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Original Research Article

PARENTAL STRESSORS AND THEIR CORRELATION WITH SEVERITY OF ILLNESS OF CHILDREN ADMITTED IN THE PAEDIATRIC INTENSIVE CARE UNIT OF A TERTIARY HOSPITAL IN PUDUCHERRY

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Abstract

Background: Admission in paediatric intensive care unit is often a transitional phase but extremely stressful period for parents. The PICU‟s environment itself with its noises, rapid pace, lights, staffs and crisis focused interventions create a great challenge for parents who are already stressed. The objective of our study is to identify various factors causing stress among parents of children admitted in PICU and their correlation with severity of illness. There are only few studies conducted in India and hence this study was carried out. **Material and Methods:** Meeting the inclusion criteria 100 parents were recruited. The inclusion criteria were parents of children aged between 1month to 12years admitted first time in PICU for more than 48hours.A detailed clinical history, sociodemographic factors and PSS PICU assessment was entered in a predesigned proforma. Severity of illness was graded with PEWS score. Statistical used test was chi square test. **Results:** In our study 90% of parents were stressed. The average score of parental stress was 3.9. In our study seeing heartbeat on monitor, seeing the baby in pain, injections, not being with crying child were major stressors. Child's age less than 5years, duration of stay between 4-6 days contributed to parental stress but was statistically not significant. Other socioeconomic variables like gender, location, income, education of mother, family type did not affect the level of stress. There is a weak positive correlation between PEWS and stress score and negative correlation between GCS and stress scores but was not statistically significant. **Conclusions:** 90% of parents were stressed as soon as their children gets admitted to PICU. Seeing heartbeat on monitor, injection and not being with crying child were the major stressor. There is no statistical significance between parental stress and severity of illness in children.

INTRODUCTION

Paediatric intensive care unit is a highly stressful ambience for parents. The very cause for admission to a Paediatric Intensive Care Unit (PICU) can prompt a fear that their child could die or become disabled.[1] Moreover its rapid pace, noises, sick children, crisis focused interventions creates a great challenge for already stressed-out parents. The role of parents in intensive care unit is inevitable especially in child's emotional support. But often the circumstances are unclear.[2] Parents should be provided with adequate information, emotional and educational guidance in coping with the stress of intensive care unit.[3] In many institutions patient teaching is accepted as important and integral function of the treating team. When parents were prepared to cope up with the new environment, they have felt it to be very helpful in reducing their anxiety. But in many cases parents were prepared in technical aspects of child care rather than child's emotional and behavioural responses to the unit.4 It would be beneficial if problem-focused coping is facilitated in parental adaptation to the new environment.[5]

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Previous studies have brought out various stressors like sight and sound of instruments, intubation status of child, uncertainty over the child's outcome, loss of parenting role and seeing their child in pain.[6,7] But most of the studies on this issue is from developed countries. They have included follow up clinic as well to track parental stress. Studies done in developed countries have shown certain behaviours have alleviated parental stress like allowing access and proximity to the child, providing accurate information and reassurance, updating parents regarding child's daily responses and progress.[8] There are only few studies that have been conducted in developing countries like India.

India is a highly populated country with great difference in economic status, level of education and culture of the people. PICU set up in India is different from those of developed nations. This could be attributed to differences in infrastructure, financial constraints of parents, poor doctor/nurse and patient ratio and lack of professional counsellors.[9] In India study has shown that prayer has helped in alleviating stress, educated parents had higher expectations in care provided by staff.[10] Henceforth, more studies are required on this aspect so that appropriate interventions can be implemented to decrease parental stress. Hence this study was designed to identify the clinical and sociodemographic variables leading to stress among parents whose children are admitted in paediatric intensive care unit and to find out the correlation between GCS, PEWS score and parental stress.

MATERIALS AND METHODS

Study setting: This cross-sectional study was conducted in the Paediatric Intensive Care Unit of multi-speciality, tertiary care hospital located in Puducherry, India. It caters to heterogenous population from urban areas of Pondicherry and surrounding rural districts of Tamil Nadu. This 6 bedded PICU is staffed with 2 consultants, 2 resident doctors and 10 staff on 8hour rotation duty. There is no separate high dependency unit in our hospital. PICU provides care for both critically ill children and those who need high dependency care. The unit has a policy to permit one guardian to stay with the child in PICU, and parental counselling is done immediately after rounds.

Study participants: Parents of children aged between 1month to 12years admitted in paediatric intensive care unit for first time for more than 48hours.

Sample size and sample selection: Considering the prevalence of stress(p) as 54% based on the previous study conducted in Punjab[10] and assuming an alpha error of 0.05, absolute precision (d)-10%, confidence level as 95%- minimum sample size required would be 96 based on the formula $n = Z^2 (1-\alpha/2)\ p(1-p)/d^2$. The final sample size was rounded off to 100.

Consecutive sampling technique was used to select the participants until the desired sample size was achieved. The parents of all children aged 1month to 12years who were admitted in paediatric intensive care unit for the first time for more than 48hours during June 2020 and September 2021 and were willing to participate were included in the study. Parents less than 18years of age, parents with pre-existing psychiatric illness and parents of children admitted for surgical illness were excluded from the study.

Data collection tool and Procedur

In this study, the parental stress score in PICU (PSS: PICU) developed by Carter and Miles was used. The PSS: PICU scale covers three broad areas: personal-family, situational and environment stressors. Each item is scored from 1(not stressful) to 5 (extremely stressful) or as 0 (not experienced). The stressors are grouped under seven dimensions. Apart from the above stressors, scores were also taken in 22 items belonging to three categories, 8 items each in the category where stress is due to the experiences in PICU and where parents felt stressed by the way their baby looked to them and 6 items in the category where stress was related to things they see or hear. Maximum score for any parent was 110 and minimum was 22. All precautions were exercised to retain the meaning, grammar and simplicity of original version of PSS: PICU.

The study was initiated after ethical committee approval. Parents were included in the study after explaining about the purpose of the study and after obtaining written consent from one of the parents. Those who were included in the study were given an information sheet containing details about the study, privacy details and contact details of the primary investigator. Face to face interviews were conducted by the primary investigator at the end of 48 hours, to facilitate the retrospective parental experiences. A detailed clinical history, sociodemographic factors and PSS-PICU assessment were entered in a predesigned proforma. Severity of illness was graded with PEWS score.

Data entry and analysis

Data were entered into Microsoft Excel and statistical analysis was carried out in SPSS software version 16.0. GCS score and PEWS score were categorized and presented as percentages. Mean scores in various stressors among parents were presented as mean (SD) and median with inter quartile range (P25 and P75). Mean of all items was computed and a stress was categorized into two categories (Overall mean stress score <3 and ≥ 3). Association of socio-demographic characteristics of parents with stress categories was assessed using chi square test. Similarly, GCS categories and PEWS categories were compared with stress categories using chi square test. A p value of less than 0.05 was considered as statistically significant. Pearson's correlation co-efficient was used to find out the correlation between PEWS, GCS score and stress score.

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RESULTS

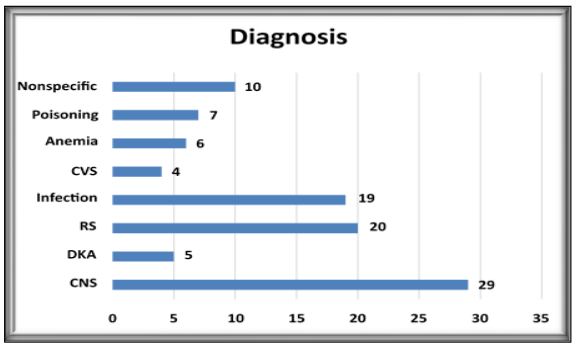

Figure 1: Diagnosis of children admitted in ICU

Of all the included children, 20% of them had diagnosed and admitted for respiratory illness like Acute exacerbation of wheeze, URI triggered wheeze, bronchiolitis, pneumonia, croup. 29% had CNS abnormalities which includes Complex febrile seizures, Simple febrile seizures, Seizure disorder, status epilepticus, Acute flaccid paralysis, Guillaine barre syndrome, Stroke. 19% had admitted for infections like Scrub typhus, dengue, UTI, meningitis, enteric fever. 10% of children had nonspecific reasons like AGE with some dehydration, MISC, FTT, Drowning, sepsis, shock, tuberous sclerosis.

Mean score of 4.6 with SD of 0.8 was the maximum among parents for the item of seeing the child in pain. The item "Seeing your baby with tubes or IV lines on him/her" and "Seeing a needle or tube put in your baby" were scored the mean score of 4.5 with the SD of 0.9 and 0.8 respectively. Not being able to protect your baby from pain and painful procedures (4.3) and Not being able to comfort or help your baby (4.1), Having your child look afraid (4.2), be upset or cry a lot (4.2), Seeing your baby look sad (4.2), Seeing your baby have problems breathing (4.3) were the other items which had scored a mean of more than 4. [Table 1]

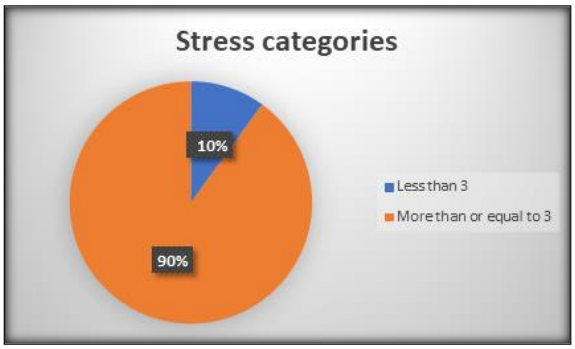

Figure 2: Stress level of parents

Nearly 90% of the mothers were in the stress category of more than or equal to 3 and the remaining (10%) were scored less than 3.

There was no statistically significant association between socio-demographic and clinical characteristics such as GCS score, PEWS and Mean stress categories of the mothers. [Table 2]

There was a negligible correlation was observed between the child's GCS scores and stress score of parent and this correlation was not significant with the p value of 0.81 and the r value of -0.02. A weak positive correlation was observed between the child's PEWS scores and stress scores of a parent and this correlation was not significant with the p value of 0.12 and correlation co efficient of 0.16. [Table 3]

Table 1: Mean score in various stressors among parents

Item	Meanscore	SD	Medianscore	P25	P75
Being separated from your baby	3.6	1.4	4	3	5
Not being able to regularly care for your baby	2.9	1.1	3	2	3
Not having a chance to be alone with your baby	3	1.2	3	2	4
Not being able to share your baby with family and friends	3.3	1.3	3	2	4
Not being able to protect your baby from pain and painful procedures	4.3	1	5	4	5
Not being able to comfort or help your Baby	4.1	1.1	4	4	5
The nurses and other staff seeming closer to the baby than you are	2.6	1.4	3	1	3
Not being able to hold your baby	3.4	1.5	3	2	5
Seeing your baby with tubes or IV lines on him/her	4.5	0.9	5	4	5
Seeing your child in pain	4.6	0.8	5	5	5
Having your child look afraid, be upset or cry a lot	4.2	0.9	4	4	5
Seeing your baby look sad	4.2	1	4	4	5
Seeing a needle or tube put in your Baby	4.5	0.8	5	4	5
Seeing your baby have problems Breathing	4.3	1.1	5	4	5
Seeing your baby surrounded bymachinery and having medical Treatments	4	1	4	3	5
When your baby cannot respond to you	4	1.2	4	3	5
Monitors and equipment in the room	3.7	1	4	3	4
The sudden sound of monitor alarms	3.8	1.1	4	3	5
The other sick children in the room	3.9	1.1	4	3	5
Large number of nurses, doctors and	3.4	1.3	3	2	5

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other staff who work with your child					
When other children in the hospital have a crisis	3.9	1.1	4	3	5
The needs of other parents in the Hospital	3.9	1.1	4	3	5

Table 2: Association between socio-demographic and clinical characters and mean stress level of parents

Variables	Total n(%)	Mean stress score <3 n (%)	Mean stress score ≥3 n (%)	P value
Age of the child				
1month-1year	54 (54)	4(7.4)	50(92.6)	0.348
>1year-5years	24 (24)	2(8.3)	22(91.7)	
>5years-12years	22 (22)	4(18.2)	18(81.8)	
Sex of the child				
Male	65 (65)	8(12.3)	57(87.7)	0.295
Female	35 (35)	2(5.7)	33(94.3)	
Mothers age				
16-24	36 (36)	3(8.3)	33(91.7)	0.344
25-34	52 (52)	7(13.5)	45(86.5)	
35-44	12 (12)	0(0)	12(100)	
Location				
Urban	43 (43)	4(9.3)	39(90.7)	0.84
Rural	57 (57)	6(10.5)	51(89.5)	
Duration of stay				
≤3days	46 (46)	6(13)	40(87)	0.197
4-6days	51 (51)	3(5.9)	48(94.1)	
≥7days	3 (3)	1(33.3)	2(66.7)	
Mothers' education				
Illiterate	1 (1)	0(0)	1(100)	0.747
Primary/secondary	48 (48)	4(8.3)	44(91.7)	
University/Tertiary	35 (35)	5(14.3)	30(85.7)	
Postgraduate	16 (16)	1(6.3)	15(93.8)	
Father's education				
Illiterate	2 (2)	0(0)	2(100)	0.25
Primary/secondary	42 (42)	2(4.8)	40(95.2)	
University/Tertiary	37 (37)	4(10.8)	33(89.2)	
Postgraduate	19 (19)	4(21.1)	15(78.9)	
Income categories (INR)				
<15000	24 (24)	3 (12.5)	21 (87.5)	0.385
15,000-39,999	34 (34)	2 (5.9)	32 (94.1)	
40,000-1,00,000	32 (32)	5 (15.6)	27 (84.4)	
>1,00,000	10 (10)	0(0)	10 (100)	
Family type				
Nuclear	49 (49)	3 (6.1)	46 (93.9)	0.205
Joint	51 (51)	7 (13.7)	44 (86.3)	
GCS score				
<8	3 (3)	1 (33.3)	2(66.7)	0.321
12-Aug	4 (4)	0 (0)	4 (100)	
13-15	93(93)	9 (9.7)	84 (90.3)	
PEWS				
0-3	77(77)	10 (13)	67 (87)	0.068
13-Apr	23 (23)	0 (0)	23 (100)	

Table 3: Correlation among GCS, PEWS and stress score

Comparison	Correlation coefficient (r)	P value
GCS vs Stress score	-0.02	0.81
PEWS vs stress score	0.16	0.12

DISCUSSION

In general, the very first admission to intensive care unit is highly stressful among parents. Identification of various stressors among parents help us in alleviating their stress by taking remedial steps. However further studies are required from India to assess deeper concerns and other psychosocial aspects of parents of children admitted in PICU.

The current study has included 100 parents whose children had been admitted to intensive care unit to assess their stress level. Among all the parents were included, 90% of them had scored score of 3 or more that meant 90% were stressed. A prospective cohort study on traumatic stress in parents of children admitted to the paediatric intensive care unit in the children's hospital of Philadelphia reported that 87 (32%) had satisfied the Acute Stress Disorder criteria.[11] This difference can be attributed by different tools that had been used for the diagnosis or screening of stress. Another study conducted in 2007 by Lee et al showed that 93% of mothers and 60% of fathers had high sleep disturbance in paediatric intensive care unit and mothers were more stressed than fathers. Hence we

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would assume that the parents might have stressed and sleep disturbance could be a sequence of that.[12] The study by Aamir et al had shown that there was no difference in stress scores between the parents of male and female child.[9] Our study findings were also in line with it. But a study done by Pooni et al observed that mothers of male children had more stressed compared to their counterparts.[10] In our study, the proportion of stress was high among children in infancy period (92.6%) and from one year to 5 years (91.7%) when compared to 5-12 years. The Aamir et al study also reported that the mean stress score was high among the parents of children who were less than five years old compared to who has older children.[9] The Aamir et al study had looked for the correlation of PRISM score and parental stress and they reported that a positive correlation has been noticed between those two scores.[9] In our study, we had seen the correlation between PEWS score and GCS with parental stress scores and we could find a weak positive correlation between PEWS and stress scores and negative correlation between GCS and stress scores.

In our study we found that the stress level was high when the parent's age was more than 30 years and this is supported by a study done by pooni et al,[10] and Kumar BS et al.[1] The Kumar BS et al study also reported that the stress was high during the child's first time admission in PICU than the children got admitted in second time.[1] These can be alleviated by appointing counsellors in paediatric intensive care unit, helps to counsel the parents during their stressful situations. Thereby we will reduce the stress and improve the mental health.

In our study we could find that the stress among the parents was higher when their child's duration of stay in the PICU was between 4-6 days and it was comparatively less in the first three days but we did not find any statistically significant association between the stress level of the parent and duration of their child's stay at hospital.

The average score of parental stress was 3.9 in our study and the score was 3.5 in

the Study conducted by Kumar BS et al.[1] Both the studies had recruited same number of parents and used the same scale for the assessment of stress. The findings from both the studies were also similar. Our study had enrolled 57% of children from rural and 43% from urban. A study conducted by Kumar BS et al also recruited 66% from rural and the remaining 34% from urban. In our study majority of the children who got admitted for CNS problems which included seizures comprises 29% followed by 20% who were admitted for respiratory causes. The Mangalore study enrolled majority of the patients for febrile seizure and pneumonia.[1] Both studies has CNS as predominant system involved.

The present study used the 22 item scale to assess the stress level among the parents. The study which has been done in Mangalore also used the same scale.[1] The mean score of how stressful are the following experience was 3.4, the mean for how stressed are you by the way your baby looks to you was 4.27 and how stressful are the things you might see or hear was 3.76. But the scores in the Mangalore study owed the overall average of 3.5 and 3.29, 3.63 and 3.76 respectively in the above mentioned domains. The score was higher in the domain how stressed are you by the way your baby looks to you when compared to the study conducted in Mangalore.

A study done by Pooni et al reported the scores for these different stressors were 2.26, 3.83and 3.14 respectively in the above mentioned domains.[10] Pooni et al also reported that the average parental stress score was 3 and it is quite lesser than the our study.[10] This could be due to the differences in the parental factors, cultural factors which play an important role in determining the stress level of the parent.

In our study we found that seeing the child's heartbeat on monitor, injections and not being with the child were the major reasons for the stress. A study done by Kumar BS et al reported that PICU monitor and equipment was the reason for the stress and these findings were likely similar.[1]

The study done by Pooni et al has reported the various stressors among the Indian parents when their child was in PICU. The study reported that factors least associated with stress included: were not being alone with baby; and the presence of monitors and equipment. The majority 67% felt stressed during procedures, and 59% parents felt stressed by the sights and sounds of the PICU.[10] In our study we found that seeing heartbeat on monitor, seeing the baby in pain and injections and other painful procedures were the important stressors.

Strengths and limitations of the study

Parents of children who were admitted for the first time only were included as participants thereby eliminating those parents who were previously exposed to PICU environment. The proforma was given after 48hours to the parents so that they had time to introspect to what all aspects they felt stressed in PICU environment. Severity of illness was assessed by PEWS which is cost effective, doesn't involve lab investigations thus it avoids unnecessary delay in taking decisions by waiting for the results. Since it was Covid period there was limitation for admission of respiratory cases and the study was conducted in small sample size. In this study only mother's stress was assessed with the tool.

CONCLUSION

There is significant stress among mothers of children admitted to PICU. In our study seeing heartbeat on monitor, seeing the baby in pain, injections given to child, not being with crying child were major stressors. Child‟s age less than 5years, duration of stay between 4-6 days contributed to parental stress but was statistically not significant.

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Other socioeconomic variables like gender, location, income, education of mother, family type did not affect the level of stress. Many of the stress factors can be alleviated by taking proper remedial steps like providing parental counselling regarding PICU environment, invasive procedures and also allowing the mothers to address their problems during hospital stay. Since studies regarding parental stress is limited in India, more studies are required to assess concerns of parents of children admitted to PICU.

REFERENCES

1. Parental stress: a study from a pediatric intensive care unit in Mangalore | Kumar | International Journal of Contemporary Pediatrics [Internet]. [cited 2021 Dec 14]. Available from: https://www.ijpediatrics.com/index.php/ijcp/article/view/429
2. Ygge BM, Lindholm C, Arnetz J. Hospital staff perceptions of parental involvement in paediatric hospital care. J Adv Nurs [Internet]. 2006 [cited 2021 Oct 19];53(5):534–42.Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2648.2006.03755.x
3. Bronner MB, Knoester H, Bos AP, Last BF, Grootenhuis MA. Follow-up after paediatric intensive care treatment: parental posttraumatic stress. Acta Paediatr [Internet]. 2008 [cited 2021 Oct 19];97(2):181–6. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1651-2227.2007.00600.x
4. Preparation of Parents for the ICU Experience: What Are We Missing?: Children‟s Health Care: Vol 20, No 3 [Internet]. [cited 2021 Oct 19]. Available from: https://www.tandfonline.com/doi/abs/10.1207/s15326888chc2003_1
5. Miles MS, Carter MC. Coping Strategies Used by Parents During Their Child‟s Hospitalization in an Intensive Care Unit. Child Health Care [Internet]. 1985 Jun 1 [cited 2021 Oct 19];14(1):14–21. Available from: https://doi.org/10.1207/s15326888chc1401_5
6. LaMontagne LL, Pawlak R. Stress and coping of parents of children in a pediatric intensive care unit. Heart Lung J Crit Care. 1990 Jul;19(4):416–21.
7. Fisher MD. Identified needs of parents in a pediatric intensive care unit. Crit Care Nurse. 1994 Jun;14(3):82–90.
8. HARBAUGH BL, TOMLINSON PS, KIRSCHBAUM M. Parents‟ Perceptions of Nurses‟ Caregiving Behaviors in the Pediatric Intensive Care Unit. Issues Compr Pediatr Nurs [Internet]. 2004 Jan 1 [cited 2021 Oct 19];27(3):163–78. Available from: https://doi.org/10.1080/01460860490497985
9. Aamir M, Mittal K, Kaushik JS, Kashyap H, Kaur G. Predictors of stress among parents in pediatric intensive care unit: a prospective observational study. Indian J Pediatr. 2014 Nov;81(11):1167–70.
10. Pooni PA, Singh D, Bains HS, Misra BP, Soni RK. Parental stress in a paediatric intensive care unit in Punjab, India. J Paediatr Child Health. 2013 Mar;49(3):204– 9.
11. Balluffi A, Kassam-Adams N, Kazak A, Tucker M, Dominguez T, Helfaer M. Traumatic stress in parents of children admitted to the pediatric intensive care unit. Pediatr Crit Care Med [Internet]. 2004 Nov [cited 2022 Jan 2];5(6):547–553. Available from:
12. https://journals.lww.com/pccmjournal/Abstract/2004/11000/Traumatic_stress_in_ parents_of_children_admitted.6.aspx
13. Lee S-Y, Lee KA, Rankin SH, Weiss SJ, Alkon A. Sleep Disturbance, Fatigue, and Stress Among Chinese-American Parents with Icu Hospitalized Infants. Issues Ment Health Nurs [Internet]. 2007 Jan 1 [cited 2021 Oct 19];28(6):593–605. Available from: https://doi.org/10.1080/0161284070135.

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