Knowledge on American Heart Association Guidelines Update for Cardiopulmonary Resuscitation among the Nurses Working at University Hospital, Kavre
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ABSTRACT

Background
Cardiopulmonary resuscitation is the foundational technique for the emergency treatment of cardiac arrest and the standardized training of it has been emphasized more than ever. Competence of the nurses in this lifesaving procedure is a critical factor in patient outcome from cardiac arrest and can largely prevent sudden death.

Objective
Many evidences suggest lack of knowledge on proper cardiopulmonary resuscitation among nurses so the aim of this study was to assess the knowledge on 2015 American Heart Association guidelines update for cardiopulmonary resuscitation among nurses working at University hospital and to identify the relationship between the level of knowledge and selected variables.

Method
Two hundred and sixty nurses working in Dhulikhel hospital participated in the study. A cross-sectional descriptive study was conducted using a predesigned questionnaire based on 2015 guidelines updates for cardiopulmonary resuscitation that incorporated total of 20 questions.

Result
Total 260 participated in the study and all were female. Only one third of the nurses had good knowledge regarding 2015 guidelines update for cardiopulmonary resuscitation. No significant results existed between the knowledge score and age of the nurses, duration of work experience. However, significant results existed between the knowledge score and qualification, designation of the nurses and previous training on cardiopulmonary resuscitation.

Conclusion
One third of the nurses had good knowledge regarding 2015 guidelines update for cardiopulmonary resuscitation in this study. Thus, knowledge and practical approach has to be updated with current guidelines in cardiopulmonary resuscitation in order to improve the safety and effectiveness of patient care.

KEY WORDS
American heart association, Cardiopulmonary resuscitation, Knowledge
INTRODUCTION

Cardiopulmonary resuscitation (CPR) is the foundational technique for the emergency treatment of cardiac arrest, is emphasized more than ever.¹ The components of CPR are chest compressions and artificial breathing.² Nurses should practice accurately because timely performed CPR can prevent sudden death and increases victim’s survival.¹,³,⁴

Adequate CPR application requires big efforts, interests, human and economic resources.⁵ After cardiopulmonary arrest, survival is usually low and depends on early intervention, quality of CPR and time to defibrillation.⁶,⁷ Cardiac arrest brings several complications if it is not done on time.⁸ Nurses are often closest to the bedside and the first to respond to patient’s needs.⁹ Identifying knowledge deficits can help in effective planning, implementing the in-service education and hands-on training.¹⁰

The objectives of this study was to assess knowledge on update for CPR and to identify their relationship with selected variables among the nurses. First CPR guidelines were published in 1966, revised periodically and the recent now in 2015 (American Heart Association {AHA} guidelines for CPR and Emergency Cardiac Care {ECC}).¹¹ Several studies conducted in Nepal have assessed knowledge on CPR and have highlighted the need for training for medical professionals.¹⁰,¹²-¹⁴ However, there has been no study that assessed knowledge on 2015 AHA guidelines updates for CPR. Such assessment is essential to better understand the current status of nurses’ knowledge. It can also inform about the need for the interventions to enhance existing knowledge because it is a major determinant in the success of resuscitation in acute emergency situations.¹⁵

METHODS

This cross sectional descriptive study was undertaken at Dhulikhel Hospital, Kathmandu University Hospital (KUH) from May 15 - June 30, 2018. Approval from Institutional Review Committee (IRC), Kathmandu University School of Medical Sciences (KUSMS) was obtained to conduct the study.

A total of 260 nurses working in different departments of Dhulikhel hospital and Kathmandu University School of Medical Sciences (KUSMS) were the participants for the study. Nurses who were on the leave for more than a month were excluded from the study. CPR knowledge was assessed by means of a 20-item self-administered multiple choice questionnaire with four possible responses, with only one correct possibility. The instrument consisted of two parts; first part consisted of sociodemographic characteristics and professional details of the participants and second part consisted theoretical and practical knowledge of the participants on 2015 AHA Guidelines update on CPR that covers the following areas: basics of basic life support, trouble shooting in BLS and advanced cardiac life support.

The content validity of the instrument was enhanced by following the 2015 Guidelines of the AHA for CPR and ECC. Two anaesthesiologists from Dhulikhel hospital evaluated the instrument and validated in its reading comprehension by an initial sample of 10 participants.

All the study participants were informed about the purpose of the study; verbal consent was obtained from each participant before data collection. Appointment for the meeting was taken in each department at the suitable time of the nurses. The questionnaire was distributed and filled out individually by the participants and was collected back at the end of the meeting. Enough time was given to the nurses to fill the questionnaire. The knowledge score was calculated from the total score (<8 = poor, 8–10 = average and >10 = good knowledge).

Data was sorted, coded, and entered into Microsoft access and then to Statistical Package for the Social Sciences (SPSS) software version 18 for management and analysis. Descriptive statistics including frequency, mean, range, and standard deviation were used to summarize baseline socio-demographic data. Chi squared test was used for non-parametric categorical data and t-test, Anova (post Hoc test) for parametric data. P value less than 0.05 was considered significant.

RESULTS

During the study period, a total number of 260 nurses were included in the study. All the participants were female and mean age was 22.4±4 years. Knowledge score regarding 2015 AHA Guidelines update for CPR revealed that out of 260 nurses, the minimum correct response was 3 and maximum was 19. Only one third of the nurses (36%) had good knowledge, 28% had average knowledge whereas 36% had poor knowledge regarding guidelines update for CPR (fig. 1).

![Figure 1. Distribution of respondants’ level of knowledge regarding 2015 guidelines update for cardiopulmonary resuscitation.](image)

The highest number of nurses (48, 18.5%) were working in operation theatre and similarly 208 (80%) nurses were working in a staff nurse post, majority of nurses (80%) had certificate level of nursing education and 101 (39%) nurses
had 1-3 years of work experience. Among these nurses, 72% of nurses had never attended CPR training (Table 1).

**Table 1. Socio-demographic characteristics and professional details of the respondents**

| Characteristics          | Group               | Number | Percentage |
|--------------------------|---------------------|--------|------------|
| Age                      | 16-20               | 38     | 14.6       |
|                          | 21-25               | 154    | 59.2       |
|                          | 26-30               | 44     | 16.9       |
|                          | 31-35               | 16     | 6.2        |
|                          | 36-40               | 3      | 1.2        |
|                          | >40                 | 5      | 1.9        |
| Working area             | Nursing Academics   | 21     | 8.1        |
|                          | Intensive Care Unit (ICU) | 35  | 13.5       |
|                          | Medical Unit        | 32     | 12.3       |
|                          | Emergency Department | 10  | 3.8        |
|                          | Obstetrics/Gynecology | 35  | 13.5       |
|                          | Outpatient Department | 12  | 4.6        |
|                          | Operation Theatre   | 48     | 18.5       |
|                          | Pediatric Department| 30     | 11.5       |
|                          | Surgical Department | 37     | 14.2       |
| Designation              | Staff Nurse (PCL Nursing) | 208| 80.0       |
|                          | Nursing Incharge (Bachelor in nursing, BN) | 10  | 3.8        |
|                          | Nursing Officer (Bachelor of Science in nursing, B.Sc. nursing) | 21  | 8.1        |
|                          | Nursing Faculty (Masters in nursing) | 21  | 8.1        |
| Highest Academic Degree  | Certificate level of nursing | 208| 80         |
|                          | Bachelor level of nursing | 31  | 11.9       |
|                          | Masters level of nursing | 21  | 8.1        |
| Year of professional experience | < 1 year | 80 | 30.8     |
|                          | 1-3 years           | 101    | 38.8       |
|                          | 3-5 Years           | 36     | 13.8       |
|                          | 5-7 years           | 18     | 6.9        |
|                          | > 7 years           | 25     | 9.6        |
| Ever attended CPR Training | No       | 187    | 71.9       |
|                          | Yes                 | 73     | 28.1       |

In terms of actual real life experience with performing CPR the majority of respondents reported that they had not been required to perform CPR and only 21.9% (n=57) indicated they had.

The group comparison of the respondents’ total scores revealed that there was no significant difference between the knowledge score of the respondents and age of the nurses (p=0.160) and duration of work experience (p=0.494). However, there was a statistically significant association between the knowledge score and qualification, designation of the nurses, attended CPR training or not, involvement in CPR (Table 2). In terms of designation significance was noted (in post hoc test) between staff nurse, nursing incharge, nursing faculty with nursing officer. Similarly, in terms of qualification of the nurses, significance was noted between the total score of bachelor level of nursing with certificate level of nursing. The nurses working in emergency department had the highest mean score i.e. 12.3 ± 2.66, followed by the nurses from intensive care unit (ICU) i.e. 11.9 ± 3.5.

Knowledge questions were grouped into three categories that revealed higher percentage of the respondents (46.18%) got correct response to the questions regarding basics of basic life support (BLS). Similarly 44.14% in trouble shooting in BLS and 41.23% had correct response to the questions regarding advanced cardiac life support (ACLS).

**DISCUSSION**

In the present study, nurses’ knowledge on 2015 American Heart Association Guidelines update for CPR was observed to be lacking. The percentage of nurses who had good knowledge was only 36%. While CPR/ACLS competency is considered a fundamental skill for health care workers, numerous evidences suggested that knowledge is generally poor, while a study carried out in Spain found a higher level of CPR knowledge among hospital nursing staff.10,13,16,18-21 The findings of this study may be explained in part by ineffective initial training and/or refresher training thus emphasizes the importance of increasing the CPR knowledge and skills of the nurses. Competent and knowledgeable nurses can implement effective CPR interventions to save patients’ lives.22 Nurses spend significant time alongside patients and are often the first to attend at in hospital cardiovascular arrests; they are thus the ones who respond by providing CPR. The ability to
respond quickly and effectively to a cardiac arrest situation rests on nurses being knowledgeable and competent in CPR. Studies have shown that training programs in CPR may augment nurses’ theoretical knowledge and may make a significant contribution to the elimination of their anxiety and an increase in their self confidence and effectiveness in dealing with a cardiac arrest, individually or as members of a team. The result of the current study showed that the majority of nurses didn’t have previous training related to CPR. This result is in accordance with the study Damjan L that stated that more than two third of the participants didn’t have any previous training regarding CPR.

The group comparison of the respondents’ total scores revealed that there was no significant difference between the knowledge score of the respondents and age of the nurses in the present study. Similar findings were revealed in many other studies, whereas in other studies, the result was significant. Non-significance between duration of work experience and the knowledge of nurses in this study has been also reported by several other studies. However, in other studies, it was found that there was an improvement in the level of nurses’ knowledge with the increase in the years of work experience. There was a statistically significant association between the knowledge scores and qualification of the nurses in this study and this finding was also evidenced by many other studies.

The highest level of knowledge was observed in the participants who had attended CPR training. This finding was in agreement with the results of other studies. Similarly in a study done by Moura et al. they found that the participants who had attended a training course had a better performance on questionnaire i.e. 62.5% versus only 22.61% of the participants who had not attended any CPR training course (p=0.007). Similarly, in terms of qualification of the nurses, significance was noted between the total score of bachelor level of nursing with certificate level of nursing. Evidence suggested that there is a significant relationship between knowledge on CPR and qualification of nurses, however a few studies found there is no difference.

It is found that the nurses working in emergency department had the highest mean score i.e. 12.3 ± 2.66, followed by the nurses from ICU i.e. 11.9 ± 3.5 in this study whereas in a study done by Parajuli et al. nurses from hemodialysis had highest score followed by the nurses from obstetrics and gynaecology.

**CONCLUSION**

The study revealed that only one third of the nurses have good knowledge regarding 2015 American Heart Association Guidelines update for Cardiopulmonary Resuscitation. Thus, their knowledge and practical approach has to be updated with current guidelines of AHA in CPR in order to improve the safety and effectiveness of patient care. Health care managers and policy makers should take this finding into consideration. CPR educational program should be included in all nursing schools and curricula. Structured CPR training program should be conducted regularly to train and educate all nurses.

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