


Research Article

Nutritional Assessment of Children Aged 6 to 59 Months Admitted in Two Hospitals in the City of Ziguinchor/Senegal

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Abstract

Introduction: Malnutrition is a major public health concern of developing countries. Very few studies on malnutrition have been conducted in the Southern part of Senegal. The objective of the study was to assess the nutritional status of children aged 6- 59 months in two hospitals of the city of Ziguinchor.

Material and methods: This was a prospective, two-center study assessing the nutritional status of children aged 6 to 59 months for a period of 4 months from December 1, 2020 to March 1, 2021.

Results: 103 children were enrolled at Ziguinchor regional hospital and 34 children at Ziguinchor Peace hospital representing a cohort of 137 children. 21, 2% were wasted, 18, 2% had stunted growth and 17, 5% were underweight. Among those malnourished children, 98,1% of mothers were over 20 years of age, 52,7% had low education level; 38,9% of fathers were unemployed; 79,6% of parents had a poor socio economic status and 90,7% were married. The sex ratio was 1.2.70, 3% of malnourished children aged less than 24 months, 94, 4% were fully vaccinated. Upon admission, 50 % of malnourished children had acute gastroenteritis (33, 3%) and pneumonia (11, 1%). HIV (11, 1%) and congenital heart diseases (7,4%) were the main concomitant pathologies. No death cases were reported.

Conclusion: In the context of public health policies of developing countries, knowledge of best attitudes and practices towards child nutrition and improvement of population's quality of life must be a priority.

keywords: Malnutrition; Emaciation; Children; Ziguinchor

Introduction

Malnutrition is a pathological state resulting from absolute or relative deficiency or excessive of one or more essential nutrients, whether manifested clinically of detectable only by anthropometric or physiological biochemical analysis [1]. It is one of the main public health challenges in developing countries [2]. Worldwide, 56 % of deaths among under 5 years of age are attributable to malnutrition [3]. In Africa, the prevalence is 20%, 39% of which are in Sub-Saharan Africa [4,5]. In Senegal, in 2018, 19% of children under the age of five were stunted, 8% were wasted and 15% were underweight. Very few studies have been conducted on malnutrition in the city of Ziguinchor, in the Southern Senegal, where we continue to wonder about the real impact of this disease. The aim of the study was to assess the nutritional status of children aged 6-59 in two hospitals in the city of Ziguinchor.

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Citation: Diouf François Niokhor, Ba Abou, Ndongo Pascale Njock, Poussy Pape Formose, Sow Amadou, Senghor Seynabou. Nutritional Assessment of Children Aged 6 to 59 Months Admitted in Two Hospitals in the City of Ziguinchor/Senegal. Journal of Pediatrics, Perinatology and Child Health. 8 (2024): 05-09.

Received: December 22, 2023

Accepted: January 12, 2024

Published: January 24, 2024

Materials and Methods

Study design and area

This was a prospective two-center analytical study aimed at nutritional assessment of children aged 6 to 59 months examined in consultations or admitted to two hospitals in the city of Ziguinchor for a period of 4 months from December 1, 2020 to 1 March 2021. Ziguinchor city has two hospitals classified as level 2 hospitals according to the Senegal health pyramid, the regional and peace hospitals, both separated from about 1 km. In addition, Ziguinchor is the rainiest city in the country. The landscape is green and the main activities are agriculture, fishing and livestock.

Study population

All children aged 6-59 months, seen at consultation or admitted in the paediatrics wards of the 2 hospitals and who had parental consent for the study were included in this work. We excluded from our study children whose parents did not consent and those who did not meet the age criteria.

Data collection

For each enrolled child, we used a data collection form that recorded child and parent's information. The following parameters were collected and analysed:

In children: Age, gender, vaccination status, weight for height, weight for age, height for age indices, concomitant pathologies and the outcome

In mother: Age, education level, marital status

In father: Profession, Residence, socio economic level

The indicators wasting, stunting, and underweight were following WHO standard definitions. The socio economic level was considered low if parents did not have access to drinking water and electricity. Anthropometric parameters were determined based on WHO criteria and tools

Data analysis

The data were analysed using Epi info 7 statistical software. proportions were compared using Pearson Chi² or Fisher's exact test depending on validity conditions with a P value <0.05 considered as statistically significant.

Results

Epidemiological data

137 children were enrolled in the paediatric wards of two hospitals of which 103 were in regional hospital and 34 in peace hospital. The sex ratio was 1, 28 in favour of boys. Children age average was 22.4 ±12.9 months with 67, 9 % of children under 24 months. According to the Expanded program on immunization in Senegal, children's vaccination status were completed in 98% of cases. 98, 1% of mothers

were over 20 years old, and almost half (46%) were over 30 years old. In 53, 7 % of cases, the education level was low. More than half of parents (76, 6%) had a poor socio economic level and 59, 3% were from rural areas. Fathers were unemployed in 38, 9% (Figure 1).

In hospitalized children, 70,3% of infectious complications occurred, mainly acute gastroenteritis (33,3%) and pneumonia (11,1%).

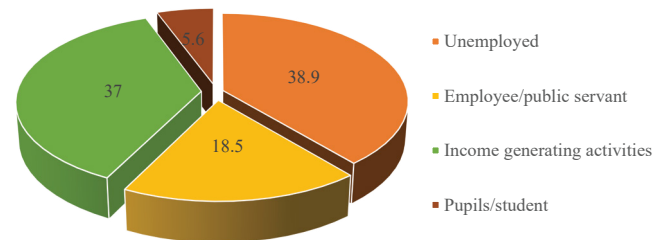


Figure 1: Distribution of malnourished children according to fathers professional activity.

Table 1: Distribution of children anthropometric parameters.

Indicators	Nutritional status	Effective	Percentage (%)
Weight/Height (z-score)			
> -2	Normal	108	78,8
-3 et -2	Moderate malnutrition	13	9,5
< -3	Severe acute malnutrition	16	11,7
Total		137	100
MUAC (cm)			
≥ 12,5	Normal	111	81
11,5-12,5	Moderate acute malnutrition	17	12,4
< 11,5	Severe acute Malnutrition	9	6,6
Total		137	100
Height/Age (z-score)			
> -2	Normal	112	81,8
-3 et -2	Moderate stunting	15	10,9
< -3	Severe stunting	10	7,3
Total		137	100
Weight/Age (z-score)			
> -2	Normal	113	82,5
-3 Z et -2	Moderate under nutrition	13	9,5
< -3	Severe under nutrition	11	8
Total		137	100

Nutritional data

Data on malnourished children

54 cases of malnutrition were diagnosed with a prevalence of 39,4 % of which 11,7 % had severe acute malnutrition. The sex ratio was 1.2 favouring males. The age related malnutrition cases is shown in Table 2.

Table 2: distribution of nutritional status according to children's age.

Age range		Nutritional status		Total	P
		Normal	Malnutrition		
6-12 months	n(%)	18 (21,7)	18 (33,3)	36 (26,3)	0,175
13-24 months	n(%)	37 (44,6)	20 (37)	57 (41,6)	
25-36 months	n(%)	15 (33,3)	11 (20,4)	26 (19)	
37-59 months	n(%)	13 (18,1)	5 (9,3)	18 (13,1)	
Total	n(%)	83 (60,6)	54 (39,4)	137 (100)	

Almost all (94,4%) malnourished children were fully vaccinated. 90,7% of their mothers were married and 46,3% over 30 years of age. On the other hand, 31,5% of mothers had no education and only 22% obtained low level of education. In the same vein, 38,9% of cases, fathers were unemployed. Furthermore, 59,3% malnourished children were from rural areas meanwhile in 79,6% of cases, the socio economic situation of their parents was poor. Half (50%) of the 36,4% malnourished children were followed as outpatients, while the remaining were in paediatrics wards. No death case was reported.

Discussion

The prevalence of malnutrition in this work was 39.4% of which 11.9% were severe acute malnutrition. This finding was similar to the those reported in 2010 by the MICS (multiple indicators clusters surveys) conducted on different regions of Mali where 6,8% of severe malnutrition cases occurred at Kaye, 9,4% at Koulikoro, 10,9% at Gao and 12,5 % à Ségou [7]. In Guinea, the prevalence of acute malnutrition in 2006 was 12% [8]. Much higher prevalence (63,1%) was reported in Chad with 37 % accounting for severe forms [10]. However an Algerian study revealed much lower prevalence (2,8%) of which 0,6% were severe forms [9].

In our study the stunting percentage was 18.2%, of which 7.3% were severe forms. This finding was similar to values found in Algeria and Chad with stunting percentages respectively of 18% and 16,1% [9,10]. Agbere et al. [11] found 22,4% of children with moderate stunting and 44.6% with severe stunting [11]. It should be noted that in Senegal the mean stunting percentage is 9.1% for children aged 6 to 59 months [12].

The prevalence of under nutrition was 17,5% of which 8% was severe form. Much higher rate (38,02%) was found by Agbere et al [11] of which 12,5% was severe under

nutrition [11]. Similarly, Kante [13] showed 46% of under nutrition cases of which 31% were severe forms [13]. On the other hand, much lower rates 6% were revealed in Algeria of which 1,3% represented the severe forms.

In this study, almost all mothers (98,1%) of malnourished children aged above 20 years. In the same trend, Kanté [13] found 81,9 % while on the hand, Ake Tano et al. [14] reported that only 60 % of mothers were over 20 years old. 53,7% mothers of malnourished children in this study had a low education level and that was statistically significant (P=0.014).

There is close link between mothers' educational level and child malnutrition explained by the fact that valuable nutritional knowledge, attitudes and practices of mothers brings satisfaction towards child nutritional needs. More often, the higher the mothers' education, the more they appreciate these various nutritional child needs in a timely manner and provide the appropriate response.

In this work 38,9% fathers of malnourished children were unemployed. Much higher (51%) percentage was found in Mali in 2020 by Guindo [15]. We also reported that 59,3% of malnourished children came from rural areas. Malnutrition is greater in rural areas than urban areas [16]. This difference can be explained by the availability and diversity of food products on the urban market. Parents' low socio-economic status has also been associated with malnutrition. In 79,6% of cases, parents in this study had a poor socio economic status.

There is a close relation between malnutrition (under), respiratory tract infections, digestive infections and HIV in children [17]. This was highlighted in our study where we found 33,3% of acute gastroenteritis, 11,1% acute respiratory tract infections and 11.1% HIV cases. Similarly, Guindo M in Mali found 41,7% cases of acute gastroenteritis and 30,2% cases respiratory infection [15]. Pulmonary infection is a frequent complication of malnutrition as demonstrated by Sow in Senegal who reported 26.6% of respiratory tract infections among malnourished children.

The sex ratio 1.2 in the study favored male gender. There is substantial overlap between the result of this study and those reported by the Smart survey [20] and the Central African Republic children nutritional status. However, Diarra reported a female predominance [22]. 70.3 % of children aged 6-24 months were malnourished. This same trend (89.6%) was observed by Guindo [15]. Indeed, introduction of complementary feeding and weaning occurs at this period. However, early pregnancies, poor socio-economic status and cultural beliefs restrict good practices [23]. Complete vaccination does not exclude malnutrition. Actually, 94.4% of malnourished children in this study were fully vaccinated. Many authors had the same findings [24,25].

In this study 19,7% of malnourished children fully

recovered and no death cases were reported. Sissoko [26] found a much lower percentage (8.6%). This can be explained by our low sample size but also low patients' attendance across health facilities during COVID 19 pandemic.

Conclusion

Knowledge of good attitudes and practices towards child nutrition as well as improving the quality of life of populations must be a public health priority in developing countries like Senegal. Our work results provide a data base that can help putting in place or improve corrective actions on children malnutrition at the local, regional and national level.

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