



MORBIDITY AND MORTALITY PATTERN OF PATIENTS ADMITTED IN PEDIATRIC INTENSIVE CARE UNIT OF ASSAM MEDICAL COLLEGE AND HOSPITAL (AMCH) A TERTIARY CARE HOSPITAL OF NORTH EASTERN INDIA.

Paediatrics

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KEYWORDS

INTRODUCTION:

Care of critically ill children remains one of the most demanding and challenging aspects in the field of paediatrics. Pediatric intensive care unit (PICU) aims at promoting early intervention and quality care with an objective of achieving good results and better prognosis. This can be achieved by well-equipped and well-staffed intensive care units.^{1,2}

Nevertheless, despite these precautions, ICUs are among the locations where medical errors are most prone to happen due to the complexity of the diseases and the number of procedures.³

The duration of stay in the PICU is an index of severity of morbidity, although this cannot be interpreted in isolation. Morbidity is broadly defined as the health-related quality of life in or out of hospital.

In order to reduce global mortality in the under-five population in less developed countries, we need adequate nutrition and preventive care, as well as effective paediatric emergency and critical care services. However, less developed countries face a daunting task in their effort to develop and sustain critical care services as most of the services are limited to basic healthcare services even during life-threatening situations. In addition, there is inadequate research in the field to identify appropriate interventions in these less developed countries.⁴

One of the most demanding and difficult areas of the practice of paediatrics continues to be the care of critically ill children. The primary goal of the PICU is to avoid mortality by closely monitoring and caring for seriously unwell kids who are thought to be at a high risk of mortality. This, however, comes at a huge cost to all the parties involved—the hospital, the personnel, and the care givers of patients.⁵

Though the specialty of paediatric critical care medicine has grown and matured over years in the developed countries, the concept of paediatric critical care is relatively new in developing countries. Respiratory, neurological and infectious diseases are more common in this part of the globe whereas solid tumors, trauma and neurological infections are more common in western world.

Based on mortality or survival rates, intensive care unit performance can be assessed in critical care medicine. With thorough PICU performance evaluation, we can pinpoint and standardize the right actions that are not only effective but also serve as a roadmap for managing the resources required to provide care in intense units.

AIMS AND OBJECTIVES

To assess mortality and morbidity pattern of PICU admitted patients in Assam Medical College and Hospital, a tertiary care centre in North Eastern India.

METHODOLOGY

The study is a hospital based retrospective cross sectional study, done in the department of Pediatrics, Assam medical college and hospital, Dibrugarh, Assam. (Tertiary Care Centre) over a period of one year from 1st May 2021 to 31st April 2022 including population of age group 1 month to 12 years.

A study sample of 390 participants record files of all the paediatric patients, aged 1 month to 12 years, admitted in PICU of AMCH. Age, sex, geographic distribution, morbidity, length of stay in the PICU, and results were all examined. Outcome was classified as transfer to ward, discharges, leave against medical advice (LAMA) and death.

Inclusion criteria:

Children of age group of 1 month to 12 years requiring PICU care

Exclusion criteria:

Patients less than or equals to 28 days of life, Study was done in COVID time so COVID positive cases were excluded as they had designated COVID care ward and ICU facilities and patients with multiple congenital anomalies

Statistical analysis

Data were entered into MS Excel and exported to SPSS version 20.0 for analysis. Descriptive statistics were computed for all study variables with mean standard deviation and median used as measures of central tendency.

RESULTS

Following values were calculated and results were found, Length of stay = Total in patient days stay ÷ Total Number of discharges and deaths

Mean cases per month = Total number of cases admitted during study period ÷ 12

Bed occupancy rate = (Number of in patients in given period ÷ No of in patients bed available x 365) x 100

Table 1 Outcome Of Patient As Per Age Group

Age	Total admission	Discharge	Referral	Death
1 month to < 12 months	176	47	4	22(5.54%)
12 months to 2 year	80	14	3	8(2.05%)
2 year to 12 year	164	84	5	17(4.35%)

Table 2 Outcome Of Patients As Per Age Group

Age	Male	Female	Percentage(100%)
< 12 months	98	76	174(44.6%)
12 months to 2 year	50	38	88(22.6%)
2 year to 12 year	74	54	128(32.8%)

Table 3 Common Diseases In Picu

Disease	Number of patients	Percentage(100%)
Pneumonia	124	31.79
Bronchial asthma	20	5.12
Meningitis	37	9.48
Congenital heart disease	21	5.38
Acute encephalitic syndrome	49	12.56
OTHERS	139	35.6

DISCUSSION:

Majority of admitted patients in our study were infants (45.12%). In a study on Admission Pattern and Treatment Outcome in Pediatric Intensive Care Unit, Tertiary Hospital, Addis Ababa, Ethiopia by Gemechu Edae et al⁷ indicated that the mean age of the study population at admission was 48.13 ± 53.65 months. Similarly in another study the mean age of the patient was 1.83 years study done by Abhulimhen-Iyoha BI et al⁸ and Roy SM et al⁹

Male: female ratio of 1.34:1 in our study which is comparable to a study conducted by Joshi et al.¹⁰ which showed male to female ratio of 1.55:1. The male to female ratio in some other similar studies was 2.95

by Khilnani et al¹¹ Overall mortality is found to be 12.05% in our study, But in a study done by Choi et al¹² for a five-bed PICU in a general hospital in Hong Kong this value is (2.6%), Similarly in another study in Brazil by Costa et al¹³ in 2010 for a tertiary care 15-bed PICU 15% mortality rate was documented which is similar to our study. While some of the other studies done where the mortality rates are low (2.1% to 9.7%)¹⁴. The mortality rate of PICU was 22.3% which is similar to the study done by Roy SM et al.⁹ (24.3%) in patients admitted to PICU of a teaching hospital in Kolkata, West Bengal, in the eastern part of India, and Jyothi AK et al.¹⁵ (28%). Several factors could contribute to the wide variation in mortality; one of these factors could be a delayed referral to an intensive care unit.

Length of stay (LOS) in the PICU ranged from few hours to more than 1 month with a mean of 8.72 ± 9.78 days and median of 5 days in our study. Klem et al¹⁶ in their study documented that patients who died stayed approximately twice as long as survivors. However, Kapil and Bagga¹⁷ recorded lower mortality (9.8%) in long-stay patients (patients who stayed for more than 13 days) than in short stay patients (24.6%).

In our study we found that pneumonia was the major disease requiring PICU admission. In other studies done by Abhulimhen-Iyoha BI et al.⁸ CVS was the major cause of PICU admission as the study was done in the centre where a lot of cardiovascular surgeries are done. CNS disease was found to be the major cause of PICU admission in another study done by Roy SM et al.⁹ In a study done by Gonder university hospital found out that CNS (31.5%) and respiratory system (10%) were the organ systems commonly affected among patients who were admitted to the PICU¹⁸. This pattern's variation may be brought on by the distinct disease patterns found in various geographic regions.

During one year of study period, a total of 390 patients were admitted in PICU (mean 32.5 cases/ month). The bed occupancy rate was 82.18%

Limitations:

1. Small sample size and single centre study was done over a period of one year so results cannot be generalized to a population of various areas where resources are more limited.
2. Here we included children under age of 12 years as per our hospital cut off.
3. It is Retrospective study; data collected were incomplete in terms of use of mechanical ventilation, which couldn't be analyzed. a wider study on use of ventilation need to be studied.

CONCLUSION:

1. Majority of admitted patients were infants (45.12%)
2. Male: female ratio of 1.34:1
3. Overall mortality is found to be 12.05%
4. Pneumonia is the most common cause of disease requiring PICU admission.
5. During one year of study period, a total of 390 patients were admitted in PICU (mean 32.5 cases/ month). The bed occupancy rate was 82.18%.

The higher PICU mortality rate needs action. Studies have shown that well equipped and staffed PICU with intensivists and other trained professionals improve ICU outcomes. An effective ICU goes a long way in reducing morbidity and mortality. A well-equipped ICU with modern and innovative intensive care greatly facilitate the care of critically ill patients giving desirable outcome.

Conflict of Interest: NIL

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