Effectiveness of education intervention programme on life support measures for the nurses working in emergency unit of BPKIHS: a pre-experimental study

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Abstract

Introduction: Lack of resuscitation skills of nurses in basic life support (BLS) and advanced life support (ALS) has been identified as a contributing factor to poor outcomes of cardiac arrest victims.

Objective: To assess the effectiveness of education intervention programme to improve the knowledge of, and thereby the quality of Emergency service; especially in the area of Basic Life Support, Advance Life Support and Triage system.

Method: Pre-experimental research design was used to conduct the study among the nurses working in Emergency units of B. P. Koirala Institute of Health Sciences where CPR is very commonly performed. Using convenient sampling technique, a total of 24 nurses agreed to participate and to give consent were included in the study. The theoretical, demonstration and re-demonstration sessions were arranged, involving the trained doctors and nurses during the three hours educational programme. Post-test was carried out after education intervention programme. The 2010 BLS and ALS guidelines were used as guide for the study contents. The collected data were analyzed using SPSS-15 software.

Result: It was found that there is significant increase in knowledge after education intervention in the components of life support measures (BLS/ALS) i.e. ratio of chest compression to ventilation in BLS ($P= 0.001$), correct sequence of CPR ($p< 0.001$), rate of chest compression in ALS ($P= 0.001$), the depth of chest compression in adult CPR ($p< 0.001$), and position of chest compression in CPR ($P= 0.016$). The participating nurses well appreciated the programme and requested to continue in future for all the nurses.

Conclusion: The workshop certainly improves the knowledge of the working nurses, and thereby the quality of Emergency service; especially in the areas of Basic Life Support, Advance Life Support and Triage System.

Key words: Nurses, Basic Life support, advanced life support, Resuscitation

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Introduction

It is well known that in the event of a person suffering a cardiac arrest, successful outcome is dependent on the

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time taken for resuscitation to commence.[1] In cases of in-hospital cardiac arrest, the most important predictor of a successful outcome is the 'time to defibrillation' interval.[2] Although all health care providers in contact with patients should be proficient at basic life support (BLS), nurses in particular should be competent at BLS, being the health care providers most likely to be the first respondents to an in-hospital cardiac arrest.[3] BLS proficiency includes the use of an automated external defibrillator (AED)[4] and it is, therefore, expected that nurses trained in BLS should be able to use this device. BLS knowledge and skills tend to degrade and regular refresher training and practice is recommended.[5] Despite these international guidelines, studies have shown that, in the developed world, nurses' BLS skills can be surprisingly poor.[6,7] Limited studies in the Asian environment have yet been published with regard to BLS competency among nursing staff.

Objective

The objective of the study was to assess the effectiveness of education intervention programme to improve knowledge level among the working nurses which is expected to improve the quality of Emergency service; especially in the area of Basic Life Support, Advance Life Support and Triage system.

Method

The study was a pre-experimental design and participation was voluntary. Total 24 nurses working in the Emergency units were included in the study. A questionnaire included 10 questions regarding the knowledge and skills involved in BLS and ALS. Pre-test was obtained and baseline data was collected. After pre-test, the workshop was arranged on 30th June, 2015 from 8 AM to 5 PM. The aspects on which they were interrogated were about the ratio of chest compression ventilation in BLS, components of BLS, correct sequence of CPR, rate of chest compression in ALS, the drug of choice in ALS, the depth of chest compression in adult CPR, position of chest compression in CPR, frequency of giving Adrenaline in ALS and intervention after cardiac arrest. The education programme was arranged with the help of trained doctors and nurses. It was one day session including demonstration and return demonstration after theoretical sessions in demonstration room using all the resources needed for the training, including CPR dummy. The level of knowledge of BLS/ALS was assessed via the number of correct responses to questions regarding ALS and BLS. After excluding the incomplete response forms, the data was analyzed using SPSS-15 Software

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package. Permission was taken from all the heads before involving the nurses in the programme. The results were analyzed using an answer; keys were prepared from the advanced cardiac life support manual.

Results

Majority of the participants (55%) were of age group of 18-21 years followed by 22-25 years (20%). Only 10% participants had previously taken training on life support measures. In all the components of life support measures, there is significant increase in knowledge and skills at 0.05 level of significance. The details are given in Table 1.

Discussion

It was found that most of the participants (55%) were of age group of 18-21 years with mean age of 23.80, SD= 5.88 and range 18-40 years. Only 10% participants had previously taken the life support (BLS/ ALS) training. The study conducted by Almeida[9] among nurses on CPR reported that only 5.5% received ALS and 23.3% received BLS training, which is nearly similar to this study. A systematic review of 64 articles done by Ryynanen[10] reported that outcome of BLS in pre-hospital is poor, which clearly demonstrates the need of BLS in hospital setting.

After the education intervention programme, there is significant increase in knowledge and skill components of life support measures like: ratio of chest compression to ventilation in BLS (p= 0.001), sequence of CPR (p< 0.001), maneuver avoided for airway maintenance in head and cervical injury (p= 0.001), rate of chest compression in ALS (p= 0.001), the depth of chest compression in adult CPR (p= 0.016) and intervention after cardiac arrest (p= 0.004). The study conducted by Almeida[9] reported that more than 60% nurses do not know appropriate compression ventilation ratio and average score on Zero to Ten was 5.2 (±1.4), which is similar to this study.

Study conducted by Keenan[11] among nurses on BLS reported correct responses of ratio of chest compression to breath in 27.7% and only 8.2% responded the use of clinical defibrillation correctly, which is similar to this study. Similarly, study conducted by Chandrasekran[12] on BLS found 84.82% Health workers scored less than 50% scores on BLS and ALS, and also reported severe lack of BLS and ALS knowledge; which is similar to this study. Similar findings were reported by Josipovic[13]; 34% nurses do not have knowledge about ventilation compression. Similar findings were reported by Moul[14] and Harmond[15] too.

Opinion was collected from the participants and found the programme implemented was highly effective and

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useful. Most of the (95.7%) participants evaluated the overall programme as very good, all the respondents (97.8%) reported contents used were good; 95.7% reported the level of understanding was very good and 78.3% reported the knowledge and skill learned is very useful in daily life. Study conducted by Harmond[15] found that after 18 months, 75% participants passed

the practical skills of ALS, which clearly illustrates the training needs of ALS and BLS for nurses.

Conclusion: The workshop certainly improves the knowledge of the working nurses, and thereby the quality of Emergency service; especially in the areas of Basic Life Support, Advance Life Support and Triage System.

Table 1. Differences in Knowledge and Practice on Life Support Measures after Education Intervention Programme

N= 24

SN	Components of ALS & BLS	Pre-Test Score (%)	Post-Test Score (%)	Percentage Difference	P-value
1	Ratio to chest compression to ventilation in BLS	40	95	55	0.001
2	Components of BLS	50	65	15	0.109
3	Correct sequence of CPR	25	95	70	0.001
4	Maneuver avoided for airway maintenance in head and cervical injury	25	75	50	0.001
5	Rate of chest compression in ALS	25	100	75	0.001
6	The drug of choice in ALS	65	100	35	0.016
7	The depth of chest compression in adult CPR	15	95	80	0.001
8	Position (Place) of chest compression CPR	60	95	35	0.016
9	Frequency of giving Adrenaline during ALS	20	60	40	0.057
10	First intervention after cardiac arrest	50	95	45	0.004

Note: *McNemar Chi Squire test was used to find out the differences in pre-test Post-test score.*

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Table 2. Evaluation of the Training Programme

N= 24

SN	Areas of Evaluation	Very Good/ Very Useful	Good/ Useful	Average/ All Right	Poor/ Not Useful
1	Overall Evaluation of the Programme	35 (76.1%)	9 (19.6%)	2 (4.3%)	0
2	Teaching Learning Methods and Media Used	23 (50%)	21 (45.7%)	2 (4.3%)	0
3	Contents Covered in training	30 (65.2%)	15 (32.6%)	1 (2.2%)	0
4	How useful in Daily Life	36 (78.3%)	9 (19.6%)	1 (2.2%)	0

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