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Disease Pattern and Outcome in Children Emergency Room of a Newly Established Tertiary Hospital in South-South, Nigeria

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ABSTRACT

Introduction: *Disease pattern and outcomes in children have become a major health concern globally. This is very important not just for the epidemiological profile of the population but it is expected to guide policymaking and interventions in poor-resource settings like ours. Prompt emergency care services have been shown to improve patient survival. The aim of the study is to understand the disease pattern and outcomes in the Children Emergency Room of a newly established tertiary hospital.*

Methodology: *This is a retrospective descriptive study of children's emergency admissions from March 2024 to September 2025. Information obtained includes age, diagnosis, gender, and outcome. Descriptive statistics were used to describe the demographic characteristics, and the chi-square test was used to assess the association with the diagnosis.*

Results: *A total of 1263 children were seen; 55.7% were male, while 44.3% were female, giving a male-to-female ratio of 1.2:1. A total of 670 (53.0%) were stabilized and transferred to the ward, 422 (35.1%) were discharged, and 66 (5.2%) died. Diarrhea (18.1%), malaria (17.7%), and sepsis (17.7%) were the commonest causes of admission. Diarrhea, 19 (8.3%), accounted for the most common cause of death, with a mortality rate of 5.2%.*

Conclusion: *The pattern of admission has remained fairly unchanged over the years, with the mortality rate appearing to be reducing. Diarrhea and malaria remain the most common causes of admission and death. Strengthening primary health care and prompt referral could reduce the mortality rate.*

Keywords: *Children; Emergency; morbidity; mortality.*

Introduction

The Children Emergency Room (CHER) is often the entry point for most paediatric admissions in the majority of tertiary hospitals, as it caters to children with acute/life-threatening illnesses or injuries that require emergency/prompt care [1]. The disease patterns seen in CHER differ from one region to another, and there might be variations within a region partly due to the availability, cost of health care services, health-seeking behaviour of the people, and the effects of cultural/regional dynamics [2,3].

Several studies in Nigeria and other African countries have documented that preventable diseases such as malaria, pneumonia, and gastroenteritis are the commonest indications for Paediatric Emergency Room admission as well as the commonest causes of death [4-6]. However, other studies have also highlighted the role of non-communicable and hereditary diseases in the pattern of admission [7]. While infectious diseases are the leading causes of admission in developing countries, childhood poisoning, drowning, accidental and non-accidental injuries are the leading causes of admission in developed countries [8,9].

The mortality rate in CHER ranges from 10% to 25%.4-7 Factors responsible for the mortality in CHER could be grouped into community-related factors and health facility-related factors. Community-related factors include poverty, ignorance, and poor health-seeking behaviour, while the health facility-related factors include the absence of quality/well-trained health professionals, industrial actions in the health sector, inter-sectoral rivalry among the health workers, an inefficient primary health care system, and a lack of well-motivated health workers.

The present study was therefore carried out to determine the pattern and outcomes of children presenting in the Children Emergency Room of Asaba Specialist Hospital, Asaba. This study is pertinent, as periodic evaluation of the disease patterns and outcomes in the children emergency room will audit the quality of care provided and will also give insight into the epidemiology of the diseases that cause morbidity and mortality in our locality.

Materials and Methods

Study area

The study was undertaken at Asaba Specialist Hospital (ASH), Asaba, Delta State. This hospital was established in 2021 as one of the state-owned tertiary hospitals. The hospital serves the citizens of Delta State and its environs. It is a 300-bedded hospital that provides specialized care. The Children Emergency Unit is a 12-bed facility that provides 24-hour services. It has a staff strength of 30, comprising one Consultant Pediatrician, resident doctors, nurses, pharmacy staff, and other ancillary staff. The unit has a general ward, a side laboratory, an isolation ward, an oral rehydration therapy (ORT) room, a pharmacy section, and a records section. Children aged 1 month to 18 years with emergency conditions are managed in the unit. The unit provides free care to all children less than 5 years old.

The study is a descriptive review of all admissions from March 2024 to September 2025. The subjects consist of children aged one month to 18 years admitted into the CHER within the period under review. All medical case records of eligible subjects will be reviewed and analyzed. The information collected included age, gender, final diagnosis, and outcome of hospitalization. The final diagnosis of the disease was made by the attending doctors based on the clinical features and available laboratory investigations. Those with incomplete documentation were excluded.

Data collected were checked for errors and analyzed using the Statistical Package for the Social Sciences (SPSS), version 25.0. Continuous, normally distributed variables were expressed as mean ± standard deviation (SD). Categorical variables were expressed as frequencies and percentages.

Ethical approval was sought and obtained from the Asaba Specialist Hospital Research Ethics Committee. Information obtained for each patient was kept anonymous and confidential.

Results

A total number of 1263 children aged 1 month to 18 years were seen. There were 703 (55.7%) males and 558 (44.3%) females, with a male-to-female ratio of 1.2:1. A total of 442 (35.0%) patients were managed in CHER and successfully discharged, 670 (53.0%) were stabilized and transferred to the wards, 66 (5.2%) died, while 76 (6.0%) signed against medical advice. A total of 228 patients (18.1%) had diarrheal disease, 224 (17.7%) had malaria, 223 (17.6%) had sepsis, while 216 (17.1%) had respiratory infections.

Table 1: The sociodemographics of children seen in the emergency room.

Variable	Frequency	Percentage (%)
Age		
1 month–5 years	965	76.4
6–10 years	141	11.2
11–15 years	96	7.6
16–20 years	61	4.8
Gender		
Male	704	55.7
Female	559	44.3
Outcome		
Discharge	442	35.0
Transferred	670	53.0
Died	66	5.2
DAMA	76	6.0
Referred	9	7.0
Disease pattern		
Febrile illness	111	8.8
Malaria	224	17.7
Respiratory infection	216	17.1
Diarrhea	228	18.1
Sepsis	223	17.6
Meningitis	30	2.4
Asthma	24	1.9
DKA	8	0.6
Nephropathy	31	2.5
Haemoglobinopathy	27	2.1
Asthma	26	2.1
Seizure disorder	28	2.2
CHD	11	0.9
Others	76	6.0

DAMA: Discharge against medical advice; DKA: Diabetic ketoacidosis; CHD: Congenital heart disease.

Table 2 shows that Diarrhea (228), malaria (224), and sepsis (223) were the three commonest causes of admission. Diarrheal disease, 19 (8.3%), accounted for the most common cause of death among the subjects. This was followed closely by sepsis, 11 (4.9%). A good number of patients with diarrhea, 92 (40.4%), were managed in CHER (the ORT room) and subsequently discharged home.

Table 2: Disease patterns and outcomes among children seen in the Children Emergency Room.

Disease	Discharge (%)	Transferred (%)	Died (%)	SAMA (%)	Referred (%)	Total
Febrile illness	31 (27.9)	68 (61.3)	4 (3.6)	8 (7.2)	0 (0.0)	111
Malaria	85 (37.9)	115 (51.3)	10 (4.5)	13 (5.8)	1 (0.4)	224
Acute lower respiratory tract infection	58 (26.9)	141 (65.3)	4 (1.9)	12 (5.6)	1 (0.5)	216
Diarrhea	92 (40.4)	104 (45.6)	19 (8.3)	13 (5.7)	0 (0.0)	228
Sepsis	63 (28.3)	136 (61.0)	11 (4.9)	13 (5.8)	0 (0.0)	223
Meningitis	6 (20.0)	19 (63.3)	4 (13.3)	0	1 (3.3)	30
Asthma	18 (75.0)	5 (20.8)	0 (0.0)	1 (4.2)	0 (0.0)	24
DKA	3 (37.5)	3 (37.5)	1 (12.5)	1 (12.5)	0 (0.0)	8
Nephropathy	9 (29.0)	14 (45.2)	0 (0.0)	4 (12.9)	4 (12.9)	31
Haemoglobinopathy	0 (0.0)	19 (73.1)	5 (19.2)	2 (7.7)	0 (0.0)	26
Seizure disorder	20 (71.4)	5 (17.9)	1 (3.6)	2 (7.1)	0 (0.0)	28
CHD	2 (18.2)	7 (63.6)	2 (18.2)	0 (0.0)	0 (0.0)	11
Others	45 (59.2)	19 (25.0)	5 (6.6)	5 (6.6)	2 (2.6)	176
Total	442 (35.0)	670 (53.0)	66 (5.2)	76 (6.0)	9 (0.9)	1263

DKA: Diabetic keto-acidosis; CHD: Congenital heart disease.

Table 3 showed that most of the patients, 965 (76.4%), admitted into CHER were aged 1 month to 5 years, followed by those aged 6 years to 10 years, who constituted 11.2% of the admission cases. Malaria remains a major morbidity among all the age groups. Infectious disease causes were the commonest causes of morbidity among the younger age group (1 month to 5 years), while non-infectious causes accounted for a greater percentage among the older children.

Table 3: Disease patterns and age of the children seen in the Children Emergency Room.

Disease	1 month–5 years	6–10 years	11–15 years	15–20 years	Total (%)
Febrile seizure	106 (10.9)	5 (3.5)	0 (0.0)	0 (0.0)	111
Malaria	142 (14.7)	46 (32.6)	27 (28.1)	9 (14.8)	224
Acute lower respiratory tract infection	206 (21.3)	2 (1.4)	6 (6.2)	2 (3.3)	216
Diarrhea	202 (20.9)	9 (6.4)	10 (10.4)	7 (11.5)	228
Sepsis	193 (20.0)	18 (12.8)	8 (8.3)	4 (6.6)	223
Meningitis	19 (2.0)	5 (3.5)	4 (4.2)	2 (3.3)	30
Asthma	9 (0.9)	10 (7.1)	2 (2.1)	3 (4.9)	24
DKA	0 (0.0)	0 (0.0)	3 (3.1)	5 (0.6)	8
Nephropathy	12 (1.2)	4 (2.8)	8 (8.3)	7 (2.5)	31
Haemoglobinopathy	15 (1.6)	6 (4.3)	4 (4.2)	2 (2.1)	22
SAM	25 (2.6)	1 (0.7)	0 (0.0)	0 (0.0)	26
Seizure disorder	9 (0.9)	14 (9.9)	5 (5.2)	0 (0.0)	28
CHD	5 (0.5)	1 (0.7)	3 (3.1)	2 (3.3)	11
Others	23 (30.3)	20 (26.3)	16 (16.7)	17 (27.9)	76
Total	965 (76.4)	141 (11.2)	96 (7.6)	61 (4.8)	1263

DKA: Diabetic ketoacidosis; SAM: Severe acute malnutrition; CHD: Congenital heart disease.

Discussion

This study shows the common causes of morbidity and mortality among children who received care at the Paediatric Emergency Room of Asaba Specialist Hospital, Nigeria. The findings in this study show that the major causes of admission in CHER were diarrhea, malaria, sepsis, and acute lower respiratory tract infections. This pattern is similar to what has been documented in other hospitals in Nigeria over the past two decades [4-7,10-13]. This suggests that the pattern of childhood admission among Nigerian children has remained largely unchanged. The majority of the causes of admission and mortality are infectious diseases. The role of infectious diseases as the leading cause of admission and death in the paediatric age group has been highlighted by other researchers [6,7]. The high prevalence of poor socioeconomic conditions, poor sanitation, and other factors has been implicated as the major reason why this pattern has persisted in Nigeria and other low- and middle-income countries (LMIC).

Diarrhea is the leading cause of admission in our study, followed by malaria. This finding supports the World Health Organization (WHO) report that diarrhea, malaria, and ALRTI are the leading causes of under-five morbidity and mortality, either as a single entity or in combination with other causes. However, other reports in Nigeria have documented malaria as the leading cause of admission [14]. The variation in the morbidity pattern could be explained by varying geographical and environmental factors.

More males were admitted over the study period, with a male-to-female ratio of 1.3:1. This finding is similar to what has been reported in some studies in Nigeria [6,7]. The role of culture in male gender preference and gender inequality might have informed the reason why males were more likely to be brought to the hospital than female children. Children less than 5 years accounted for the highest age group admitted in CHER. This age group represents the most disadvantaged age group, complicated by their low immunity.

The percentage mortality in this study is 5.2%, with 80.3% of deaths occurring in children less than 5 years. This finding is low compared to the mortality rate of 7% reported by Agbasanwa et al. in Ekiti but high compared to 3.7% reported by Oluwafemi in Akure, Nigeria [12,13]. However, the finding is comparable to the 5.8% mortality reported by Ezeonwu in Federal Medical Center, Asaba [7]. The difference could be attributed to a lot of factors ranging from poor health-seeking behaviours to poor staffing of the hospital. Strict adherence to standard operating guidelines and free treatment of children under 5 years might have explained the low mortality in our findings. More than 90% of the deaths occurred in the first 24 hours of admission, largely due to late presentation to the hospital associated with a poor referral system.

We found diarrheal disease, sepsis, and malaria to be the leading causes of death in descending order. This finding is similar to what other researchers had earlier reported, though not in this particular order. Some studies done in Africa and Nigeria had reported that severe malaria was the leading cause of death in their

surveys. One would have expected that with the introduction of low-osmolarity ORS and rotavirus vaccination, the incidence of diarrhea-related deaths would have reduced. However, the issues of hygiene, non-exclusive breastfeeding, and the non-availability of safe water have continued to persist in Nigeria and other low- and middle-income countries (LMIC) of Africa and Asia.

Discharge against medical advice (DAMA) rate in this study is 6.0%. This finding is similar to the 5% that was reported by Ezeonwu et al [7]. in Nigeria but higher than the 0.52% reported in Saudi Arabia [14]. Multiple factors are responsible for patients leaving against medical advice; these factors include family/social/religious, cultural, and financial factors.

Conclusion

The pattern of admission among children in Nigeria has remained fairly unchanged. The mortality rate might have reduced over the years, but it is still a concern that children die of preventable causes like diarrhea and malaria. Having a functional primary health system, a good referral system, and well-equipped tertiary hospitals will significantly reduce mortality among the paediatric age group.

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Conflicts of Interest

The authors declare no conflict of interest and received no specific funding for this work.

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