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Original Article

Mortality Pattern of Children Admitted In Rural Medical College

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Abstract

Introduction: Childhood mortality is a sensitive health indicator and its pattern in the given area is important for policymaking.

Materials and Methods: This is a retrospective study done using hospital records. Deaths among children admitted during the period of 2 years from January 2014 to December 2015 analyzed.

Results: Total admission during the study period was 7227 with total deaths 114 (1.58%); out of 114, 74 (64.9%) were infants and 20 (17.5%) died in age group 1-5 years and 20 (17.5%) died in age group >5 years. The common cause of infant death was septicemia. Pneumonia is the leading cause in 1-5 years. Central nervous system (CNS) infection was the most common cause of mortality in more than 5 years age group.

Conclusion: Most of the death occurred in infants. Infections are the leading cause of death in all age groups. Exclusive breastfeeding, nutritional care, and immunization are the effective ways to decrease childhood mortality.

Key words: Childhood mortality, Infants, Pneumonia, Sepsis

INTRODUCTION

Mortality in children is an important indicator of the state health and development of the country.[1] In countries like India with heterogeneous population, the etiology may vary widely with different regions. Knowledge about this varied pattern of diseases and their fatality rate is essential for the policy makers to make region-specific plans. The study area is a rural medical college serving predominately rural population and adjoining hill areas. In this context, this study was done to analyze the mortality pattern of the children admitted in the hospital for 1 year.

MATERIALS AND METHODS

This is a retrospective study done using the hospital records. Government Theni Medical College is a teaching tertiary care hospital in Tamil Nadu, India. This study was done at Department of Paediatrics, Government Theni Medical College. The study period was for 2 years from January 2014 to December 2015. The study population included all children of age from 1 month to 12 years admitted in the pediatric ward during the study period. As the hospital contains separate surgical and burns ward, children admitted for surgical conditions and burns are excluded from the study. All pediatric deaths during the study period were analyzed according to age, sex, etiology, and duration of stay. A pediatrician is available for round - The clock in the ward under the guidance of senior consultants. The diagnosis and cause of death were largely clinically based with supportive laboratory results. Data were collected from the hospital admission and death register. Data collected was entered into a spreadsheet using statistical package for the social sciences (SPSS) software package. Descriptive statistics was used to analyze the obtained data.

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RESULTS

A total of 7227 children comprising 4393 (60.78%) and 2834 (39.22%) of females were admitted in the Department of Paediatrics from January 2014 to December 2015.

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During this 2-year period, 114 children died with an overall mortality of 1.58%.

Overall, mortality among admitted males and females were 1.34% and 1.94%, respectively (Table 1). Male: female ratio in age group 1 m to <1 year, 1-5 years, and >5 years were 1.5:1, 1.5:1, 1.3:1, 1:2.3, respectively (Table 2).

Out of total 114 pediatric deaths, 74 (64.9%) were infants and 20 (17.5%) died in age group 1-5 years and 20 (17.5%) died in age group >5 years (Table 3).

The common cause of infant death was septicemia, congenital heart disease, and respiratory tract infection followed by acute encephalitis syndrome (Table 4). Septicemia (25 cases) was the leading cause of death among infants. 14 infants having congenital heart disease including cyanotic and acyanotic died within the study period. CNS infection was the cause for 10 infant deaths. Etiological classification was given in Table 4.

Pneumonia is the most common cause of death in 1-5 years. Other important causes of mortality in the age group of 1-5 years were sepsis, acute encephalitis syndrome, and congenital heart disease (Table 5).

Table 1: Sex distribution

Sex	*n* (%)	
	Total admissions	Total deaths
Male	4393 (60.8)	59 (51.8)
Female	2834 (39.2)	55 (48.2)
Total	7227 (100)	114 (100)

Table 2: Age distribution

Age (years)	Male (%)	Female (%)
<1	43 (58.1)	31 (41.9)
1-5	12 (60)	8 (40)
>5	6 (30)	14 (70)

Table 3: Mortality pattern in infants

Cause	*n* (%)
Septicemia	25 (33.85)
Congenital heart disease	14 (18.9)
Pneumonia	13 (16.2)
AES/meningitis	10 (13.5)
Intracranialbleed/late HDN	5 (06.7)
Myocarditis/DCM	2 (02.7)
CVT	1 (01.3)
Osteopetrosis with anemia	1 (01.3)
Congenital cystic adenamatoid malformation	1 (01.3)
Poisoning	1 (01.3)
Hepatic encephalopathy	1 (01.3)

AES: Acute encephalitis syndrome, HDN: Hemorrhagic disease of new born, DCM: Dilated cardiomyopathy, CVT: Cortical vein thrombosis

In age group >5 years, CNS infection is the leading cause followed by seizures, poisoning, sepsis, and hepatic encephalopathy. Children died of seizures had chronic neurological diseases such as cerebral palsy and post-meningitic sequale (Table 5).

About 57 out of 114 deaths (50%) occurred within 24 h of admission. 30 died within 72 h (26.3%). 15 died in four to seven of admission (13.2%). 12 child stayed more than 7 days before death (10.5%).

DISCUSSION

The number of admissions was more in males (4393) than females (2894). This is similar to the finding by Patil *et al.*[2], Roy *et al.*[3] and Singhi *et al.*[4] This finding was explained in previous studies in developing countries by two factors, the susceptibility of male child for infection and more care seeking for male child. These factors need more exploration by further studies.

After neonatal period, the risk of death in pediatric age group is highest during the post-neonatal period and infancy. In this study, approximately, 57.95% infants died out of total deaths in all age groups, indicating that the risk of death was highest in this age group this is similar to studies Charles *et al.*[5] and Naik *et al.*[6] Leading cause of death in this age group is sepsis. This finding emphasizes

Table 4: Mortality pattern in 1-5 years

Cause	*n* (%)
Pneumonia	5 (25)
Septicemia	4 (20)
DCM/myocarditis	3 (15)
Acute encephalitic syndrome	3 (15)
Congenital heart disease	2 (10)
Poisoning	1 (5)
ADEM	1 (5)
Anemia	1 (5)

DCM: Dilated cardiomyopathy, ADEM: Acute demyelinating encephalomyelitis

Table 5: Mortality pattern in more than 5 years

Cause	*n* (%)
Acute encephalitic syndrome/meningitis	5 (25)
Status epilepticus/seizure disorder	3 (15)
Poisoning	3 (15)
Pneumonia/bronchiectasis	2 (10)
Hepatic encephalopathy	2 (10)
Acute rheumatic carditis	1 (5)
DKA	1 (5)
Congenital heart disease	1 (5)
HIV/AIDS	1 (5)
Anemia	1 (5)
ALL relapse	1 (5)

DKA: Diabetic ketoacidosis, HIV/AIDS: Human immunodeficiency virus/acquired immune deficiency syndrome, ALL: Acute lymphoblastic leukemia

the need of immunization, exclusive breastfeeding, and appropriate initiation of complementary feeds.

Deaths due to congenital heart diseases and Myocarditis are higher than other studies. This finding needs further studies on incidence of congenital heart disease, the prevalence of consanguineous marriage and health seeking behavior of the parents.

CNS infection in the form of acute encephalitic syndrome, meningitis was common in all age group and is leading case in children more than 5 years of age. It is similar to other studies like Kataki *et al*.[7] In this study, pediatric deaths (114) in relation to total pediatric admissions (7227) in one-year period showed overall mortality of pediatric patient in this study was 1.58% and is comparable with Singhi *et al*.[6] study (2.7%).

When compared with the rate of admission, mortality is comparatively more in female children in all age group Godale *et al*.[8] This may be due to the gender discrimination and is similar to studies such as Godale *et al*.[4] About 50% of pediatric deaths occurred within 24 h of admission, which could be attributed to delay transportation of patients and late health seeking tendency. It was noted in most of the previous studies like Roy *et al*.[3]

CONCLUSION

Overall, mortality is 1.58% of total admissions. Most of the death occurred in infants. Infections are the leading cause of death in all age group. Exclusive breastfeeding, proper complementary feeding, immunization, early health seeking, and health education will significantly reduce childhood mortality.

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