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The effectiveness of paediatric advanced life support (pals) training programme in terms of knowledge and knowledge retention among nursing students at selected college of nursing

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Abstract

Background: Cardiac arrest in children does not commonly occur because of primary cause. But it occurs due to hypoxia arrest which is a respiratory and/or circulatory emergencies. India being a developing country is one among the leading countries with high child mortality. Many efforts are taken by the government but still the child mortality is high in our country. BLS and PALS are the lifesaving procedures for children which helps in treating them in emergency situations and in reducing the high child mortality rates

Objectives: To assess knowledge and Knowledge retention regarding PALS among Nursing Students before and after administration of PALS training programme.

Methods: A quasi experimental (time series test) design was used to examine the effectiveness of PALS training programme. The study participants comprised of 60 B.Sc. Nursing IV year students and six groups of ten students each were made by using consecutive sampling technique. PALS Training programme was divided into two parts including BLS Training and PALS training. The nursing students who were competent in BLS Training were eligible for attending PALS Training Programme. Knowledge was assessed initially, immediately after training and again on 28 day by PALS.

Results: Findings of the study indicate that PALS training programme was effective in enhancing the knowledge as the findings indicate that the mean of the post-test knowledge score (28.47) was higher by pre-test knowledge score which was (11.13). But there is subsequent decrease in knowledge on 28th day (19.67). So regular reinforcement sessions should be given to the students.

Conclusion: PALS Training Programme was effective in enhancing the knowledge of nursing students regarding PALS.

Keywords: Effectiveness, PALS training programme, knowledge, retention, nursing students, PALS

Introduction

Cardiac arrest in children does not commonly occur because of primary cause. But it occurs due to hypoxial arrest which is a respiratory and/or circulatory emergencies. As the respiratory and circulatory emergencies are commonest emergencies in the children, death of the child can take place if untreated. Thus, high child mortality rate is associated with such life threatening situations. India being a developing country is one among the leading countries with high child mortality. Many efforts are taken by the government but still the child mortality is high in our country. Majority of the efforts taken by the government is at primary level; therefore the life threatening situation is a neglected area in our country. BLS and PALS are the lifesaving procedures for children which helps in treating them in emergency situations and in reducing the high child mortality rates ^[1].

PALS usually takes place in the setting of an organized response in an advanced healthcare environment. In these circumstances, multiple responders are rapidly mobilized and are capable of simultaneous coordinated action.

Resuscitation teams may also have access to invasive patient monitoring that may provide additional information during the performance of BLS ^[1].

PALS is an integrated team based response utilizing treatment strategies and algorithms to optimize survival of patients with cardiac and respiratory events. The PALS provider may perform advanced procedures and skills and following as set forth algorithms by AHA-PALS. PALS training focuses on broad range of skills from airway management to pharmacology to leadership during emergency situations. The order of assessment and intervention for any seriously ill or injured child follows the ABCDE principles. A indicates airway (A for airway and cervical spine stabilisation for the injured child). B indicates breathing. C indicates circulation (with haemorrhage control in injured child). D indicates disability (level of consciousness and neurological status). E indicates exposure to ensure full examination (whilst respecting dignity and temperature conservation) ^[2].

Paediatric health care providers require training opportunities to acquire the knowledge and skills to

appropriately manage children with critical illness and cardiac arrest. Paediatric resuscitation events are relatively rare, and trainees often have few opportunities to master procedures on real patients. Many paediatric trainees finish their training lacking sufficient procedural proficiency and resuscitation expertise in the care of critically ill children [3]. The professional practice of nursing within the paediatric environment can be both rewarding and challenging. Paediatric nurses' activities are intricate so requires constant vigilance in providing quality care to the patient. The nurses get inadequate time to enhance their knowledge and skills with recent advancement in technology. This results in possible rift in the integration of knowledge into practice, whereby they are expected by parents and physicians to be knowledgeable, collaborative and rationalists, on routine basis. Cardiac Life Support training is a critical component of undergraduate teaching. The training helps to develop an organized thinking process in the students [4].

Methodology

This study was conducted in a nursing college with the approval of ethical committee of the university. A quasi experimental (time series test) design was used to examine the effectiveness of PALS training programme. The study participants comprised of 60 B.Sc. Nursing IV year students and six groups of ten students each were made by using consecutive sampling technique. PALS Training programme was divided into two parts including BLS Training and PALS training. The nursing students who were competent in BLS Training were eligible for attending PALS Training Programme. B.Sc. Nursing students who were willing to participate and present at the period of data collection were included in the study. Written informed consent was

obtained from all the study participants before starting the study. Knowledge was assessed initially, immediately after training and again on 28 day by PALS structured questionnaire comprised of 33 questions. (Each correct answer was given 1 mark and 0 for wrong answer) validated by 9 experts independently. The nursing students who scored 28 or more than 28 marks were termed as "competent" and less than 28 marks were termed as "non-competent" by researcher. The training programme was prepared by researcher which was confined to PALS as per AHA guidelines. The training programme included, video based teachings, simulation technique and hands on session. On the first day, pre-test to assess knowledge regarding BLS followed by Knowledge of PALS on day 2, 1 day BLS training programme was administered followed by 2 days PALS training programme was conducted and on day- 4&5, 7&8, 10&11, 13&14, 16&17 and 19&20th.the training programme was given to group-1, 2, 3, 4, 5 and 6 respectively and of training programme after the completion of training programme of 2 days the post assessment-I was assessed on 5th, 8th, 11th, 14th, 17th and 20th day. After the completion of PALS training programme for all the groups, on 28th day, each group had undergone post assessment- II knowledge regarding PALS respectively as per their pre assessment dates which was on day- 33, 36,39,42,45 and 48th day.

Results

The Nursing Students (100%) were in the age group of 20-23 years. Majority of subjects (73.6%) were female and (26.4%) were male. Most of the subjects (84.7) had did have (55.6) previous knowledge about PALS.

Table 1: Frequency and percentage distribution of nursing students in terms of level of knowledge before and after administration of PALS training programme, n=60

Level of Knowledge	Range of Scores	Pre-test f %	Post-test-I f %
Competent	28-33	0 00	43 71.6
Non Competent	0-27	60 100	17 28.4

Maximum Score = 33 and Minimum Score = 00

The data presented in table 1 showed that in pre-test all the Nursing Students (100%) were non competent in terms of knowledge regarding PALS, Whereas in post-test-I after administration of the PALS training in PALS training programme, majority of nursing students that is 71.6% were competent in terms of knowledge regarding PALS only 28.4% were non competent in terms of knowledge regarding PALS after implementation of PALS training programme.

Table: 2 Range, mean, standard deviation and median of knowledge score before and after PALS training programme of nursing students regarding PALS, n=60

Knowledge test	Range	Mean ± SD	Median
Pre-test	5-16	11.13±3.181	11
Post-test - I	21-33	28.47±2.613	29

Maximum Score = 33 and Minimum Score = 0

The data presented in table 2 showed that the range of post-test-I knowledge score (21-33) was higher than the range of pre-test knowledge score (5-16). The findings indicate that the mean of the post-test-I knowledge score (28.47±2.613) was higher than pre-test knowledge score (11.13±3.181).

The median of pre-test knowledge score was 11 whereas the median of the first post-test knowledge score was 29.

Table 3: Mean, mean difference, standard deviation, standard error mean "t" value of pre-test and post-test knowledge score of PALS, n=60

Score	Mean	Mean D	SD _D	S.E _{MD}	't'	p value
Pre-test	11.13	17.333	3.256	0.420	41.241*	0.01*
Post-test-I	28.47					

t (59) = 2.00 *significant (p≤0.05)

The data presented in table 3 depicted that mean difference between pre-test and post-test-I knowledge score was (17.333), the pre-test mean knowledge score was (11.13) and post-test-I test mean knowledge score was (28.47) and the computed t value was (41.241). The calculated t value (41.241) was found to be statistically significant at 0.05 level of significance which shows that difference between pre-test and post-test-I knowledge scores were true difference and not by chance. And it indicated that there was a significant increase in the knowledge of nursing students regarding PALS.

Table 4: Frequency and percentage distribution of nursing students in terms of level of knowledge scores of pre-test, post-test-I and post-test-II regarding PALS training of nursing students, n=60

Level Of Knowledge	Range of Scores	Pre-test		Post-test-I		Post-test-II
		F	(%)	f	(%)	f (%)
Competent	28-33	0	00	43	71.6	2 3.3
Non Competent	0-27	60	100	17	28.4	58 96.7

Maximum Score = 33 and Minimum Score = 00

The data presented in table 4 showed that in pre-test all the Nursing Students (100%) were non competent in terms of knowledge regarding PALS. Whereas in post-test-I after administration of the PALS training in PALS training programme, majority of nursing students that was 71.6% were competent in terms of knowledge regarding PALS only 28.4% were non competent in terms of knowledge regarding BLS but only 3.3% nursing students were competent in Post-test-II which happens to be on 28th day after providing PALS training in PALS Training Programme and the majority of nursing students were non competent 96.7%.

Table 5: Range, mean, standard deviation and median of knowledge score of pre-test, post-test-I and post-test-II regarding PALS training programme of nursing students, n=60

Knowledge Test	Range	Mean ± SD	Median
Pre-test	5-16	11.13±3.181	11
Post-test –I	21-33	28.47±2.613	29
Post-test –II	14-28	19.67±3.144	20

Maximum Score= 33 and Minimum Score= 00

The data presented in table 5 showed that the range of post-test-I knowledge score (21-33) was higher than the range of post-test-II which was 14-28 but it was higher than the pre-test knowledge score (5-16). The findings indicate that the mean of the post-test-I knowledge score (19.67±3.144) was higher than post-test-II knowledge score (19.67±3.144) followed by pre-test knowledge score which was 11.13±3.181. The median of pre-test knowledge score was 11 whereas the median of the post-test-I knowledge score was 29 and post-test-II is 20.

Table 6: Mean, Mean difference, standard deviation, standard error mean “t” value of post-test-I and post-test-II knowledge scores of nursing student regarding PALS, n=60

Score	Mean	Mean D	SD _D	S.E _{MD}	‘t’	p value
Post-test-I	28.47	8.800	2.268	.293	30.049	0.01*
Post-test-II	19.67					

t(59)=2.00 * significant (p<0.05)

The data presented in table 6 depicted that mean difference between post-test-I and post-test-II knowledge score was (8.800), the post-test-II mean knowledge score was (19.67) and post-test-I test mean knowledge score was (28.47) and the computed t value was (30.049). The calculated t value (30.049) was found to be statistically significant at 0.05 level of significance which shows that difference between post-test-I and post-test-II knowledge scores were true difference and not by chance. So there was a significant decrease in the knowledge of nursing students regarding PALS

Discussion

The findings of the present study had shown that the majority of samples were female (73.6%) and male students were only (26.4%), most of nursing students were not having previous exposure of PALS (4.3%). The findings were consistent to a similar study Amy J. Eng *et al.* conducted quasi experimental study to assess the high-fidelity simulation training in advanced resuscitation for pharmacy residents in California where most of the pharmacy residents were female (83%) and only 17% had previously experience the code (Advance resuscitation) [5]. The result of the present study had shown the pre-test mean knowledge score (11.13±3.181) which indicates that the nursing students were non competent in terms of knowledge. The finding was consistent with finding of Endale G. Gebremedhn *et al.* conducted cross-sectional study knowledge level of final year undergraduate health science students about cardiopulmonary resuscitation at a university teaching hospital of Northwest Ethiopia, finding shows that the pre-test mean knowledge score was (11.1±0.2) for all the health science students which was noted to be poor. The pre-test knowledge score of nursing students was (11.13±3.181) which was also categorized as poor which was even lower than the total pre-test knowledge score of all the health science students [6]. The study findings were reconcilable with the finding of Jhuma Sankar *et al.* who conducted a repeated measure quasi experimental study to determine the effectiveness of training programme regarding PALS on pre service nurses (nursing students) at a selected hospital in New Delhi. The study revealed that the pre-test knowledge mean score was (5.8) which improved to 11.3 just after the training programme, followed by second post-test mean knowledge score of (9.1) after 6 weeks of training programme, which shows the training programme was effective but there was a fall in the mean score after 6 weeks without any intervention. Similar findings were seen in the present study the pre-test knowledge score of nursing students was (11.13), followed by 28.47, the first post-test mean knowledge which was after the completion of training programme and followed by (19.67) after 4 weeks or 28 days of intervention which means the training programme was effective in enhancing the knowledge of the nursing students but with time there was a fall in the knowledge. Similarly the aspect of the skills were also checked in the study which shows that the pre-test skill mean score was 3.2 which increased to 10.7 after providing training programme which further decreased to 7.4 in second post assessment after 6 weeks, and in the present study the pre-test practice mean score was 7.72, the first post-test practice score was 90.35 which was significantly increased after providing training programme which reduced to 38.67 in second post assessment after 4 weeks [7].

Conclusion

The mean post-test knowledge-I score was higher than the mean pre-test knowledge score and mean post-test knowledge-II score was lower than the mean post-test-I knowledge score. Thus, the PALS training programme was effective in enhancing the Knowledge of Nursing Students regarding PALS. There was significant decrease in the knowledge among of nursing students regarding PALS after 28 days of administration of PALS training programme so there was poor retention of PALS knowledge among nursing students.

Limitations

The reinforcement was not given regarding PALS to the nursing students who were non-competent after the training programme

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