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***Research Article***

# Pattern of Morbidity and Outcome of Hospitalized Children: A retrospective Study in Goldfish Sea Hospital Kano, Nigeria

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**ABSTRACT**
Under-five mortality is still very high in the African sub-region. In Nigeria alone, more than 2300 children aged less than 5years die every day. Nigeria is the second largest contributor to global under-five mortalities. More than 60% of the medical conditions in Nigeria are attended to in private hospitals. This study aimed to document the morbidity pattern and outcomes of admissions among children admitted into a private hospital in Kano metropolis, Nigeria. This was a retrospective descriptive study conducted over three years period. The study population includes all children aged 0 to 15years that were admitted into the paediatric wards of the hospital in Kano, Nigeria. The age, gender, diagnoses and disease outcome of the patients were retrieved from the hospital medical records. Data analysis was done using SPSS Version 25. There were 1966 paediatric cases admitted over the study period. Males were 1110 (56.5%) and females were 856 (43.5%), with a male-to-female ratio of 1.3 :1. Over 90% of the children were less than 5years. Birth asphyxia (21.9%), Malaria (15.3%), Neonatal jaundice (14.7%), Acute diarrheal disease (9.5%), and pneumonia (9.4%) were the leading causes of admission. The patients who died during admission constituted 2.3% of the total admitted patients, with 66.9% of these deaths occurring in children under five years of age.

**Keywords:** Admissions; Kano; Nigeria; Pattern; Paediatrics

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## INTRODUCTION

Childhood morbidity and mortality in Africa have remained high. The under-five mortality in Nigeria is still very high. Nigeria is the highest contributor to the worldwide burden of under-five mortality with annual child mortality of 850,000 (Gayawan *et al.*, 2016). Nigeria is losing over 23000 children aged under five years daily (Gayawan *et al.*, 2016). Most of the under-five mortality are due to causes that can be prevented. The high under-five mortality trend in Nigeria has persisted for a long time and if action is not taken it will make it impossible for the country to achieve the targets of reducing neonatal mortality rate to at least as low as 12 per 1000 livebirths and under-five mortality to at least as low as 25 per 1000 livebirths by 2030 which is one of the sustainable development goals (SDG) (WHO, 2025). The common causes of childhood morbidity and mortality in Africa are infections and other communicable diseases (WHO, 2025). It was reported that more than sixty percent of medical conditions among the children are attended to by private health sector in Nigeria (Ayoola *et al.*, 2005). This has become even more important due to recurrent strike in the government sector (Ayoola *et al.*, 2005). National medical data for decision making on public heath will be incomplete without accounting for the statistics from private health sector. Many studies have documented some childhood morbidities in various institutions in

Nigeria (Saad *et al.*, 2015; Yahya, 2022). Most of these studies are done in government owned hospitals. The studies that documented childhood morbidities and mortalities in private health centres in Nigeria were mostly done in the Southern part of the country. There is therefore a need to review the pattern of childhood morbidity and mortality among children from private heath sectors in Kano, Nigeria. The hospital where this research was conducted is a private hospital located in the city of Kano state.

## MATERIALS AND METHODS

The study area is a private health facility located at Rijiyar Zaki Quarters Kano, Nigeria. The hospital is located on $11^0$59'43.0" N $8^0$27'51.8".

It was established in the year 2022 by a consultant paediatrician from the state. It caters for both adults and children but most of the patients that are attended to in the hospital are children. The scope of care in the hospital is both medical and surgical. The hospital is manned by medical officers, a consultant paediatrician and visiting consultants of different specialties. A consultant paediatrician consults twice a week and does ward rounds twice a week and is also available when the medical officers have difficulty in managing any patient. Its location at Gwale Local Government Area (which is one of the local government areas within the Kano metropolis) and the presence of a paediatrician in the hospital attracts most paediatric patients especially when the bed spaces in government owned hospitals are filled up. It attends to about 700 paediatric patients per year (Goldfish Ann Report, 2022-2025). This is a retrospective study which reviewed medical records over 3years of the children admitted in the hospital. The details of all the patients admitted are recorded in hard copy during this period. Permission for the study was obtained from the Hospital management before commencing the study (clearance number GFS/ MAC/002). The total number of all paediatric patients aged 0-15years admitted into the hospital between March 2022 to March 2025 records were retrieved from the hospital's medical records. The information extracted include: age, sex, presenting complaints, investigation results, diagnoses, duration of hospital stay, outcome of the illness. The data collected and cleaned was analysed using SPSS Statistical Package for the social sciences) VERSION 24 (IBM-SPSS version 24.0).

Frequency tables and percentages were generated for all the major variables of interest. Categorical variables were presented as percentages, pie and bar charts.

## RESULTS

A total of 1966 paediatric cases (both surgical and medical) were admitted over the study period. Out of the total admission 1935 (98.4%) were medical and 31 (1.6%) were surgical cases. Among the cases admitted 1110 (56.5%) were males and 856 (43.5%) were females (Figure 1) with male to female ratio of 1.3: 1. Among the patients admitted during the study period 1872(95.2%) are from within Kano, while 94(4.8%) were from outside Kano metropolis. Over 90% of the children were less than 5years (Table 1). Birth asphyxia (21.9%), Malaria (15.3%), Neonatal jaundice (14.7%), acute diarrheal disease (9.5%), pneumonia (9.4%) were the leading causes of admission as shown in Table 2. Mortality rate was 2.3% with 66.9% of these deaths occurring in children under five years of age as shown in Table 3.

**Table 1: Age distribution of the study population**

| Age (months) | Frequency | Percentage |
|---|---|---|
| 0-1 | 993 | 50.5 |
| >1- 12(1year) | 465 | 23.7 |
| >12-36 (3years) | 353 | 18.0 |
| >36- 72 (6years) | 61 | 3.1 |
| >72-120(10years) | 64 | 3.2 |
| >120-168(14years) | 30 | 1.5 |
| Total | 1966 | 100 |

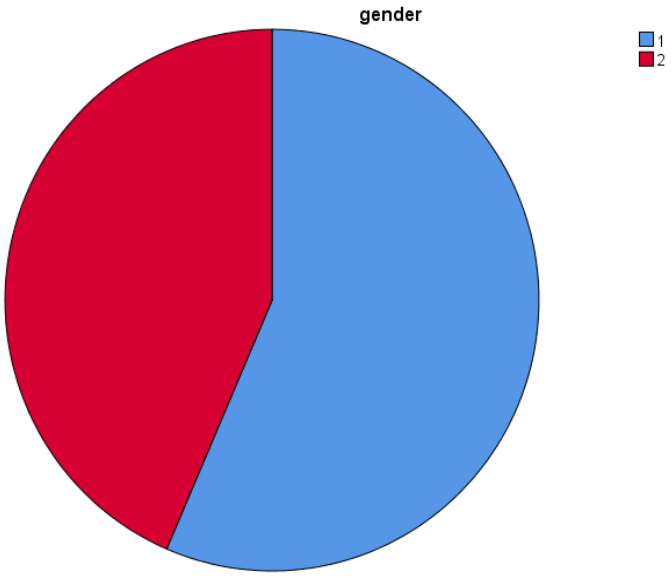


**Figure 1: Sex distribution of admitted patients**
**Keys:** 1 = Male; 2 = Females

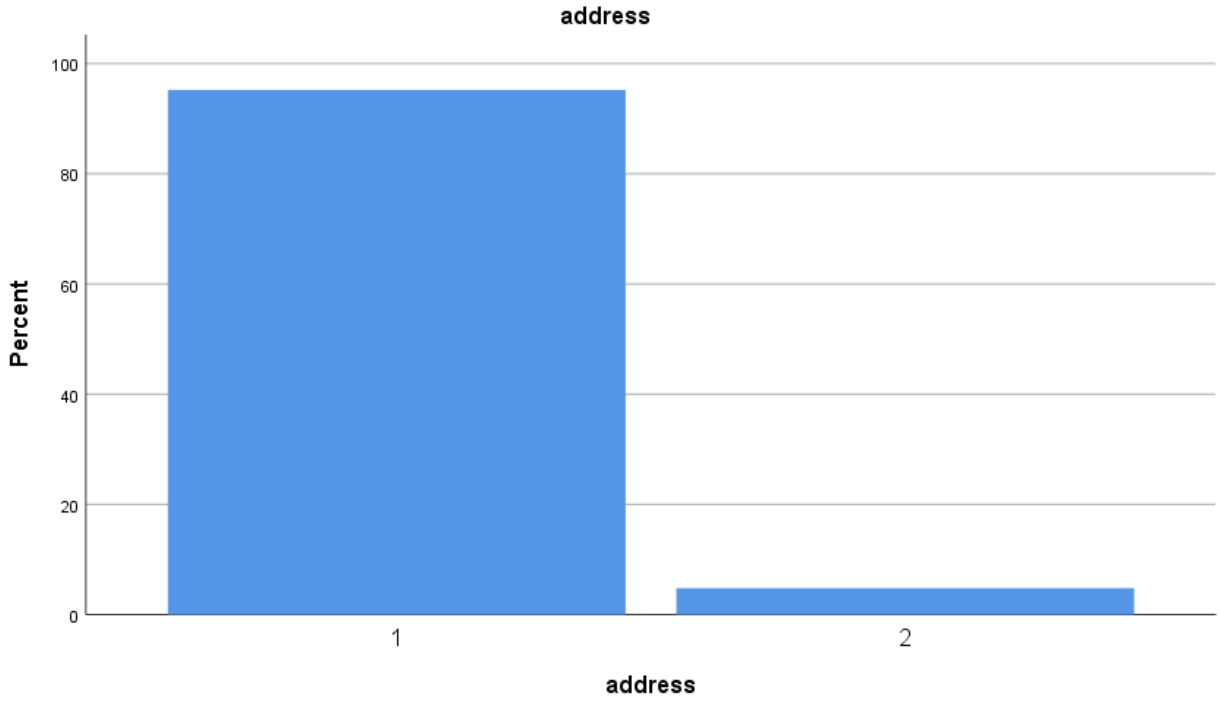


**Figure 2: Address of patients admitted**
**Keys:** 1 = Within Kano metropolis; 2 = Outside Kano metropolis

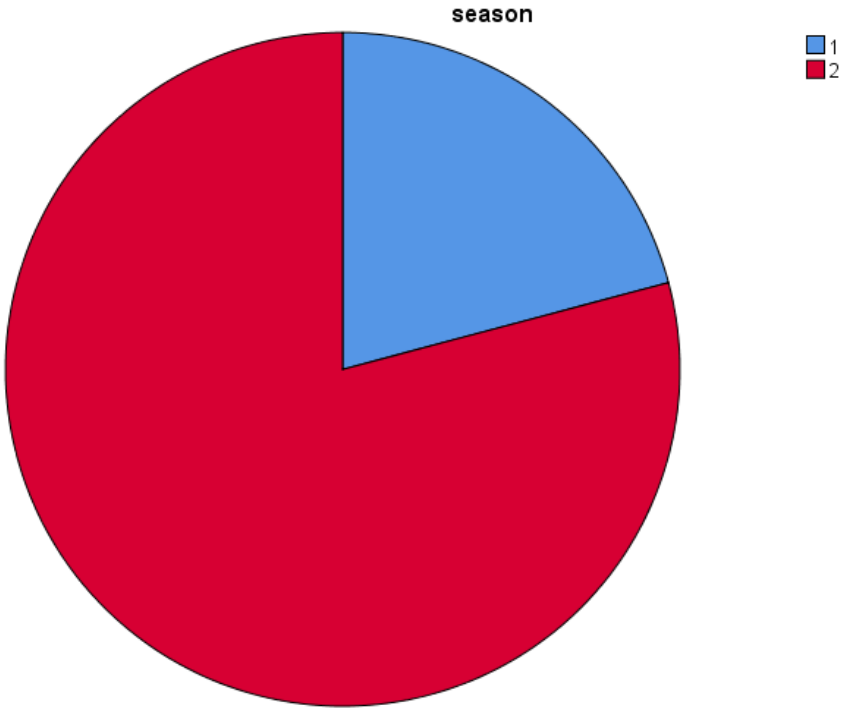


**Figure 3: Season of admission of patients**

**Keys:** 1. Dry season 2. Wet season

**Table 2: Diagnosis on admission over the study period**

| Disease | Frequency (n) | Percentage (%) |
|---|---|---|
| Protein energy malnutrition | 30 | 1.5 |
| Neonatal jaundice | 290 | 14.7 |
| Acute diarrheal disease | 187 | 9.5 |
| Malaria | 301 | 15.3 |
| Sickle cell anaemia | 107 | 5.4 |
| Pneumonia | 184 | 9.4 |
| Birth asphyxia | 431 | 21.9 |
| Severe acute malnutrition | 45 | 2.4 |
| Surgical cases (Gastroschisis, Omphalocele, imperforate anus, acute GI bleeding, adenoidal hypertrophy) | 32 | 1.6 |
| Sepsis | 52 | 2.7 |
| Asthma | 31 | 1.6 |
| Bronchiolitis | 109 | 5.5 |
| Prematurity | 32 | 1.6 |
| Meningitis | 45 | 2.3 |
| Measles with complications | 30 | 1.5 |
| Pharyngotonsilitis | 20 | 1.0 |
| Dysentery | 8 | 0.5 |
| Others | 32 | 1.6 |
| Total | 1966 | 100 |

**Table 3: Outcome of admission**

| Outcome | Number of patients | Percentage |
|---|---|---|
| Discharged | 1828 | 93.0 |
| Referred | 92 | 4.7 |
| Died | 46 | 2.3 |
| Total | 1966 | 100 |

**Table 4: Duration of hospital stay**

| Duration | Frequency | Percentage |
|---|---|---|
| Less than 3 days | 1209 | 61.5 |
| 3days to 7 days | 710 | 36.1 |
| More than 7 days | 47 | 2.4 |
| Total | 1966 | 100 |

## DISCUSSION

The number of hospital admission for children in our study is high similar to what was obtained in other studies from different parts of the country (Nneka *et al.*, 2018; Ebenezer *et al.*, 2023; Isezuo *et al.*, 2024). However, it is lower than what was reported in other studies (Ibeziako *et al.*, 2002; Isezuo *et al.*, 2024). This variation may be due to the length of time over which various studies were conducted. Some of the studies were conducted over long periods while other studies were conducted over short periods.

In this study most of the admissions (94.4%) were medical cases, this may be due to the presence of paediatrician in the hospital as the surgeons are only invited when there is a surgical case. There were more males 1110(56.5%) admitted according to this study compared to 856(43.5%) females with male to female ratio of 1.3:1. This is similar to what is obtained in other studies in the country (Ibeziako *et al.*, 2002; Enyuma *et al*., 2019; Isezuo *et al.*, 2024). This may be due to more parental concern for male children when they are sick compared to female children which has since been reported (Saad *et al.,* 2015). Among the patients admitted 95.2% were from within Kano metropolis. This may be due the relative access of the hospital to most of the people living within Kano metropolis. Ninety percent of the children admitted in this study were under the age of five years. A study conducted in Sudan by Ahmed *et al.* (2022) reported 58.8% of the children admitted were under five years. Likewise, a study from Australia (Schneur *et al.*, 2023) also reported lower under five admissions (60.8%) compared to what is obtained in this study. High under -five admissions were however reported from other studies done in Nigeria (Ibeziako *et al.,* 2002; Saad *et al*., 2015; Isezuo *et al.,* 2024). This high under-five morbidity in Nigerian studies may be due to high burden of childhood preventable diseases in some locations. The high under-five admissions can also be due to lower immunity in this age groups making them susceptible to infections (Borghesi *et al*.,2020). Most of the admissions in this study were done between the months of April to September (wet season). This is similar to findings in a study done in South Western Nigeria by Tosin *et al.* (2023). The high presentations for admission during wet season may be due to increase transmission of infectious diseases during wet season. Malaria which is one of the common causes of admission it occurs more in wet season due to increased number of mosquito breeding sites during wet season.

In this study birth asphyxia was found to be the most common cause of admission and contributed up to 21.9% of the total admissions over the study period. Malaria contributed 15.3% of the admissions making it the second common cause of admission in this study followed by neonatal jaundice (14.7%), acute diarrheal disease (9.5%), pneumonia (9.4%), bronchiolitis (5.5%), sickle cell anaemia with crisis (5.4%). This is different to what was obtained in a study from Sokoto, Nigeria (Isezuo *et al*., 2024) and a study conducted in Aba, South East, Nigeria, and Edo Ekiti, Nigeria (Nneka *et al*., 2018; Ebenezer *et al*., 2023) who reported Malaria as the top cause of admission. Their studies did not include neonates aged less than one month which may have contributed to the differences from what is observed in this study. In a study among neonates in other parts of the country (Muktar Yola *et al*., 2007; Ekwoci

*et al*., 2010; Omoigberale *et al.,* 2010). Perinatal asphyxia was the commonest cause of admission. The occurrence of perinatal asphyxia as the most common cause of admission indicates poor perinatal care and bad emergency obstetric practice. Most of the babies with birth asphyxia were delivered at home with most of the deliveries conducted by traditional birth attendants who have no or inadequate knowledge of neonatal resuscitation therefore offer no immediate resuscitation to asphyxiated babies. Most of the babies recognized to have features of asphyxia report to our facility very late after going round all government owned hospitals without securing bed space for admission. A Study from India by Suvashri *et al.* (2024) who studied a total of 10,301 neonates admitted into a tertiary care neonatal unit in Kolkata, reported neonatal hyperbilirubinemia (19.30%) as the commonest cause of admission, followed by congenital anomalies (11.15%). But most of the studies from India among neonates reported neonatal sepsis as the most common cause of admission (Kotwal *et al.,* 2017; Verma *et al., 2*018; Gunasekhar *et al.,* 2019).

The mortality rate in this study is low (2.3%) which is lower than what is reported from other government hospitals from Nigeria (Aikonbare *et al.*, 1989; Lesi *et al.*, 2000; Anyanwu *et al*., 2014). This finding may be explained by long waiting periods at the government hospitals which is not obtained in private hospitals which can affect patient's outcome. Most of the patients admitted in this study 1,209 (61.5%) stayed in the hospital for less than 3 days. This is mainly as a result of financial constraints and among some patients it is pressure from other family members who insist on leaving the hospital as soon as child starts getting better.

## CONCLUSION

There is high rate of children admission in Goldfish Sea hospital Kano. Most of the children admitted are under five years of age. Birth asphyxia, malaria, diarrheal disease, pneumonia and neonatal jaundice were the common causes of morbidity. Most of the patients admitted (93.0%) admitted were discharge, 4.7% were referred to another facility and 2.3% died and 61.5% of the admitted patients spend less than 3 days on admission.

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**Authors contribution:** Aishatu Yahya conceived and designed the manuscript, Abdurrahman Bin Usman contributed with data entry, revision of the manuscript. Sakina Yahya edited the manuscript. All the authors read and gave approval to the version to be published.

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