Nigerian Journal of Paediatrics 1987; **14** (1): 1–5

Pattern of Childhood Mortality at the University of Ilorin Teaching Hospital

D FAGBULE* AND KT JOINER†

Summary

Fagbule D and Joiner KT. Pattern of Childhood Mortality at the University of Ilorin Teaching Hospital. *Nigerian Journal of Paediatrics* **1987; 14: 1.** Of 9260 consecutive admissions to the department of paediatrics, University of Ilorin Teaching Hospital, during a two-year period (January 1983–December 1984), 1078 died, giving an overall mortality of 11.6%. Out of the 1078 cases that died, 92.2% were in the pre-school age group, with a peak in children aged 7–12 months. Only 7.8% of the total deaths occurred in children aged 61 months to 14 years. The major causes of death were gastroenteritis, measles with complications, preterm delivery and malnutrition. 82.1% of the deaths were in children from the high-density urban and periurban area of Ilorin. Majority of the deaths were considered to be preventable. Reduction in childhood mortality can be achieved by community participation in primary health care delivery programmes such as immunization, nutrition and health education and environmental sanitation.

Introduction

NEARLY 70% of deaths in most African and other Third World countries occur in children under the age of five years,[1] as against 5% in developed countries.[2] Childhood mortality in these Third World countries, especially those in Africa and South Asia, account for 90% of the world total.[3] Analysis of causes of death in many of these countries were based mainly on hospital records. However imperfect these records might have been, they serve as pointers to what exists in their populations at large.

Records of trends in childhood mortality in Nigeria are available for the south-west zone[4-7] and to some extent, the eastern zone.[8] There are however, no similar records for the middle belt of Nigeria. This study, which was carried out at the University of Ilorin Teaching Hospital (UITH), serving the whole of Kwara, parts of Niger, Benue, Bendel, Ondo and Oyo states, was meant to bridge this gap in our knowledge.

University of Ilorin Teaching Hospital, Ilorin

Department of Paediatrics and Child Health
* Lecturer/Consultant
† Senior Lecturer/Consultant

Correspondence : Dr D Fagbule

Materials and Methods

All the case notes of children admitted to the Neonatal Intensive Care Unit, Emergency Paediatrics Unit (EPU) and Children's Ward,

UITH, between January 1983 and December 1984 were reviewed, and the total number of deaths recorded. The information extracted from the case notes included age, sex, residential addresses, diagnosis and duration of hospitalization. Due to religious beliefs among the indigenes, necropsy was hardly ever performed therefore, data on this examination could not be obtained.

Results

During the two-year period under review, 9260 children were admitted: 4349 in 1983 and 4911 in 1984. There were 5910 males and 3350 females, a male: female ratio of 1.8:1. There were 1078 deaths (501 in 1983 and 577 in 1984), of which 639 were males and 439 females; a male: female ratio of 1.5:1. The overall mortality was 11.6%. Eight hundred and eighty-five (82.1%) of those who died, came from the high-density urban and periurban areas of Ilorin.

Age distribution

Six hundred and thirty-three (58.7%) of the 1078 deaths occurred in the first year of life, with a peak in the age group, 7–12 months; in all, 994 (92.2%) of the deaths occurred in the first 5 years of life. Only 84 (7.8%) deaths occurred in children aged 61 months-14 years (Table I).

Causes of death

The principal causes of death in the 1078 cases are listed in Table II. The five principal causes were pneumonia (12.5%), gastroenteritis (12.0%), measles with complications (10.0%), preterm delivery (9.7%) and malnutrition (9.5%). However, significant differences were evident in the various age groups.

Neonatal period

The three principal causes of death in the 257 neonates that died, were prematurity, birth

Table I

Age Distribution of Childhood Deaths in Ilorin (UITH) and Ibadan (UCH)[4]

Age (Mon)	*Number of Deaths*			
	Ilorin (UITH)		*Ibadan (UCH)*[4]	
	No of Deaths	*% of Total*	*No of Deaths*	*% of Total*
Birth – 1	257	23.8	725	23.5
2 - 6	77	7.2	391	12.7
7 - 12	299	27.7	446	14.4
13 - 24	233	21.6	715	23.1
25 - 36	59	5.5	325	10.5
37 - 60	69	6.4	288	9.3
61 - 14 yrs	84	7.8	202	6.5
Total	1078	100.0	3092	100.0

TABLE II

Principal Causes of Death in Ilorin (UITH) compared with Lagos (LUTH)[5] and Ibadan (UCH)[4]

Diagnosis	*Percentage of Total Deaths*		
	(UITH) Ilorin	*(LUTH) Lagos*	*(UCH) Ibadan*
Pneumonia	12.5	5.0	14.4
Gastroenteritis	12.0	9.0	16.3
Measles with complications	10.0	0.5	4.0
Preterm with complications	9.7	–	13.6
Malnutrition	9.5	2.0	9.3
Febrile convulsion	6.2	11.0	–
Septicaemia	5.7	–	3.7
Birth asphyxia	5.7	–	–
*Severe anaemia	4.5	3.5	4.6
Meningitis	3.2	3.0	5.4

*Excluding haemoglobinopathies

asphyxia and neonatal tetanus accounting for 40.8%, 23.7% and 11.3% respectively. Others were respiratory distress secondary to pneumonia, meconium aspiration and idiopathic respiratory distress syndrome, in 8.6%, hyperbilirubinaemia in 7.8% and septicaemia in 5.8% (Table III).

Age group 2–12 months

The leading cause of death in this age group was pneumonia which accounted for 23.7% of the 376 deaths in the group. Gastroenteritis and septicaemia accounted for 18.9% and 10.9% respectively. Other important causes of death identified were measles with various complications (8.8%) and severe anaemia excluding sickle-cell disease (7.7%) (Table IV).

Age group 13 months–5 years

Of the 361 deaths in this group, measles with various complications accounted for 20.8%.

TABLE III

Diagnoses in 257 Neonatal Deaths

Diagnosis	*No of Deaths*	*% of Total*
Preterm with complications	105	40.8
Birth asphyxia	61	23.7
Neonatal tetanus	29	11.3
Respiratory distress	22	8.6
Neonatal jaundice	20	7.8
Septicaemia	15	5.8
Congenital abnormalities	3	1.2
Severe anaemia	2	0.8
Tota	257	100.0

TABLE IV

Principal Diagnoses in 376 Deaths occurring in Age Group 2 - 12 months

Diagnosis	*No of Deaths*	*% of Total*
Pneumonia	89	23.7
Gastroenteritis	71	18.9
Septicaemia	41	10.9
Measles with complications	33	8.8
*Severe anaemia	29	7.7
Malnutrition	22	5.9
Febrile convulsion	16	4.3
Congenital abnormalities	12	3.2
Meningitis	10	2.7
Bronchiolitis	4	1.1

*Excluding haemoglobinopathies

Malnutrition, especially marasmic-kwashiorkor, accounted for 19.9% while gastroenteritis was responsible for 16.1% of deaths (Table V). Febrile

TABLE V

Principal Diagnoses in 361 Deaths occurring in Age Group 13 - 60 months

Diagnosis	*No of Deaths*	*% of Total*
Measles with complications	75	20.8
Malnutrition	72	19.9
Gastroenteritis	58	16.1
Febrile convulsion	51	14.1
Pneumonia	37	10.2
*Severe anaemia	17	4.7
Meningitis	11	3.0
Tuberculosis	9	2.5
Septicaemia	5	1.4
Sickle-cell disease	2	0.6

*Excluding haemoglobinopathies

convulsion and pneumonia were responsible for 14.1% and 10.2% respectively.

Age group 61 months–14 years

Sickle-cell disease was the leading cause of death in this group accounting for 26.2% of the 84 deaths. Septicaemia and typhoid were each responsible for 17.8%, and liver diseases 9.5% of the deaths (Table VI). Malignancies (mainly Burkitt's lymphoma), and renal diseases (mainly nephrotic syndrome) were each responsible for 4.8% deaths.

Interval between admission and death

Three hundred and fifty four (32.8%) of the deaths occurred within 24 hours of admission, while 761 (70.6%) occurred within 48 hours. Only 150 (13.9%) children were hospitalised for one week or longer, before death.

TABLE VI

Diagnoses in 84 Deaths occurring in Age Group 61 months—14 Years

Diagnosis	*No of Deaths*	*% of Total*
Sickle-cell disease	22	26.2
Septicaemia	15	17.8
Typhoid	15	17.8
Pneumonia	9	10.7
Liver disease	8	9.5
Malignancies	4	4.8
Nephotic syndrome	4	4.8
Pulmonary tuberculosis	3	3.6
Tetanus	2	2.4
Poisoning	2	2.4
Total	84	100.0

Discussion

The present study has shown an overall mortality of 11.6%. This is comparable to an overall mortality of 14% reported from Ibadan, lower than the 16.4% from Congo[9], but much higher than 4.5% reported from Benin[6]. However, as reported in other series[4–9], most of the deaths in the present study occurred in the first 5 years of life, with a peak in infancy.

Infections and malnutrition accounted for 58.2% of all the deaths. The overcrowding and deterioration of environmental sanitation in developing countries would explain the high mortality from various infections especially pneumonias and gastroenteritis. In the present study, measles and its complications were responsible for 10% of deaths; this is similar to reports from other parts of West Africa[10 11].

Prematurity and birth asphyxia were responsible for 64.5% of the neonatal deaths. Other important causes of neonatal death were neonatal tetanus, respiratory distress, and neonatal jaundice. Of the cases with respiratory distress, only 2 (9.1%) were proven cases of idiopathic respiratory distress syndrome. Our results are comparable to those from Ile-Ife[12].

Similar to other reports[4], deaths due to sickle-cell disease were mainly in children aged 61 months to 14 years who presented in crises precipitated by various infections. The use of prophylactic antibiotic such as penicillin in this age group is worth considering as a further step in reducing mortality. An adolescent sickle-cell clinic might give the older children a close rapport with their physicians. Other causes of death in the older children are similar to those earlier reported by others[4].

Children who died within 24 hours of admission accounted for 32.8% of the total deaths. This compares with 50% recorded by Morley[13], and signifies a regrettable delay in seeking medical attention.

This study has further confirmed that majority of childhood deaths in the third world countries are preventable. Prevention of deaths answers a fundamentally felt need in the family, in that it maintains and safeguards the family unit. The health worker's role as a promoter and provider of better health practices means that he must start and support health programmes particularly those concerned with preventing diseases. A good nutritional start in life, improved environmental sanitation, good antenatal care, effective immunization coverage and encouraging parents to seek early and effective treatment for sick children must be an integral part of a comprehensive child health programme in any community. Successful programme with active community participation will quickly and dramatically change the mortality picture.

Acknowledgements

We wish to thank the Principal Medical Records Officer and his staff for making the patients' records available. The secretarial assistance of Mr 'Kunle Ojo is gratefully acknowledged.

References

1. Wallace HM. The status of Child Health. *J Trop Paediatr* 1983; **29:** 252–8.
2. Forfar JO. Demography, vital statistics and the pattern of diseases in childhood. In: Forfar JO and Arneil GC, eds. Textbook of Paediatrics. Edinburgh: Churchill Livingstone, 1984: 2–25.
3. Alma-Ata International Conference on Primary Health Care. *WHO Chronicle* 1978; **32:** 409–30.
4. Adeyokunnu AA, Taiwo O and Antia AU. Childhood mortality among 22,255 consecutive admissions in the University College Hospital Ibadan. *Nig J Paediatr* 1980; **7:** 7–15.
5. Ransome-Kuti O. The problems of paediatric emergencies in Nigeria. *Nig Med J* 1972; **2:** 62–70.
6. Obi JO. Analysis of paediatric medical cases admitted to children's clinic, Benin-City. *Nig Med J* 1976; **6:** 69–73.
7. Diakparomre MA and Obi JO. Pattern of paediatric emergencies in the University of Benin Teaching Hospital. *Nig J Paediatr* 1980; **7:** 43–5.
8. Dean NMB. General practice paediatrics in the tropical town of Calabar. *Pediatrics* 1967; **13:** 4–18.
9. Lintermans JP. A survey of childhood mortality in a Congolese University Hospital. *Env Child Hlth* 1972; **18:** 21–4.
10. MacGregor IA. Measles and child mortality in the Gambia. *W Afr Med J* 1964; **13:** 251–7.
11. Morley DC, Martin WJ and Allen I. Measles in West Africa. *W Afr Med J* 1966; **15:** 24–31.
12. Oyedeji GA, Olamijulo SK and Joiner KT. Experience at Wesley: 1391 consecutive admissions into the Neonatal Unit (Hurford Ward). *J Trop Paediatr* 1983; **29:** 206–12.
13. Morley D. Paediatric Priorities in the Developing World. Apley J, ed. London: Butterworth, 1973: 16–32.

Accepted 15 October 1986.