Original Article

Effectiveness of Enhanced Hands-on Skill in Implementation of Pediatric Early Warning Score (PEWS) Assessment among Staff on Patient Outcomes at PICU in a Selected Hospital Kolar.

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Abstract

Background: The ideology of underpinning Pediatric Early Warning Score (PEWS) is the earlier recognition of deterioration in patients and would help to improve clinical outcomes.To explore how the introduction of PEWS at a tertiary children's hospital affects emergency admission to Pediatric Intensive Care Unit (PICU) and the impact on service delivery.

Subject and Method: A quantitative, pre experimental study was conducted to assess the effectiveness of Pediatric Early Warning Score among 30 staff nurses. The performance was assessed by using check list after Hands on skill training performance was assessed on Pediatric Early Warning Score.

Results: The Pediatric Early Warning Score is compared between pretest and posttest found statistically significant after Hands on skill training performancewhich is assessed by paired t test [p=<001]. Thus it was evident that effective in improving the knowledge on Pediatric Early Warning Score in PICU.

Conclusion: The overall findings of the study clearly stated that, it was effective in improving the knowledge on Pediatric Early Warning Score among staff nurses.

Keywords: Pediatric, Early, Warning, Score.

Introduction

Pediatric Early Warning Score is a Pediatric critical care remains one of the challenging aspects in the field of pediatrics. The Pediatric Intensive Care Unit (PICU), where critically ill pediatric patients who require advanced airway, respiratory, and hemodynamic supports are usually admitted with the aim of achieving better outcome.[1] Under-five mortality according to data provided by UNICEF is 39.4 deaths/1000 live births in 2018.[2] Diarrheal diseases, pneumonia, and other infectious diseases are leading causes of death among the children below 5 years of age in developing countries like India.[3]However, little is known about the causes of death in children after 5 years of age. Profile of mortality in PICU varies between different age groups. Evaluation of the mortality pattern can help in better decision-making, improving quality of care, and modifying future management.[4]Pediatric Early Warning Signs (PEWS) are clinical manifestations that indicate rapid deterioration in pediatric patients, infancy to adolescence. PEWS Score or PEWS System are objective assessment tools that incorporate the clinical manifestations that have the greatest impact on patient outcome.[5]Pediatric Early Warning Systems (PEWS) is an assessment used at bedside in PICU to identify hospitalized children at increased risk of deterioration by assigning a score based on vital signs and clinical status and guiding interventions using a response algorithm to improve outcomes.6 Using PEWS System plays a pivotal role in early detection of any deterioration and immediate management among critically ill child in PICU.[7]

The knowledge on the manner in which pediatric early warning scoring system can be used limited. So, a reliable scoring system is very essential in this population. Monaghan in 2005 was the first to publish a report on the use of Pediatric Early Warning Score (PEWS).[6]Pediatric Early Warning Signs (PEWS) are clinical manifestations that indicate rapid deterioration in pediatric patients, infancy to adolescence. PEWS Score or PEWS System are objective assessment tools that incorporate the clinical manifestations that have the greatest impact on patient outcome.[7]The knowledge on the manner in which pediatric early warning scoring system can be used is limited. So, a reliable scoring system is very essential in this population. This knowledge of bedside tool in staff nurses help in early identification and improve the outcomes. Hence this was chosen to assess the knowledge of staff nurses and impact following hands on training.

MATERIALS AND METHODS

A quantitative approach, pre experimental study was conducted after getting the institutional ethics committee approval [Ref.No.SDUCON/IEC/107/2022]. Total of forty staff nurses working in pediatric intensive care unit who met the inclusion criteria were selected by using convenient sampling technique. Informed consent was obtained from the samples before collecting the data. Data collection tool consist of:

Section-A Socio demographic data of staff nurses which includes age, gender, marital status, Educational status and work experience.

Section-B It consists of Structured Knowledge Questionnaire to assess the knowledge on Pediatric Early Warning Score with 20 items. The questions were multiple –choice type, the total score was 20, each correct response carry "score 1" and incorrect response carry "zero".

Knowledgeis assessed by the following scores

Adequate knowledge: Score15 and above (75%)

Average knowledge: Score 10 to 15 (50-75%)

Inadequate knowledge: Score < 10 score (<50%)

Section -C: Observational checklist to assess the patient condition at the time of admission.It consists of 15 items with a maximum score of 15 each correct response will be carried 1 mark and incorrect response carried zero.Checklist was assessed by GoodPractice: score above 12 (75%) Average Practice: score between 7 to 12(50-75%) and Poor Practice: score < 7 (<50%) score between 0 & 6.

Statistical analyses were performed using SPSS. Categorical data were analyzed using Chi-square tests and continuous data variables were analyzed using paired t test were used to compare pretest and posttest knowledge of staff nurses [p=<.001] was found statistically significant.

Results

Description of Socio demographic data of staff nurses

N=40

SL NO	Variables		Frequency(f)	Percentage (%)
1.	**Age**	23-25	17	42.5%
		26-30	18	45%
		31-36	5	12.5%
		>37	0	0%
2	**Gender**	Male	0	0%
		Female	40	100%
3	**Marital status**	Married	22	55%
		Unmarried	18	45%
4.	**Education status**	GNM	18	45%
		BSC	16	40%
		PBBSC	5	12.5%
		MSC	1	2.5%
5.	**Work Experience**	0-1	9	22.5%
		2-6	21	52.5%
		7-9	8	20%
		>9	2	5%

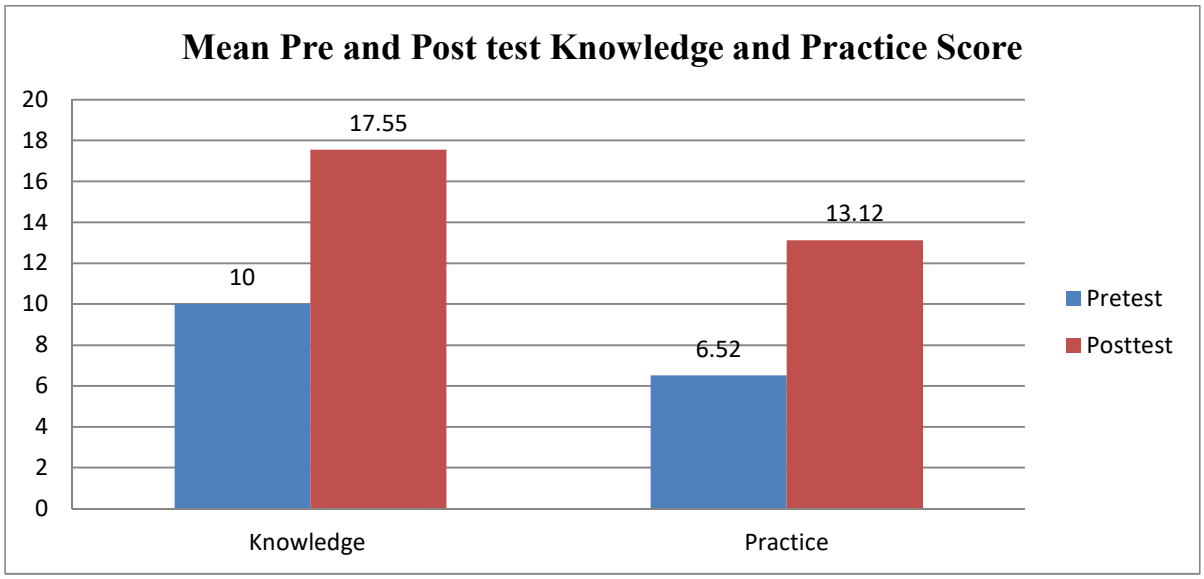
Shows that majority of staff nurses age group were in the age group between 26 to 30 years (45%), 42.5% of staff nurses were with age group of 23 to 25 years and 12.5% of staff nurses were with the age group of 31 to 36 years of age group. With regard to gender all the staff nurses were females (100%). With regard to marital status, majority of staff nurses were married (55%) and reaming 45% unmarried.With regard to education of staff nurses Majority education was General Nursing Midwifery (45%), 40% had the Bachelor of Science in Nursing, 12.5 % had Post Basic BSc Nursing and 2.5% of them educated with Master of Science in Nursing. With regard to work experience majority had 2-6 years (52.5%) experience, 22.5 % of them had 0-1 years of experience and 20% were between 7-9 years' experience and 5% > 9 years experience.

Table-2 Comparison of Mean pre -test and post- test knowledge and Practice Score of staff nurses.

N=40

Variable	Pre test Mean SD	Posttest mean SD	t value	df	p value
Knowledge	10± 2.42	17.55± 1.61	16.994	39	.002
Practice	6.52±1.21	13.12±0.88	27.5	39	<.001

'p' value at<0.05 level, df 39



The pre-test mean Knowledge score of staff nurses is 10± 2.42 and post mean score is 17.55± 1.61 which shows statistically significant difference between the pre and post mean Knowledge score. The pre-test mean Practice Score of staff nurses is 6.52±1.21 and post mean score is 13.12±0.88 which shows statistically significant difference between the pre and post mean Practice score. The difference observed in mean score of knowledge (p=.002) and practice (p=<.001) was statistically significant. Thus null hypothesis $H0_1$ is rejected and research hypothesis $H0_1$was accepted. Hence it is evident that Hands on skill training on Pediatric Early Warning Score assessment found to be effective.

Table-3Association between Pretest and Posttest Knowledge and practice Score with selected socio demographic variables.

N=40

Sl no	Variables		Posttest knowledge		χ^2	P	Post- test Practice		χ^2	p
			Below Median <18	Above Median >18			Below Median <13	Above Median >13		
1.	Age	>25years	8	12	6.6	0.09	15	4	1.08	0.2
		<25 years	16	4			16	9		
2.	Marital status	Married	15	10	0.73	0.39	12	9	2.16	0.14
		Un married	11	4			15	4		
3.	Educational status	Diploma	13	4	2.46	0.11	11	10	4.60	0.03
		Graduate	12	4			16	3		
4.	Work experience	<1 Year	18	12	0.32	0.57	6	10	10.94	0.009
		>1 year	7	3			21	3		

From the above table 3 it is evident that there is statistically significant association only with age group of staff nurses (χ^2value 6.6) and not significant with marital status (χ^2value0.73), educational status (χ^2 value 2.46) and work experience (χ^2value0.32).Thus null hypothesis $H0_3$ is partially rejected with regard to only age (p=0.09) of staff nurses and with regard to marital status, educational status and work experience the research hypothesis H3 his partially accepted.So it is evident that knowledge on Pediatric Early Warning Score is more among staff nurse whose age is above 25 years. From the above table it is evident that there is statistical significant association with work experience of staff nurses (χ^2 value 10.94) and with educational status (χ^2value 4.60). There was statistically no significant difference with age (χ^2value 1.08) and marital status (χ^2value2.16). So it was evident that good practice is seen more among diploma nurses and who are having less than one year experience. Thus null hypothesis $H0_3$ is partially

rejected with regard to work experience (p= 0.009) and educational status (p=0.03) of staff nurses and with regard to age and marital status the research hypothesis H0 partially accepted.

So it is evident that practice on Pediatric Early Warning Score is more among staff nurses whose educational status is diploma and work experience is less than one year more. There is statistically no significant correlation (p=.55) between pretest knowledge and pretest practice of staff nurses on Pediatric Early Warning Score. Hence null hypothesis $H0_2$stated is accepted.

Discussion

All the staff nurses knowledge was assessed. In pre experimental phase, majority (55%) of staff nurses had average knowledge, 43% of them had inadequate knowledge and none of the staff nurses had adequate knowledge. Majority of Staff Nurses had Poor Practice (55%), 45% of them had average practice and none of the staff nurses had good practice. In Post –test, majority of staff nurses had adequate knowledge (87%), 12.5% them had average knowledge and none of them had inadequate knowledge.. In Posttest practice of staff nurses, majority of staff nurses had good practice (80%), 20% them had average practice and none of them had poor practice. The pre-test mean Knowledge score of staff nurses is 10± 2.42 and post mean score is 17.55± 1.61 which shows statistically significant difference between the pre and post mean Knowledge score. The pre-test mean Practice Score of staff nurses is 6.52±1.21 and post mean score is 13.12±0.88 which shows statistically significant difference between the pre and post mean Practice score.

There is statistically no significant correlation (p=.55) between pretest knowledge and pretest practice of staff nurses on Pediatric Early Warning Score. There is statistically no significant correlation (p=.60) between post knowledge and post-practice of staff nurses on Pediatric Early Warning Score.There is statistically significant association only with age group of staff nurses (χ^2value 6.6) and not significant with marital status (χ^2value0.73), educational status (χ^2value 2.46) and work experience (χ^2value0.32). There is statistical significant association with work experience of staff nurses (χ^2value 10.94) and with educational status (χ^2value 4.60). It was evident that good practice is seen more among diploma nurses and who are having less than one year experience.

A study conducted by Parshuram CS et al. in PICU with regard to simulation with deliberate practice with ICU nurses knowledge. Total of 24 nurses participated in the simulation

education series. All participants had two years or less of PICU experience, with 14 (58%) reporting less than one year of experience. scores for clinical teamwork performance, knowledge, and self-confidence increased from pre- to post- simulation education.[9]

Another study by Mustafa G et al. the structure intervention programme was given about oxygen therapy on nurse's knowledge and practice in PICU results shows that the average test score before and after implementation of the education were 10.75±2.65 and 17.5±2.04 respectively. The average post test score was greater than that of the post test and the difference was statistically significant ($p<0.04$).[11]

Implications of the study

Nursing Practice

- Keeping the findings of the study as base, PICU nurses can practice the hands on skill training on pediatric early warning score.

Nursing Education

- The nurse educator helps the nurse to develop competence in theoretical as well as practical knowledge.
- Based on the findings of the study, nurse educator can educate PICU nurses
- Nursing curriculum can also include the assessment of pediatric early warning Score in caring of critically ill child.

Nursing Research

Nursing research is a systematic investigation and study of materials, sources etc. in order to establish facts and research conclusion.

- Findings of the study add to body of knowledge.
- The suggestions and recommendations can be utilizing by other researchers for further studies in the same.
- Emphasize evidence based practice to provide quality care to pediatric children's.

Nursing Administration

- Nursing administration is a sector to control the management operation along with arrangement of services in order to plan for organization. Nursing administrators take initiative for continuous education program.
- Nurse administrator can arrange for in service education programme for nurses to orient regarding hands on skilltraining on Pediatric Early Warning Score.
- Nurse administrator can develop standard practice guidelines regarding Pediatric Early Warning Score on children's.

Limitations of the study

- The study is limited to single hospital setting..
- The study has a small sample size.

Recommendations

- A similar study can be conducted by using larger populations.
- A similar study can be conducted with mixed method to identify factors in improving pediatric patient care in PICU.

Conclusion

- The study results revealed there was significant increases in the mean among staff nurses in the assess the effectiveness of structure teaching programme on knowledge regarding pediatric early warning score of staff nurses working pediatric intensive care unit at RLJH&RC Kolar.

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