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Trends and Determinants of Mortality Among Children in Nigeria: A Teaching Hospital Perspective

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ABSTRACT

Background: Globally, even across all regions and income groups, the majority of child mortality occurred during the earlier age with 85 percent of the 6.3 million deaths in 2017 occurring in the first five years of life. Measuring how many children die each year and why they died along with measuring how diseases and injuries are affecting children is one of the most important means for assessing the effectiveness of a country's health system. Cause-of-death statistics even among all age groups helps health authorities determine the focus of their public health actions. They may be used to determine which preventive and medical curative measures or which focus in research might increase the life expectancy of the population.

Aim: To determine the pattern and the determinants of deaths among pediatric patients in DUFUTH between March 2022 to June 2025.

Objectives:

1. To determine the social demography of pediatric patients in DUFUTH
2. To determine the pattern and frequency and determinants of mortality among pediatric age group in DUFUTH
3. To determine if possible the variable contributing factors to death among hospitalized children in DUFUTH.

Result: Mortality among children in DUFUTH was recorded as 17.9%(52) out of 291 mortalities recorded between March 2022 to June 2025 with male preponderance, accounting for 55.8%(29) and female 44.2%(23). Severe malaria ranked the highest among the determinants of death among children accounting for 30.7%(16), followed by neonatal sepsis accounting for 26.9%(14). Anaemic heart failure accounted for 19.1%(10), while perinatal asphyxia and acute gastroenteritis accounted for 9.6%(5) and 5.7%(3) respectively. Low birth weight, severe malnutrition, febrile seizure and acute watery diarrhoea accounted for 2% (1) respectively. Death was more rampant between age range of 0-1 year with a frequency of 50%(26). This is followed by age 2-5years which recorded 21.2% (11) deaths. Ages 6-10 recorded 19.2%(10) deaths while 11-17years recorded 5(9.6%) deaths respectively.2024 saw the highest number of mortality in children accounting for 42.3% of the total mortality. Year 2023 had 32.7%, while year 2022 had the least death frequency accounting for 9.6% while the first quarter of 2025

accounted for 15.4%.Across all the years of study except 2025,most of the deaths occurred in the evenings, between the hours of 5-11pm while year 2025 recorded highest death in the morning hours(12am to 12noon).

Conclusion: Despite the significant progress made in curbing mortalities among children across the world, this ugly event has remained bothersome and unabated with mortalities among children still at alarming rate especially under 5 and among neonate. Any serious nation who wants to make a giant stride in heath of her citizens must developed practical interventional approach that can yield effective and enduring results.

INTRODUCTION

Over the past years, researchers have often been bothered about the rate of mortality in children and have often been in continuous search of ways to mitigate against this ugly trend. Although some significant progress have been made, to curb the rising mortality of children under age 5, children aged 5−9 and adolescents aged 10−14, still, in 2017 alone, an estimated 6.3 million children and young adolescents died, mostly from preventable diseases . Children under age 5 accounted for 5.4 million of these deaths, with 2.5 million deaths occurring in the first month of life, 1.6 million at age 1–11 months, and 1.3 million at age 1−4 years. An additional 0.9 million deaths occurred amongst children aged 5−14year [1]. Globally, even across all regions and income groups, the majority of child mortality occurred during the earlier age with 85 percent of the 6.3 million deaths in 2017 occurring in the first five years of life.

In 2017, half of all deaths under 5 years of age took place in Sub Saharan Africa and another 30% in Southern Asia and 1 in 13 children died before their fifth birthday in Sub-Saharan Africa; this is however lower in high-income countries[1].

Measuring how many children die each year and why they died along with measuring how diseases and injuries are affecting children is one of the most important means for assessing the effectiveness of a country's health system. Cause-of-death statistics even among all age groups help health authorities determine the focus of their public health actions. They may be used to determine which preventive and medical curative measures or which focus in research might increase the life expectancy of the population [2].

Of all mortality measures, infant mortality rate is the most frequently used indicator of broad socioeconomic well-being. It stands as a basic measure of how well a society meets the needs of its people. However, in many developing countries, especially those in Sub-Saharan Africa, about 50% of early childhood deaths occur after infancy and the risk of dying is highest in the period immediately after birth, remains high but at a lower level through infancy, and drops further until about age 10 to 15 years, after which mortality increases with increasing age[3]. This general pattern occurs in all human populations; however, the precise configuration of the mortality schedule depends on both the level of mortality and the relative importance of different age-specific causes of death. The relative contributions of mortality at different ages (the age pattern of mortality) has important implications for policy formulation, for the allocation of resources, and for targeting of interventions [3].

It has been estimated that more than 4 million newborns die yearly within the first 4 weeks of life, with 3 million of these deaths occurring in the early neonatal period. Unfortunately, 98% of these deaths occur in developing countries. Worldwide, in 2013, it was estimated that 6.3 million children died before their fifth birthday, and 44% of them died within the first 28 days of life [4]. In addition, 73% of all neonatal deaths occurred within the early neonatal period with 36% occurring on the day of birth [5]. The prevalence of childhood mortality in developing countries is very high. In Africa and South Asia alone, child mortality accounted for about 90% of the world total mortality [6].

In developing countries, the risk of death in the newborn period is six times greater than in developed countries and over 8 times higher in the least developed countries [3]. Africa has the highest risk of neonatal death, with a figure of 41 neonatal deaths per 1000 live births [3]. Nigeria has the highest neonatal death in Africa with an estimate of 700 babies dying daily (around 30 every hour), and second highest in the world. Hence, Nigeria contributes about 8% of the world's annual neonatal deaths [7]. Early neonatal deaths are due to obstetric complications while intrapartum deaths are closely linked to place of delivery and care at delivery [3]. In most developing countries, about 40% of deliveries occur in health facilities and few actually take place with the assistance of trained health personnel [5].

In Aminu Kano University Teaching Hospital for instance, common morbidities and mortalities were neonatal sepsis, prematurity, and birth asphyxia among the 522 cases analyzed. Highest mortality (44.8%) occurred within 24hrs of admission and neonatal tetanus had the highest case fatality rate of 42.8% [5].

There are many diseases and non disease events that are implicated in deaths among children and this mostly vary within the age groups of children. For age groups under 5 years, diarrheal diseases, respiratory infections, other communicable diseases, and congenital

malformations represent major causes of death [2]. Ending preventable deaths of newborns and children under 5 years of age by 2030 is a central aim of the international community and is codified in the United Nations' Sustainable Development Goal 3.2 (UN 2017) [8]. In Asaba, delta state, a total of 3,830 children with age ranges between 1 month and 180 months were admitted and studied from January 2007 to December 2011 and More than 70% (2912/3830) were under 5 years of age. There were 221 (5.8%, 221/3830) deaths majorly from complicated malaria (24.4%, 54/221), sepsis (19.9%, 44/221), diarrheal diseases (18.1%, 40/221) and RTIs (7.7%, 17/221) [11].

Similarly in Port Harcourt, out of 2,174 admissions. Sixty one of the total number of admissions died in the children medical wards giving a mortality rate of 2.8%. The youngest child was 2 months and the oldest 10 years. Fifty two (80.3%) were under 5 years. There was male preponderance. Most of the deaths occurred between April and September. The commonest causes of death were HIV/AIDS and bronchopneumonia in the under five age group; while in those above 5 years of age malignancies and HIV/ AIDS were the predominant causes[10]. Childhood deaths have been reported to be concentrated in poor resource settings like Nigeria where poverty, ignorance and social instability have provided a platform on which malnutrition and infection-related diseases have resulted in childhood deaths (4). Impressive progress has been made in improving the survival rates and health of children, even in some of the poorest countries, since 1990 (5). However it is worrisome to note that high rate of infant and child morbidity and mortality is still one of the greatest challenges facing most of the countries in Sub-Saharan Africa[10]

In Uyo Akwa-Ibom state, Nigeria, a total of 772 deaths were recorded in 2014, Of the 772 deaths, 453 (58.7%) were males and 319 (41.3%) were females. Four hundred and thirty nine deaths (56.9%) were among children aged less than one month. More of the deaths occurred at about the month of March, while cumulative deaths were highest in the 15th hour of the day. The leading causes of death were prematurity, asphyxia, bronchopneumonia, septicemia, severe malaria and malignancies [11].

In a prospective cohort study among 208 children aged 1–59 months admitted to Mbarara Regional Referral Hospital in Uganda, a recorded mortality rate within the first 24 hours of 7.7% and the median time to death was 7.3(2.62–8.75) hours was worrisome. Most deaths occurred in infants, with severe pneumonia, severe acute malnutrition, and malaria as leading causes. Factors predicting mortality included admission during the night and abnormal neutrophil count. The study highlights the importance of timely interventions, particularly for infants, and suggests extra monitoring for those admitted at night [11]

In 2021, over 80% of the estimated 5 million deaths of children under 5 years occurred in Sub Sahara Africa and Southern Asia, with approximately 78 deaths per 1000 live births in SSA [2]. This rate is about 15 times higher than in Europe and North America and 19 times higher than in New Zealand and Australia [3]. Most of these deaths are due to infectious diseases like measles, malaria, cholera, diarrhea, and respiratory infections. Even though these diseases are preventable and curable, the lack of efficient healthcare intervention strategies has resulted in continued death in children in Africa [1].

Although childhood mortality has declined globally, this is not so in Nigeria with highest record of under-5 mortality in Sub Sahara Africa [11]. World Health Organization (WHO) has it as a record that Nigeria, including 4 other countries (India, Pakistan, the Democratic Republic of Congo, and Ethiopia), accounted for half of all deaths among children under the age of 5 in 2020, with nearly a third of all deaths occurring in Nigeria (844,000 deaths) and India (783,000) alone[13].

In 2022, the under-5 mortality rate among the poorest house holds in Nigeria was 142 per 1000 live births, compared to 54 deaths per 1000 live births among the wealthiest households: a disparity of 88, the highest in the world [13]. In 2021, under-5 mortality ranged from 52 deaths per 1000 live births in some regions to as high as 253 deaths per 1000 live births in others [13]. Nigeria lags significantly in reducing under-5 mortality. This is more worrisome as while Ethiopia and Nigeria had similar under-5 mortality rates of around 200 deaths per 1000 live births in 1990, Ethiopia has achieved significant progress, reducing its rate to 49 per 1000 live births in 2020. Unfortunately, Nigeria's rate remains much higher at 114 deaths per 1000 live births [13].

Sub-Saharan Africa remains the region with the highest under-five mortality rate in the world. In 2017, the region had an average under five mortality rate of 76 deaths per 1,000 live births. This translates to 1 in 13 children dying before his or her fifth birthday – 14 times higher than the average ratio of 1 in 185 in high-income countries and 20 times higher than the ratio of 1 in 263 in the region of Australia and New Zealand, which has the lowest regional under-five mortality rate[14]. On current trends, 56 million children under 5 years of age are projected to die between 2018 and 2030, half of them are newborns [14].

In the Middle East and North Africa, the under 5 years mortality rate was studies; 77% in 1990 and 54% in 2000 per 1000 live births. In Pakistan, one in every 14 children die before reaching the age of one year and one in every 11 does not survive to his or her fifth birthday[9].The Neonatal Mortality Rate (NMR) in rural and urban areas is 62 per 1,000 live births and 47 per 1,000 live births respectively [9].

The neonatal period, defined as the first four weeks of life, accounts for significantly high morbidity and mortality [1]. Between 1990 and 2017, the global neonatal mortality rate decreased from 36.6 deaths per 1,000 live births in 1990 to 18 deaths per 1,000 live births in 2017[16]. Notably, neonatal mortality rates varied significantly between countries, it is said to be high in South Asia and low in Europe and North America. Therefore, a newborn's chances of surviving and thriving largely depend on where they are born [16].

In Viet Nam, the mortality of children aged 1 to 11 months decreased a third from 44.4% in 1990 to 14% in 2019 [16] ,however, despite remarkable improvements in maternal and neonatal care, the neonatal mortality rate has remained high. The neonatal mortality rate from 2010 to 2014 was 11.95%, which accounted for 70% of all deaths in children under 1-year and 50% of all deaths in children under 5-years[16].Painfully, most of these childhood deaths are due to preventable or treatable infectious diseases. Diseases such as malaria, pneumonia, diarrhea, measles and HIV/AIDS account for more than 70 per cent of the under-five deaths in Nigeria [17].

Many factors are contributory to high child mortality rates around the globe. Preventable diseases are responsible for a large number of deaths in vulnerable children who do not have access to vaccinations. Poor sanitary environment especially in regions with turmoil and chaos make children vulnerable. Malnutrition and hunger kill millions of innocent children who do not have the proper availability of food and nourishment [9]. Much of the progress made before now in reduction of mortality in children is attributed to the success of public health interventions, particularly those targeting malaria, malnutrition, and mother-to-child transmission of HIV. However, as the world moves into the Sustainable Development Goal era and aims to end all preventable under-5 deaths by 2030, public health strategies alone will not be sufficient. Child hospital mortality remains high, and challenges delivering high-quality hospital care may be responsible for over half of all deaths in low- and middle-income countries. Assessing and improving the quality of pediatric hospital care will be crucial in reducing childhood mortality [18].

Infection is the leading cause hospitalization in children in Nigeria and beyond causing lower respiratory tract infections and vaccine preventable diseases. Pediatric sepsis is a term that refers to a group of illnesses caused by bacteria, viruses, fungi, or parasites, as well as the harmful products of these pathogens. Sepsis-causing infections are a significant cause of death and morbidity in children worldwide. It affects people of all ages and is caused by a variety of infectious diseases, including pneumonia, malaria, meningitis, tuberculosis (TB), HIV, and COVID-19[2,7, 8]. Sepsis is one of the main causes of death and morbidity worldwide, and it affects all age groups, accounting for 20% of global deaths with a particularly devastating impact in low-income nations [8].

In 2017, children accounted for half of all sepsis cases worldwide, with an estimated 20 million cases and 2.9 million fatalities in under 5yrs children. An estimated 17 million of these cases and 3.5 million of the deaths occur in Africa. Sepsis also accounts for 15% of neonatal deaths, and is the most common cause of death in infants globally. According to the World Health Organization, sepsis due to severe pneumonia, severe diarrhea, severe malaria, and severe measles, are responsible for the highest deaths in children [8].

In the United States, infants are at highest risk of sepsis. About 25% of severe sepsis occurs in low- and very low-birth-weight (VLBW) children. Also, boys less than 10yrs of age had significantly higher rates of severe sepsis than girls, particularly among infants [8]. Regional disparities in sepsis incidence and mortality exist between high income (HIC) and low- and middle-income countries (LMIC), with 85% of sepsis cases and related deaths occurring in Africa [13]. Studies have shown that, children in LMICs are 18 times more likely to die under the age of five than children in higher income countries (HICs) [7,8,12]. This may be due to the interplay between socio-economic factors and poor medical care and resource limitations [6]. Nigeria is the second highest contributor to under-five mortality in the world, majority of these deaths were due to sepsis[8].

India contributes about 23 percent of the global pneumonia burden and 36 percent of the WHO regional burden in patients under 5 years of age [19]. Several developing countries have reported risk factors for the development of pneumonia and patient fatalities. Despite the fact that pneumonia-related mortality can be avoided with modest actions and effective treatment, identifying children with pneumonia who are at high risk of death remains difficult [19].

Other notable death causing diseases in children include severe acute malnutrition, diarrheal diseases and malaria, in addition to newborn-related issues like prematurity, birth asphyxia and HIV[12].Family poverty and illiteracy are significant underlying risk factors, so also are overcrowding, unsafe drinking water and un-salutary sanitary habits. Pneumonia, diarrhea and malaria account for 41% of annual death globally and 49% in Africa [2]. The bulk of childhood morbidity and mortality affect mainly children under 5 years of age [9].

On the other hand , prematurity is another notorious events which is also a leading cause of neonatal deaths. Followed by birth asphyxia, and congenital anomalies. These causes make up nearly 80% of the causes of infant deaths [9]. Meanwhile, the aforementioned causes could be partly prevented. One of the possible explanations for the high neonatal mortality is the lack of collaboration between pediatricians and obstetricians at the hospital [16].

In Vietnamese, Early-onset neonatal sepsis was the most frequent cause of death in a separate study.Accounting for (49.9%), sequentially followed by late-onset neonatal sepsis (35.5%), congenital anomalies (14%), hyaline membrane disease (12.6%), unconjugated hyperbilirubinemia (12.2%), and asphyxia (10.2%). Moreover, the mortality rate was reported as 13.2%. The factors associated with mortality included gestational age, birth weight, multiple anomalies, critical congenital heart defects, asphyxia, hyaline membrane disease, cerebellar hemorrhage, and early-onset neonatal sepsis [16].

In Rajasthan, accidental in 76% of cases, suicidal in 7.6%, homicidal in 1.6% and unknown in 14.8% at the time of autopsy were the major cause of death among children. Road Traffic Accidents (RTAs) accounted for the majority of deaths (200 cases, 41.1%), burns in 76 cases (15.6%), followed by falls from height (73 cases, 15%) and most of the subjects belonged to rural area [20]. An unnatural

cause of death results from an external cause typically including homicides, suicides, accidents, medical errors, alcohol intoxications and others were leading at a time in causing death in children. . Children are more prone to accidental injuries due to developmental and behavioral factors at different stages of growth. Neonates and infants are vulnerable to falls, suffocation, or improper handling. Toddlers and young children, driven by curiosity and unsteady mobility, often explore without understanding risks, leading to falls, choking, or burns [20]. Adolescents, on the other hand, are prone to injuries due to risk-taking behaviors, peer pressure, and cognitive immaturity, which impairs judgment and impulse control. Among children, it has been documented that lack of supervision, unsafe environments, and unpredictable behavior further increase their susceptibility to accidents [20]. Trauma remains one of the leading causes of their mortality [20].

Furthermore, overcrowding increases the chances of droplet infections. Malnutrition, ignorance, unemployment and low income are important risk factors jeopardizing child survival. Based on the recent experience in Sri Lanka and Kerala State in India, it has been suggested that for every year of normal schooling for girls, a reduction of 10% in infant mortality be reasonably expected. Malnutrition increases the risk of deaths, it contributes a reasonable percentage to the totality of children deaths under 5 [15].

In addition, maternal age, like young mothers, often due to early childbearing age or older mothers, who may face increased health complications, including preterm birth or gestational hypertension, are at higher risk of losing their children before the age of 5. Additionally, multiple pregnancy such as twins or triplets, have been linked to a high risk of prematurity, low birth weight, and congenital anomalies, which can contribute to a higher likelihood of under-5 mortality [13].Furthermore, low rates of exclusive breastfeeding, immunization and lack of access to sanitary and clean water facilities have been identified as risk factors associated with under-5 mortality in Nigeria. These factors tend to be more prevalent in Northern Nigeria, thereby creating disparities in under-5 mortality rates between the Northern and Southern geopolitical zones [13].

The Sustainable Development Goal-3 aims to lower the under-5 mortality rate to 25 deaths per 1000 live births by 2030[13]. In spite of great efforts by WHO, UNICEF, central and state governments for prevention of communicable diseases, India and Nigeria are still lagging behind goals[21] and Infection is the most prevalent cause among pediatric intensive care admissions in developing countries. Diarrhea, respiratory illnesses, malaria and central nervous system (CNS) infections are still responsible for heavy burden of morbidity and mortality. This is adjudged to be due to different geospatial, socioeconomic, demographic and health factors i.e. division, parents' education, fathers' occupation, wealth index of family, type of toilet, birth status (single or multiple birth), vitamin A and antenatal care visit during pregnancy as significantly associated with under-5 child mortality as documented in Bangladesh [22].

Moreover, more than 50% of deaths happen in the first 24 hours of hospital admission. These deaths are at times due to several factors including delays in seeking healthcare, inadequate healthcare interventions, financial limitations, lack of life-saving equipment, and insufficient support services, among others. Health workers in these settings often operate with minimal training and supervision, further complicating the delivery of critical care [18]. Newly born child often experiences a high degree of fragility and dependency which is often translated into high infant mortality rates. In developing countries especially in Equatorial Africa, infant mortality is as high as 191 per 1000 as in Niger Republic. Children in developing countries are also highly susceptible to the six childhood killer diseases of measles, diphtheria, whooping cough, neonatal tetanus, tuberculosis and poliomyelitis. One of the achievements of the 20th century has been the remarkable progress that has been made in death control [23].

Medical evidence shows that the common causes of death among children are respiratory infections, malnutrition, gastro-enteritis, and dehydration. The disastrous effect of malnutrition is that it does not only lower the body's resistance to infections, but a malnourished child easily gets ill and does not readily respond to medical treatment. Other common causes of child death include malaria, anemia, diarrhea, tuberculosis etc [23]. Children and adolescents have increasing threats to their health and wellbeing, with stark inequities for those living in areas where they face poverty, preventable injuries, conflict, and climate change. Investing in their wellbeing has benefits that extend into their adult lives and the next generation [24].

In adolescence, incidence of road traffic injuries, neoplasms, malaria, drowning, and diarrhea diseases tend to be high and sometimes are the leading causes of death. Countries in Western and Central Africa continue to bear the highest burden of communicable diseases in addition to injuries and non-communicable diseases. Neoplasms are the second most common cause of death and have had the slowest reduction in associated mortality rates. However, almost 45% of childhood cancers are expected to remain undiagnosed or misdiagnosed in the near future [24]. The sex-specific differences in burden of injuries are more pronounced for adolescents aged 15–19 years. An important contribution is the separate analysis for countries made fragile or affected by conflict. By 2019, 35·1% of deaths of children and adolescents occurred in these countries. Although most of the leading causes of death have declined, violence and conflict-related mortality has increased in the past decade for children and adolescents [24].

For the purpose of policy change and more attention to childhealth in resource allocation, this analysis is key to drive the policy towards reduction of mortality in children since the paucity of similar research work exist in our environment.

AIM: To determine the pattern and the frequency of deaths among pediatric patients in DUFUTH between March 2022 to June 2025.

OBJECTIVES:

4. To determine the social demography of pediatric patients in DUFUTH
5. To determine the pattern and frequency of mortality among pediatric age group in DUFUTH
6. To determine if possible, the variable contributing factors to death among hospitalized children in DUFUTH.

MATERIALS AND METHODS

STUDY DESIGN

This was a descriptive cross-sectional retrospective study which analyzed the cases of mortality among pediatric age group form March 2022 to June 2025.

STUDY AREA

This study was conducted at David Umahi Federal University Teaching Hospital, Uburu Ebonyi State, Nigeria. DUFUTH is a 500 bed space capacity tertiary health care institution with active clinics and wards. It is generally stratified into health care service department and administrative departments with effective mortuary services.

STUDY POPULATION

Children between the ages 0f 0-17 years who were admitted managed and died (while in admission) form March 2022 to June 2025 as well as cases of children who were brought in dead to the accident and emergency department of DUFUTH were included in the study.

Data collection

Causes of deaths among pediatric age group were retrospectively extracted from the health records department as well as the mortuary unit of the Anatomic Pathology department of the hospital.

Ethical approval

Study was granted by research and ethic department of David Umahi Federal University Teaching Hospital, Uburu.

DATA ANALYSIS

Statistical analysis of data generated in this study was entered and analyzed using SPSS version 22 (IBM Corps, Armonk, NY, USA). Frequencies and Percentages were used to represent the categorical variables. Pearson Chi square test was used to assess association between variables. Alpha value was set at 0.05.

RESULTS

GENERAL RESULT

Mortality among children in DUFUTH was recorded as 17.9%(52) out of 291 mortalities recorded from March 2022 to June 2025 with male 55.8%(29) and female 44.2%(23).

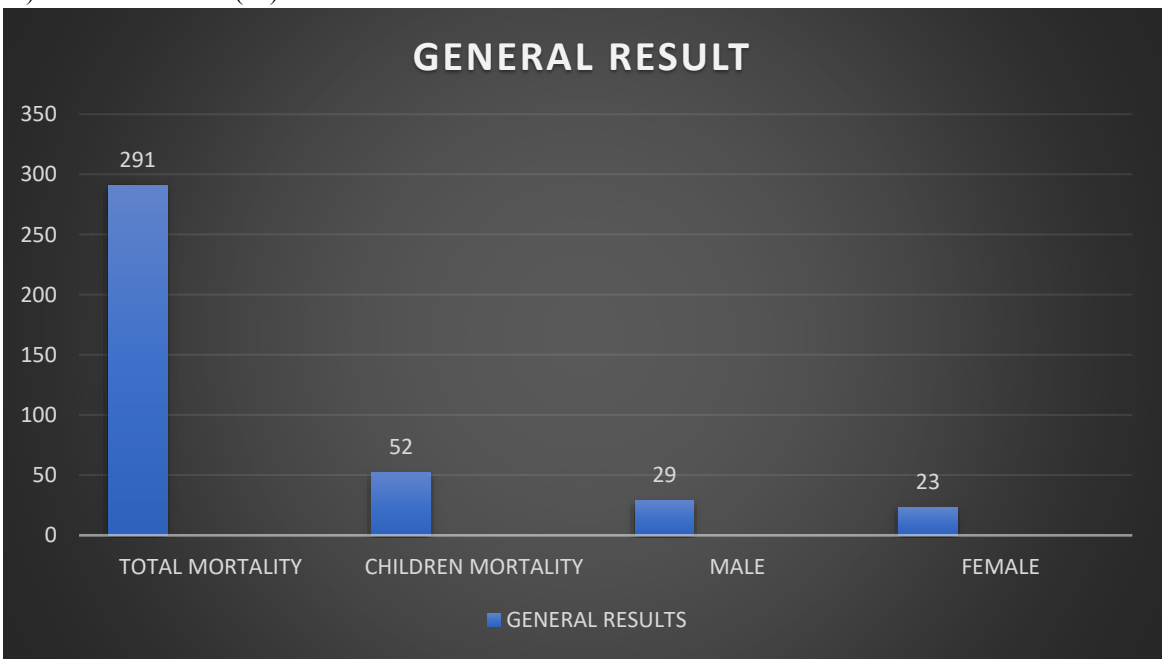

Fig. 1 showing the mortality of children in DUFUTH with their sex distribution.

DEATH ANALYSIS AMONG CHILDREN VS ADULT

Among the deaths, 52 (17.9%) are children within the ages of 0-17years while 239 (82.1%) were adults.

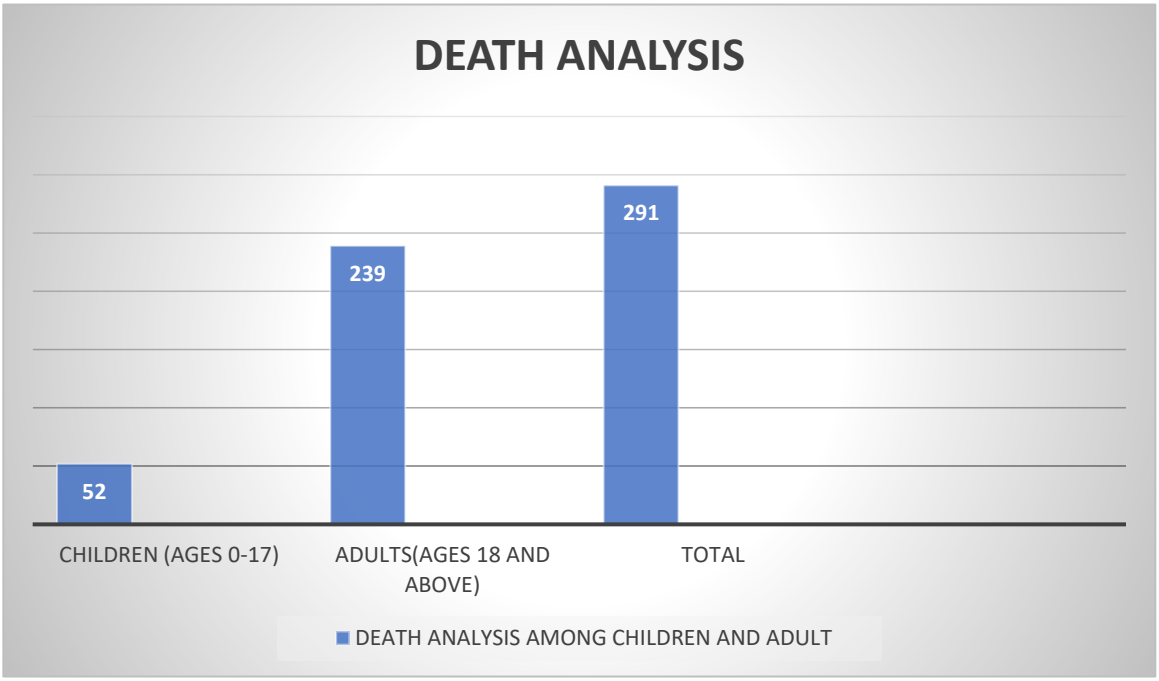

Fig. 2 showing the general prevalence of death among children in comparison with adult

AGE DISTRIBUTION

The highest frequency of deaths among children occurred among the age range of 0-1 year with a frequency of 50%(26). This is followed by ages 2-5years which recorded 11(21.2%) deaths. Ages 6-10 recorded 10(19.2%) deaths while 11-17years recorded 5(9.6%) deaths respectively.Sepsis and malaria were the most common pattern of death among all the age group.

Table 1 showing the age distribution of mortalities among the paediatric age group and the most common pattern.

S/N	AGE RANGE(YEARS)	NUMBER	PERCENTAGE	MOST COMMON CAUSE OF DEATH
1	0-1(Neonates & Infants)	26	50	severe sepsis
2	2-5(toddler and preschool)	11	21.2	Sepsis and Malaria
3	6-10 (school age)	10	19.2	Severe Malaria
4	11-17(adolescent).	5	9.6	Malaria, Gastroenteritis
5	**TOTAL**	**52**	**100**	

DETERMINANTS OF MORTALITY AMONG CHILDREN.

Severe malaria ranked the highest frequency on the cause of death among children accounting for 30.7%(16), this was followed by neonatal sepsis accounting for 26.9% (14). Anaemic heart failure accounted for 19.1%(10), while perinatal asphyxia and acute gastroenteritis accounted for 9.6% (5)and 5.7%(3) respectively. Low birth weight, severe malnutrition, febrile seizure and acute watery diarrhoea accounted for 2%(1) respectively. **See Table 8 below for the distribution.**

Table 2. Showing Determinants Of Death Among Children

CAUSES OF DEATH	NUMBER OF CASES	PERCENTAGES
SEVERE MALARIA	**16**	**30.7**
NEONATAL SEPSIS	14	26.9
ANAEMIC HEART FAILURE	10	19.1
PERI NATAL ASPHYXIA	5	9.6
ACUTE GASTROENTERITIS	3	5.7

LOW BIRTH WEIGHTT	1	2
SEVERE MALNUTRITION	1	2
FEBRILE SEIZURE	1	2
ACUTE WATERY DIARRHEA	1	2
TOTAL	**52**	**100**

YEARLY DISTRIBUTION OF MORTALITY IN CHILDREN.

Year 2024 saw the highest number of mortality in children accounting for 42.3% of the total mortality. Year 2023 had 32.7% of the total death in children. Year 2022 had the least death frequency accounting for 9.6% while the first quarter of 2025 accounted for 15.4%.

Table 3: showing the yearly distribution of mortalities in children

YEAR	NUMBER	PERCENTAGE
2022	**5**	**9.6**
2023	**17**	**32.7**
2024	**22**	**42.3**
2025	**8**	**15.4**

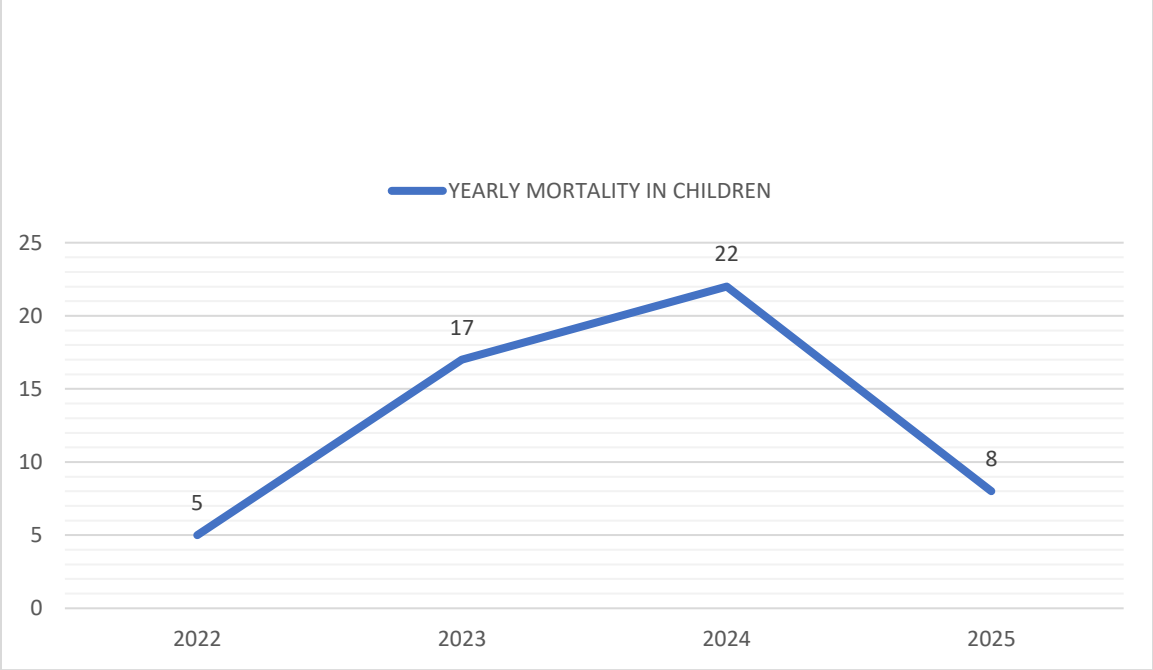

Fig. 3 Showing The Yearly Trends Of Mortalities Among Children

DEATH BY TIME OF THE DAY

Across all the years of study except 2025**,** most of the deaths occurred in the evenings, between the hours of 5-11pm while year 2025 recorded highest death in the morning hours (12am to 12noon). **See table 3 for the analysis**

Table 4. Showing The Distribution Of Deaths By Different Time Of The Day

YEARS	MORNING(12 AM - 12NOON)	AFTERNOON(12NOON-5PM)	EVENING(5PM-11PM	MIDNIGHT(11PM-12AM)
2022	1	1	2	1
2023	3	4	5	5
2024	1	5	10	6
2025	2	1	2	3
TOTAL	**7(13.5%)**	**11(21.2%)**	**19(36.5%)**	**15(28.8%)**

ANALYSIS BY DURATION ON ADMISSION

Most of the infants and neonates death occur within 24 hours on admission, this accounted for 46.2% (24). 30.8% (16) children died within 2-5 days on admission while a least percentage 23.0% (12) children died above 6 days on admission.

Table 5. showing deaths based on the duration n admission before deaths.

NUMBER OD DAYS ON ADMISSION	DISTRIBUTION	PERCENTAGES
24HRS	24	46.2
2-5DAYS	16	30.8
6DAYS AND ABOVE	12	23.0

DISCUSSION

The overall mortality among children in DUFUTH stood at 17.9% (52) out of the 291 mortalities recorded from March 2022 to June 2025, dominant among male children 55.8%(29) than female children 44.2%(23). Different levels of care amongst different genders could be a potential cause with the preference for taking male children to the hospital than they do for female children. Biased affection for male children is a documented problem in developing countries. Higher death rates amongst older female children could also be a result of a negative attitude towards the girl child [1]. Similarly, majority of deaths among children in Kano and Malawi are males (59.9%) and within 1-5 years of age (53.3%) [7, 8].

Of all the mortalities, severe malaria and neonatal sepsis maintain a combine determinants of 57.6%(30) making infection to be the leading cause of deaths among children in DUFUTH. Studies done in many areas like Kano, Egypt and Saudi Arabia recorded case fatality rate for sepsis to be 10.7% collectively. This was comparable to similar studies in Nigeria [21, 22] and Egypt[23] where the mortality rate was 8.8% but lower than 22% reported by Shanza A Fadelet al[24] and 23.8% reported in Saudi Arabia[25]. This difference could be due to difference in the studied population where their patients were those admitted into the pediatric intensive care unit only, indicating the level of severity of the disease. In Asaba, the common indications for admission and deaths were complicated malaria (24.4%, 54/221), sepsis (19.9%, 44/221), diarrhea diseases (18.1%, 40/221) [9].

Various factors could contribute to a different mortality pattern of children among the studied population of pediatric patients in Uburu, these include, infectious diseases like severe malaria, neonatal sepsis, anaemic heart failure, perinatal asphyxia, severe malnutrition, acute gastroenteritis, febrile seizure, and low birth weight. Similar studies in port Harcourt, Kano and among several countries in the world especially among developing countries placed infections above all else as a major cause of death in children [14,9,5,10, 11,13, 8,19,14].

Health intervention programs such as integrated management of childhood illnesses and primary health care, which have been shown to reduce childhood deaths significantly, need to be intensified in our locality. Sepsis is one of the main causes of death and morbidity worldwide, and it affects all age groups, accounting for 20% of global deaths with a particularly devastating impact in low-income nations [8]. Regional disparities in sepsis incidence and mortality exist between high income (HIC) and low- and middle-income countries (LMIC), with 85% of sepsis cases and related deaths occurring in Africa [13]. Studies have shown that, children in LMICs are 18 times more likely to die under the age of five than children in higher income countries (HICs) [7,8,12]. This may be due to the interplay between socio-economic factors and poor medical care and resource limitations [6]. Nigeria is the second highest contributor to under-five mortality in the world, majority of these deaths are due to sepsis [8]

This is bothersome as despite the improvement in the development of antibiotics, infections is still ravaging our children causing deaths among them.

Most studies reveled a gradual reduction in the mortality rate with increasing age of the children. It is almost generally agreed that mortalities among neonates and infants are higher than that of toddlers, pre school and school age and even among adolescents. This study is not exception. Neonates and infants make up 50% of the mortalities among children in DUFUTH, ages 2-5, 6-10 and 11-17 stood mortalities of 21%, 19%, and 9.6% respectively. This is almost similar in developing countries and even among developed world. In Asaba, delta state, more than 70% (2912/3830) deaths recorded were under 5 years of age, which were majorly from complicated malaria (24.4%, 54/221), sepsis (19.9%, 44/221), diarrheal diseases (18.1%, 40/221) and respiratory tract infections(RTIs) (7.7%, 17/221) [9]. The youngest child in a study done in US was 2 months and the oldest 10 years and 80.3% deaths were under 5 years with male preponderance and deaths occurred mainly between April and September [10] . Most deaths in Uganda occurred in infants, with severe pneumonia [11]. It is widely documented that over 80% of the estimated 5 million deaths of children under 5 years occurred in Sub Sahara Africa and Southern Asia, with approximately 78 deaths per 1000 live births in Sub Sahara Africa were all under 5 [2].

Even in Uyo, four hundred and thirty nine deaths (56.9%) were among children aged less than one month. More of the deaths occurred at about the month of March, while cumulative deaths were highest in the 15th hour of the day [11].

Although childhood mortality has been said to decline globally, this is not so in Nigeria. Nigeria has the highest record of under-5 mortality in Sub Sahara Africa[11] and according to the World Health Organization (WHO), Nigeria, including 4 other countries (India, Pakistan, the Democratic Republic of Congo, and Ethiopia), accounted for half of all deaths among children under the age of 5 in 2020, with nearly a third of all deaths occurring in Nigeria (844,000 deaths) and India (783,000) alone[13]. Among the 2827515 children analyses across some African States , 81.5% of deaths occurred in the first 2years after birth ranging from 63.7% in Niger to 97.8% in Albania. An estimated 18.5% of child deaths occurred at 24 to 59 months of age [19].

We cannot particularly tell why number of deaths was more in 2024 than any other year studied and death occurred more in evening and night time between the hours of 5pm to 11 pm and 12am to 6 am, compared to morning and afternoon period. More so, majority of death more than half occurred within 24 hours on admission . In a prospective cohort study in Uganda, mortality rate was frequent among children within the first 24 hours of admission and the median time to death was 7.3(2.62–8.75) hours. Factors predicting mortality included admission during the night. The importance of timely interventions, particularly for infants which suggests extra monitoring for those admitted at night can never be over emphasized [11] .

Childhood deaths have been reported to be concentrated in poor resource settings like Nigeria where poverty, ignorance and social instability have provided a platform on which malnutrition and infection-related diseases have resulted in childhood deaths (4). However it is worrisome to note that high rate of infant and child morbidity and mortality is still one of the greatest challenges facing most of the countries in Sub-Saharan Africa[10].

CONCLUSION

Preventable diseases still constitute the major cause of morbidity and mortality in our facility and our children are very much susceptible to death following infections and infection-related diseases. Therefore, efforts must be doubled to save our children from these ugly incidence and adequate resources and favorable policy must be deployed to combat deaths among neonates, infants and under 5 in our locality.

RECOMMENDATION

We therefore recommend improve intervention and adequate service cover in children emergency ward for the first 24 hours of admission as well as during the night shift. These will in no small way reduce mortality and morbidity among children in our facility**.**

CONFLICT OF INTEREST

The author declare no conflict of interest.

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