KNOWLEDGE RETENTION OVER TIME OF PALS TRAINING PROGRAMME IN NURSES WORKING AT PEDIATRIC TERTIARY CARE UNIT", CHENNAI, TAMILNADU, INDIA.

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Abstract- **Inadequate CPR management affects the sick children outcome. Hence nurses must be equipped with adequate knowledge and a positive attitude towards assessment and management of pediatric emergencies based on American Heart Association (AHA} training module 2020.**
Objectives: To assess the effectiveness of PALS Simulation training among nurses in Tertiary care hospital.
Design: Quasi experimental where One group pre-test post-test design.
Setting: The pilot study was conducted at Institute of Child health and Research Institute, Egmore, Chennai. Nurses working in ICH fulfilling the inclusion criteria were selected by Simple Random sampling technique. The inclusion criteria included Nurses who are not attended previous PALS training were selected. A structured knowledge questionnaire and standardized practice checklist (AHA 2020) were used for the data collection in the study. Post-test was assessed based on OSCE check list over time interval of 30 days. The following OSCE stations were used in Post-test to assess the Knowledge retention for Nurses.
Station I: CPR- Cardio pulmonary resuscitation and Defibrillation
Station II: Intravenous / Intra osseous (IO) access
Station III: Emergency Drugs – Crash Cart
Station IV: Management of Pediatric Emergencies - Shock, Foreign body, Head trauma, Drowning, SIDS (sudden infant death syndrome).
Station V: Equipments requirement in Emergency unit.

Results: Frequency and percentage distribution of pre and post test scores on PALS among nurses depicts that, in pre-test most (54%) of them were poor knowledge only 13% of nurse were good knowledge, whereas in post-test most (67%) of them were very good knowledge and 33% of them were good knowledge. It seems that PALS training programme was effective among nurses.
Conclusions: Findings indicate that PALS simulation training over the time of knowledge retention for nurses was effective. The pre and post test scores on PALS among nurses depicts that, in pre-test mean score 3.8 (28%) & SD is 1.8 and the Post- test mean score 38.6 (77%) & SD is 0.7. The mean difference score is 49. Comparison of mean, standard deviation and mean percentage of pre and post knowledge scores of PALS among nurses. The pre and post test scores on PALS among nurses depicts that, in pre-test mean score 16.4 (43.21%) & SD is 1.16 and the Post-test mean score 43.21 (86%) & SD is 2.08. The mean difference score is 53.Paired 't' test value of pre-test and post-test knowledge scores of PALS among nurses 2.84 .It seems the' P' value of pre-test and post- test knowledge score is <0.05 is significant. The association between the demographic variables for post-test practice scores of PALS among nurses also not significant.

Key words: **PALS, Sudden Cardiac arrest, Defibrillation, Airway obstruction, Shock, Foreign body, Head trauma, Drowning and SIDS (sudden infant death syndrome).**

INTRODUCTION

American Heart Association, 2010; Donoghue et al., 2005. In paediatric patients when cardiopulmonary arrest does occur, it is usually due to the progression of shock and/or respiratory failure.There are many causes for arrest and they include sudden infant death syndrome (SIDS), submersion/near-drowning, trauma, and sepsis (American Heart Association, 2010; Slonim et al., 1997).Early recognition of life threatening events in paediatric patients and rapid action means the difference between life, death, or permanent disability. Through specialty certification Courses like the American Heart Association's (AHA) Pediatric Advanced Life Support (PALS), health care providers are trained in assessment and interventions specific to critically ill and or injured Pediatric patients (American Heart Association, 2010). In exclusive general wards the health care providers, regularly practicing PALS procedures may be difficult due to lack of resources. Furthermore, the **nurses see in practice is often limited in pediatric health care settings. As a result of this limited exposure to Pediatric patients, the nurses do not have the**

opportunity to use knowledge and practice skills even they have learned in PALS. Hence, they may lose valuable knowledge over time due to a lack of usage. When faced with a life threatening Pediatric emergency and the need to rapidly access knowledge and skills, the nurses not be able to retain and apply what they have previously learned. The result is that precious minutes are lost in a rush to save a child's life. I proposed to study the problem of PALS knowledge retention and skill acquisition among the healthcare providers and offered an educational technique, simulated training (ST), as a potential solution to the mentioned problem.

Cronenwett, et al., 2007.American Association of Critical-Care Nurses Quality and Safety Education for Nurses (QSEN) competencies, and applying quality improvement Patient-centred scenarios, team collaboration, and pediatric advanced life support (PALS) practice guidelines scenarios can be applied through a quality improvement program, by having nurses participate in mock codes (responses) to address core competencies.

Our Teaching advanced life saving knowledge and skills to nurses will have the potential to save many lives. Being able to access life saving knowledge and skills depends on the ability of the health care provider to call upon that information at a moment's notice.

STATEMENT OF THE PROBLEM

"EFFECT OF SIMULATION BASED PALS TRAINING PROGRAMME ON KNOLEDGE AND SKILL RETENTION IN NURSES WORKING IN PEDIATRIC TERTIARY CARE UNIT", CHENNAI, TAMILNADU, INDIA.

OBJECTIVES OF THE STUDY

1. To assess the existed knowledge and skill about pediatric advanced life support among registered nurses.

2. To evaluate the effectiveness of simulation training about pediatric advanced life support course among registered nurses.

3. To compare the pre-test and post-test level of knowledge retention and skill in pediatric advanced life support course among registered nurses.

4. To associate the post- test level of knowledge retention and skill in pediatric advanced life support course among registered nurses with selected demographic variable. examine the relationship between participants

The overall goal of this research is to improve the nurses knowledge and skill in CPR techniques and management of pediatric emergencies outcome of children requiring resuscitation in treasury care hospital by periodically updated PALS trained nurses.

MATERIALS AND METHODS.

Research Approach: Evaluative research approach.

Research design : Quasi experimental design, where one group pre-test and post-test only design was selected.

Setting : Institute of Child Health and Hospital for Children, Chennai.

Population : Nurses Working at Paediatric Tertiary Care hospital, Chennai-8.

Samples : Nurses who were not attending PALS training.

Sample size : 15 Nos

Sample technique: Simple random sampling technique

Data collection procedure :- the inclusion criteria was nurses who were not attended PALS training, willing to participate in PALS Simulation training and present during the period of data collection. Nurses Practice While Watching and/or Practice Skills, they practiced using a static manikin, then assign to participate in stimulation training with the Critically ill children at Emergency room, ICH& RI, Chennai.

Period of Data Collection Data was collected from 01-05-2019 to 30-05-2019. The investigator collected the data from 15 Nurses working in ICH & RI, Chennai-8.

Pre test data collected based on structured questionnaire

Post test In this Pilot study the Post test was conducted by using OSCE check list on 30days interval.

OSCE Skill stations

Station I: CPR- Cardio pulmonary resuscitation and Defibrillation

Station II: Intravenous / Intra osseous (IO) access

Station III: Emergency Drugs – Crash Cart

Station IV: Management of Pediatric Emergencies - Shock, Foreign body, Head trauma, Drowning, SIDS (sudden infant death syndrome).

Station V: Equipments requirement in Emergency unit.

Development of the Tool

There are 2 sections of tools were used. They are,

Section –A

Demographic Variables – It consists of demographic characteristics of Nurses

- Age
- Sex
- Education level
- Years of experience in service
- Years of experience in PALS

Section – B
PART I - Structured knowledge questionnaire consists of 40 knowledge items each correct answer will be scored 1
PART II - The standardized practice OSCE checklist consists of 14 practice items based on the content on Advanced Pediatric life support, 2021 AHA guidelines.

Scoring Procedure:

Level of knowledge	Percentage of scores	Actual scores
Very poor	<20%	0 – 8
Poor	21% to 40%	9 – 16
Average	41% to 60%	17 – 24
Good	61% to 80%	25 – 32
Very Good	81% to 100%	33 – 40

Ethical Consideration
1. Written permission were obtained from Director of Medical Education and Principal of College of Nursing, Madras Medical College, Chennai.
2. Written permission were obtained from Director- Institute of Child Health and Research Institute, Chennai-8.
3. Ethical permission obtained from Chairperson of Ethical committee, Madras Medical College, Chennai- 3.
4. Prior informed consent was obtained from Nurses working in ICH & RI, Chennai-8.

Validity and reliability The content validity of the tools like demographic variables, structured Questionnaire related to PALS (AHA) and OSCE check list for post-test evaluation were validated in consultation with the guide and Pediatric experts. The expert are Paediatricians, Pediatric Nurse Educators and Statistician. The tool was modified according to the suggestion and recommendation of the experts.

Discussion:
Frequency and percentage distribution of pre and post test scores on PALS among nurses depicts that, in pre-test most (54%) of them were poor knowledge only 13% of nurse were good knowledge, whereas in post-test most (67%) of them were very good knowledge and 33% of them were good knowledge. It seems that PALS training programme was effective among nurses.

Table-1 Frequency and percentage distribution of pre and post-test knowledge scores of PALS among nurses (N= 15)

Level of knowledge	Pre-test score		Post -test score	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
Very poor	-	-	-	-
Poor	8	54	-	-
Average	5	33	-	-
Good	2	13	5	33
Very Good	-	-	10	67

The above table shows the Frequency and percentage distribution of pre and post test scores on PALS among nurses depicts that, in pre-test most (54%) of them were poor knowledge only 13% of nurse were good knowledge, whereas in post-test most (67%) of them were very good knowledge and 33% of them were good knowledge. It seems that PALS training programme was effective among nurses.

Table – 2. Frequency and percentage distribution of pre and post-test practice scores of PALS among nurses (N= 15)

Level of knowledge	Pre-test score		Post- test score	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
Not adopting	7	46	-	-
Partially adopting	8	54	4	27
Fully adopting	-	-	11	73

The table 2 shows the frequency and percentage distribution of pre and post test scores on PALS practice among nurses depicts that, in pre-test 7 nurses (46%) were not adopting only 8 nurses (54%) were adopting PALS practice, whereas in post-test 4 nurses (27%) of them were partially adopting and 11nurses (73%) were fully adopting the PALS practice. It seems that PALS training programme was effective among nurses.

Table-3. Comparison of mean, standard deviation and mean percentage of pre and post knowledge scores of PALS among nurses (N1= 15)

Area of knowledge among nurses	Max scores	PALS						Difference in mean percentage
		Pre test			Post test			
		Mean	SD	Mean %	Mean	SD	Mean %	
Introduction	10	4.4	0.8	44	7.4	1.0	74	30
Cardiac arrest	5	3	0.7	60	3.7	0.3	74	14
Respiratory assessment	10	4.1	1.5	41	7.8	1.0	78	37
Airway	12	6.3	0.8	53	10.5	0.2	87	35
Breathing	7	2.0	0.3	29	5.4	0.2	77	48
Circulation	6	2.6	1.4	43	4.9	0.5	82	39
Total	**50**	**13.8**	**1.8**	**28**	**38.6**	**0.7**	**77**	**49**

The above table shows Comparison of mean, standard deviation and mean percentage of pre and post knowledge scores of PALS among nurses**.** The pre and post test scores on PALS among nurses depicts that, in pre-test mean score 13.8 (28%) & SD is 1.8 and the Post-test mean score 38.6 (77%) & SD is 0.7. The mean difference score is 49. It seems that PALS training programme knowledge was effective among nurses.

Table – 4. Comparison of mean, standard deviation and mean percentage of pre and post practice scores of PALS among nurses (N1= 15)

Area of practice among nurses	Max scores	PALS						Difference in mean percentage
		Pre test			Pre test			
		Mean	SD	Mean %	Mean	SD	Mean %	
Introduction	10	4.1	1.5	41	9.75	1.81	97	56
Level of consciousness	5	2.2	1.80	44	4.1	1.9	82	38
Airway	10	4.6	192. 2.52	46	8.52	0.66	85	39
Breathing	10	4.2	0.37	42	8.51	1.8	85	43
Circulation	10	4.8	0.69	48	8.59	0.41	86	38
Complications	5	2.1	1.0	42	4.3	0.88	86	44
Total	**50**	**16.4**	**1.16**	**33**	**43.21**	**2.08**	**86**	**53**

The above table shows Comparison of mean, standard deviation and mean percentage of pre and post practice scores of PALS among nurses**.** The pre and post test scores on PALS among nurses depicts that, in pre-test mean score 16.4 (43.21%) & SD is 1.16 and the Post test mean score 43.21 (86%) & SD is 2.08The mean difference score is 53. It seems that PALS simulation training programme in practice was effective among nurses.

Table- 5. Paired 't' test value of pre-test and post-test knowledge scores of PALS among nurses

Knowledge of PALS	Paired 't' test value	Table value	Level of significance
Introduction	12.8	2.84	P <0.05 Significant
Cardiac arrest	18.1		P <0.05 Significant
Respiratory assessment	16.21		P <0.05 Significant
Airway	10.2		P <0.05 Significant
Breathing	14.08		P <0.05 Significant
Circulation	16.05		P <0.05 Significant
Total	**18.21**		P <0.05 Significant

Table 5 shows the Paired 't' test value of pre-test and post-test knowledge scores of PALS among nurses 2.84 .It seems the' P' value of pre-test and post- test knowledge score is <0.05 is significant.

Table – 6. Paired 't' test value of pre-test and post-test practice scores of PALS among nurses

Practice of PALS	Paired 't' test value	Table value	Level of significance
Introduction	14.1	2.84	P <0.05 Significant
Level of consciousness	16.01		P <0.05 Significant
Airway	18.02		P <0.05 Significant
Breathing	14.18		P <0.05 Significant
Circulation	13.52		P <0.05 Significant
Complications	15.07		P <0.05 Significant
Total	19.02		P <0.05 Significant

Table 6 shows the Paired 't' test value of pre-test and post-test knowledge scores of PALS among nurses 2.84 .It seems the' P' value of pre-test and post-test practice score <0.05 is significant

Table-7. Find out the association between post-test knowledge scores of PALS among nurses

Demographic variables	DF	χ^2	TV	Level of significance
Age in years	1	0.7	3.84	Not significant
Gender	1	0.8	3.84	Not significant
Education level	1	0.8	3.84	Not significant
Year of experience	1	1.8	3.84	Not significant
Years of experience as a Pediatric Nurse	1	0.5	3.84	Not significant

The table7showsthe association between the demographic variables of post-test knowledge scores of PALS among nurses were not significant.

Table – 8. Find out the association between post-test practice scores of PALS among nurses

Demographic variables	DF	χ^2	TV	Level of significance
Age in years	1	0.64	3.84	Not significant
Gender	1	0.8	3.84	Not significant
Education level	1	0.8	3.84	Not significant
Year of experience	1	1.46	3.84	Not significant
Years of experience as a Pediatric Nurse	1	0.64	3.84	Not significant

The above table shows the association between the demographic variables for post-test practice scores of PALS among nurses also not significant.

Result:

- Findings indicate that simulation training given on knowledge and practice regarding PALS was effective.
- The level of knowledge retention was increased for the nurses.

CONCLUSION

Seropian, Brown, Gavilanes, and Driggers (2004) described several factors important to the increased use of ST(Simulation Training) in health care education

- The nursing shortage and the need to increase enrollment in educational programs,
- A need to supplement limited numbers of clinical sites and learning opportunities,
- A lower cost of simulator equipment
- Emphasis on evidence based practice and related competencies
- Acceptance of ST as a useful tool
- Increased awareness of the need to address patient safety
- The potential of ST to enhance clinical practice.

- Nurses need to be empowered to act. In light of the call from the IOM report (2010) for the introduction of innovations in health care education, the results of this study suggest that high-fidelity simulation deserves incorporation in this approach.

The pilot study result shows knowledge retention over time of PALS training programme for nurses improved the nurses confidentiality in managing pediatric emergencies.
The pilot study shows the feasibility, will helps the researcher to conduct main study in future with large samples to improve the nurses knowledge by periodical PALS training programme.

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