

# Management of Acute Diarrhoea in Children Aged 0 - 59 Months in the Paediatric Ward of the Ratoma CMC (Guinea)

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**How to cite this paper:** Hassimiou, C.S., Binta, B.F., Aissata, B., Lamine, D.M., Aminata, B.M., Kaba, B., Binta, D.F. and Ouou, K.O. (2024) Management of Acute Diarrhoea in Children Aged 0 - 59 Months in the Paediatric Ward of the Ratoma CMC (Guinea). *Open Journal of Pediatrics*, 14, 1108-1116.

<https://doi.org/10.4236/ojped.2024.146107>

**Received:** October 20, 2024

**Accepted:** November 18, 2024

**Published:** November 21, 2024

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## Abstract

**Introduction:** Acute diarrhoea is a real public health problem worldwide and is responsible for considerable mortality in developing countries. The aim of this study was to evaluate the management of acute diarrhoea in children aged 0 - 59 months hospitalised in the paediatric ward of the Ratoma CMC. **Material and Methods:** This was a descriptive cross-sectional study lasting 6 months, from 01 July to 31 December 2023, including all children aged 0-59 months admitted for diarrhoea lasting no more than 14 days and whose parents agreed to take part in the study. Sociodemographic, clinical, therapeutic and evolutionary data were studied. **Results:** 79 children were seen for acute diarrhoea out of 330 consulted, *i.e.*, a frequency of 23.9%. The age group 0 - 11 months was the most represented, at 54.4%. Males predominated: 62% with a sex ratio of 1.6. The average consultation time was 3 days, with extremes of 0 to 10 days. The number of bowel movements per day varied from 3 to 12. The stools were liquid in 82.27% of cases. All hospitalised children were dehydrated, with 68.4% suffering from moderate dehydration, 21.5% from mild dehydration and 10.1% from severe dehydration. Malaria was the condition most frequently associated with diarrhoea (27.8%). Malnutrition was found in only 2.5%. 82% of the children had received oral rehydration with ORS and 18% intravenous rehydration. Almost all the children (93.67%) had a favourable outcome. We recorded one case of death, a rate of 1.26%. **Conclusion:** Acute diarrhoea in children is one of the most frequent reasons for consultation in the paediatric department of the Ratoma CMC. Often accompanied by fever and vomiting, it is frequently observed in children aged 0 to 11 months, with a predominance of males. The overall management of acute diarrhoea in children involves improving people's standard of living, combating faecal peril,

drinking water consumption, promoting vaccination, the use of oral rehydration solutions and zinc, and training healthcare staff.

## Keywords

Diarrhoea, Child, Ratoma, Guinea

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## 1. Introduction

Acute diarrhoea is a frequent cause of paediatric mortality and morbidity. It corresponds to a sudden change in the number (too frequent) and character (liquid) of stools, lasting from less than a week to 14 days at most [1]. Acute diarrhoea is a major public health problem worldwide and is responsible for considerable mortality in developing countries [2]. In industrialised countries, infectious diarrhoea remains the second most common cause of hospital admission and the most frequent cause of paediatric consultations [2] [3]. Although infant and child mortality due to acute diarrhoea has fallen, many children in developing countries still succumb to this disease [1]. In Africa, it is one of the most deadly childhood diseases, responsible for 12% of deaths in children under the age of five [4]. In Guinea, the Global Health Observatory reported a prevalence of 12.4% of cases of diarrhoea in 2015 [5]. The main causes of acute diarrhoea in children are infectious, essentially viral (rotavirus). Bacterial and parasitic causes are rare in infants. Co-infections are also common (5% - 15%), depending on the study [1]. According to the World Health Organisation (WHO), rotavirus accounts for around 40% of hospital admissions and is the leading cause of severe diarrhoea in children under five worldwide. According to the WHO, almost 90% of deaths from rotavirus diarrhoea occur in low-income countries, Africa and Asia [6]. The main complication of acute diarrhoea in children is dehydration, the rapid progression of which without appropriate management can be life-threatening [7]-[9]. Current management, recommended by the WHO and UNICEF, is based on the use of oral rehydration solution (ORS), zinc supplementation, continued feeding, particularly breastfeeding, and the selective use of antibiotics [5] [10]. In developing countries, the problem remains significant because of certain factors such as dysfunctional health systems, high levels of malnutrition among children, low health budgets and a lack of equipment and highly qualified personnel to properly manage sick children [1] [2].

The aim of our study was to assess the management of acute diarrhoea in children aged 0 - 59 months hospitalised in the paediatric ward of the Ratoma CMC.

## 2. Material and Methods

This was a descriptive cross-sectional study lasting 6 months, from 01 July to 31 December 2023. We included in the study all children aged 0 - 59 months hospitalised for acute diarrhoea not exceeding 14 days, who had received treatment and

whose parents had agreed to participate in the study. Children hospitalised for diarrhoea lasting more than 14 days and children over 59 months of age were excluded from the study. The study variables were qualitative and quantitative and included sociodemographic, clinical, therapeutic and evolutionary data.

### 3. Results

During our study period, 79 children were hospitalised for acute diarrhoea out of 330 children, *i.e.*, a frequency of 23.9%. The mean age of our patients was  $19 \pm 0.49$  months. The age group 0 - 11 months was the most represented, *i.e.*, 54.4%, with extremes of 2 months and 59 months. Males predominated: 62% with a sex ratio of 1.6. The average consultation time was 3 days, ranging from 0 to 10 days. Fifty-six children (70.9%) were brought to the consultation within 0 to 3 days, 20 (25.3%) within 4 to 6 days and 3 (3.8%) after one week. The number of bowel movements per day varied from 3 to 12. 78.5% of children had 3 to 6 bowel movements per day. The stools were liquid in 82.27% of cases, mucus in 15.19% and bloody stools in 2.5% (**Table 1**).

**Table 1.** Distribution of children aged 0 - 59 months hospitalised for acute diarrhoea according to sociodemographic and clinical characteristics in the paediatric ward of the Ratomá CMC.

Characteristics	Headcount	Percentage
<b>Ages (months)</b>		
0 - 11	43	54.43
12 - 23	21	26.6
24 - 35	5	6.3
36 - 47	7	8.9
48 - 59	3	3.8
<b>Sex</b>		
Male	49	62
Female	30	38
<b>Consultation time</b>		
0 - 3	56	70.9
4 - 6	20	25.3
over 6	3	3.8
<b>Stool frequency per day</b>		
3 - 6	62	78.5
7 - 10	13	16.5
Over 10	4	5
<b>Type of stool</b>		
Liquid	65	82.27
Glutinous	12	15.19
Gloopy and bloody	2	2.5

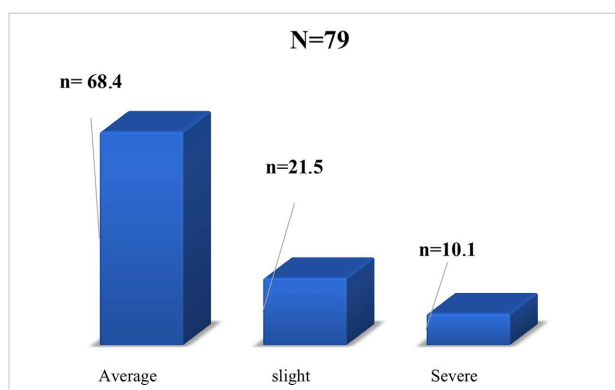
Fever was the symptom most frequently associated with diarrhoea, accounting for 59.5% of cases, followed by vomiting (22.8%), cough (13.9%) and physical asthenia (12.6%). Malaria was the condition most frequently associated with diarrhoea (27.8%), followed by acute respiratory infections (24%) and digestive

candidiasis (19%). Malnutrition was found in only 2.5% of cases (**Table 2**).

**Table 2.** Frequency of associated symptoms in children aged 0 - 59 months hospitalised for acute diarrhoea in the paediatric ward of the Ratoma CMC.

Associated symptoms	Headcount	Percentage
Fever	47	59.5
Vomiting	18	22.8
Cough	11	13.9
Thrush	10	12.6
Physical asthenia	10	12.6
Abdominal pain	6	7.6
Rhinorrhea	4	5.1
Skin rash	1	1.3

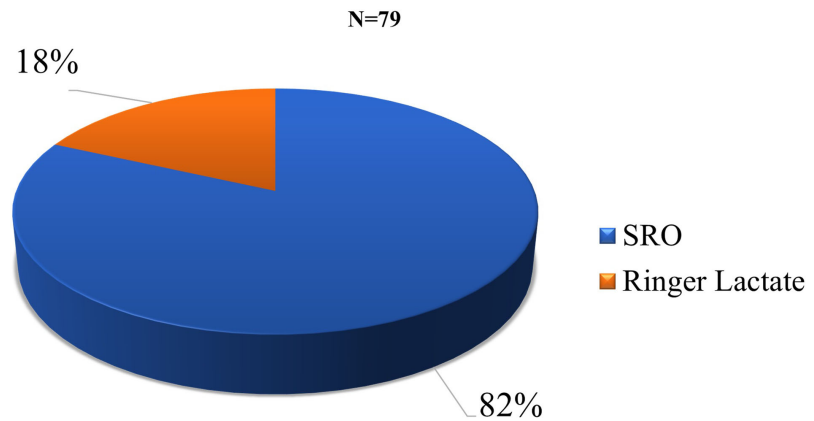
All the children hospitalised ( $n = 79$ ) were dehydrated, with 68.4% suffering from moderate dehydration, 21.5% from mild dehydration and 10.1% from severe dehydration. 82% of the children had received oral rehydration with ORS and 18% intravenous rehydration because of the severity of the dehydration. Antibiotic therapy (ceftriaxone) was used in 62.02% of cases. Antidiarrhoeals were prescribed in 10.1% of cases. The outcome was favourable in almost all children (93.67%). We recorded one case of death in a child suffering from severe malnutrition, a rate of 1.26% (**Figures 1 - 3** and **Table 3**).



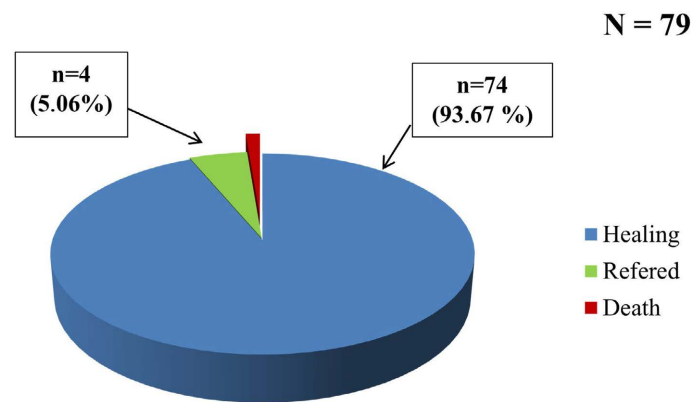
**Figure 1.** Distribution of children aged 0 - 59 months hospitalised for acute diarrhoea according to a degree of dehydration in the paediatric ward of the Ratoma CMC.

**Table 3.** Frequency of associated diseases in children aged 0 - 59 months hospitalised for acute diarrhoea in the paediatric ward of the Ratoma CMC.

Associated diseases	Headcount	Percentage
<b>Malaria</b>	<b>22</b>	<b>27.8</b>
ARI	19	24.0
Digestive candidiasis	15	19.0
Ascariasis	10	12.6
Amoebiasis	9	11.4
Severe malnutrition	2	2.5
Meningitis	1	1.3



**Figure 2.** Breakdown of children aged 0 - 59 months hospitalised for acute diarrhoea by type of rehydration in the paediatric ward of the Ratoma CMC.



**Figure 3.** Distribution of children aged 0 - 59 months hospitalised for acute diarrhoea, by clinical course, in the paediatric ward of the Ratoma CMC.

#### 4. Discussion

The lack of infrastructure for carrying out certain tests (coproculture, blood culture) and the lack of financial means of some parents were our limitations and difficulties during the study. Our study focused on the management of acute diarrhoea in children aged 0-59 months hospitalised in the paediatric ward of the Ratoma CMC, which enabled us to identify 79 cases of acute diarrhoea out of 330 children hospitalised, *i.e.*, a frequency of 23.9%, placing acute diarrhoea in the 3<sup>rd</sup> place among the most common conditions encountered in our ward. Our results were superior to those of Seck N *et al.* in Senegal [9] and Doumbia A.K. *et al.* in Mali [1] which found 12.9% and 14.5% respectively. This high frequency in our study could be explained by the lack of sanitation and food hygiene.

The average age of the children was  $19 \pm 0.49$  months, with extremes of 02 months and 59 months. The 0 - 11 months age group was the most affected, with 54.4%. This maximum frequency before the age of one year has also been reported by other authors: Maramraj *et al.* [11] in India in 2020, Chang *et al.* [12] in Shanghai in 2017 and Ondima L.H.M. *et al.* [5] in Guinea with frequencies of 47%, 56% and 53.57% respectively. The high frequency in this age group could be explained

by the frequent contact of children under one year of age with the environment, by throwing everything they find into their mouths, poor weaning practices, lack of food hygiene and certain discriminatory dietary practices depriving infants after weaning of foods rich in iron, vitamins, etc. Children under 1 year of age are particularly exposed to diarrhoea for two main reasons: it is during this period that the child's own immunity gradually develops, while maternal antibodies decline. The baby is therefore more vulnerable to infections during this period. This is also the time when the child's diet begins to diversify. If this is not carried out properly, malnutrition and then diarrhoea can occur [5] [13].

We found a male predominance of 62% with a sex ratio of 1.6. Our data are similar to those of Abdoul *et al.* [14] in Niger in 2018 who found a male predominance with a sex ratio of 2.4. They are contrary to those of Doumbia A.K. *et al.* in Mali [1] who found a female predominance. Sex had no influence on the occurrence of acute diarrhoea. The average consultation time was 3 days, with extremes ranging from 0 to 10 days. Fifty-six children (70.9%) were brought to the consultation within 0 to 3 days, 20 (25.3%) within 4 to 6 days and 3 (3.8%) after one week. Narimane *et al.* [15] in Algeria in 2019 reported an average delay of 2 days. This longer delay in our study could be explained by the trivialisation of diarrhoea, self-medication and mothers' lack of awareness of the consequences of diarrhoea. In our study, the number of bowel movements per day varied from 3 to 12. 78.5% of children had 3 to 6 bowel movements per day, with an average of 5.08 movements per day. The stools were liquid in 82.27% of cases, mucus in 15.19% and bloody stools in 2.5%. Our results are similar to those of Ba A *et al.* in Dakar [16], who reported that the number of stools passed per day varied from 3 to 17 episodes and that nearly half the children (49%) had 3 to 5 stools per day. The same authors found that the stools were liquid in 57% of cases and mucous in 43%. Our results are similar to those in the literature, according to which, in cases of acute diarrhoea, the frequency of liquid or semi-liquid stools that may be mixed with mucus or blood varies from 3 to 20 stools per day [17].

According to the literature, the presence of mucus or blood in the stools generally indicates an invasive phenomenon [1]. Our study showed that fever (59.5%), vomiting (22.8%), cough (13.9%) and physical asthenia (12.6%) were the symptoms most frequently associated with diarrhoea. Our results are consistent with those of Narimane *et al.* [15] who reported that fever was the most frequently associated symptom in 72.2% of cases. BA Abou *et al.* [16] found in their study 82.2% vomiting and 54% fever. The high frequency of fever could be explained by the close link between the pathologies most frequently encountered in the paediatric ward and fever. All the children hospitalised ( $n = 79$ ) presented with dehydration, 68.4% of which was moderate, 21.5% mild and 10.1% severe, unlike Doumbia A.K. *et al.* [1] in Mali who found 76% severe dehydration. In the event of a metabolic emergency, the WHO recommends rehydration adapted to the age and severity of the dehydration [1].

Malaria was the condition most frequently associated with diarrhoea (27.8%),

followed by acute respiratory infections (24%) and digestive candidiasis (19%). Malnutrition was found in only 2.5% of cases. Our results differ from those of Appolinaire S.K *et al.* [17] who found 14.2% of cases of malaria associated with diarrhoea. Seck N, *et al.* [1] reported in 2018 that in 18% of cases, diarrhoea was associated with a parenteral infection: 5 cases of urinary tract infection and 13 cases of septicaemia. Demortier *et al.* [18] in France in 2019 found a malnutrition-diarrhoea association in 52% of cases. These two conditions feed off each other, creating a vicious circle: malnutrition increases the risk of diarrhoea and diarrhoea exacerbates malnutrition. In terms of treatment, 82% of the children had received oral rehydration with ORS and 18% intravenous rehydration because of the severity of the dehydration. The most commonly used solution was lactated Ringer's solution. This result is contrary to that of Seck N, *et al.* [9] who reported in their study 37% oral rehydration with ORS and 63% intravenous rehydration. Our result could be justified by the fact that the majority of children were moderately dehydrated. Antibiotic therapy (ceftriaxone) was given in 62.02% of cases. Antidiarrhoeals were prescribed in 10.1% of cases. This result is comparable to that of Doumbia A.K *et al.* [1] in Mali, who reported in their study that 60% of cases were treated with antibiotics, and 5% antidiarrhoeal drugs. Antibiotic therapy should not be used routinely in cases of acute diarrhoea, but may be considered in severe cases and in children at risk with underlying chronic conditions or immunodeficiency [1]. The outcome was favourable in almost all children (93.67%). We recorded one case of death, a rate of 1.26%. In contrast, Appolinaire SK *et al.* [17] found a 2.63% mortality rate among infants with acute diarrhoea.

## 5. Conclusion

This study concluded that acute diarrhoea is one of the most frequent reasons for consultation in the paediatric ward of the Ratoma CMC. It is often accompanied by fever and vomiting, and is often observed in children aged between 0 and 11 months, with a predominance of males. Diarrhoea is often associated with other pathologies, making treatment complex. It represents an inescapable danger that must be prevented to avoid the serious consequences for the child's health, namely dehydration and malnutrition. Treatment was based on oral rehydration with ORS and intravenous rehydration with lactated Ringer's because of the severity of the dehydration. Almost all the children had a favourable outcome. The overall management of acute diarrhoea in children must involve improving people's standard of living, combating faecal peril, drinking water consumption, and training healthcare staff in the management of acute diarrhoea in order to guide the choice of treatment.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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