la Statistique.

Liu, Li, Hope L. Johnson, Simon Cousens, Jamie Perin, Susana Scott, Joy E. Lawn, Igor Rudan, Harry Campbell, Richard Cibulskis, et Mengying Li., 2012. "Global, Regional, and National Causes of Child Mortality: An Updated Systematic Analysis for 2010 with Time Trends since 2000." *The Lancet* 379 (9832): 2151-2161.

Lung'Aho M. S. et Stone-Jimenez M., 2009, Groupes de soutien de mère à mère dans les camps de réfugiés de Dadaab [Document PDF]. Récupéré de [http://www.aba.org.my/pdf/MtMSG\\_Dadaab\\_fr.pdf](http://www.aba.org.my/pdf/MtMSG_Dadaab_fr.pdf).

Mariatou Koné, 2008, Stratégies des ménages et malnutrition infantile dans la région de Madarounfa , *Afrique contemporaine*, 1 (225) : 161-197. DOI 10.3917/afco.0161

Ministère de la Santé et de la Lutte Contre le Sida (MSLS) et l'Institut National de la Statistique (INS) et ICF International. 2013. Enquête Démographique et de Santé et à Indicateurs Multiples du Côte d'Ivoire 2011-2012 : Rapport de synthèse. Calverton, Maryland, USA: MSLS, INS et ICF International, 24p

Mukandoli E., 2009, Évaluation de la satisfaction des bénéficiaires des mutuelles de santé de la mairie de la ville de Kigali (MVK) au Rwanda. Mémoire de maîtrise inédit, Université Laval, Québec.

Mouko A, MbikaCardorelle A, Samba Louaka C, Ibara JR, Senga P., 2007, Prise en charge de la malnutrition sévère dans un service de pédiatrie au CHU de Brazzaville. Lettres à la rédaction /ArchPediatri., 14 (9) :1113-4.

Nguefack Félicité, Chritoph Akazong Adjahoung, Basile Keugoung, Nelly Kamgaing, Roger Dongmo, 2015, Prise en charge hospitalière de la malnutrition aigue sévère chez l'enfant avec des préparations locales alternatives aux F-75 et F-100: résultats et défis, *Pan African Medical Journal*, 21:329 doi:10.11604/pamj.2015.21.329.6632

Sackou Kouakou JG, Aka BS, Hounsa AE, Attia R, Wilson R, Ake O, Oga S, Houenou Y, Kouadio L., 2016, Malnutrition : prévalence et facteurs de risque chez les enfants de 0 à 59 mois dans un quartier pe'riurbain de la ville d'Abidjan. *Med Sante Trop* ; 26 : 312-317. doi : 10.1684/mst.2016.0591

Sall MG, Badji ML, Martin SL, Kuakivi N., 2000, Récupération nutritionnelle en milieu hospitalier régional: Le cas de l'Hôpital Régional de Kaolack (Sénégal). *Med Afr Noire.*; 47 (12):525-527.

Van Roosmalen-Wiebenga MW, Kusin JA, De With C., 1987, Nutrition rehabilitation in hospital, a waste of time and money? Evaluation of nutrition rehabilitation in a rural district hospital in southwest Tanzania II: Long term results. *J Trop Pediatr.*; 33(1):24-8.

WHO, 2013, Intersectoral collaboration on child nutrition in informal settlements in Mombasa: a Kenyan case study. Geneva: WHO; 2013. Available from: <http://apps.who.int/iris/bitstream/10665/92866/1/9789290232384.pdf>.