

# Effectiveness of Self Instructional Module on Knowledge Regarding Pediatric Advanced Life Support (PALS) among the Staff Nurses Working in Pediatric Wards of Selected Hospitals at Dehradun: A Pre-Experimental Study

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## ABSTRACT

Pediatric Advanced Life Support is the assessment and support of pulmonary and circulatory function in the period before an arrest, during arrest and after an arrest. Consistent with the Chain of Survival PALS should focus on prevention of the causes of arrest (Sudden Infant Death Syndrome, injury, and choking) and on early detection, rapid treatment of cardiopulmonary compromise and arrest in the critically ill or injured child. The study aimed at finding out the effectiveness of Self Instructional Module on knowledge regarding Pediatric Advanced Life Support (PALS) among the staff nurses.

**Methods:** In this pre-experimental study, I enrolled 60 staff nurses of pediatric wards working in Combined Medical Institute and Doon Valley Hospital of Dehradun. They were selected by purposive sampling technique. The tool used for the study consists of two sections: Structured schedule questionnaire seeks information about socio-demographic variable and structured knowledge questionnaire. They were analyzed and interpreted by using descriptive and inferential statistics at level of significance 0.05.

**Results:** The assessment of the effectiveness of the simulated instructional module on knowledge of the staff nurses regarding pediatric advanced life support revealed that the knowledge increased after intervention is 35.43% at  $P < 0.05$  using structured knowledge questionnaire. Hence, it is inferred that, there is a significant increase in the knowledge of the staff nurses.

**Conclusions:** Based on the findings of the study, there was no significant association between the knowledge level and demographic variables of the staff nurses. Therefore, the investigator felt that it was necessary to improve the knowledge level and signify the knowledge of staff nurse.

**Key words:** Knowledge, pre-experimental study, pediatric advance life support, staff nurses, simulated instructional module.

## INTRODUCTION

Pediatric Advance Life Support refers to the care that healthcare providers deliver to children and infants who are experiencing a

respiratory emergency, shock or a cardiac emergency. The psychomotor skills needed to perform high-quality CPR; use an AED, a defibrillator, or both; and relieve an

obstructed airway for pediatric patients of all ages are the foundation of PALS. As a PALS provider, you must also be able to use advanced assessment skills to recognize problems and prioritize interventions. Finally, we must be able to provide effective care for respiratory emergencies, shock or cardiac emergencies based on specific pediatric advanced life support treatment guidelines. In-hospital pediatric cardiac or respiratory arrest can potentially be averted by early recognition and intervention for the deteriorating patient. The use of scoring systems might help to identify such patients sufficiently early so as to enable effective intervention. <sup>[1]</sup>

The 2010 AHA Guidelines for PBLIS changed the sequence of resuscitation for patients in cardiac arrest from the previously well-known “A-B-C” i.e. Airway, Breathing, and Chest Compression to “C-A-B” i.e. Chest Compressions first. The rationale for this change is as follows: Bystander CPR dramatically improves survival from out-of-hospital cardiac arrest in both pediatric and adult populations. <sup>[2-4]</sup> Unfortunately, only 15-30% of out-of-hospital sudden cardiac arrest victims receive CPR prior to the arrival of Emergency Medical Services (EMS). <sup>[5,6]</sup> Reluctance to initiate CPR may, in part, relate to the technical difficulty in opening the airway and delivering rescue breaths. Therefore, starting with chest compressions (the ‘simpler’ component of CPR) may encourage more witnesses to act when faced with victims of cardiac arrest.

Cardiac arrests in infants and children are usually asphyxia in nature i.e. secondary to hypoxia or shock (which, if left untreated, leads to progressive bradycardia and ultimately asystole, not primary VF as in adults). Thus ventilation is critically important in pediatric resuscitation. The compression-to-ventilation ratio of 30:2, for the lone rescuer, and 15:2, for two healthcare providers. Once an advanced airway is in place, synchronization of chest compressions with ventilation is not required. Instead, chest compressions should

be continued with no /or minimal interruption, at a rate of at least 100/min without pause for ventilation. The ventilation rate should be 8-10 breaths/min to avoid excessive ventilation. It is important to note the differences in resuscitation of the newly born in the delivery room as compared to that in infants and children. The compression-to-ventilation ratio for neonatal resuscitation is 3:1 with a pause for ventilation whether or not the infant has an advanced airway. <sup>[7,8]</sup> Nurses are the key person responsible to take care of patients of any sudden cardiac arrests and respiratory insufficiencies. Nurses play important role in early recognition and prevention of risk factor for development of life threatening problems as well as providing early advance life support to child that can reduce complications and save the life of the child. Nurse’s knowledge on PALS improves the quality care, patient safety, patient satisfaction ratings, and at the same time reduces length of hospital stay and the overall cost of health care. That’s why researcher has selected this topic for the study.

## **METHODOLOGY**

In this present study, one pre-experimental group pre-test and post-test design was selected for the study. Accessible population of the present study includes the 60 staff nurses of CMI and Doon Valley hospital. Ethical approval was obtained from the research committee of Combined (P.G) Institute of Medical Sciences and Research, College of Nursing, Dehradun, then from the chief medical superintendent of CMI and Doon Valley hospital, Dehradun. Pre-testing of the tool was done by doing pilot study, to check the clarity of the items, then feasibility, reliability and practicability. It was administered to 6 staff nurses of Govind hospital at Dehradun. The stability obtained for the tool was  $r = 0.75$  indicating the tool was stable and reliable. To ensure content validity, the prepared tool along with blue print, objectives, hypothesis and certain checklist were submitted to 5 experts

in different fields like (1) Child health nursing-3, pediatrician-2 and biostatistician-1. The experts were requested to judge the items for relevance, clarity, appropriateness of the title and content area. The modifications were done in the based on expert's suggestions and in consultation with the guide. After permission was obtained, from respective sample to conduct a study, the data was collected between 14<sup>th</sup> June and 30<sup>th</sup> June 2016. Investigator utilized the purposive sampling technique to select the study respondents. The investigator introduced her to the samples and the interpreter explained the purpose of the study and ascertained the willingness of the participants. The respondents were assured about the anonymity and confidentiality of the information provided by them. Data was collected with the help of self-administered questionnaire. Pre-test was performed for the group, by using a structured questionnaire and structured knowledge questionnaire, which was validated by the experts. Most of the respondents took 35 minutes for self-administered answers for one respondent

and 10 respondents per day, administered answers for questionnaire. The intervention was provided soon after the pre-test and post-test was taken after seven days. Informed consent was obtained from each participant. The study design depicted on day one, a pre-test was taken in pediatric wards on pediatric advanced life support and simulated instructional module was administered to the staff nurses then the post test was taken after seven days of intervention to assess the effectiveness of simulated instructional module on knowledge of staff nurses regarding pediatric advance life support. It refers to the physical location and condition in which data collection takes place in a study. The selection of the hospital was done on the basis of: geographical proximity, feasibility of conducting study, availability of sample. Data obtained were coded and entered in Microsoft excel 2010 and converted to SPSS sheet version 11.5 for statistical analysis. Descriptive statistics was used to describe the socio-demographic variables and. Inferential statistics; Pearson's Chi Square test.

## RESULTS

**Table 1: Socio-Demographic Characteristics of the Respondents n=60**

Characteristics	Category	Frequency	Percentage (%)
Age (in Years)	20-25 years	19	31.7%
	26-30 years	34	56.7%
	31-35 years	03	5%
	36 – 40 years	01	1.6%
Gender	Male	12	20%
	Female	48	80%
Professional qualification	GNM	49	81.7%
	B.Sc. (N)	11	18.3%
	Post Basic (N)	00	0%
	M.Sc. (N)	00	0%
Year of experience	Less than 1 year	21	35%
	1 to 5 year	35	58.3%
	6 to 10 years	04	6.7%
Working Area	Neonatal intensive care unit (NICU)	11	18.3%
	Pediatric ward	34	56.7%
	Pediatric Emergency	12	20%
	Outpatient Department	03	5%
Designation	Staff nurse	58	96.7%
	Ward in charge	02	3.3%
Source of Information	During the training	23	38.3%
	Continuing nursing education	07	11.7%
	Seminar/Conference /workshop	30	50%

**Table 2: Pre & Post Test level of Knowledge of Staff Nurses regarding pediatric advance life support n=60**

Knowledge level	Pre test		Post test	
	Frequency	Percent	Frequency	Percent
Inadequate	34	56.7%	00	0%
Moderate	26	43.3%	00	0%
Adequate	00	0%	60	100%

**Table 3: Comparison of Pre Test and Post Test Knowledge Scores of Staff Nurses regarding pediatric advanced life support n = 60**

S. No.	Knowledge	Mean	S D	t-value	p-value	Inference
1	Pre test	17.3	1.23	50.719	0.001	S
2	Post test	29.7	1.39			

Table 1 deal that the majority 56.7% of the respondents were 26-30 years old. The majority 96.7% of the respondents belong to staff nurses, majority 56.7% of staff nurses were working in pediatric wards and the majority 58.3% of staff nurses had 1-5 years of experience. Only 38.3% participants had previously taken the training on pediatric advance life support.

Table 2 projects that, the frequency and percentage distribution of staff nurses regarding pediatric advance life support. The result shows that 56.70% of respondents had inadequate knowledge, 43.3% had moderate knowledge in pre-test and whereas 100% respondents had adequate knowledge in post-test regarding pediatric advanced life support respectively. The knowledge has drastically been changed in posttest after self-instructional module (SIM) for educational intervention.

Table 3 represents that the comparison of pre and post-test knowledge score of staff nurses regarding pediatric advanced life support. In pre-test mean score of knowledge were 17.3 with standard deviation of 1.23 which was increased to 29.7 in the post test with standard deviation of 1.39. The difference between knowledge on pre and post- test mean score revealed the effectiveness of simulated instructional module (SIM) on pediatric advance life support. Hence, there is highly significant increase in knowledge of nurses regarding pediatric advanced life support after their exposure to SIM on PALS. Therefore, H1 is accepted. Further, the paired t- test (50.719) and p-value (0.001) was used to find the significant difference between the pre and post-test knowledge score. It shows that there is a significant difference between the knowledge of pre-test and post-test ( $p < 0.05\%$ )

**Table 4: Association of pre-test knowledge scores of staff nurses with selected demographic variables n= 60**

Demographic variables of the nurses		Inadequate	Moderate	Chi square p-value	Inference
Age in year	20-25 years	10	09	1.902	NS
	26-30 years	21	13		
	31-35 years	03	03		
	36 – 40 years	00	01		
Gender	Male	04	08	3.326	NS
	Female	30	18		
Professional qualification	GNM	27	22	0.266	NS
	B.Sc (N)	07	04		
Designation	Staff nurse	34	24	2.706	NS
	Ward Incharge	00	02		
Clinical experience	Less than 1 year	11	10	4.041	NS
	1 to 5 year	21	14		
	6 to 10 year	02	02		
Working area	Neonatal intensive care unit (NICU)	06	05	3.478	NS
	Paediatric Wards	20	14		
	Paediatric emergency	05	07		
	Outpatient Department	03	00		
Any source of information for PALS	During training	15	08	2.528	NS
	CNE	05	02		
	Seminar/ Workshop	14	16		

Table 4 depicts  $\chi^2$  value computed between the pre-test knowledge level of staff nurses on pediatric advanced life support and selected demographic variables. All demographic variables are not significant at

0.05 levels. Thus it can be inferred that there is no significant association between knowledge levels of the staff nurses regarding pediatric advanced life support and selected variables. Therefore, the

hypothesis stated there is will be significant association between pre-test knowledge level of staff nurses regarding pediatric advanced life support and selected demographic variables are rejected.

## DISCUSSION

This is one group pre-test and post-test pre-experimental research design. The purpose of the study was to assess the effectiveness of the self-instructional module (SIM) on knowledge regarding pediatric advance life support of staff nurses. The majority 34(56.7%) of the staff nurses were in the age group of 26-30years, 19(31.70%) were between 20-25 years of the age, 03(5%) were 31-35 years of the age 01(1.6%) were 36-40 years of the age and only 0(0%) staff nurses were belonged to the age group of above 40 years. The total subjects under the study evident that, 48(80%) found female and only 12 (20%) found male. Majority 49(81.7%) belongs to G.N.M, 11(18.3%) were B.Sc. Nursing, 0 (%) belongs to Post Basic B.Sc. Nursing and 0(0%) belongs to M.Sc. Nursing. Majority 58 (96.70%) of the nurses were staff nurses and 02(3.3%) were ward incharge. Majority 35(58.3%) of the staff nurses have 1-5 years of experience, 21(35%) nurses have less than 1 year, 4(6.7%) nurses have 6-10 years and 0(0%) has more than 10 years. Majority 34(56.7%) of staff nurses had worked in pediatric ward, 11(18.3%) staff nurses had in NICU, 12(20%) staff nurses had in pediatric emergency and only 03(5%) staff nurses had worked in out- patient department. The European Resuscitation Council has adopted the Advanced Pediatric Life Support course for providing care for children. The poor outcome for resuscitation from cardiopulmonary arrest in childhood is widely recognized. Unlike in the literature, Aygin et al., a study with the participation of 97 nurses stated that the knowledge level of nurses working in education and research hospitals was higher A weak positive correlation was found between basic life support knowledge scores (BLSKS) and advanced life support knowledge scores

(ALSKS) subscale dimensions ( $r=0.256$ ). It was determined that there was a strong positive correlation between BLSKS and the total knowledge scores (TKS) ( $r=0.811$ ) ( $p=0.001$ ). There was also a strong positive correlation between the ALSKS subscale size and the TKS ( $r=0.773$ ) ( $p=0.001$ ). The ALSKS (mean  $\pm$  SD= $3.20\pm 0.96$ ) and TKS (mean  $\pm$  SD= $6.33\pm 1.71$ ) of those who have worked and experienced in their fields for 5-8 years are higher than the other groups, and the statistically significant difference is due to this group ( $p=0.017$ ,  $p=0.027$ , respectively).<sup>[9]</sup> In other study by de Almeida AO et.al., Theoretical knowledge of nurses working in non-hospital urgent and emergency care units concerning cardiovascular arrest and resuscitation, in general, the knowledge and practice score of the study participants was found to be poor, as it was suggested by a mean and  $\pm$ SD total score of  $9.17\pm 3.3$  and  $3.6\pm 1.5$  respectively from a total of 22 knowledge and 8 practice questions. Only few nurses could answer questions like how should you open the air way of victim who had head injury, how many initial breath should you give for unresponsive victims and the first step for unresponsive victims, removed from submerged water with spontaneous breathing.<sup>[10]</sup>

## CONCLUSION

Based on the findings of the study, there was no significant association between the knowledge level and demographic variables of the staff nurses. Therefore, the investigator felt that it was necessary to improve the knowledge level and signify the knowledge of staff nurse. Pictorial informational booklet has been prepared to increase the awareness and knowledge of the staff nurses regarding pediatric advance life support.

**Conflict of Interest:** There is no conflict of interest in the submission or publication of this paper.

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