# Assessment of Malnutrition in Hospitalized Children Aged 2 to 60 Months at Hospital's Pediatric Services

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## Abstract

**Introduction:** Malnutrition poses a significant public health challenge globally, particularly in developing nations. National prevalence rates of malnutrition may not accurately depict the situation within hospital settings. This study aimed to assess the nutritional status of children under 5 years old admitted to pediatric services in the municipality of Ziguinchor.

**Materials and Methods:** Conducted as a prospective study from June 1 to October 30, 2016, this research included children aged 2 to 60 months admitted to one of the two pediatric services, excluding those with data-ascetic syndrome. Epidemiological, anthropometric, and associated diagnostic data were analyzed.

**Results:** 114 children (70 boys and 44 girls) were included, averaging 21.9 months. Forty-two-point-one percent (42.1%) of infants under 6 months were exclusively breastfed. Early weaning occurred in 55.3% of cases. Mothers had a mean age of 26.6 years, and a low socioeconomic status was observed in 62.3% of cases. The prevalence of malnutrition was 35.5% for underweight, 32.9% for wasting, and 32.0% for stunting. Acute respiratory infections (ARI) and acute gastroenteritis were the most associated conditions. The mean hospital stay was 8 days ± 0.09, with approximately two-thirds of patients (n=72) experiencing a hospital stay exceeding 7 days. Malnutrition is significantly associated with multiparity, low socioeconomic status, hospital stays exceeding 7 days, and infectious diseases.

**Conclusion:** Infections and hospitalizations lasting more than a week emerged as factors significantly linked to malnutrition in children under 5 years of age. Addressing these factors is crucial for improving the nutritional outcomes of pediatric patients in this context.

**Keywords:** Malnutrition; Infant; Hospitalization.

## Introduction

Malnutrition, characterized by the relative or absolute deficiency or excess of essential nutrients, poses a global public health challenge, particularly in developing countries [1]. In Senegal, the 2015 DHS-C reported 21% chronic malnutrition and 8% acute malnutrition among children under 5 years old, but these general population figures may not accurately represent the hospital setting [2,3].

Typically, hospitals lack preventive measures for malnutrition during patient hospitalization for various conditions that may increase the risk of undernutrition. Nutritional assessments upon admission are infrequent, and caregivers seldom provide guidance on dietary habits.

This study aims to evaluate the nutritional status of children admitted to the pediatric departments.

## Materials and Methodology

Conducted as a cross-sectional and descriptive study from June 1 to October 30, 2016, it included all children aged 2 to

60 months hospitalized for over 48 hours in one of the two pediatric departments. Malnutrition indicators followed WHO 2000 standards: underweight (weight-for-age) <-2SD, chronic malnutrition (height-for-age) <-2SD, and acute malnutrition (weight-for-height) <-2SD. Excluded were children with glomerulonephritis, heart disease, or chronic liver disease.

The parameters studied included epidemiological, sociodemographic, and anthropometric data, along with the diagnosis, hospitalization duration, and patient outcomes. Epi Info software facilitated data processing, and statistical analysis employed the chi-square test and Fischer test, considering $p < 0.05$ as significant.

## Results

Over the study period, 114 children (70 boys, and 44 girls) were included, with an average age of 21.9 months. Approximately one-fourth (29) of the patients originated from regions such as Sedhiou, Kolda, and the sub-region (Guinea Bissau, Gambia).

Immunization rates were 58.8%, as per Senegal's EPI. Ninety-five-point six percent (95.6%) of infants under 6 months were breastfed, with 42.1% exclusively breastfed.

Diversification occurred in over half (57.9%) of the children, either early (46.5%) or late (11.4%), and early weaning was observed in 55.3%. Mothers had a mean age of 26.6 years, with half being out of school and more than half of the families (65%) having a low socioeconomic status.

The distribution of children according to weight-for-age, height-for-age, and weight-for-height indicators remained consistent between admission and discharge (Figures 1-3). Malnutrition prevalence averaged 35.5% for underweight, 32.9% for wasting, and 32.0% for stunting.



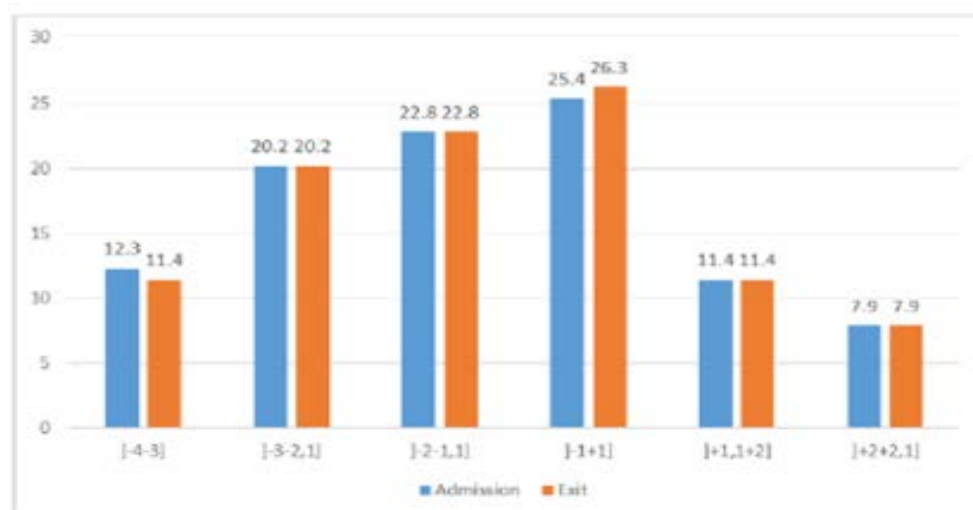**Figure 1:** Distribution of children by weight (age) at admission and discharge.



**Figure 2:** Distribution of children by size (age) at intake and discharge.
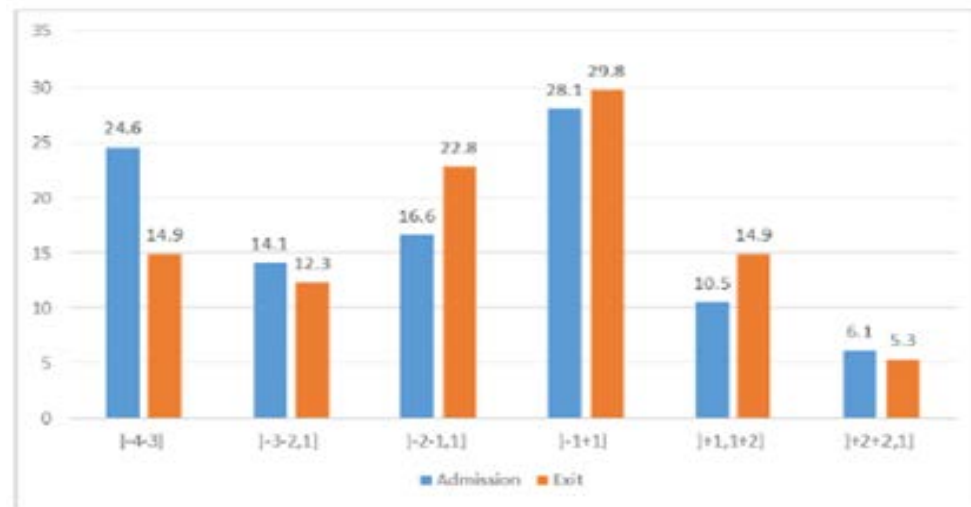
**Figure 3:** Distribution of children according to the weight (size) index at admission and exit.

Three deaths (2.6%) were recorded in our study, all of which occurred among children with severe acute malnutrition. Two of these cases were associated with pulmonary tuberculosis, while one was linked to HIV infection.

In our investigation, both acute malnutrition and chronic malnutrition showed significant associations with factors such as multiparity (p values: 0.035 and 0.026, respectively), low family socioeconomic status (p values: 0.023 and 0.014, respectively), infectious diseases like Acute Respiratory Infection (ARI) and acute gastroenteritis (GEA) (p values: 0.035 and 0.012, respectively), and a hospital stay exceeding one week (p values: 0.035 and 0.043, respectively).

## Discussion

Utilizing the same WHO standards as Senegal's 2015 DHS, our study revealed malnutrition rates higher than the national average. The prevalence of wasting in our series (32.9%) was four times greater than the national level (8%), and stunting (32.0%) was 1.5 times higher than the national prevalence (21%). These elevated rates are attributed to our focus on hospitalized children, consistent with findings from previous studies by Senegalese authors [4-6].

Classical factors associated with malnutrition, such as low socioeconomic status, extended hospital stay, multiparity, early diversification, and weaning, were identified in our study. These factors align with findings from various Senegalese and African studies [4,7-10]. Exclusive breastfeeding was practiced in 42.1% of cases, surpassing the national rate of 33% according to the 2015 DHS-C. However, exclusive breastfeeding remains a concern globally, prompting WHO and UNICEF to introduce new guidelines through the ANJE (Infant and Young Child Feeding) initiative, with the aim of achieving a minimum of 50% exclusive breastfeeding by 2025 [7].

## Conclusion

Malnutrition is more prevalent in our pediatric services compared to national figures and is associated with factors such as low socioeconomic status, hospitalization exceeding 7 days, maternal multiparity, early diversification, and weaning. Our recommendation includes the continued promotion of exclusive breastfeeding for infants under 6 months and routine nutritional assessments upon admission. Health personnel should also sustain efforts to provide meals and actively encourage children to eat during hospitalization.

## Conflict of Interest

No conflicts of interest have been declared.

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