MedCrave
Step into the World of Research

Journal of Pediatrics & Neonatal Care

Review Article

Open Access

Nutritional profile of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020

Abstract

Introduction: Malnutrition remains a public health problem affecting especially children. The objective of this study was to describe the nutritional profile of hospitalized children aged 1 to 59 months in the pediatric department of the teaching hospital (CHU) of Parakou in Benin from 2018 to 2020.

Framework and method: This was a descriptive study with retrospective data collection. Data were collected from the medical records of children aged 1 to 59 months, admitted to the pediatric department of the CHU of Parakou from January 1, 2018 to December 31, 2020. Epi data 3.1 fr, Microsoft Excel 2016 and Epi Info version 7.2 softwares were used to describe variable.

The research protocol was submitted to the local ethics committee of the University of Parakou and obtained its approval under the reference: 0540/CLERB-UP/P/SP/R/SA

Results: A total of 6789 children met the inclusion criteria out of 9285 children admitted during the study period. 3433 children had a good nutritional status, representing a frequency of 51.0%. Children were suffering from acute malnutrition (wasting), chronic malnutrition (stunting) and underweight in 32.0%, 25.0% and 33.0% of cases, respectively. The frequency of over nutrition was 3.0%.

Conclusion: The frequency of pathological nutritional status, especially undernutrition is high in the pediatric department of the CHU of Parakou. Community actions are necessary to reverse this trend.

Keywords: nutritional profile, hospitalized children, Benin

Volume 13 Issue 3 - 2023

Noudamadjo A, Agbeille Mohamed F, Kpanidja MG, Affo M, Adédémy JD, Agossou J
Mother and Child Department of the Faculty of Medicine, University of Parakou, Benin

Correspondence: Noudamadjo Alphonse, Mother and Child Department of the Faculty of Medicine -University of Parakou, Parakou, Borgou, Benin, Tel (229) 90049007, 94794149, Email alphonse_ndama@yahoo.fr

Received: August 7, 2023 | **Published:** November 1, 2023

Introduction

Infant and child mortality remains high in sub-Saharan Africa despite the efforts made by States in the context of the Sustainable Development Goals (SDGs).[1]

According to the fifth Demographic and Health Survey in Benin (DHSB-V),[2] this mortality was 9.6%.

Malnutrition is one of the main causes of infant and child mortality in Africa.[3]

It is directly or indirectly associated with the death of children under 5 in 45% of cases,[4] underlining its importance in infant-child morbidity and mortality.

Globally, according to UNICEF in 2018,[4] 21.9% of children suffered from stunting and 7.3% from wasting.

According to Massen et al,[5] in Algeria, the prevalence of malnutrition, acute malnutrition (wasting) and chronic malnutrition (stunting) was 23.55%, 13.45% and 10.2%, respectively.

In West and Central Africa, according to UNICEF in 2018,[4] growth retardation and emaciation affected 33.1% and 9% of children, respectively.

In Benin, according to the DHS-V,[2] stunting, wasting and underweight affected 32%, 5% and 17% of children under five years of age, respectively.

The objective of this study was to describe the nutritional profile in hospitalized children aged 1 to 59 months in the pediatric department of the teaching hospital (CHU) of Parakou from 2018 to 2020 in order to planify the management of cases.

Framework and study methods

Framework, type and period of study

This was a descriptive cross-sectional study with retrospective data collection, conducted in the pediatric department (child sector) of the CHU of Parakou in Benin Republic. The data were collected from the medical records of children admitted from January 1, 2018 to December 31, 2020.

Study population

The target population was represented by hospitalized children aged 1 to 59 months in the department.

The source population consisted of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou, admitted during the study period.

Inclusion criteria

The inclusion criteria were as follows:

a. children aged between 1 and 59 months
b. hospitalized children in the department between January 1, 2018 and December 31, 2020,

c. children with medical records including anthropometric parameters as well as the type of hospital discharge

Exclusion criteria

Information that could interfere with the diagnosis of undernutrition or over nutrition (cases of nephropathy, heart disease, liver disease or any other situation with symmetrical edema).

Sampling

This was an exhaustive and consecutive census of the medical records of hospitalized children aged 1 to 59 months during the study period.

Study variables

The main variable was the nutritional status including three subclasses namely: a good nutritional status, a poor nutritional status (undernutrition) and an excess of nutritional status (over nutrition).

The nutritional status is good when the following anthropometric parameters and indices are all normal:[6]

a. Weight-for-Height (WH) Index;

b. Body Mass Index for Age (BMI/Age);

c. Mid-Upper Arm Circumference (MUAC) which is only taken in children aged at least 6 months;

d. Height-for-Age (HA) Index;

e. Weight-for-Age (WA) Index.

Undernutrition included acute malnutrition (wasting), chronic malnutrition (stunting) and underweight.[6]

a) Wasting was defined by a WH index and/or BMI/Age under -2 standard deviation (SD) and/or MUAC under 125 mm;

b) Stunting was defined by a HA index under -2 SD;

c) Underweight was defined by a WA index under -2 SD.

Over nutrition includes overweight and obesity:[6]

a) Overweight was defined by a WH index and/or BMI/Age between 2 and 3 SD;

b) Obesity was defined by a WH index and/or BMI/Age greater than or equal to 3 SD.

The secondary variables were socio-demographic (age of the child, sex, socio-professional status of the parents); clinical (mode of admission, reason for consultation, anthropometric parameters on admission, diagnosis, vaccination); nutritional (exclusive breastfeeding, food diversification) and evolutionary (vital status at hospital discharge).

Regarding food diversification, which is a nominal qualitative variable, it included three categories (Good, Bad and not specified). Food diversification was of good quality if and only if the following seven (07) conditions were met:

a) Type of feeding adapted to the age (exclusive breastfeeding up to 6 months of life, complementary feeding from 6 months);

b) Complementary feeding is adequate if the composition is respected (food containing proteins, carbohydrates, lipids, fruits, variety);

c) In good consistency (thick porridge, homogenized solid foods)

d) Meal frequency (At least 3 meals and 2 snacks);

e) Quantity of food at each meal (required quantity regulated by the child, food given by reaction);

f) Feeding technique (breast or cup, food in a separate bowl);

g) Micronutrient supplementation (iron, folic acid at 6 months and 18 months, vitamin A at 6 months and every 6 months, deworming at 9 months and every 3 months).

Diagnosis

A qualitative nominal variable, representing the child's health problem. The health problems were grouped into five diagnoses: severe malaria, sepsis, acute respiratory tract infections, gastro-intestinal tract infections with diarrhea and other diagnoses. The diagnoses were retained as notified in the medical records.

Vital status at hospital discharge

Qualitative dichotomous variable corresponding to the state of the child's health at discharge and has two categories: Alive and Deceased.

Method and process of data collection

Data collection was carried out using a survey form, the medical record of each child, and hospitalization registers. From the hospitalization registers, all medical records of children aged 1 to 59 months that met the inclusion criteria were identified using the medical records and the survey forms were filled.

Data processing

The data collected were entered into Epi Data 3.1fr software. After the entry, the consistency of data and eventual entry errors were checked. Then these data were exported into Microsoft Excel 2016 software for analysis. The analysis was also done with Epi Info version 7.2. The parameters of central tendencies (Mode, Mean, and Median) and dispersions (Standard Deviation) were used for the description of the quantitative variables. Proportions with confidence intervals were used for qualitative variables.

Ethical considerations

The data were collected and processed with respect for anonymity and confidentiality. The research protocol was submitted to the local ethics committee of the University of Parakou and obtained its approval under the reference: 0540/CLERB-UP/P/SP/R/SA.

Results

A total of 9285 children aged 1 to 59 months were admitted to the pediatric department during the study period. 7204, 6789 and 415 of them were included, studied and excluded, respectively.

Among the 415 (4.47%) children excluded, 99 (1.07%) were aged 1 to 5 months and 316 (3.40%) aged 6 to 59 months. The diagnoses made in the children excluded from the study were: heart failure (126 cases), nephrotic syndrome (96 cases), acute renal failure (75 cases), acute glomerulonephritis (58 cases) and hepatic failure (29 cases).

Sociodemographic, clinical and evolutionary characteristics of children

Sex

Boys were the most represented (54.4%). The sex ratio was 1.2%.

Age

The average age of the children was 21.5 ± 13.4 months with the extremes of 1 and 59 months. 549 (8.09%), 6240 (91.91%) and 44.7% of children were 1 to 5 months, 6 to 59 months and 24 to 59 months old, respectively (Table 1).

Table 1 Distribution of hospitalized children aged 1 to 59 months by age groups in the pediatric department of the CHU of Parakou from 2018 to 2020

	Size	%	95% CI
[1 ; 6[	549	8.1	[7.0- 9.2]
[6 ; 12[	1400	20.6	[19.9- 21.3]
[12 ; 24[	1806	26.6	[25.9- 27.2]
[24 ; 59]	3034	44.7	[44.2- 45.2]
Total	**6789**	**100**	

Children's diet

a. Exclusive breastfeeding

Exclusive breastfeeding up to 6 months was specified for 3452 children. The children's mothers had declared having practiced exclusive breastfeeding up to 6 months in 54.4% of cases.

b. Food diversification

The quality of complementary feeding was specified for 2881 children (42.4%). All of these 2881 children had a poor food diversification.

Nutritional profile of hospitalized children from 2018 to 2020

3433 out of 6789 children had a good nutritional status, i.e. 51.0%. The frequency of wasting, stunting, underweight and over nutrition (overweight and obesity) was 32.0%, 25.0%, 33.0% and 3.0%, respectively.

Figure 1 shows the nutritional profile of the children included in the study.

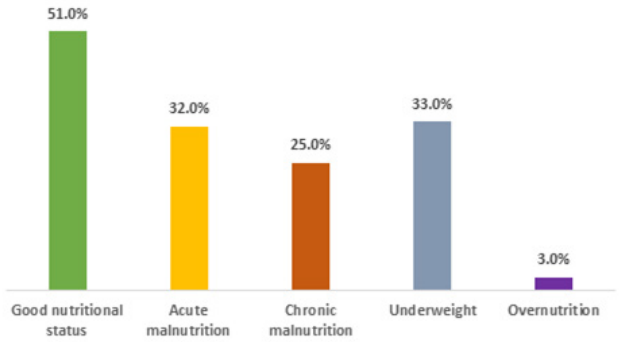

Figure 1 Distribution of hospitalized children aged 1 to 59 months according to the nutritional status in the pediatric department of the CHU of Parakou from 2018 to 2020.

Nutritional status according to anthropometric parameters and indices

a) According to the Mid-Upper Arm Circumference (MUAC)

Among 4701 children aged 6 to 59 months, whose MUAC had been specified, 613 (13.1%) had moderate wasting, 439 (9.3%) had the severe form (Table 2).

Table 2 Distribution of the nutritional status according to the mid-upper arm circumference of hospitalized children aged 6 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020

	MUAC (mm)	Size	%	CI (95%)
All children included (N= 4701)				
Good nutritional status	≥125	3649	77.6	[77.1- 78.0]
Moderate wasting	[115; 125[	613	13.1	[12.0-14.1]
Severe wasting	<115	439	9.3	[8.0- 10.5]
Total		4701	100	
Children with normal WH index and BMI/Age (n= 3182)				
Good nutritional status	≥125	2912	91.5	[91.0- 91.9]
Moderate wasting	[115; 125[	238	7.5	[5.8- 9.2]
Severe wasting	< 115	32	1	[0.6- 1.5]
Total		3182	100	

WH index and BMI/age were normal, greater than or equal to -2 SD in 3182 children. Among them, the diagnosis of wasting was made only on the basis of MUAC in 8.5% of cases, including 7.5% of moderate type and 1.0% of severe type (Table 2).

b) According to the weight-for-height (WH) index

According to the WH index, 1077 children (15.9%) and 841 (12.4%) had moderate and severe wasting, respectively. The number of children with overweight and obesity according to the WH index was 98 (1.4%) and 67 (1.0%), respectively (Table 3).

2928 children had a normal MUAC (≥ 125mm) and a BMI/age greater than or equal to -2 SD. Among them, only 16 had a WH Index < -2 SD. The diagnosis of moderate wasting had therefore been made only on the basis of WH index (normal MUAC and BMI/Age) in 0.5% of cases (Table 3).

Table 3 Distribution of the nutritional status according to the weight-for-height index of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020

	WH Index (SD)	Size	%	CI (95%)
All children included (N= 6789)				
Obesity	≥3	67	1	[0.7- 1.9]
Overweight	[2 ; 3[	98	1.4	[1.0- 2.1]
Good nutritional status	[-2 ; 2[	4706	69.3	[68.9- 69.7]
Moderate wasting	[-3 ; -2[	1077	15.9	[15.1- 16.7]
Severe wasting	<-3	841	12.4	[11.5- 13.3]
Total		6789	100	
Subjects with normal MUAC and BMI/Age (n= 2928)				
Obesity	≥3	33	1.1	[0.5- 2.1]
Overweight	[2 ; 3]	70	2.4	[1.9- 3.0]
Good nutritional status	[-2 ; 2[	2809	96	[95.5- 96.5]
Moderate wasting	[-3 ; -2[	16	0.5	[0.1- 0.9]
Severe wasting	<-3	0	0	---
Total		2928	100	

SD: Standard Deviation

c) According to the body mass index for age (BMI/Age)

According to the BMI/Age, 1111 children (16.4%) had moderate wasting and 926 (13.6%) had a severe type. According to BMI/Age, the number of children with overweight and obesity was 115 (1.7%) and 68 (1.0%), respectively (Table 4).

Citation: Noudamadjo A, Agbeille MF, Kpanidja MG, et al. Nutritional profile of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020. *J Pediatr Neonatal Care.* 2023;13(3):201–206. DOI: 10.15406/jpnc.2023.13.00517

2987 children had a normal MUAC (≥ 125mm) and a normal WH Index (≥-2 SD). Among them, 75 had a BMI/age < -2 SD. The diagnosis of wasting was therefore made only on the basis of BMI/age in 2.5% of cases, all of moderate type (Table 4).

Table 4 Distribution of the nutritional status according to the body mass index for age of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020

	BMI/Age (SD)	Size	%	CI (95%)
All children included (N= 6789)				
Obesity	≥3	68	1	[0.6- 2.3]
Overweight	[2 ; 3[	115	1.7	[1.3- 2.5]
Good nutritional status	[-2 ; 2[	4569	67.3	[66.8- 67.7]
Moderate wasting	[-3 ; -2[	1111	16.4	[15.6- 17.2]
Severe wasting	<-3	926	13.6	[12.7- 14.5]
Total		6789	100	
Children with normal MUAC and WH index (n= 2987)				
Obesity	≥3	37	1.2	[0.8- 1.9]
Overweight	[2 ; 3[	68	2.3	[1.9- 2.8]
Good nutritional status	[-2 ; 2[	2807	94	[93.5-94.5]
Moderate wasting	[-3 ; -2[	75	2.5	[2.1- 3.1]
Severe wasting	<-3	0	0	---
Total		2987	100	

SD = Standard Deviation

d) According to the height-for-age (HA) index

The children in this study had chronic malnutrition (stunting) in 24.9% of cases, including 11.3% of severe type (Table 5).

Table 5 Distribution of the nutritional status according to the height-for-age index of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020 (n = 6789).

	HA Index (SD)	Size	%	CI (95%)
Good nutritional status	≥-2	5097	75.1	[74.7- 75.5]
Moderate stunting	[-3 ; -2[	926	13.6	[12.7- 14.4]
Severe stunting	<-3	766	11.3	[10.3- 12.2]
Total		6789	100	

SD = Standard Deviation

e) According to the weight-for-age (WA) index

The children in the study were underweight (UW) in 33.1% of cases, including 15.3% of severe type (Table 6).

Table 6 Distribution of the nutritional status according to the weight-for-age (WA) index of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020, (n = 6789).

	WA Index (SD)	Size	%	CI (95%)
Good nutritional status	≥-2	4538	66.9	[66.5- 67.3]
Moderate UW	[-3 ; -2[	1211	17.8	[17.0- 18.5]
Severe UW	<-3	1040	15.3	[14.5- 16.1]
Total		6789	100	

SD = standard Deviation

Diagnosis

The most common diagnosis was severe malaria in 4386 children (64.6%) (Table 7).

Table 7 Distribution of hospitalized children aged 1 to 59 months according to the diagnosis in the pediatric department of the CHU of Parakou from 2018 to 2020 (n = 6789).

	Size	%	CI (95%)
Severe malaria	4386	64.6	[64.2- 65.0]
Sepsis	1005	14.8	[13.9- 15.6]
Acute respiratory tract infections	706	10.4	[9.4- 11.4]
Gastro-intestinal tract infections with diarrhea	495	7.3	[6.1- 8.5]
Others	197	2.9	[1.0- 4.8]
Total	**6789**	**100**	

Others: epileptic seizure (37 cases), encephalitis (27 cases), meningitis (88 cases), urinary tract infection (31 cases), nutritional rickets (5 cases), measles (17 cases), acute renal failure (22 cases).

Vital status at discharge

Among the 6789 children studied, 693 died, i.e. an intra-hospital mortality of 10.2%. The remaining 6096 children were discharged alive (89.80%).

Discussion

Validity of the study

A descriptive study was carried out with retrospective data collection from January 1, 2018 to December 31, 2020, i.e. a period of 03 years.

An exhaustive and consecutive census of the medical records of hospitalized children aged 1 to 59 months during the above-mentioned period was carried out. The retrospective nature of this study led to biases related to the non-documentation or lack of precision of certain information in children's medical records.

In fact:

a) The imprecise age of children could lead to selection and information biases;

b) The anthropometric parameters (weight, height, mid-upper arm circumference) in the medical records may not be correct, leading to information bias. However, these data were taken by qualified and trained health workers with robust and reliable tools in a usual exercise context.

Despite these inherent limitations of this type of study (retrospective), this work has the merit of approaching a very large sample of hospitalized children in the pediatric department over three years, with a rigorous method respecting ethical standards and ethics. In addition, the diagnosis of pathological nutritional status was made using several complementary anthropometric parameters, making our results more objective.

Nutritional profile

The study showed that only one out of two hospitalized children had a good nutritional status. This is a worrying situation which may partly explain the high proportion of deaths in the department (10.20%). This poses the problem of children's feeding both in the community and in the department where the management of eutrophic sick children does not systematically take into account the dietary component.

Acute malnutrition (wasting)

Among the children included, 32% had acute malnutrition. In studies carried out in sub-Saharan Africa, variable frequencies from one region to another have been reported. Thus, Milcent et al,[8] in Benin in 2008 and Thiam et al,[9] in Senegal in 2016 had observed similar frequencies of 33% and 32.9%, respectively. Kouamé et al,[10] in Ivory Coast in 2017 and Sinanduku et al,[11] in the DRC in 2020 had found higher frequencies of 55.86% and 81.2%, respectively. In Togo, Mali and Burkina Faso, Lawson-Evi et al,[12] Sangho et al,[13] Ouédraogo et al,[14] found lower frequencies of 12.5%, 14% and 15%, respectively.

According to the DHS-V in Benin,[2] 5% of children suffered from wasting. The high frequency in our study could be explained by the effect of concentration of cases in the hospital environment. In addition, the use of MUAC alone made it possible to diagnose 8.5% of cases. This easy-to-use tool, which is little used in several studies including the DHS, deserves to be promoted because it is a good indicator of survival apart from its contribution to the diagnosis of acute malnutrition.[7]

Chronic malnutrition (stunting)

Hospitalized children were affected by chronic malnutrition in 25% of cases. Musenge et al[15] in Zambia, Thiam et al[9] in Senegal, Djomo et al[16] in DRC had noted higher frequencies of 31.5%; 32% and 86%, respectively. On the other hand Massen et al[5] in Algeria and Ouédraogo et al[14] in Burkina Faso, in 2016 reported lower frequencies of 10.2% and 13%, respectively.

This frequency of chronic malnutrition in our study is high and could be explained by the high prevalence of chronic malnutrition in the community according to the DHS-V in Benin which is 32%[2] and the effect of concentration of cases in the hospital.

Underweight

Our study shows that 33% of hospitalized children were underweight; results similar to those of Thiam et al[9] in Senegal (35.5%). On the other hand, Ouédraogo et al[14] in Burkina Faso and Musenge et al[15] in Zambia had reported lower frequencies of 7% and 13.8%, respectively. Similarly, Djomo et al[16] in the DRC reported a higher frequency (48.8%). According to the DHS-V in Benin,[2] 17% of children are underweight at the community level.

The high frequency of underweight in our study could be explained by the high prevalence of underweight in the community, the effect of concentration of cases in the hospital and the high frequency of acute and chronic malnutrition cases ; underweight being a composite status of the latter.

Over nutrition

Overweight and obesity accounted for 1.6% and 1.1% of cases, respectively. Mabiala-Babéla et al,[17] in Congo and Sbai et al,[18] in Morocco had reported higher frequencies of 7.1% and 20%, respectively.

These proportions are low and could be explained by the fact that overweight and obesity occur more often in children over 5 years old, whereas the target population of our study was children under five years old. However, the status of overnutrition must be followed up in our context where the double nutritional burden is gradually being established.

Conclusion

At the end of the study, it appears that one in two children has a poor nutritional status in the pediatric department at the CHUD of Parakou, one in three children has acute malnutrition, one in four children has chronic malnutrition and one in three children was underweight. This result reflects the situation at the community level and suggests that bold actions should be taken to reverse this trend. This situation can largely explain the high child mortality rate in Benin. Prospective studies on child feeding needed to understand the poor nutritional status of the children.

Acknowledgements

None

Funding

By the authors

Conflicts of interest

The authors declare that there are no conflicts of interest.

References

1. Kaly E. et Gueye M. Fight against infant and child mortality in Africa: advocacy for the promotion of simple gestures that save. *The Sun*. 2007.
2. National institute of statistics and economic analysis (INSAE) and ICF. 2019. Demographic and health survey in Benin, 2017-2018. Cotonou, Benin and Rockville.
3. United Nations children's fund (UNICEF). The State of the World's children 2019. Children, food and nutrition: Growing up well in a changing world. UNICEF, New York.
4. Main markers: malnutrition. *World Health Organization*. 2021.
5. Massen Z, Dib S, El Mezouar C, et al. P108 - Prevalence of protein-calorie malnutrition (PCM) in Algerian children. *Arch Pediatr*. 2010;17(6):77.
6. World Health Organization (WHO). Training course on child growth assessment. Geneva, WHO. 2008.
7. World Health Organization and UNICEF. WHO child growth standards and the identification of severe acute malnutrition in infants and children: joint statement by the World Health Organization and the United Nations Children's Fund. World Health Organization 2009.
8. Milcent K, Stoffel V, Chagué F, et al. Infant and child malnutrition in Fo-Bouré (Benin): anthropometric data and management of children with malnutrition. *Arch Pediatr*. 2008;15(8):1289–1295.
9. Thiam L, Niang B, Diouf FN, et al. Assessement of malnutrition in hospitalized children aged 2 to 60 months in the pediatric departments of Ziguinchor hospitals. *Clin Pediatr OA*. 2018;3(1):5–8.
10. Kouamé KJ, Amoikon KE, Kouamé KG, et al. Socio-demographic, economic and food profile in children aged 06 to 59 months with acute malnutrition, admitted to the teaching hospital of Treichville (Abidjan-Ivory Coast). *Eur Sci J*. 2017;13(21):338.
11. Sinanduku JS, Mishika PL, Mukunda FM, et al. Severe acute malnutrition in children admitted to Sendwe hospital in Lubumbashi, Democratic Republic of Congo. *Ann Pediatr Res*. 2020;4(2):1037.
12. Lawson-Evi K, Djadou KE, Tsolenyanue, et al. Nutritional status of apparently healthy children under 5 years of age admitted for vaccination in Lomé (Togo) according to new standards of WHO. *Rev CAMES Health*. 2015;3(2):4.

13. Sangho O, Doumbia A, Samake A, et al. Prevalence of acute malnutrition in children aged 6- 59 months in the health district of Barouéli. *MASAP*. 2013;3(1):76–79.

14. Ouedraogo Y, Faso B, Makoura B, et al. Malnutrition in infants aged 6 to 23 months. *Mali Med*. 2020;35(3):45–50.

15. Musenge EM, Tembo S, Hankwebe M, et al. Prevalence and determinants of malnutrition among under-5 year old children in Lusaka urban, Zambia. *Tanzania J Health Res*. 2020;21(1):1–13.

16. Djomo LG. Comparative evaluation of malnutrition in children under 5 years of age by anthropometric indices in Democratic Republic of Congo. *Eur Sci J ESJ*. 2021;17(7).

17. Mabiala-Babela J, Alima JS, Monabeka HG, et al. Epidemiological and clinical profile of obesity in children in Brazzaville (Congo). *Elsevier Masson*. 2011;46:259–262.

18. Sbai M, Aboussaleh Y. Nutritional status and overweight among preschool children in the city of Kenitra (North-West Morocco). *Antropo*. 2014;32:45–53.

Citation: Noudamadjo A, Agbeille MF, Kpanidja MG, et al. Nutritional profile of hospitalized children aged 1 to 59 months in the pediatric department of the CHU of Parakou from 2018 to 2020. *J Pediatr Neonatal Care*. 2023;13(3):201–206. DOI: 10.15406/jpnc.2023.13.00517