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Original research article

Study on assessment of psyhcological state of pediatric ICU survivors

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Abstract

Background: Children admitted to the ICU witness and undergo a large amount of psychological stress which has a negative impact on not only their lives, but also lives of their families. This study was intended to assess and compare the psychological state of children admitted to the ICU versus that of children admitted in the wards

Materials and Methods: A total of 70 children below 12 years of age who got admitted into the ICU during Feb 2023 to Jan 2024, in the Department of Pediatrics, were included in the study as cases. Age and gender matched children who got admitted in the wards during the study period were considered as controls. All patients were subjected to TISS, PRISM, IES-R and Birleson Depression scoring questionnaires.

Results: The TISS, PRISM, IES-R and Birleson Depression scores were significantly different in patients who were admitted to PICU than those who were admitted in pediatric ward.

Conclusion: Children in the PICU experiences acute psychological stress, which is correlated with the intensity of therapeutic interventions and manifests as the emergence of intrusive thoughts. Future focused therapies for these pediatric patients will be designed with a clearer understanding of the mechanisms underlying the development and maintenance of psychological and psychiatric response.

Keywords: Pediatric ICU, post-traumatic stress disorder.

Introduction

When children with physiological instability are hospitalized to the pediatric intensive care unit (PICU), they are subjected to various treatments and technologies in an unsettling setting [1]. Because of this, the kids are more susceptible to stress on a social, psychological, and bodily level [2, 3].

Therefore, a hospital admission to the PICU may be comparable to psychological trauma in a child who is temperamentally "at risk." It is thought that the more psychological trauma and interventions a child receives, the worse they are [4]. PICU survivors may experience the aftereffects of this trauma in the form of post-traumatic stress disorder. Youngsters might not express such anguish verbally [5]. Because of this, their suffering went unnoticed until they made a particular request, and the consequences of unresolved psychological trauma could be harmful to these kids [4, 5].

The emotional health of children in pediatric intensive care units (PICUs) in poor nations such as India is rarely given proper attention. Investigating the existence of psychological morbidity in survivors is crucial in order to implement corrective measures and provide comprehensive PICU treatment.

The purpose of this study is to ascertain whether PICU hospitalization is linked to a negative psychological result, as well as to pinpoint the risk variables that fuel psychological stress and ascertain whether the effects last longer than the duration of hospitalization.

Materials and Methodology

This prospective cohort study was conducted over a period of 1 year, i.e. from Feb 2023 to Jan 2024 in the Department of Pediatrics, RVM Institute of Medical Sciences. Children aged below 12 years, who got admitted in the pediatric intensive care unit (PICU) for 48 hours and above, were included in the study as cases. Age and gender matched children who got admitted in the pediatric ward for 48 hours and above, without any history of PICU admission were included in the study as controls.

Exclusion criteria: Children with history of previous PICU admissions or with any congenital anomalies associated with mental retardation or with cerebral palsy or any seizure disorder or with any previous or present psychiatric illness or children with any neurological conditions which impair the cognition or children whose parents didn't give consent to participate in the study were excluded.

Detailed demographic data, presenting complaints, birth history, personal history, were taken from all patients. A thorough general and systemic examination was done. Severity of illness in both cases and

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controls was assessed and graded according to the Pediatric Risk of Mortality- III score (PRISM). Therapeutic intervention scoring system (TISS-76) was recorded for both cases and controls to assess the intensity of critical care [6, 7].

All the cases who survived out of ICU were interviewed 24 hours after discharge from PICU and all the controls were interviewed on the day of discharge from the pediatric ward.

Both the cases and controls were interviewed for the second time after 1 month. Psychological outcomes of both cases and controls was assessed using - IES- R (Revised Impact of Event Scale) and the Birleson depression self-rating scale for children.

The IES-R Revised Impact of Event Scale) is a 22-question self-report measure to assess the subjective distress caused by traumatic events. It is a revised version of the old 15-questionnaire score initially developed by Horowitz. The scores are graded as follows – 0-8 = subclinical; 9-25 = mild; 26-43 = moderately severe; and >44 = severe [8].

The Birleson depression self-rating scale is an 18 item questionnaire for assessing presence of depression in children aged between 8-14 years. Items were scored 0 for "non-depressive" or normal responses, 1 for "sometimes" responses and 2 for "depressive" or abnormal responses. Score above 15 was suggestive of depression in children [9].

Institutional ethical committee approval was taken before commencing the study.

All the data was analyzed using SPSS software version 22.0. Categorical variables were compared in terms of percentages. Comparisons were made between cases and controls using student “t” test. The p value of < 0.05 was considered to be statistically significant.

Results

A total of 70 patients got admitted in PICU over the study period. 70 age and sex matched children who were admitted in the ward were selected as controls. The mean age of study population is 8.9±2.3.

Table 1: Comparison of age of children

Age in years	PICU	Wards
7	8 (11.4%)	9 (12.8%)
8	24 (34%)	20 (28.57%)
9	13 (18.57%)	16 (22.8%)
10	11 (15.7%)	14 (20%)
11	9 (12.8%)	6 (8.6%)
12	5 (7.1%)	5 (7.1%)
Total	70	70

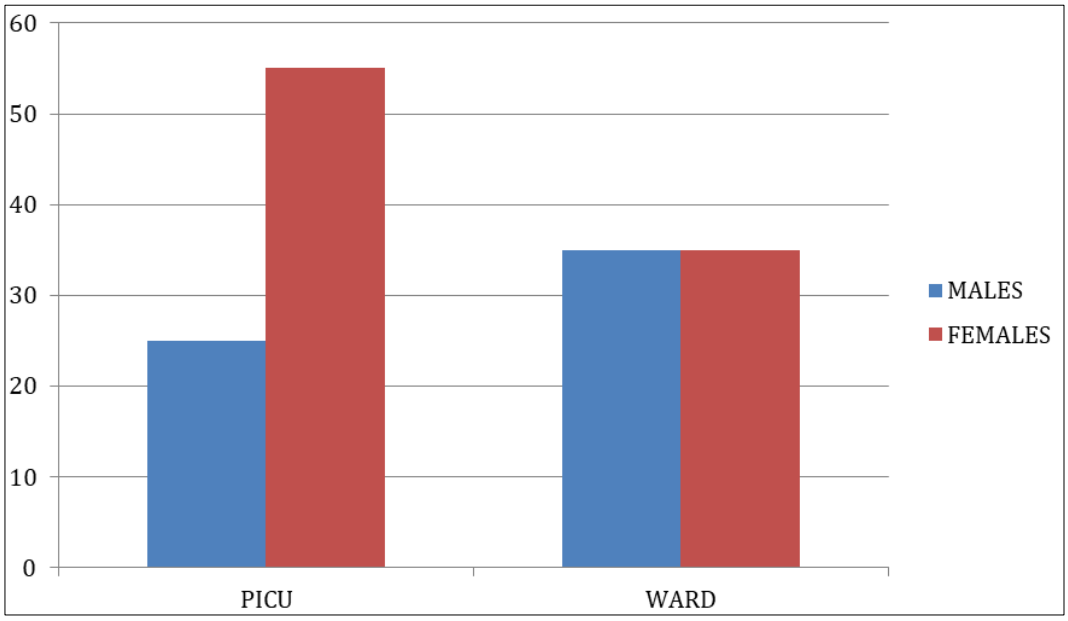

Fig 1: Gender wise distribution

Total males were 60 and total females were 80 in this study.

Table 2: Distribution of patients according to the diagnosis

Diagnosis	PICU	Ward	Total
Acute Rheumatic fever	7 (10%)	1 (1.4%)	8 (11.4%)
Acute febrile illness	25 (35.7%)	24 (34.3%)	49 (70%)

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Acute glomerulonephritis	7 (10%)	6 (8.6%)	15 (18.6%)
Urinary tract infection	1 (1.4%)	6 (8.6%)	7 (10%)
Nephroticsyndrome	7 (10%)	9 (12.8%)	16 (22.8%)
Henoch schonlein purpura	0	2 (2.8%)	2 (2.8%)
Immune mediated thrombocytopenic purpura	3 (4.3%)	1 (1.4%)	4 (5.7%)
Acute Tonsillitis	0	4 (5.7%)	4 (5.7%)
empyema	10 (14.3%)	5 (7.1%)	15 (21.6%)
Pulmonary tuberculosis	0	4 (5.7%)	4 (5.7%)
Septic arthritis	1 (1.4%)	2 (2.8%)	3 (4.3%)
Bronchopneumonia	1 (1.4%)	1 (1.4%)	2 (2.8%)
Scorpion bite	2 (2.8%)	1 (1.4%)	3 (4.3%)
Snake bite	2 (2.8%)	0	2 (2.8%)
Allergic reactions	0	3 (4.3%)	3 (4.3%)
Injuries and trauma	4 (5.7%)	1 (1.4%)	5 (7.1%)
Total	70	70	140 (100%)

Table 3: Distribution according to duration of stay

Duration in days	PICU	Ward
2	6 (8.6%)	15 (18.6%)
3	4 (5.7%)	10 (14.3%)
4	9 (12.8%)	10 (14.3%)
5	5 (7.1%)	12 (17.14%)
6	10 (14.3%)	2 (2.8%)
7	12 (17.14%)	4 (5.7%)
8	4 (5.7%)	6 (8.6%)
9	5 (7.1%)	5 (7.1%)
10	4 (5.7%)	5 (7.1%)
>10 days	11 (15.7%)	1 (1.4%)
total	70 (100%)	70 (100%)

Table 4: Comparison of TISS score 24 hours after PICU discharge and at time of ward discharge

Score	PICU	Ward
0	2 (2.8%)	4 (5.6%)
1-10	37 (52.8%)	66 (94.2%)
10-20	26 (37%)	0
20-30	5 (7.1%)	0
T value = 9.125; p = <0.00247- significant.		

Table 5: Comparison of PRISM scores between the two groups

Score	PICU	Ward
0	2 (2.8%)	40 (57.14%)
1-10	68 (97.14%)	28 (40%)
10-20	0	2 (2.8%)
T value = 7.654; p = <0.003- significant.		

The TISS score, PRISM scores were assessed 24 hours after discharge from PICU in cases and at the time of discharge in controls. The difference was found to be statistically significant.

Table 6: Comparison of IES, Birleson scores from initial to follow up in both groups:

Group	Variables	Initial		Follow-up		Improvement		"t" value	Sig (p)
		Mean	SD	Mean	SD	Mean	SD		
PICU	IES Intrusion	1.8	1.9	0.8	1.1	1.7	0.5	13.984	0.024
	IES avoidance	0.3	0.4	0.0	0.0	0.1	0.6	3.0014	0.034
	Depression	6.9	4.1	4.3	2.1	2.4	2.1	10.024	0.003
Ward	IES intrusion	0.2	0.6	0.07	0.5	0.07	0.4	1.587	0.159
	IES avoidance	0.0	0.0	0.0	0.0	0.0	0.0	0.000	0
	Depression	6.1	2.7	2.9	1.4	3.7	2.9	12.047	0.0012

According to Table 6, difference between IES scores and Birleson depression score at time of discharge, were significantly higher in patients who got admitted to PICU when compared to controls who got admitted to the ward.

The improvement in IES scores and Birleson scores is significant in PICU patients after 1 month of follow-up.

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Discussion

A case control study was conducted to assess the psychological impact of PICU admissions on pediatric populations. 70 cases who were admitted in PICU were matched to 70 controls who got admitted in ward. Scores such as PRISM and TISS were used to assess the severity of illness and extent of critical care provided. In present study, PRISM score of both the groups had a significant difference. The TISS score also was significantly different.

Both the intrusion and avoidance components of the impact of event scale (IES) were significantly different in both groups.

The Birleson depression score was also found to be significantly different in both groups.

The children admitted in PICU had intrusive thoughts despite low TISS scores. Rennick *et al.* [4] postulated that children admitted in PICU were exposed to a higher number of invasive procedures which made them a high risk group for development of psychological conditions. In present study, minimally invasive interventions had adversely impacted the young PICU survivors, which however, had resolved within one month of follow-up. This is suggestive of an acute stress reaction not trailing as of into post-traumatic stress disorder.

Rennick *et al.* [4] found no significant difference between PICU and ward hospitalization owing to the effect of sedation being employed in PICU. In present study, however, patients were not as liberally sedated as the study done by Rennick *et al.* [4].

According to study conducted by Playfor *et al.* [10], 66% of patients admitted to PICU had recollections of strange dreams. Karande *et al.* [1] postulated that children speak up and express their feelings only when asked. According to them, children who didn't undergo any procedures but were witnessing the ICU events had subjective feelings and apprehension about the procedures.

Davydow *et al.* [11] observed that the prevalence of post-traumatic stress disorder in PICU survivors was to such an extent that it had negative impacts on the child's health related quality of life. Rees *et al.* [12] observed that the negative impact of PICU admission was not only on the child, but also the families as well.

Conclusion

Many children who are released from pediatric intensive care units (PICUs) worldwide are affected by PICU-related morbidities. Further study utilizing standardized instruments is required to better understand the extent and natural history of problems that occur after hospital release in order to further define PICS in children. It is critical to advance our knowledge of the physical, neurocognitive, and psychosocial issues that arise in the pediatric ICU population following admission in order to develop more therapies that will enhance the long-term outcomes of these individuals.

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Conflicts of interest: Nil.

References

1. Karande S, Kelkar A, Kulkarni M. Recollections of Indian children after discharge from an intensive care unit. Pediatr. Crit. Care Med. 2005;6:303-307.
2. Davidson JE, Powers K, Hedayat KM, Tieszen M, Kon AA, Shepard E, *et al*. Clinical practice guidelines for support of the family in the patient-centered intensive care unit: American College of Critical Care Medicine Task Force 2004-2005. Crit. Care Med. 2007;35:605-622.
3. Stuber ML, Shemesh E. Post-traumatic stress response to life-threatening illnesses in children and their parents. Child Adolesc Psychiatry Clin. N Am. 2006;15:597-609.
4. Rennick JE, Morin I, Kim D, Johnston CC, Dougherty G, Platt R. Identifying children at high risk for psychological sequelae after pediatric intensive care unit hospitalization. Pediatr. Crit. Care Med. 2004;5:358-363.
5. Vidyasagar D. Stress of admission to pediatric intensive care unit on children. Pediatr. Crit. Care Med. 2005;6:374-376.
6. Keene A, Randal T. Therapeutic Intervention Scoring System: Update 1983. Crit. Care Med. 1983;11:01-03.
7. Pollack MM, Ruttimann UE, Getson PR. Pediatric risk of mortality (PRISM) score. Crit. Care Med. 1988;16:1110-1116.
8. Horowitz MJ, Wilner N, Alvarez W. Impact of event scale: A measure of subjective stress. Psychosom Med. 1979;41:209-218.
9. Birleson P. The Validity of Depressive Disorder in Childhood and the Development of a Self-Rating Scale: A Research Report. J Child Psychol. Psychiat. 1981;22:73-88.

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10. Playfor S, Thomas D, Choonara I. Recollection of children following intensive care. Arch Dis Child. 2000;83:445-448.
11. Davydow DS, Gifford JM, Desai SV, Needham DM, Bienvenu OJ. Posttraumatic stress disorder in general intensive care unit survivors: A systematic review. Gen Hosp. Psychiatry. 2008;30:421-434.
12. Rees G, Gledhill J, Garralda ME, Nadel S. Psychiatric outcome following paediatric intensive care unit (PICU) admission: A cohort study. Intensive Care Med. 2004;30:1607-1614.