

Clinical Profile And Outcome of Patients Admitted In Pediatric Intensive Care Unit of Gauhati Medical College & Hospital.

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Abstract: This study was carried out with the objectives to study the clinical profile and to find the outcome of children admitted to Pediatric Intensive Care Unit (PICU) of Gauhati Medical College and Hospital, Assam. This retrospective study was done in children aged more than 28 days to 12 years admitted in PICU from 1st January 2015 to 31st December 2015 when a total of 790 patients were admitted. Out of these, 529 (66.96%) cases were males and 261 (33.04%) cases were females. Maximum numbers of patients were in the age group of more than 28 days to 1 year which constituted 415 (52.53%) cases. This was followed by 1 year to less than 5 years age group which constituted 220 (i.e. 27.85%) cases. Under 5 years aged children constituted 635 (80.38%) cases. Next most common age group admitted was 5 years to 10 years with 123 (i.e. 15.57%) cases and 10 to 12 years age group constituted 32 (4.05%) cases. In this study, central nervous system was the commonest system involved (n = 241, 30.57%). Other systems involved were – respiratory system (n = 153, 19.37%), cardiovascular system (n = 83, 10.51%), gastro-intestinal system (n = 42, 5.32%), hematological (n = 40, 5.06%) and renal system (n = 29, 3.67%). Other causes include infections (n = 132, 16.71%), metabolic (n = 24, 3.04%), Down syndrome (n = 9, 1.14%) and poisoning (n=7, 0.89%) etc. Out of the 790 patients admitted to PICU, 216 (27.34%) patients died. 409 (51.77%) cases improved. 165 (20.89%) cases constituted those who were shifted to higher center or another department or were taken against medical advice.

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I. Introduction And Background:

Paediatric patients who are critically ill and those who need advanced airway, respiratory and hemodynamic support are admitted in PICU so that the outcome is improved. The Principal objective of Pediatric critical care is not only to decrease the mortality but also to restore the child who is suffering from a life threatening condition to health with a minimum pain anxiety and complications and to provide comfort and guidance to the child's family¹.

Under five mortality according to the data provided by UNICEF is 41 deaths per 1000 live birth in 2016². The number of children dying before the age of five is 5 – 6 million in 2016. 15000 under five children die every day³. The knowledge of the clinical profile and outcome of critically ill children helps in planning health policies. The clinical profile and outcome of PICU differ in different studies. There is a dearth of study of PICU from this region of the country and hence this study is undertaken.

II. Aims And Objectives

The Present Study Aims

- To study the clinical profile
- To find the outcome of children admitted in PICU.

III. Materials And Methods

This is a retrospective study conducted at the PICU of Gauhati Medical College & Hospital, Guwahati, Assam. Approval from the institutional ethical committee was taken. The records of patients aged more than 28days to 12 years admitted to PICU, Gauhati Medical College & Hospital, Guwahati, Assam from 1-1-2015 to 31-12-2015 was analyzed.

IV. Results

During the year 2015, from 1st January to 31st December, total of 790 patients were admitted in PICU. Out of these 790 patients, 529 (66.96%) were males and remaining 261 (33.04%) were females. Male to female ratio was 2.03:1.

Table – 1 Age distribution of children admitted in PICU.

Age	Number of cases (percentage)
> 28 days – 1 year	415 (52.53%)
1 – 5 years	220 (27.85%)
5-10 years	123 (15.57%)
>10 years	32 (4.05%)
Total	790 (100%)

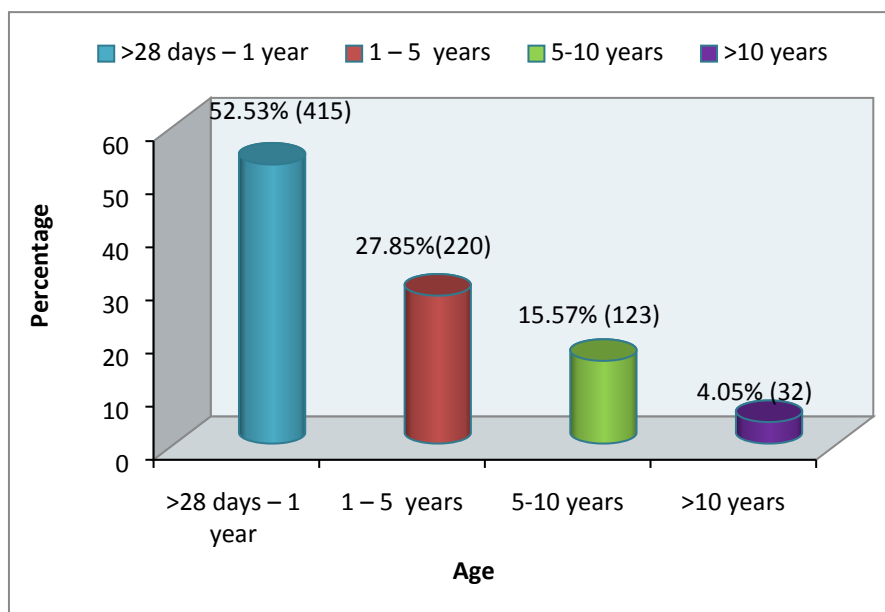


Fig 1: Age distribution of children admitted in PICU.

Maximum numbers of patients were in the age group of more than 28 days to 1 year which constituted 415 (52.53%) cases. This was followed by 1 year to less than 5 years age group which constituted 220 (i.e. 27.85%) cases. Under 5 years aged children constituted 635 (80.38%) cases. Next most common age group admitted was 5 years to 10 years with 123 (i.e. 15.57%) cases and 10 to 12 years age group constituted 32 (4.05%) cases.

Table – 2 Distribution in relation to the systems involved.

Systems involved/ causes	Number of cases (percentage)
Central Nervous System	241 (30.51%)
Respiratory System	153 (19.37%)
Infection/ Sepsis	132 (16.71%)
Cardio vascular system	83 (10.51%)
Gastro intestinal system	42 (5.32%)
Hematological system	40 (5.06%)
Renal system	29 (3.67%)
Metabolic	24 (3.04%)
Down Syndrome	9 (1.14%)
Poisoning	7 (0.89%)
Others	30 (3.80%)

Table -2 shows the system wise cause of admission of patients to PICU. Central nervous system was the commonest system involved (n = 241, 30.57%). Next system commonly involved was respiratory system (n = 153, 19.37%). Other common causes were infections (n = 132, 16.71%); cardiovascular (n = 83, 10.51%), gastro intestinal (n = 42, 5.32%), hematological (n = 40, 5.06%) and renal (n = 29, 3.67%) system causes. This was followed by metabolic causes (n = 24, 3.04%), Down syndrome (n = 9, 1.14%) and poisoning in 7 (0.89%) cases and others in 30 (3.80%) cases.

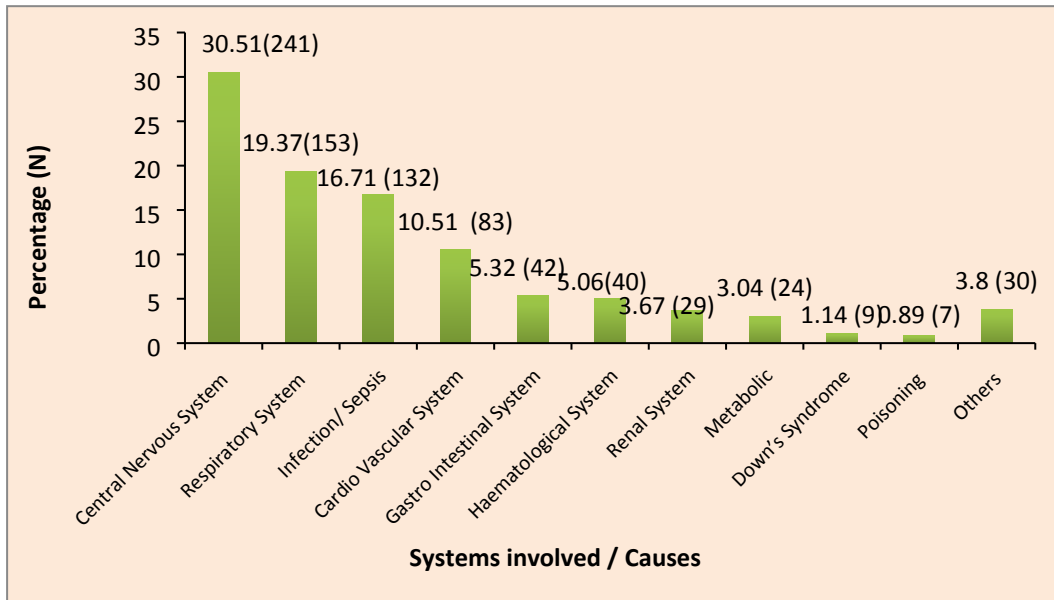


Fig 2: Distribution in relation to the systems involved.

Table 3: Outcome of patients in PICU:

Outcome	No. of Cases (Percentage)
Expired	216 (27.34%)
Survived	409 (51.77%)
Others	165 (20.89%)

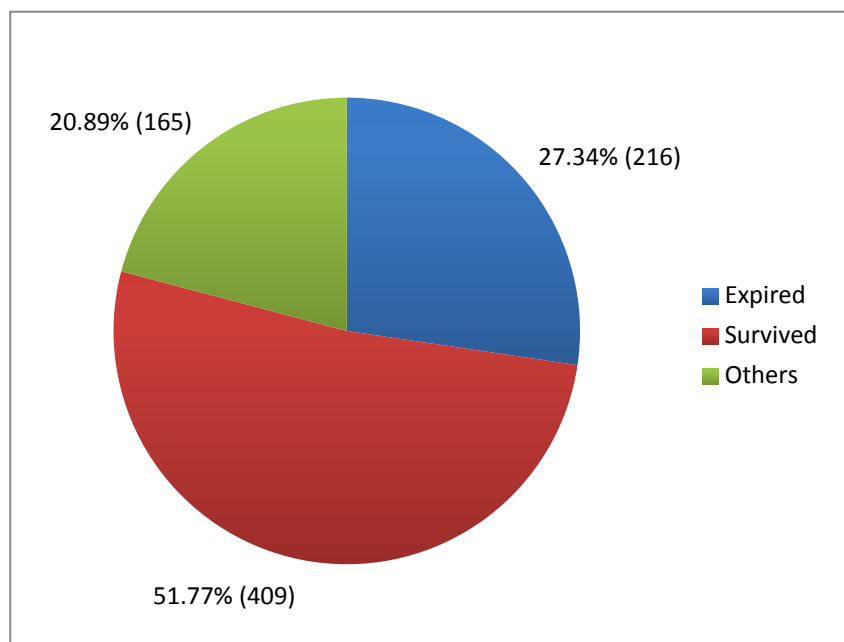


Fig 3: Outcome of patients in PICU.

Out of the 790 patients admitted to PICU, 216 (27.34%) patients died. 409 (51.77%) cases improved and were shifted to general ward and later discharged. 165 (20.89%) cases constituted of those who were shifted to higher center or another department or were taken against medical advice.

V. Discussion

In this study, we found that total of 790 children in the age group of more than 28 days to 12 years were admitted in the Paediatric Intensive Care Unit of Gauhati Medical College and Hospital from 1st January 2015 to 31st December 2015. 415 (52.53%) cases belonged to age group between 28 days and 1 year. Under 5 years aged children constituted 635 (80.38%) cases. This is comparable to a study published by Michel George dos Santos El Halal et al⁴ from Brazil where it was reported that majority of patients (78.3%) was under 5 years of age. A study conducted by Abhulimhen – Iyoha et al⁵ revealed that 72.4% patients were aged less than 5 years. In the same study, 50.7% constituted infants which is comparable to this study where 52.53% constituted children aged between 29 days to 1 year. In a study published in Journal of College of Physicians and Surgeons Pakistan by Anwarul Haque et al⁶ most children (62.5%) were under 5 years of age.

This study revealed the male to female sex ratio to be 2.03:1. I. Blessings Abhulimhen – Iyoha et al⁵ found male: female ratio of 1.49:1. Anwarul Haque et al⁶ also found that majority (60.9%) of patients were male. Another study from Nepal by Gauri S. Shah et al⁷ found the male to female ratio to be 1.7: 1. In this study, most of the cases admitted in PICU belonged to central nervous system disorders which constituted 241 (30.51%) cases, followed by respiratory system in 153 (19.37%) cases, infections in 132 (16.71%) and cardiovascular system in 83 (10.51%) cases. This was comparable to a study carried out by Anwarul Haque et al⁶ which showed that the most common cause was neurological (28%) followed by respiratory in 24.4%, sepsis in 13.7% and cardiovascular in 10.9% cases. This was in contrast to a study published in British Journal of Medical Research by Gauri S. Shah et al⁷ which found that respiratory diseases contributed to the maximum number of cases i.e 33%, followed central nervous system diseases (18.6%), infectious diseases (11.3%), surgical causes (7.8%), gastrointestinal diseases (7.4%), cardiovascular diseases (6.5%) and poisoning (4.8%). A study done in South India by SK Earan et al⁸ found that respiratory system was the commonest system (40.2%) affected in their study.

A study by I. Blessing Abhulimhen – Iyoha et al⁵ found that in their centre, the commonest cause was cardiovascular (41.1%) followed by neurological (12%), respiratory (10%), infectious (8.5%) and hematological causes (5-6%). In our study, out of 790 patients admitted in PICU, 216 Patients died bringing the mortality to 27.34%. In a study from Brazil, Michel Gorges Dos Santos El Halal et al⁵ found the mortality in their centre to be 10.3%. Blessings I. Abhulimhen – Iyoha et al⁶ found that mortality in their centre was as low as 2.1%. In a study from Pakistan by Anwarul Haque et al⁶, it was found that the mortality of their PICU cases was 11.9%. Gauri S. Shah et al⁷ found that in their centre the mortality was 12.6%. Some other studies have reported mortality similar to our study. D. Kapil and A. Bagga⁹ found a mortality of 23.5% in their centre in 1993. Another study from Pakistan by Anwarul Haque and Surraiya Bano¹⁰ reported a mortality of 35% in their institute. A study from Africa by Jeena PM et al¹¹ reported an overall mortality of 35.44%.

The high mortality in our PICU may be contributed by several factors. Firstly, it is the only government run PICU in the Brahmaputra Valley of Assam. It caters to the population of the Brahmaputra Valley and neighbouring North Eastern states mostly Meghalaya and Arunachal Pradesh. Most of the patients are seriously ill when brought here. Another contributory factor might be that in our study central nervous system was responsible for 30.51% of admissions in PICU and many of these cases were cases of Acute Encephalitic Syndrome. Again viral meningo encephalitis constituted most of the AES cases which included Japanese Encephalitis. Japanese Encephalitis is common in this part of the country which has high mortality. Another cause of high mortality is that lot of patients requiring PICU admissions have to be treated in the ward due to paucity of beds in PICU. Our PICU caters to seriously ill pediatric patients from other departments also, including Paediatric Surgery, Hematology, Neurology, Neurosurgery etc. In 2015, 3534 patients were admitted in the Indoor department of Pediatrics.

VI. Conclusion

This study is one of the first study in this part of the region on PICU patients. Under 5 years children constituted the major load of the patients in our PICU. There was male preponderance of PICU admission. Central nervous system disorders were the commonest cause of admission in the PICU, followed by respiratory, infectious and cardiovascular causes. Our mortality stood at 27.34%. Several factors like being the only government run PICU in this part of the region, catering to paediatric patients of other specialties and super specialties in this tertiary hospital and predominance of admission of central nervous system disorders have contributed to the mortality. There were many cases of meningo-encephalitis which were admitted and they have high mortality.

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