

**COMMON CAUSES OF CHILD MORTALITY IN ATBARA TEACHING HOSPITAL, SUDAN**

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**Abstract**

**Background** : Providing data about the common causes of child death is essential to the development of national and local health policies for prevention and control of disease.

**Objective** : To determine the common causes of child mortality in Atbara Teaching Hospital, Sudan.

**Methods** : In this retrospective study the records of children 0-15 years of age who died at Atbara Teaching Hospital within a 5 year period (Jan 2005 – Dec 2009) were reviewed for demographic data as well as the cause of death.

**Results** : From a total of 14765 admissions to the pediatric ward in the five year period the total death was 344 (2.3%). Males were 215 (62.5%) and females 129 (37.5%). The under five were the majority ( 92.2%). Neonates constituted 25.8% of the total, older infants 42.9% and more than one year to five years 23.5%. The commonest causes of death were respiratory tract infections (18.2%) followed by malnutrition (16.6%), blood infections (15.4%), gastroenteritis and dehydration (15.4%), malaria (5.9%), scorpion sting (5.9%), heart failure (4.3%), meningitis (3.4%) and anemia (2.5%). At the bottom of the list were: tuberculosis (0.6%) and tetanus (0.3%).

**Conclusion** : Causes of child mortality in Atbara are similar to those reported from other developing countries. Children under-five years of age are at the greatest risk of death from preventable and treatable diseases.

**Key words**: Child mortality, neonatal death, Atbara, Sudan.

الأسباب الشائعة لوفيات الأطفال في مستشفى عطبرة التعليمي بالسودان  
وديع محمد ياسين المدهون<sup>1</sup> و عمر حسين<sup>2</sup>  
الخلاصة

**مقدمة** : إن معرفة وتحديد الأسباب الشائعة لوفيات الأطفال مهم في تطوير السياسات الصحية المحلية والقومية الخاصة بالوقاية والتحكم في هذه الأسباب.

**الأهداف**: هدفت هذه الدراسة إلى تحديد أسباب ونسبة وفيات الأطفال في مستشفى عطبرة التعليمي بالسودان في الفترة من يناير 2005 – الي ديسمبر 2009 م.

**EDITORIAL**

**المرضى والطرق:** في دراسة استرجاعية تمت مراجعة ملفات الذين توفوا داخل مستشفى عطبرة التعليمي في فترة خمسة أعوام (2005 – 2010) وتم جمع وتحليل البيانات الخاصة بأسباب الوفاة. **النتائج:** من جملة عدد 14765 مريض ادخلوا الي عنابر الأطفال بالمستشفى في فترة الخمسة أعوام كان عدد الوفيات 344 (2.3%). وكانت نسبة الذكور (62.5%) والإناث (37.5%). وكانت معظم الوفيات (92.2%) في الأطفال دون الخامسة, حيث شكل حديثي الولادة نسبة (25.8%), والأطفال من عمر شهر وحتى عام واحد (42.9%) واكبر من عام ودون الخامسة (23.5%) من جملة الوفيات. وكانت أكثر أسباب الوفيات شيوعا هي التهابات الجهاز التنفسي (18.2%) ثم سوء التغذية (16.6%), الالتهاب الدموي (15.4%), الإسهال وفقدان السوائل (15.4%), الملاريا (5.9%), لدغات العقارب (5.9%), قصور القلب (4.3%), التهاب السحايا (3.4%) وفقر الدم (2.5%). وتندبل قائمة الأسباب المؤدية للوفاة لمرض السل الرئوي (0.6%) والكزاز (0.3%). **خاتمة:** إن الأسباب الشائعة لوفيات الأطفال في مستشفى عطبرة لا تختلف كثيرا عن مثيلاتها في البلدان النامية, فالأطفال دون الخامسة أكثر عرضة للوفاة من أمراض قابلة للوقاية والعلاج.

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**Introduction**

Child mortality is the result of a complex web of determinants at many levels <sup>[1]</sup>. The prevalence of childhood mortality in developing countries is very high. In Africa and south Asia alone, it accounts for 90% of the world total. The vast majority die from causes preventable through a combination of good care, nutrition and medical treatments <sup>[2]</sup>. The main causes are diarrhoea, pneumonia, measles, malaria and HIV/AIDS. The underlying causes are undernutrition, and a small group of causes leading to neonatal deaths <sup>[3]</sup>. The probability of death between birth and 15 years ranges from 22% in sub-Saharan Africa to 1.1% in the established market economies. About one third of all deaths in the developing world occurred in children younger than 5 years. Within developing regions, the age structure of death varied widely: 53% of all deaths in sub-Saharan Africa occurred between ages 0 and 4 years, compared to 11% in China <sup>[4]</sup>. Six causes of death account for 73% of the 10.4 million deaths among children under the age of five years worldwide, these are acute respiratory infections (17%), diarrhoeal diseases (17%), prematurity and low birth weight (11%), neonatal infections such as sepsis (9%), birth asphyxia and trauma (8%), malaria (7%). Undernutrition is an underlying cause in an estimated 30% of all deaths among children under five. Deaths in the neonatal period (0–27 days) account for more than one third of all deaths in children. The two leading communicable disease killers in all regions are diarrhoeal diseases and respiratory infections. Deaths directly attributable to malaria occur almost entirely in the African Region, representing 16% of all under-five deaths in that region. HIV/AIDS and measles are important causes of death 5% of all child deaths are associated with HIV. Measles mortality, which has declined considerably in recent years, is estimated to be responsible for 4% of deaths among children aged under five <sup>[5]</sup>.

**Patients and Methods**

This is a retrospective, observational and descriptive study in which the records of 344 children aged 0 – 15 years who died at Atbara Teaching Hospital between Jan 2005 through Dec 2009 were reviewed for the cause of death as well as demographic data. Records included were from the inpatient files and for children who died at the casualty. The cause of death was based on clinical grounds.

Atbara is the main city in River Nile State, Sudan, some 310 km north to the capital Khartoum, with a population of 134586 among them 45755 (34 %) are 0-15 years of age. Atbara Teaching Hospital is a 400 bed tertiary care facility.

The aim of this work is to study in retrospect the pattern of child mortality in Atbara region.

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The data generated from a questionnaire was coded, entered, validated and analyzed using Statistical Package for Social Science (SPSS) version 12.0.

### **Results**

From a total of 14765 children admitted to the pediatric ward in the five year period of the study the total death number was 344 (2.3%). Males were 215 (62.5%) and females 129 (37.5%). The under five were the majority 92.2%. Neonates constituted 25.8% of the total, one month to one year 42.9%, more than one year to five years 23.5%. The most common causes of death were respiratory tract infections 18.2%, malnutrition 16.6%, blood infections 15.4%, gastroenteritis and dehydration 15.4%, malaria 5.9%, scorpion sting 5.9%, heart failure 4.3%, meningitis 3.4% and anemia 2.5%. At the bottom of the list: tuberculosis 0.6% and tetanus 0.3%. The most common causes of neonatal death are septicemia (44.4%) and respiratory infections (22.2%). More than half (57.5%) of the total child death occurred during the summer period that extends from April through September. Almost two thirds of malnutrition cases (64.2%) are from rural areas of nearby small cities

### **Discussion**

In a period of 5 years, the total number of admissions to the pediatric ward was 14765 with 344 children death (2.3%) which is lower than that reported from Sana'a, Yemen (14%)<sup>[6]</sup>, Ilorin-Western Nigeria (11.6%)<sup>[7]</sup> and that from Port Harcourt Hospital, Nigeria (5%).<sup>[8]</sup> Male to female ratio was 1.7:1. Children under five years took the burden of the death toll (92.2%) of the total child mortality pointing to the area where efforts should be focused. Respiratory infections were the leading cause of death with similar percentage as in all developing countries.<sup>[5]</sup> Malnutrition was the second most common cause of child mortality in this study, although it indicates poverty, but also lack of education about nutritional habits in the community. Neonates are more likely to die of blood sepsis or respiratory infection, which are treatable causes of death. Only one neonate died of neonatal tetanus in 5 years period reflecting the wide coverage of the immunization programs. Gastroenteritis and dehydration were still among the leading causes of death among children (15.4%). Scorpion sting was similar to malaria as a cause of death with a 5.9% each, a point that needs to be addressed by health personnel as well as the local health authorities. Measles and HIV/AIDS were not recorded as a cause of death in any case during the study period. Prematurity was not recorded in this study because premature children are not admitted to the pediatric ward, rather they are nursed at the nursery where data is very deficient therefore not reported in this study. Malignant diseases were also absent because children with malignancies are referred to specialized centers once diagnosed either from outpatient or private clinics and accurate data are not available. The vaccine-preventable diseases are no longer common causes of child death as it is evident in this study. This fact is supported by the high coverage rate of vaccination in River Nile State as follows : tuberculosis 87.6%, DPT3 74.6%, polio 73.3%, measles 82.8%, neonatal tetanus 73.0% and fully immunized children constitute 57.0%.<sup>[9]</sup> The survey in 2006 reported child mortality rate was 34, under-five mortality rate was 112, the neonatal mortality rate was 41, and the post neonatal mortality was 40 per 1000 live births<sup>[10]</sup>.

Feasible policies that would reduce child mortality include proper implementation of the components of the IMCI and primary health programs, namely, antenatal care, immunization against preventable diseases, promotion of health education, encouraging proper practices for breast feeding, improvement of nutrition, provision of safe drinking water and enhancement of sanitation.

The weaknesses of this study, are similar to those of other hospital-based studies in situations such as ours,

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these include loss of data, unrecorded referrals and early hospital deaths, in addition to exclusion of postmortem findings for determination of the exact cause of death. Therefore the results may not precisely represent the causes of death in the whole community.

### **Conclusion**

Common causes of child mortality in Atbara Teaching Hospital, Sudan are similar to those of the developing world with respiratory infections, malnutrition, gastroenteritis and blood infections are the leading causes of death. Scorpion sting causes similar number of fatalities among children in our community as malaria. Most child mortality causes are preventable by feasible policies.

### **Competing interests**

The authors declare that they have no competing interests.

### **Authors' contributions**

Both authors designed the study, the first author wrote then both authors participated, read and approved the final manuscript.

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