

Nurses Knowledge Regarding Advanced Cardiac Life Support

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Haider B. Hami

ABSTRACT

Objective: To assess nurses' knowledge about advanced cardiac life support and the correlation between knowledge and various demographic variables.

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Al-Nafes Teaching Hospital, Iraq from 15th August 2024 to 31st October 2024.

Methods: Sixty nurses from critical care units were selected. Participants received a thorough explanation of the study's goals and methods, along with reassurance that their participation would not cause any harm. By coding responses and eliminating any personal information, confidentiality and anonymity were protected. The information was safely kept and utilized only for scholarly and scientific research. Additionally, participants were made aware of their freedom to leave the research at any time without incurring any fees.

Results: A significant portion of those surveyed displayed moderate understandings regarding the items, eight questions reached a mean score of 1.33 or more, while seven questions ended up with scores beneath this limit. Besides, the study revealed that there is no meaningful correlation between knowledge level and selected demographic data. While the results showed up a strong association between knowledge and participation in courses.

Conclusion: The key weakness in their knowledge about advanced cardiac life support protocols, stress the necessity for educational programs and courses and simulation activities to develop the readiness for emergency heart situations.

Key Words: Assess, Nurses, Awareness, Cardiac life support

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INTRODUCTION

The heart failure causes more than five hundred thousand deaths every year, underlining its status as a critical worldwide health concern, thus marking it as an important area for public health strategies. The survival rate for adult patients experiencing cardiac arrest have demonstrated a slight improvement over the past two decades; however, outcomes continue to be suboptimal particularly in situations where the event transpires outside of clinical environments, where the probability of surviving is estimated to be below 10%.¹⁻³

A cardiac arrest is a severe and urgent occurrence that requires the actions of many healthcare workers to

maximize the accomplishment of cardiopulmonary resuscitation (CPR). Establishing the time inside the hospital environment introduces a major challenge, mostly because of the pressure tied to administering advanced cardiac life support (ACLS).^{4,5}

Programs aimed at resuscitation training are designed to cut down on the occurrence of conditions and loss of life due to serious health problems through the dissemination of validated expertise and protocols. Understanding ACLS considerably reinforces the impact of ACLS team. Across the world, the perceptions and proficiency of healthcare professionals reflect significant variability. Involvement with community-orientated programs lowers the rates of mortality around the world.^{6,11}

Under several situations, the health status of the patient can serve as a stable parameter that alters the consequences of CPR. To achieve better outcomes for patients that are performing CPR, it is crucial to improve the quality of care delivered to individuals in cardiac arrest through the application of understood expertise and clinical protocols. The skills of nurses and other healthcare practitioners in performing CPR are a fundamental determinant of their effectiveness in responding to cardiac arrest.¹²

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The determination of various medical emergencies, such as myocardial infarction, sudden cardiac arrest, and airway obstruction due to foreign bodies, along with the preparation and delivery of a D.C shock during CPR, makes up the foundation of Basic Life Support (BLS). The American Heart Association (AHA) highlights that the probability of victims surviving can be significantly enhanced, increasing from 49% to 75% for patients by administering CPR and D.C shock delivery within the critical initially three to five minutes after the cardiac arrest. In occurrences of unexpected cardiac arrest, the competent administration of BLS protocols can facilitate 2-3 times improvement in survival statistics.^{6,7,12} Consequently, the awareness and proficiency in BLS among nurses are of paramount importance.

METHODS

This descriptive study was conducted at Ibn Al-Nafes Teaching Hospital, Iraq from 15th August 2024 to 31st October 2024 vide letter No. 4545/QM/Approval/9389JFDNF dated August 11, 2024 and 60 voluntaries were to participated. Participants received a thorough explanation of the study's goals and methods, along with reassurance that their participation would not cause any harm. By coding responses and eliminating any personal information, confidentiality and anonymity were protected. The information was safely kept and utilized only for scholarly and scientific research. Additionally, participants were made aware of their freedom to leave the research at any time without incurring any fees. The evaluation was executed at the Ibn Al-Nafes Teaching Hospital, recognized for it is experienced in cardiology, thoracic and vascular surgical technique in Baghdad. A purposive sampling method was applied consisting of sixty nurses from critical care units in selected setting. To achieve the study aims, a questionnaire instrument that was developed to assess ACLS. A total of 60 participants were included. The study tool consists of two parts; the first include sociodemographic data of nurses participated in the study; the second part is concerned with nurses' knowledge regarding ACLS which is a 15 multiple choices items.

The research instrument was revised by a panel of nursing experts comprising twelve experts, each one of them have many years' experiences in nursing. The panel consists of five faculty members in College of Nursing/ University of Baghdad, four-faculty members in College of Nursing/ Al-Bayan University. Furthermore, there were three faculty members representing the AL-Russafa Health Directorate and Ibn Al-Nafes Teaching Hospital. These experts were provided with a copy of the study instruments and were solicited to critically review and evaluate the instrument concerning its content clarity and adequacy. Following a comprehensive consideration of all feedback and

recommendations, certain items were excluded while others were incorporated. The questionnaire was deemed valid subsequent to the modifications implemented in accordance with their feedback.

The questionnaire was developed utilizing a test-and-retest methodology with 5 nurses from selected hospital during 3 week period to assess the reliability of study tool. The reliability results showed that the Pearson correlation coefficient was statistically acceptable at ($r = 0.864$) which is compatible with standard. The data was entered and analyzed through SPSS-25.

RESULTS

There were 56.7% females and 40% were between age group of 20-25 years, their marital status was single (63.3%), and they also had an education level of diploma degree (56.7%), with a year of experience of 1-5 (65%), also the majority of the sample didn't get any training courses (65%) [Table 1].

The larger proportion of participants in the study exhibited responses aligned with their knowledge at a moderate level (eight questions resulting in a mean score surpassing 1.33). This is succeeded by a low level of understanding, evidenced by seven questions with mean scores falling below (1.33) [Table 2].

Table 3 suggested a notable link between the expertise that nurses hold and the training they have received, whereas no link is evident between nurses' expertise and their selected socio-demographic characteristics.

Table No. 1: Distribution of demographic data (n=60)

| Variable | No. | % |
|------------------------------------|-----|------|
| Gender | | |
| Male | 26 | 43.3 |
| Female | 34 | 56.7 |
| Age (years) | | |
| 20-25 | 24 | 40.0 |
| 26-30 | 20 | 33.3 |
| 31-35 | 9 | 15.0 |
| 36-40 | 3 | 5.0 |
| 41-45 | 4 | 6.7 |
| Level of education | | |
| Nursing school | 10 | 16.7 |
| Diploma | 34 | 56.7 |
| Bachelor | 16 | 26.6 |
| Marital status | | |
| Single | 38 | 63.3 |
| Married | 19 | 31.7 |
| Others | 3 | 5.0 |
| Years of experience (years) | | |
| 1-5 | 39 | 65.0 |
| 6-10 | 14 | 23.3 |
| 11-15 | 4 | 6.7 |
| 16-20 | 2 | 3.3 |
| 21-25 | 1 | 1.7 |
| Training courses | | |
| Yes | 21 | 35.0 |
| No | 39 | 65.0 |

Table No. 2: Assessment of nurses' knowledge about advance cardiac life support

| Variable | Group | No. | % | MS | Assess |
|--|-----------|-----|------|-------|--------|
| Abbreviation of Advanced Cardiac life Support is? | Correct | 17 | 28.3 | 1.280 | W |
| | Incorrect | 43 | 71.7 | | |
| Initial intervention for an unresponsive patient presented in your hospital? | Correct | 16 | 26.7 | 1.260 | W |
| | Incorrect | 44 | 73.3 | | |
| An immediate intervention if the victim has no pulse? | Correct | 23 | 38.3 | 1.610 | M |
| | Incorrect | 37 | 61.7 | | |
| Location of chest compression? | Correct | 28 | 46.7 | 1.460 | M |
| | Incorrect | 32 | 53.3 | | |
| Depth of chest compression for adults? | Correct | 13 | 21.7 | 1.210 | W |
| | Incorrect | 47 | 78.3 | | |
| Adult advanced cardiac life support maximum joule for shockable rhythm | Correct | 16 | 26.7 | 1.260 | W |
| | Incorrect | 44 | 73.3 | | |
| Non-shockable rhythms are? | Correct | 22 | 36.7 | 1.360 | M |
| | Incorrect | 38 | 63.3 | | |
| The CPR rate of compression for adults? | Correct | 30 | 50.0 | 1.500 | M |
| | Incorrect | 30 | 50.0 | | |
| Shockable rhythms are? | Correct | 24 | 40.0 | 1.400 | M |
| | Incorrect | 36 | 60.0 | | |
| The reversible causes of cardiac arrest? | Correct | 19 | 31.7 | 1.310 | W |
| | Incorrect | 41 | 68.3 | | |
| The dose and frequency of adrenaline for advanced cardiac life support? | Correct | 14 | 23.3 | 1.230 | W |
| | Incorrect | 46 | 76.7 | | |
| The indication of amiodarone for advanced cardiac life support? | Correct | 32 | 53.3 | 1.530 | M |
| | Incorrect | 28 | 46.7 | | |
| The dose of first dose amiodarone for advanced cardiac life support? | Correct | 22 | 36.7 | 1.360 | M |
| | Incorrect | 38 | 63.3 | | |
| A Magnesium sulfate drug use for advanced cardiac life support? | Correct | 23 | 38.3 | 1.380 | M |
| | Incorrect | 37 | 61.7 | | |
| What is the post-cardiac arrest care? | Correct | 18 | 30.0 | 1.300 | W |
| | Incorrect | 42 | 70.0 | | |

G = Good (1.67-2), M = Moderate (1.34 – 1.66), W = Weak (1 – 1.33), MS = mean score, Assess = Assessment

Table No. 3: Association between nurses' socio-demographic characteristics and their overall knowledge

| Variables | B | Std. Error | Beta | t | Sig |
|---------------------|---------|------------|--------|--------|-------|
| Age | 0.252 | 0.461 | 0.113 | 0.547 | 0.586 |
| Gender | -0.297 | 0.758 | -0.057 | -0.392 | 0.697 |
| Marital status | 0.119 | 0.753 | 0.027 | 0.158 | 0.875 |
| Education level | -0.048 | 0.613 | -0.012 | -0.079 | 0.938 |
| Years of experience | -.0303 | 0.624 | -0.103 | -0.486 | 0.629 |
| Training courses | - 1.113 | 0.944 | -0.634 | -2.340 | 0.002 |

B = Unstandardized coefficients; Std. Error = Standard errors; Beta = standardized coefficients; t= t-statistics; Sig. = significance

DISCUSSION

The significant majority of the participants were females (56.7%), aligning with prevailing national and regional trends in nursing. Similar gender patterns were found in the Iraqi research conducted by Alkhaqani¹³ (2023), where females also made up the majority group of nursing staff, reflecting the gender trends in nursing in the Middle East.

A considerable percentage of the sample was consisted of individuals within the youthful demographic

category of 20-25 years (40%), similar findings were reported in an Iranian study where nurses are in their first years of careers (2-5 years of experience).¹⁴ Additionally, 56% of the respondents held a diploma qualification, confirming trends observed in regional Iraqi studies that indicate nurses with diploma-level credentials are the predominant demographic group.¹³ A considerable of participants (65%) mentioned having about 1-5 years in their careers. This observation is consistent with prior research conducted in Rasht Teaching Hospital, were majority of nurses working in

intensive care units and emergency department had less than five years of experience, prompting apprehensions regarding their preparedness for high acuity clinical environments.¹⁴

Lastly, 65% had not participated in any instructional or practice courses is consistent with findings from Ethiopia, where over 60% of nurses had never engaged in ACLS training, thereby contributing diminished competency levels in resuscitation practices.¹⁵

Table 2 showed that eight items were positioned within the moderate knowledge level where seven items were categorized within the lowest level, signifying considerable deficiencies in fundamental ACLS competencies. The items that are about the depth of chest compressions, the selection of joules for shockable rhythms, appropriate drug dosage (specifically epinephrine and amiodarone) and the differentiation between shockable and non-shockable rhythms reflects trends identified in numerous regional and international investigations.

The cross-sectional study published in 2024, an analysis evaluating ACLS readiness among nursing practitioners, pointed out analogous inadequacies, particularly, regarding drug administration and rhythm determination, at last concluding that theoretical knowledge tends to decrease rapidly in the lacking of regular reinforcement.¹⁶

Moreover, Mudigoudra et al¹⁷ revealed that over 90% of nursing students present only “moderate” pretraining ACLS knowledge, with almost universal challenges in advanced subjects such as drug dosing and electrical therapy, findings that align closely with inadequacies uncovered in current study.

The results in post-cardiac arrest management are distressing, notably given the international data that stresses the important effect of superior post arrest care on neurological health. A lack of knowledge regarding these protocols was also reported in a study conducted in Kuwait that assessed CPR/ACLS competencies among critical care nursing professionals.¹⁸

Table 3 demonstrates the lacking of a statistically significant association between overall ACLS knowledge and demographic variables, which include age, gender, marital status, educational levels, and years of experience. This investigation concurs with the argument documented in scientific studies that demographic factors are not reliable measures of ACLS capabilities. A survey involving nurses in Oman identified no considerable correlation between ACLS knowledge and characteristics such as age, educational qualifications and experiences, which indicates that clinical experience, cannot improve efficiency in resuscitation techniques.¹⁹

On the other hand, training programs exhibited a statistically significant correlation with knowledge (p=0.002), which suggests that systematic training is the principal aspect that influences ACLS knowledge.

This observation is strongly confirmed by recent globally research. A review in 2025 regarding simulation-based ACLS education concluded that structured training, rather than the duration of experience, appears as a more accurate predictor of knowledge retention, performance accuracy and confidence in emergent scenarios.²⁰

Another research investigation from Ethiopia endorses this claim, indicating that nurses with ACLS training achieved considerably better outcomes in knowledge compared to their colleagues who did not have training.¹⁷ Consequently the current study underlines the global agreement that steady, organized and simulation-based training is the cornerstone of ACLS proficiency, while demographic variables show minimal significance

CONCLUSION

The results of the evaluation demonstrate that although there exists variability in the comprehension of advanced cardiac life support among nurses, considerable deficiencies are evident in essential areas such as the identification of cardiac rhythms, the execution of the correct sequence of interventions, and the administration of medications during resuscitation procedures. Patients' chances of survival could drop because of insufficient awareness or old-fashioned practices, as nurses often play the role of initial responders in urgent healthcare events. Elevating our capability and awareness about advanced cardiac life support is important to confirm that we give timely and effective resuscitation intervention.

Recommendation: To maintain nurses' proficiency in advanced cardiopulmonary resuscitation (CPR), ongoing training courses, simulation exercises, emergency training, and improved integration of CPR into nursing curricula are essential. Regular audits, along with constructive feedback, can help identify gaps and promote improvement. Furthermore, access to up-to-date educational resources and guidelines is beneficial.

Author’s Contribution:

| | |
|--|------------------|
| Concept & Design or acquisition of analysis or interpretation of data: | Haider B. Hami |
| Drafting or Revising Critically: | Haider B. Hami |
| Final Approval of version: | The above author |
| Agreement to accountable for all aspects of work: | The above author |

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