International Journal of Food Science and Nutrition
ISSN: 2455-4898, Impact Factor: RJIF 5.14
www.foodsciencejournal.com
Volume 2; Issue 1; January 2017; Page No. 182-187

Nutritional programs accessibility and performance in Danané, Côte D'Ivoire (West Africa)

[1] KN' Guessan, *[2] H Attoh Touré H, [3] GR Niamien, [4] LBN Aka, [5] S Noufé, [6] A Douba, [7] G Okoubo, [8] MK Soumahoro, [9] KD Ekra

[1, 2, 5, 6] National Institute of Public Hygiene Abidjan, Côte d'Ivoire
[1, 2, 4, 5, 6, 7, 9] Félix Houphouët Boigny University Abidjan, Côte d'Ivoire
[4, 9] Office of Enhanced Program of Immunization Abidjan, Côte d'Ivoire
[3] National Nutrition Program Abidjan, Côte d'Ivoire
[8] Pasteur Institute of Côte d'Ivoire Abidjan, Côte d'Ivoire

Abstract
The nutritional situation in Côte d'Ivoire is complex and precarious in the west of the country. The objective of this survey was to analyze the factors limiting the accessibility and performance of nutritional programs in Danané, a health district in western Côte d'Ivoire.
It was a qualitative and quantitative survey. Data were collected through semi-structured interviews and group discussions. With regard to the collection of health data, the monthly registers, fact sheets and reports made it possible to select 797 children aged 6-59 months admitted for malnutrition in 18 nutritional programs. The main barriers to the accessibility of nutritional programs were the lack of knowledge about malnutrition. The health district of Danané was performing well overall. However, 7 out of 18 zones were below the performance criteria. Finally, there was no significant link between walking time and dropout from nutritional programs. Efforts should be made to strengthen awareness-raising and community-based screening activities.

Keywords: nutrition, accessibility, performance, barriers, Côte d'Ivoire

1. Introduction
Widespread in developing countries, food and nutrition insecurity is a major concern of the international community. "Food and nutrition security exists when all human beings have, at all times, physical, social and economic access to healthy food that is of sufficient quantity and quality to meet needs" [1].
Natural disasters, poor harvests and high food prices have negative consequences for food and nutrition security, especially for the most vulnerable populations [2]. One of these consequences is undernourishment. According to the United Nations Food and Agriculture Organization (FAO), it corresponds to a consumption below the minimum required to be healthy and to lead an active life. Globally, FAO estimates in 2014 indicated that the vast majority of the 805 million hungry and undernourished people in the world lived in developing countries. In sub-Saharan Africa, these estimates are 214 million undernourished, or 24% of the world's population [3].
Malnutrition is the most perceptible manifestation of food insecurity and is currently taking on alarming proportions. It has become one of the major indicators of food insecurity [4].
In Côte d'Ivoire, the socio-political crisis of 2002 caused disruptions to the health system, negatively impacting the nutritional status of vulnerable populations, especially women and children. This crisis, added to the post-electoral crisis of 2011, has led to a cyclical vulnerability, especially in the western part of the country, which seriously affects the economic power of the people of this region and the functioning of basic services, notably the health system. In 2012, the Demographic Health Survey of Côte d'Ivoire revealed rates of Acute Global Malnutrition at 6.2% and Chronic Global Malnutrition at 34.2% in the Western Region [5].
In order to reduce these high rates of malnutrition, nutrition programs have been implemented across the country. Unfortunately, many reported malnutrition cases do not always occur in these programs where they should be taken care of. It is in this context that we initiated this survey whose main objective was to analyze the factors limiting the accessibility of nutritional programs in Danane, health district of West Cote d'Ivoire. The secondary objective was to estimate the performance of nutritional programs.

2. Materials and methods
2.1 Type and duration of the study
It was a descriptive and analytical survey which took place from 07 to 19 July 2014. It was inspired by the method of Semi-Quantitative Assessment of Accessibility and Coverage (SQAAC) [6, 7, 8, 9, 10, 11, 12] in its two first steps, namely, identification of the elements influencing coverage and spatial distribution of nutritional coverage.
This tool has been developed to provide an effective and accurate methodology to identify barriers to accessing services and estimate coverage of nutritional programs. The survey was part of a quantitative and qualitative approach. On the one hand, the combination of these two approaches enabled us to assess the performance of the health district and, on the other, to identify the barriers that could hamper access to the management of malnutrition.

2.2 Framework for the survey
This survey was carried out in Danané which is located 630 km from Abidjan and 82 km from Man (chief town of region). Danané covers an area of 3,383 km² with a population of

293,590 inhabitants including 40,364 children aged 6 to 59 months.

2.3 Population and material studied

The study population who participated in the qualitative survey was selected by reasoned choice. Included were all those who could directly or indirectly influence nutritional programs (N = 63):

- Administrative authorities (prefects, mayors);
- Health authorities (Departmental Director of Health, Director of the General Hospital, Health Officers, Focal Point Nutrition);
- Action Against Hunger staff (Field Coordinator, Health Nutrition Program Manager, Food Security and Livelihood Program Manager, Data Manager);
- Community health workers,
- Village chiefs,
- Community leaders,
- Religious leaders,
- Matrons (traditional birth attendants),
- Traditional health practitioners,
- Mothers of severely acute malnourished children.

The nutritional program registers, feeding cards, nutritional inputs inventory sheets and monthly reports compiled by health facility were used to research the health indicators of nutritional programs covering the period January 2013 to February 2014. These sources enabled us to select 797 children aged 6-59 malnourished, admitted to 18 nutritional programs.

2.4 Collection method

The qualitative data on the barriers to nutritional management were collected with a maintenance guide developed by Valid International [13] and adapted to our context. Semi-structured face-to-face interviews gathered primary data.

Extensive discussion groups were held to better understand the topic under study. All the data collected were recorded using dictaphones.

The collection of health data was carried out using a questionnaire. These data have been collected by the District Epidemiological Surveillance Officer who centralizes all the information coming from the care structures (nutritional programs) covered by the Danané health district. The performance of nutritional programs was based on 3 indicators derived from the SPHERE standards [14]:

- Healing rate > 75%
- Death rate < 10%
- Abandonment rate < 15%

Other variables were collected:

- Admissions over time
- Median of the Brachial Perimeter at admission: reflects early or delayed screening
- Length of stay in the program: duration corresponding to the time taken by the malnourished to be declared cured and to leave the program (this average length of stay must be <60 days)
- Distance made by beneficiaries to reach a nutritional program

2.5 Data analysis

The data collected were entered and analyzed using the Epi Data software. The link between the quantitative variables was established using the Pearson correlation test. The threshold of significance was 5%.

The qualitative analysis method used was the analysis of the content of the interview. After the field phase, the data collected were transcribed and the various comments were identified. The second phase of the content analysis consisted of a so-called "long table" analysis. The basic principle was to analyze the transcripts of the participants' speeches that were cut, classified, compared and confronted while remaining focused on the main themes addressed. The coding phase made it possible to eliminate the "off subjects" and to weigh the results by noting their frequency in case of repetition of certain themes or to emphasize the non-verbal and the emotional that are associated with them. This phase ended with the synthesis of the content according to an analysis plan which also took into account the source of the information.

2.6 Ethical aspects

Participants were provided with insightful information about the survey. All data collection tools were anonymous. There was no evidence to identify the respondents by name. They were included in the survey after verbal consent.

3. Results

The main barriers to the management of malnutrition were (Table 1): lack of knowledge of religious leaders and matrons on malnutrition and nutritional programs, weakness in the activities of community health workers and breaks in nutritional inputs. The health district of Danané had overall good performance which complied with SPHERE standards [14]. The three key performance indicators of the cure rate, death rate and dropout rate were acceptable (Table 2). The synthesis of analyzes of all nutritional programs found that two zones ranked first in high performance with 100% healing and 0% drop-out and death. However, coverage in the district was heterogeneous. Indeed, 7 out of 18 zones were critical with poor performance.

The admissions curve showed three phases (Figure 1): the first one from January to September 2013, with a curve up to March, remaining in the plateau from March to June and then falling back to September. The second phase started from September to December 2013 and corresponded to a low level of admissions. Finally, the third phase from January to February 2014 was characterized by an upward trend in admissions. The median of the Brachial Perimeter at admission was 110 mm less than the normal value of 125 mm. The distribution of beneficiaries according to the length of stay of the cured persons was estimated at 40 days on average. The rate of non-declaration of length of stay was very high (31.4%).

About 22.6% of the population lived more than 15 km from a health center and 40.5% between 5 and 15 km (N=797). However, at the dropout level, the relationship between distance and dropout was not statistically significant (Table 3). Indeed, the significance test of the correlation between distance and abandonment gave a probability greater than 0.05 (Sig. (2-tailed) = 0.307). Abandonment is therefore not due to distance. The survey also found no correlation between distance and admissions in a nutritional program (Table 3).

Table 1: Breakdown of the main barriers to the management of malnutrition

Barriers	Collective barriers	Sources	Numbers	Frequency
Low awareness among religious leaders	Lack of knowledge of religious and matron leaders	Community leaders, health workers, matrons, community health workers	*11*	*17.5 %*
Low awareness among matrons				
No vehicles for activities	Weakness in the activities of community health workers	Health workers, community health workers and mothers	*10*	*15.9 %*
Lack of awareness tools				
No search for abandon				
Ruptures of inputs and medicines	Breakdown of nutritional inputs	Health workers, community health workers and mothers	*9*	*14.3 %*
Impracticability of roads, distance from village to health centers	Geographic accessibility barrier	Health workers, community health workers, Action Against Hunger, community leaders, village chiefs and mothers	*9*	*14.3 %*
Admission delay				
Use of traditional healers	First use of traditional healers	Health workers, community health workers, Action Against Hunger, Regional Director of Health and the Fight against AIDS	*8*	*12.7 %*
Traditional healers do not refer cases of severe acute malnutrition				
Perpetual movements of mothers to Guinea and Liberia (refugee camps)	Population movements	Health workers, community health workers	*7*	*11.1 %*
Rural work prevents mothers from coming to a health center	Occupation of mothers for rural work	Health workers, community health workers, mothers, community leaders	*7*	*11.1 %*
No culinary demonstrations	Weakness in the activity of health workers	Health workers, community health workers, and mothers	*2*	*0.3 %*

Table 2: Danane Health District Performance Indicators

INDICATORS	Standards for Ambulatory Therapeutic Nutritional Units (SPHERE standards)	**Danané**
Healing rate	> 75%	86.95%
Death rate	< 10 %	1.76%
Abandonment rate	< 15%	4.64%

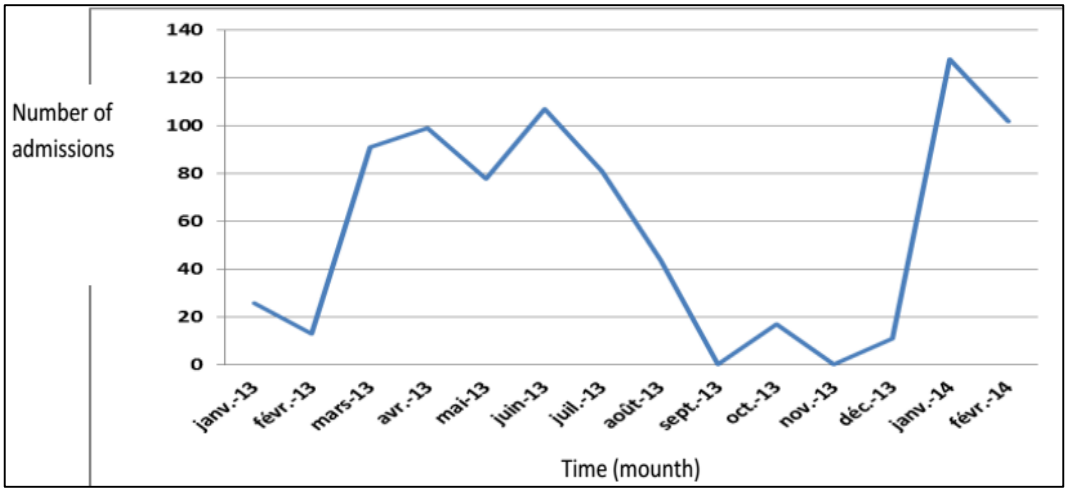

Fig. 1: Evolution of admissions in time

Table 3: Correlations between distance-dropout and distance-admissions in nutritional programs (N=18)

		Dropout	Distance
Dropout	Pearson Correlation	1	-0.255
	Sig. (2-tailed)		0.307
	N	18	18
Distance	Pearson Correlation	-0.255	1
	Sig. (2-tailed)	0.307	
	N	18	18
		Admission	Distance
Distance	Pearson Correlation	1	-0.379
	Sig. (2-tailed)		0,121
	N	18	18
Admission	Pearson Correlation	-0.379	1
	Sig. (2-tailed)	0.121	
	N	18	18

4. Discussion

The main barriers found in our survey were the same as those highlighted in several similar assessments, namely poor knowledge of malnutrition, inadequate activities of community health workers and breaks in nutritional inputs [9, 10, 11]. The economic barrier was not mentioned in our survey but the systematic use of traditional healers shows the search for care that is financially and geographically accessible. In fact, a survey conducted in 2012 reported that 73% of the western population cited the financial barrier as a problem of access to health care [5].

The majority of district programs have acceptable indicators. Those with poor indicators were located along the border with Liberia. Their livelihoods were plundered and sacked during the 2011 socio-political crisis. According to participants interviewed by investigative teams, the main reasons were due to the frequent movement of people to the refugee camps in Liberia where humanitarians provide assistance. By the end of 2013, the number of Ivorian refugees was estimated to be about 70,000, including more than 50,000 in Liberia, the vast majority from the western area [15].

Our results are similar to those of several assessments carried out in other countries such as Burkina Faso, Niger and Chad [7, 16, 17]. The good performance of the district of Danané could be explained by the fact that the district benefited in 2012 from an evaluation of the coverage and that the recommendations resulting from it were followed [8]. However, this overall performance should not mask the low performance levels of some programs. These levels could be explained by the existence of barriers to the nutritional care of children as we mentioned before.

The evolution of admissions over time presents three phases. Between March and June, there was a significant increase in admissions to nutrition programs. This could be explained by the

rainy season favoring diseases such as malaria or diarrheal diseases. According to a survey by Dolo in Sikasso, the major pathologies associated with malnutrition, malaria was dominant with a frequency of 65.38%, followed by diarrheal diseases (25%) and Acute Respiratory Infections (ARI) (7.69 %) [18]. the morbidity associated with these infantile pathologies favors the use of health centers, leading to an increase in admissions following passive screening. The fall in admissions observed from June to September may be related to the fact that women are engaged in lowland rice harvesting but also to a demotivation of community health workers and mothers due to the frequent breakdown in nutritional inputs. Between September and December, low inflows of children were due to intensive rainfed rice, lowland rice, coffee and cocoa harvests in the same period. The third part of the curve from January to February 2014 shows a resumption of the rising trend of admissions related to the expected cases of diarrhea and malaria in the same period. In addition, coffee, cocoa and rice crops in late 2013 coupled with the sale of palm oil could have provided resources and motivated mothers to attend health services. Finally, children were most often admitted with a 110 mm Brachial Perimeter showing the delay in admission and passive screening. According to Food and Nutrition Technical Assitance III (FANTA III), late admission is associated with the need for hospital care, longer treatment, risk of withdrawal and failure to treat or even death [19]. This may lead to poor perception of the program within the local population.

The health district of Danané has zones particularly difficult to access, especially during the rainy season. Long distance travel is most often done by motorcycle taxi [8]. For rural populations, the distance to health centers is a real obstacle to access to health care. Indeed, in Côte d'Ivoire, according to the 2012 Demographic Health Survey (DHS), more than half of women living in rural areas believe that distance hampers access to health care [5]. This is reflected in other studies carried out in Port au Prince, Haiti [12], Togo [20], Côte d'Ivoire [21] and Guinea [22], which reported that long distances and Areas were a barrier to access to treatment. However, tests of significance of the correlation between distance and drop-out showed no statistically significant relationship ($p > 0.05$). This corroborates the results obtained by Action against Hunger at Fada N'Gourma in Burkina Faso in 2014, which did not demonstrate an impact of distance on dropouts [7].

The analysis of routine data has been limited by some failures in terms of missing data on individual malnutrition follow-up records. Indeed, some missing information did not facilitate a good interpretation of the data.

5. Conclusions

In Côte d'Ivoire, the post-electoral crisis of 2011 had a negative impact on the already precarious national nutritional situation. In the west of the country, this situation has aggravated the economic vulnerability of the populations and severely affected their economic power. This has had an impact on household access to basic necessities and has led to many cases of malnutrition. The response to these cases of malnutrition has been to strengthen nutritional programs for their management. The performance of the programs remains good according to SPHERE standards but heterogeneous. This heterogeneity could be explained by the existence of numerous barriers.

This survey opens up perspectives for further work on other aspects such as economic aspects in the community, aspects related to the quality of services in our nutritional programs and aspects of collaboration between traditional health practitioners and health workers. Thus, in order to overcome malnutrition, it would be appropriate to adopt a multisectoral approach encompassing complementary interventions such as agriculture, environment, public health and education.

6. References

1. Comité de la Sécurité Alimentaire Mondiale. S'entendre sur la terminologie. 39ième session. Rome, Italie, 2012, 17.
2. International Food Policy Research Institute. Indice de la Faim dans le monde, le défi de la faim. Construire la résilience pour une sécurité alimentaire et nutritionnelle durable. IFPRI, Bonn, Allemagne, 2013, 66.
3. FAO, FIDA et PAM. The State of Food Insecurity in the World, Strengthening the enabling environment for food security and nutrition. FAO: Rome, Italy, 2014, 57.
4. Soule BG. Les perspectives de Sécurité Alimentaire pour l'Afrique de l'Ouest jusqu'en 2025. Food across Borders, Improving food security through regional trade in West Africa. USAID West Africa, 2013, 24.
5. Ministère de la Santé et de la Lutte contre le Sida. Enquête Démographique et de Santé et à Indicateurs Multiples, EDSCI-III, INS. Rapport final. Côte d'Ivoire, 2012, 418.
6. ACF. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, Diapaga, Provi nce de la Tapoa, Burkina Faso. Coverage Monitoring Network/ Action Contre la Faim. Rapport. Burkina Faso, 2012, 26.
7. Ministère de la Santé Burkina Faso. Direction Régionale de la Santé de l'Est, Rapport d'évaluation SQUEAC District sanitaire de Fada N'Gourma. Burkina Faso, 2014, 77.
8. ACF/CMN. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, Danané, Région du Tonkpi, Côte d'Ivoire. Rapport. Côte d'Ivoire, 2012, 37.
9. HKI. Rapport Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, Yako, Burkina Faso. Coverage Monitoring Network/ Helen Keller International. Rapport. Burkina Faso, 201, 46.
10. Perez BB. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, District sanitaire de Koutiala, Mali. Coverage Monitoring Network/ Helen Keller International. Rapport. Mali, 2013, 50.
11. ALIMA/BEFEN/CMN. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, District Sanitaire de Mirriah, Niger. Rapport. Niger, 2013, 32.
12. Sebinwa U. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, Port Au Prince, Haïti. Coverage Monitoring Network/ Action Contre la Faim. Rapport. Haïti, 2012, 39.
13. Valid International. SQUEAC and SLEAC hanbook, main SLEEAC section. Available on: http://www.brixtonhealth.com/handbookSQUEAC/handbookSQUEAC.html . [consulté le 21/12/2016].
14. SPHERE. La Charte humanitaire et les standards minimums de l'intervention humanitaire. Practisal Action Publishing, Royaume Uni, 2011, 454.
15. OCHA. Côte d'Ivoire, besoins humanitaires. Comité de Coordination Elargi. Office for the Coordination of Humanitarian Affairs, Cocody, 2014, 37.
16. ACF. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, District sanitaire de KEITA, Tahoua Niger.

Coverage Monitoring Network/ Action Contre la Faim. Rapport. Niger, 2013, 55.
17. Nzombo MM. Evaluation Semi Quantitative de l'Accessibilité et de la Couverture, District sanitaire de Bokoro, Région de Hadjer Lamis, Tchad. Coverage Monitoring Network/ Merlin. Rapport. Tchad, 2014, 57.
18. Dolo K. Profil socio-économique des ménages et prise en charge intégrée de la malnutrition aiguë sévère à l'Hôpital Régional de Sikasso (Mali). Mémoire de mastère en sécurité alimentaire et nutritionnelle. Centre Régional AGRHYMET, Niger, 2014, 57.
19. FANTA III. Référence technique sur l'évaluation semi-quantitative de l'accessibilité et de la couverture (SQUEAC)/ l'évaluation LQAS simplifiée de l'accessibilité et de la couverture (SLEAC). FHI 360/ FANTA III. Washington DC, 2014, 208.
20. Koffi-Tessio E, Tossou YH, Homevor KA, Batana YM, Agbodji AE, Kouma K. Déterminants de l'état de santé au Togo. In : Kouassi, 2008, Pauvreté des ménages et accès aux soins de santé en Afrique de l'Ouest, Karthala, Paris. 2008 ; 178 :253-280.
21. Kouadio AA. L'accessibilité des populations rurales aux soins de santé dans le département d'Abengourou, Côte d'Ivoire. Les cahiers d'outre-mer, 2010; 3(251):439-459.
22. Goumou E, Kpoghomou MA, Kpoghmou NA, Soatiana JE, Bishwajit G, Delpeuch, *et al.* Facteurs d'abandon de la récupération nutritionnelle des enfants de moins de cinq ans en Guinée. International Journal of Innovation and Scientific Research. 2014; 2(2):198-207.