Original Article

DOI: 10.7860/JCDR/2022/52568.16476

Paediatrics Section

Outcome Analyses of the Admitted Patients in a Paediatric Intensive Care Unit in a Resource Poor Setting: A Prospective Observational Study

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ABSTRACT

Introduction: Paediatric intensive care is an indispensible part in the management of critically ill children. Facilities for intensive care are sparse in low income countries requiring strict admission criteria. Adequate data generation regarding the profile of patients, outcomes and identification of the risk factor for poor prognosis can help in appropriate utilisation of this specialised care.

Aim: To analyse the outcome of admissions in the Paediatric Intensive Care Unit (PICU) of a tertiary care centre in upper Assam and identification of risk factors for poor prognosis.

Materials and Methods: A prospective observational study was carried out at the PICU of Assam Medical College Hospital, Dibrugarh, Assam, India, from March 2019 to April 2020. Data collected were demographic details of the admitted children, the outcome and the risk factors affecting the mortality. Statistical methods used were Odds Ratio (OR), simple proportion test, Chi-square test and Relative Risk (RR) estimation with 95% confidence intervals, backward and forward logistic regression.

Results: Total 495 children were enrolled in the study. The three most common disease categories were neurological disease (33.3%), respiratory disease (31.1%), and sepsis (10.7%). The overall mortality was 17.8%. Diseases related to the nervous system were the leading cause of death (38.6%). Highest mortality (43.2%) was in the age group of one month to one year. Highest disease specific mortality was due to Acute Encephalitis Syndrome (AES) (28.4%). Presence of circulatory shock, poor Glasgow Coma Scale (GCS) (GCS <8), hypoxia, dyselectrolytaemia, malnutrition, renal failure, and requirement of ionotropic support, mechanical ventilation were significantly associated with mortality with p-value <0.05.

Conclusion: Mortality rate (17.7%) was relatively high. Requirement of mechanical ventilation and Cardiopulmonary Resuscitation (CPR), use of inotropes, GCS ≤8, malnutrition, renal failure, dyselectrolytaemia, hypoxia and sepsis were associated with increased mortality. Circulatory shock, requirement of CPR and mechanical ventilation were the independent predictors of mortality.

Keywords: Independent variables, Morbidity pattern, Mortality, Outcome of patients, Risk factors

INTRODUCTION

The United Nations world leaders defined Millennium Development Goal 4 (MDG 4) to reduce under-five-year mortality rates by two-thirds by the year 2015 [1]. Unfortunately, only few developed countries could make it a reality. India had a under-five-year mortality rates of 35.73 per 1000 live birth in 2020 and expecting a reduction to 25 per 1000 live birth as Sustainable Developmental Goal (SDG) by 2030 [2]. In addition to preventative care and nutritional support, the development of effective paediatric emergency and critical care services in resource-limited countries can substantially reduce global mortality in children <5 years of age [3].

Maximum benefit from the sparse resources in these settings can be expected if the allocation of the same can be done wisely. Identification of the illness profile and the possible outcome from an authentic dataset is utmost necessary for the best allocation of the resources. In the context of intensive care management, a rational and objective way to define and quantify severity of illness is through the prediction of mortality risk by identifying risk factors that can influence the outcome. A variety of scoring system predicting mortality risk are created in the resource rich settings and validated in PICUs of the developed countries. Amongst them some of the standard scoring system like PRISM, PIM1 and PIM2 have been evaluated in resource-limited areas, including some of the tertiary centers of India. The results are conflicting, giving rise to under prediction of mortality, poor sensitivity of the scoring systems, varied calibrating and discriminative ability [4,5].

Reliable scores that can be used in all resource-limited settings are absent, and hence, the definition of critical illness and estimating its burden is difficult [6]. In resource poor settings there can be logistic problems to obtain all the standard laboratory parameters required to use the available scoring systems. So identification of the risk factors with prognostic value may greatly help the treating team to triage and focus on the specific group of children appropriately. Paediatric intensive care is still in an evolving stage in the state of Assam in terms of both resource and manpower. The number of PICU is less in number and functioning only in the teaching institutes. Each unit has a vast catchment area and number of children requiring intensive care is quiet high specially during seasons of epidemic encephalitis. Keeping these points in mind the study was planned to analyse the profile of admitted children in the PICU of Assam Medical College and Hospital and to identify the risk variables that may affect the mortality.

MATERIALS AND METHODS

This was a hospital-based prospective observational study, conducted from March 2019 to April 2020, in the PICU of Assam Medical College and Hospital Dibrugarh, Assam, India.

Inclusion criteria: The inclusions of the study subjects were done after obtaining proper informed consent from the guardian or the care taker. Data on demographic characteristics, diagnosis on admission, nature of intervention and outcome were obtained from the patients admitted into PICU of Department of Pediatrics of Assam Medical College and Hospital, Assam, India.

Exclusion criteria: Children who died within 24 hrs of PICU admission or left against medical advice. Child who required CPR after admission and didn't survive. Children who get admitted for temporary monitoring like after surgery and for IVIG infusion etc.

The study institution is an eight-bedded PICU established on March 2018 with six-bedded recovery unit with facilities for invasive and non invasive ventilation, portable X-ray, Ultrasonography, critical care monitors, defibrillation, microinfusion and peritonial dialysis. Arterial Blood Gas (ABG) analyses was done in the central Intensive Care Unit (ICU) inside the institution. The PICU is staffed 24/7 by a team of skilled paediatric intensive care team. The team of this unit per 24 hours is composed of two residents (PICU residents are senior residents who spend at least six months in the general ward familiar with the use of mechanical ventilator and managing critically ill cases), one faculty skilled with paediatric intensive care and three nurses and nurse aids. The patients are either referred from the emergency department or the paediatric ward or from other hospitals.

Data Collection

Information was collected during the first 24 hours in PICU. On admission, a proforma was filled up for each patient. Data was collected after getting written consent from parents (or guardians). All patients had routine clinical assessments and basic investigations. Details on admission day were plotted separately in the proforma. Clinico-demographic data collected were age, sex, specific diagnosis, vitals at the time of admission, level of consciousness, respiratory distress, circulatory shock, convulsions, and hypoxemia along with relevant findings from systemic examination. Neurological status was represented with the GCS/ modified GCS scoring. GCS score <8 was considered as coma. Hypoxia was defined as SpO_2 <90 in room air, in absence of cyanotic congenital heart disease. Dyselectrolytaemia was diagnosed as per standard definition of the specific electrolyte. Associated co-morbidities like presence of anaemia, malnutrition were observed. Requirement of oxygen, mechanical ventilation, vasoactive medication and cardio pulmonary resuscitation was noted. Laboratory parameters were complete blood count, organ function tests, ABG report, electrolyte status/ other metabolic parameters and imaging parameter.

STATISTICAL ANALYSIS

Quantitative variables were clinical profile and outcome pattern. Statistical analysis used was OR, Chi-square and simple proportion test. Means, Standard Deviations (SD), percentages, and ranges were used as appropriate to describe continuous variables. The significance of each factor associated with mortality in children admitted to PICU was first analysed by using univariate analysis. Univariate analysis was performed through Chi-square test and RR estimation with 95% confidence intervals. Thereafter, a multivariate analysis (forward and backward stepwise logistic regression) was applied to determine the contribution of each prognostic factor after ruling out confounding factors. The level of significance was $p<0.05$. Statistical software used was Medcalc Version 20.026.

RESULTS

Of the total sample of 495 children admitted to PICU, 283 (57.2%) were male and 212 (42.8%) were female. Most of the patients (50%) belonged to the age group of one month to one year, 77 % admitted children are under five age group [Table/Fig-1]. Total 33.3% of the admitted children had diseases related to nervous system, 31.1% had diseases associated with the respiratory system, 10.7% patients admitted with Sepsis [Table/Fig-2]. Single most common specific diagnosis was pneumonia followed by AES mostly due to Japanese encephalitis [Table/Fig-3].

Age group	Number (%)
1 month to 1 year	248 (50.1)
>1 year to 5 year	133 (26.9)
>5 year to 10 year	73 (14.7)
>10 year	41 (8.3)
Male/Female	283 (57.2)/212 (42.8)

[Table/Fig-1]: Age distribution, n=495.

System	Number (%)
Nervous system disease	165 (33.3)
Respiratory system disease	154 (31.1)
Sepsis	53 (10.7)
Cardiovascular disease	31 (6.3)
Renal disease	19 (3.9)
Severe malnutrition	17 (3.5)
Gastrointestinal disease	22 (4.4)
Haematological disease	11 (2.2)
Congenital anomalies	5 (1)
Poisoning	4 (0.8)
Trauma	4 (0.8)
Others	10 (2)
Outcome	
Survived	407 (82.2%)
Died	88 (17.8%)

[Table/Fig-2]: Disease profile and the outcome of the admitted patients.

Disease	Specific illness	Mortality (n %)
Nervous system	AES	25 (28.4)
	TBM	4 (4.5)
	Seizure disorder	5 (5.6)
Respiratory system	Severe pneumonia	11 (12.5)
Cardiovascular system	CCF with CHD	8 (8.9)
Gastrointestinal/ hepatobiliary system	Acute liver failure	3 (3.3)
	Post surgery	2 (2.2)
Sepsis		17 (19.3)
Haematological	Sickle cell crisis	1 (1.1)
	Leukaemia	2 (2.2)
	Aplastic anaemia	1 (1.1)
Nutritional	SAM	2 (2.2)
	CP with FTT	2 (2.2)
Others	Poisoning	1 (1.1)
	Drowning	1 (1.1)
	Hanging	1 (1.1)
	Malignancy	2 (2.2)

[Table/Fig-3]: Disease category of non survivors (n=88).
AES: Acute encephalitis syndrome, TBM: Tubercular meningitis, CHD: Congenital heart disease, CCF: Congestive cardiac failure; CP: Cerebral palsy, SAM: Severe acute malnutrition; FTT: Failure to thrive

Eighty eight (17.8%) children died among the sample population [Table/Fig-2]. Highest number of mortality (43.1%) was observed in the infancy. Most of the non survivors suffered from nervous system disorder (38.6%) followed by sepsis (19.3%), respiratory disorders (12.5%). Nervous system diseases comprised of acute meningoencephalitis, seizure disorders, Tubercular Meningitis (TBM), cerebral palsy with complications. Single most common cause of death was AES followed by systemic sepsis. Pneumonia was the third leading cause of death in the PICU [Table/Fig-3].

On analyses of risk factors, it was noticed that age groups and gender had no significant (p-value=0.58) association with mortality [Table/Fig-4]. Presence of shock, poor GCS, hypoxia,

dyselectrolytaemia, malnutrition, and renal failure was significantly associated with mortality. Moreover, use of ionotropes, requirement of cardiopulmonary resuscitation and ventilations were also significantly associated with mortality. The association of mortality with the different variables and their predictability is shown in [Table/Fig-5,6]. Out of the above-mentioned variables circulatory shock, use of ventilation and CPR comes with positive significant values on binary logistic regression analyses as independent predictor of mortality [Table/Fig-7].

Age group	Mortality, n (%)	p-value
1 month to 1 year	38 (43.2)	0.52
>1 year to 5 year	26 (29.6)	
>5 year to 10 year	16 (18.1)	
>10 year	8 (9.1)	
Total	88 (17.8)	
Gender		
Males	49 (55.7)	0.58
Females	39 (44.3)	

[Table/Fig-4]: Association of age group and mortality n=88.

Outcome		Survivors (407)	Non-survivors (88)	95% CI	Odds ratio	p-value
Shock	Yes	91	58	4.0774 to 11.0539	6.7136	<0.0001
	No	316	30			
Poor GCS	Yes	90	52	3.1319 to 8.2647	5.0877	<0.0001
	No	317	36			
Hypoxia	Yes	284	72	1.1464 to 3.7697	2.0789	0.0160
	No	123	15			
Anaemia	Yes	189	48	0.8715 to 2.1983	1.3841	0.1684
	No	218	40			
Dyselectrolytaemia	Yes	58	21	1.0736 to 3.3133	1.8860	0.0273
	No	349	67			
Renal Failure	Yes	21	10	1.068 to 5.1996	2.3565	0.0338
	No	386	78			
Septicaemia	Yes	181	41	0.6861 to 1.7293	1.0892	0.7171
	No	226	47			
Malnutrition	Yes	48	18	1.0563 to 3.5015	1.9232	0.0324
	No	359	70			

[Table/Fig-5]: Disease profile and the outcome of the admitted patients.
• Poor GCS: GCS <8 on admission

Intervention		Survivor	Non survivor	95% CI	Odds ratio	p-value
Ionotropes	Yes	89	59	4.3966 to 12.0188	7.2693	<0.0001
	No	318	29			
Ventilation	Yes	143	68	3.6633 to 10.7552	6.2769	<0.0001
	No	264	20			
CPR	Yes	17	39	9.6045 to 34.713	18.2593	<0.0001
	No	390	49			

[Table/Fig-6]: Association of mortality with intervention.

-2 Log likelihood	Cox and Snell R square	Nagelkerke R square
320.591[a]	0.750	0.811
Variables	**B**	**Sig.**
Constant	-2.993	0.001
Shock	0.919	0.017
Poor GCS	0.309	0.359
Hypoxia	-0.073	0.841
Anaemia	0.120	0.695
Dyselectrolytaemia	-0.429	0.304
Renal failure	0.942	0.084
Septicaemia	-0.610	0.054
Malnutrition	0.138	0.736
Ionotropes	0.646	0.086
Ventilation	1.032	0.002
CPR	2.112	0.001

[Table/Fig-7]: Binary logistic regression of the risk factors predicting mortality.
a: a is a variable here for the statistical analyses

DISCUSSION

The number of well-equipped PICU in terms of both manpower and facilities are scanty in the developing countries but the demand for a PICU bed is exponentially high due to high prevalence of severe form of common childhood illness [4,6]. Mortality of a sick child depends on multiple factors which act from before reaching hospital. It reflects the overall standard of the healthcare network of a region. This study was done in a dedicated Medical College PICU with a vast catchment area extending around six districts and three bordering States. Total 495 children were enrolled in the study, out of the 644 admitted children (age range from 1 month to 14 years) during this period. Maximum admission (50%) was in the infancy age group and 77% of children were below 5 years. This was similar to the study by Abhulimhen-Iyoha BI et al., from KIMS Hyderabad, India, in their study a total of 341 patients were admitted into PICU during the study period of which 50.7% were infants and 72.4% patients were aged <5 years [7]. The major reason for PICU admission in present study was neurological disease (33.3%) followed by respiratory infection (31.3%) which was similar to observation by Kumar R et al., from Bihar [8]. Systemic sepsis (10.7%) was a major cause of PICU admission in present study which was similar to study from Nepal, and another from AIIMS, India. In these studies, the incidence of sepsis as the primary cause of admission was stated as 24% and 14.8%, respectively [9,10].

The overall mortality observed in this study was 17.8%. Morality rate varies in a wide range in different PICUs. A mortality rate of 6.7% was recorded by Khilnani P et al., from India [11]. Bellad R et al., from India recorded a mortality rate of 16.7% [12]. Abhulimhen-Iyoha BI et al., from India stated a mortality rate of 2.3% in 2013 [7]. Another study from Greece recorded mortality rate of 9.7% in 2011 by Volakli E et al., [13]. The high mortality rate in the present study may be due to the multiple factors. The PICU has a vast covering area and sick children need to travel a long distance to reach here with possible deterioration during transport. It is more significant for the sick children coming from the neighbouring hilly states. Due to the small capacity of the unit, in comparison to the population it covers, only the sickest patients are admitted. Prevalence of Japanese encephalitis, co-morbidities like severe malnutrition, anaemia are important contributing factors.

Major reason of death in this study was neurological disease followed by respiratory infection and sepsis. Kapil D and Bagga A reported that septicaemia was the most common cause of death followed by congenital heart disease in the AIIMS study in 1993 [10]. Shah VB and Mehta K reported that pneumonia was the leading cause of death. In children under five years, infection was 58.9% cause of death [14]. Khilnani P et al., from India in the 2004 study stated cardiovascular disease, infection especially dengue illness and trauma as major causes of death [11]. Neurological disease was the leading reason of death in the present study. This can be explained by the prevalence of

epidemic meningoencephalitis in Assam. Regular outbreaks of Japanese encephalitis occur in the post monsoon period specially in the districts of upper Assam. It leads to huge morbidity and mortality in both children and adults in spite of vaccination drive against the disease since 2013. Similar results were observed in a study from Bihar in 2019 by Kumar R et al., [8].

The incidence of sepsis as the primary diagnosis on admission is quite significant (10.7%), and is the second leading cause of death (19.3%), after meningoencephalitis (28.4%). Sakr Y et al., also stated a high incidence of sepsis in the ICU from a worldwide data from the Intensive Care over Nations Audit. There was wide variation of incidence of sepsis, causative microorganism and sepsis related mortality rate around the World [15]. The prevalence of sepsis, severe sepsis, and septic shock were 42.6%, 25.9%, and 19.8%, respectively in the study by de Souza DC et al., from North America [16].

In the Pediatric index of Mortality study (PIM study, 1997) there were seven variables which could predict mortality, i.e., elective admission, specified diagnosis, fixed pupil, and use of mechanical ventilation [17]. Pudjiadi AH et al., found five variables that could predict the probability of PICU death-age, consciousness level, HR, PaO_2/FiO_2, and use of mechanical ventilation [18]. Analysis of the risk factors in present study revealed nine variables which affects mortality with statistical significance-circulatory shock, poor GCS on admission (GCS <8), hypoxia, dyselectrolytaemia, renal failure, septicaemia, malnutrition, use of ionotropes and ventilation and requirement of CPR to stabilise as dependent variable. 42.6% admitted children required mechanical ventilation during the course of hospital stay and showed a statistically significant increase in mortality then the non ventilated group (32.2% and 7%). These findings were in accordance with studies conducted by E Volakli E et al., which showed that requirement of mechanical ventilation was a significant risk factor for mortality. 29.8% patients received inotropic support during the course of hospital stay [13]. The results were similar to study conducted from Pakistan by Anwar-ul-Haque et al., which reported that 39% patients who received inotropes died during the course of illness [19]. Out of the above-mentioned variables circulatory shock, requirement of ventilation and CPR were independent predictors of PICU mortality on multivariate analyses by a binary logistic regression model. de Freitas Aragão et al., found associations between death and age below two years old, use of mechanical ventilation and CVP, presence of hospital acquired infection, length of hospital stay of two days or less; and class 4 clinical severity according to the Clinical Classification System (CCS), in children admitted to the PICU, in a referral hospital in Brazil [20]. Presence of malnutrition though not an independent variable, was an important predictor of mortality in the index study. Bagri NK et al., concluded that ICU outcome is decisively influenced by their nutritional status of the patients if they could be stabilised in the initial critical phase [21]. Teshager NW et al., in their study from Ethiopia mentioned the following factors to be significant and independent predictors of mortality at the PICU. Those were admission over weekends, admission from other facility and emergency room, presence of more than one resident at admission, presence of severe acute malnutrition, Multiorgan Dysfunction Syndrome (MODS), mechanical ventilation, and higher PIM2 scores [22].

Limitation(s)

It was a study spanning a short duration. Some of the important variables could not be included, like acid base parameters, invasive monitoring parameters due to logistic issues. Residual morbidities (e.g., persistent neurological deficits, persistent cardiopulmonary insufficiency etc.),which could also reflect the standard of PICU care, were not included for analyses.

CONCLUSION(S)

Childhood neurological illness, acute respiratory diseases, and systemic infections were the leading causes of admission to a PICU as reflected in the study. The risk factors affecting mortality can be identified with analyses of correctly extracted data. Childhood anaemia, severe acute malnutrition and common childhood infections like pneumonia strongly contributes to PICU mortality. Requirement of mechanical ventilation, cardiovascular collapse and any acute events leading to sudden cardiorespiratory arrest are the independent predictors of mortality at the PICU. Identification of risk factor and proper triaging of PICU admitted children with focused management can be an integral part of care to the sick children and can improve the overall outcome.

REFERENCES

[1] Slusher TM, Kiragu AW, Day LT. Pediatric critical care in resource-limited settings-Overview and lessons learned. Front Pediatr. 2018;6:49.
[2] World Bank collection of development indicators, compiled from officially recognized sources. India-Mortality rate, under-5 (per 1,000)-actual values, historical data, forecasts and projections were sourced from the World Bank on October of 2020 (October 28 https://www.worldbank.org/en/programs/debt-statistics/ids).
[3] Baker T. Pediatric emergency and critical care in low-income countries. Paediatr Anaesth. 2009;19(1):23-27.
[4] Thukral A, Lodha R, Irshad M, Arora NK. Performance of Pediatric Risk of Mortality (PRISM), Pediatric Index of Mortality (PIM), and PIM2 in a pediatric intensive care unit in a developing country. Pediatr Crit Care Med. 2006;7(4):356-61. Doi: 10.1097/01.PCC.0000227105.20897.89. PMID: 16738502.
[5] Patki VK, Antin JV. Comparison of severity scoring systems in a pediatric intensive care unit in India: A single-prospective, observational cohort study. Journal of Paediatric Intensive Care. 2017;6(2):98-102.
[6] Turner EL, Nielsen KR, Jamal SM, von Saint André, von Arnim A. A review of pediatric critical care in resource-limited settings: A look at past, present, and future directions. Front Pediatr. 2016;4:5. Doi: 10.3389/fped.2016.00005.
[7] Abhulimhen-Iyoha BI, Pooboni SK, Vuppali NK. Morbidity pattern and outcome of patients admitted into a pediatric intensive care unit in India. Indian J Clinical Med. 2014;5:IJCM-S13902.
[8] Kumar R, Kishore S, Kumar R, Prakash J. Clinical profile and outcome in a paediatric intensive care unit in a tertiary level centre of Bihar. Int J Med Paediatr Oncol. 2019;5(3):89-92.
[9] Jeevan GJ, Chandra GF, Bahadur TS. Clinical, demographic profile and outcome of children admitted in PICU with a diagnosis of severe sepsis and septic shock. Journal of Medical Science and Clinical Research. 2017;5(12):31470-74.
[10] Kapil D, Bagga A. The profile and outcome of patients admitted to a pediatric intensive care unit. Indian J Pediatr. 1993;60(1):05-10. Doi: 10.1007/BF02860496.
[11] Khilnani P, Sarma D, Singh R, Uttam R, Rajdev S, Makkar A, et al. Demographic profile and outcome analysis of a tertiary level pediatric intensive care unit. Indian J Pediatr. 2004;71:587-91.
[12] Bellad R, Rao S, Patil VD, Mahantshetti NS. Outcome of intensive care unit patients using pediatric risk of mortality (PRISM) score. Indian Pediatr. 2009;46(12):1091-92.
[13] Volakli E, Sdougka M, Tamiolaki M, Tsonidis C, Reizoglou M, Giala M. Demographic profile and outcome analysis of pediatric intensive care patients Hippokratia. 2011;15(4):316-22.
[14] Shah VB, Mehta K. Study of risk factors for severe pneumonia among children between 2 months to 5 years of age. International Journal of Contemporary Pediatrics. 2019;6(4):1627.
[15] Sakr Y, Jaschinski U, Wittebole X, Szakmany T, Lipman J, Ñamendys-Silva SA, et al. ICON Investigators. Sepsis in intensive care unit patients: Worldwide data from the intensive care over Nations audit. Open Forum Infect Dis. 2018;5(12):ofy313.
[16] de Souza DC, Shieh HH, Barreira ER, Ventura AM, Bousso A, Troster EJ; LAPSES Group. Epidemiology of sepsis in children admitted to PICUs in South America. Pediatric Crit Care Med. 2016;17(8):727-34.
[17] Shann F, Pearson G, Slater A, Wilkinson K. Paediatric Index of Mortality (PIM): A mortality prediction model for children in intensive care. Intensive Care Medicine. 1997;23(2):201-07.
[18] Pudjiadi AH, Yanti M, Tumbelaka AR. Prognostic factors of death in children admitted to pediatric intensive care unit, Cipto Mangunkusumo Hospital, Jakarta, Indonesia. Paediatrica Indonesiana. 2002;42(11-12);254-60.
[19] Anwar-ul-Haque, Bano S. Clinical profile and outcome in a paediatric intensive care unit in Pakistan. Journal of the College of Physicians and Surgeons Pakistan 2009;19(8):534-35.

[20] de Freitas Aragão, de Fátima M, Albuquerque PM, Gonçalves de Mello MJ, Ximenes RA. Risk factors associated with death in children admitted to a paediatric intensive care unit. J Trop Pediatr. 2001;47(2):86-91. Doi: 10.1093/tropej/47.2.86. PMID: 11336141.
[21] Bagri NK, Jose B, Shah SK, Bhutia TD, Kabra SK, Lodha R. Impact of Malnutrition on the outcome of critically ill children. Indian J Pediatr. 2015;82(7):601-05. Doi: 10.1007/s12098-015-1738-y.
[22] Teshager NW, Amare AT, Tamirat KS. Incidence and predictors of mortality among children admitted to the pediatric intensive care unit at the University of Gondar comprehensive specialised hospital, northwest Ethiopia: A prospective observational cohort study. BMJ Open. 2020;10(10):e036746. Doi: 10.1136/bmjopen-2019-036746. PMID: 33067274; PMCID: PMC7569923.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Sep 30, 2021
- Manual Googling: Feb 16, 2022
- iThenticate Software: Apr 04, 2022 (7%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? No
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Sep 29, 2021**
Date of Peer Review: **Dec 07, 2021**
Date of Acceptance: **Mar 04, 2022**
Date of Publishing: **Jun 01, 2022**