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Research Article

**CAUSES OF MORTALITY IN PEDIATRIC INTENSIVE CARE
UNIT OF A TERTIARY CARE HOSPITAL, RAWALPINDI**Saad Junaid¹, Salman Aslam², Adnan Khan³^{1,2} Rawalpindi Medical University, Rawalpindi³ Jiangxi university of Traditional Chinese Medicine, China**Article Received:** August 2020**Accepted:** September 2020**Published:** October 2020**Abstract:**

Background: Pediatric intensive care unit is considered as fundamental part of children hospital. This study was aimed to determine the causes of mortality in our PICU which may help us to modify our practices if necessary for better patient outcomes.

Methods: A cross sectional study was conducted over a two year period from 1st January 2015 to 31st December 2016 in the PICU of Holy Family Hospital, Rawalpindi. All patients aged 1 month to 12 years were included in the study. SPSS version 22 was used for the analysis of data.

Results: Out of 7055 admission, 1019 patients died with mortality rate of 14.4%. There were 54.8% males as compared to 45.2% females. 65.4% deaths belonged to less than 1 year and 31.8% died after 72 hours of admission. Sepsis was the leading cause of mortality (27.7%) followed by Pneumonia (23.9%) and meningitis (12.5%).

Conclusion: Sepsis was the most common cause of death followed by Pneumonia & meningitis in our setting.

Keywords: Mortality, PICU, Pediatric, Sepsis

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INTRODUCTION:

The most challenging aspect of pediatric critical care is to manage the children suffering from acute life threatening conditions.¹ Pediatric intensive care unit is considered fundamental part of children hospital because it provides sophisticated organ support and invasive monitoring for better outcome.²

According to World Health Organization (WHO), more than 10 million children die every year, almost all in developing countries.³ Preventable and curable conditions like respiratory tract infections, diarrheal diseases are responsible for majority of deaths in children below age of five years.⁴ The number of deaths in children less than five years of age has declined worldwide from 12.5 million in 1990 to 5.9 million in 2015 as a result of effective preventive and curative interventions. However these improvements vary considerably around the world.⁵

For assessment of development of any country, child mortality is a sensitive indicator². Therefore our study is aimed at identifying the causes of mortality over the last 2 years period in our PICU. This would allow us in reducing mortality rate by identifying the magnitude of each illness and redistribution of resources. Thus, further improving the health care facilities for better patient care.

Our study was aimed to analyze the causes of mortality over the last 2year period and to compare the results with published National & International data. This would help us in reducing mortality by modifying our practices if necessary for better patient outcomes.

MATERIAL AND METHODS:

This Descriptive Cross Sectional Study was conducted at indoors of Pediatric Intensive Care Unit (PICU) Holy Family Hospital, Rawalpindi from 1st January 2015 to 31st December 2016, after permission from hospital ethical committee. Non Probability Consecutive Sampling was used and all patients aged 1month to 12years who died were included in the study. Surgical cases and the patients who left against medical advice (LAMA) were excluded. Data was collected on a Proforma designed specifically for this study. It includes age, gender, time interval from admission to death and underlying cause. It was analyzed by using SPSS version 22.0 and was presented in the form of tables with description.

RESULTS:

During the period of study, a total number of 7055 patients were admitted in PICU. Of them, 1019 patients died with the mortality rate of 14.4%. There were 558(54.8%) males as compared to 461(45.2%) females. Most (65.4%) of the patients were aged less than 1 year (Neonates excluded) as shown in the Table 1.

Table. 1: Age Distribution of Patients

Age	Number of Patients (%)
Less than 1year	666(65.4)
1year - 5years	251(24.6)
> 5years	101(9.9)

Of the 1019 deaths, **28.4%** occurred within 24 hours of admission, **27.3%** in 24-48 hours **12.6%** in 48-72 hours and remaining **31.8%** occurred after 72 hours as shown in the Table 2.

Table. 2: Length of Hospital Stay

Time(hours)	Number of Patients (%)
<24hrs	289(28.4)
24-48hrs	278(27.3)
48-72hrs	128(12.6)
>72hrs	324(31.8)

Sepsis (27.7%) was the most common cause of death followed by Pneumonia (23.9%) and Meningitis (12.5%). Other causes of death are given in the table 3.

Table 3: Causes of Mortality

Causes	Number of Patients (%)
Pneumonia	244(23.9)
Meningitis	127(12.5)
Congenital Heart Disease	83(8.1)
Sepsis	282(27.7)
Liver Failure	22(2.2)
Diabetes Ketoacidosis	10(1.0)
Malignancies	5(0.5)
Renal Failure	22(2.2)
Foreign Body Aspiration	2(0.2)
Encephalitis	44(4.3)
Gastroenteritis	43(4.2)
Malnutrition	7(0.7)
Thalassemia major	6(0.6)
Others	34(3.3)
Congestive Heart Failure	88(8.6)
Total	1019(100)

DISCUSSION:

The study was conducted at PICU of HFH, Rawalpindi. It is one of the main referral centers for Rawalpindi District. It has 23 beds and is well equipped with ventilators. Post Graduates Residents work day and night guided by senior Residents and Consultants in the Department.

The mortality rate at our PICU (14.4%) was higher to those reported in India (4.1%)⁶, Hong Kong (2.6%)⁷ and Europe (5.8%)⁸. Some Authors reported much higher rates^{9, 10}. However, Haque and Bano¹¹ documented similar rate of mortality (14%). The higher mortality rate in our study was due to patient related factors like Age, Sex, Underlying Disease, Socio Economic Status and PICU related factors like availability of beds and other health care facilities.⁵

We noticed that 65.4% of deaths occurred in patients aged 1month to 1year which is higher as compared to study done by El - Nawawy A.¹³. This was most probably due to lack of immunization against preventable diseases, poor socioeconomic and educational status of communities, delay in health seeking behavior and undernutrition. The preponderance of male sex (54.8%) was higher in our study as compared to female (45.2%). This observation is in accordance with the study done by Siddique et al¹². In present study most of deaths (31.7%) have occurred after 72 hours of admission. The reason for this may be due to development of nosocomial Sepsis leading to Multi Organ Failure.

In our study Sepsis was the most common cause of mortality (27.7%) which is similar to study conducted in Pakistan by Khan et al (24%)¹⁴. Pneumonia and Meningitis were the next leading causes of deaths which were diagnosed in 23.7% and 12.5% of patients respectively.

There were some limitations of our study. First this was a cross sectional study and lacks information regarding incidence, effect of interventions and follow up. Second there were limited number of prior studies on this topic in this institution making interpretation of changing trends in mortality difficult. Further the findings of our study cannot be generalized to all hospitals of Pakistan as this is a hospital based study.

CONCLUSION:

Sepsis followed by Pneumonia and meningitis were the most common causes of mortality in our PICU. These conditions can be prevented by mass immunization, improving the socioeconomic and educational status of communities and by providing new protocols to caregivers. Re-evaluation of health policies should be done to improve the outcome. Research and communication among tertiary care centers should be encouraged to create central database registry.

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