# CARDIOPULMONARY RESUSCITATION IN THE LIGHT OF NEW 2010 AMERICAN HEART ASSOCIATION GUIDELINES: A SURVEY AMONG HEALTHCARE PROFESSIONALS OF TERTIARY CARE HOSPITALS IN PESHAWAR CITY

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## ABSTRACT

***Objective:*** *To evaluate the basic knowledge and practice of cardiopulmonary resuscitation (CPR) and the new changes in 2010 American Heart Association (AHA) guidelines for CPR amongst healthcare professionals (doctors and staff nurses) in tertiary care hospitals of Peshawar.*

***Methodology:*** *A structured self-administered questionnaire based on 2010 AHA guidelines of CPR, was used to test the knowledge and practice of CPR among participants. A correct response rate of >70% to a question was considered as excellent awareness, 50-69% was considered as satisfactory awareness while a response rate of 30-49% was considered as poor and <30% as very poor awareness.*

***Results:*** *A total of 345 staff members including 165(40%) staff nurses (SNs), 90(30%) house officers (HOs) and 90(30%) post-graduate trainees (PGTs) participated in the study. Regarding the basic knowledge and skills of CPR, response rate was classified as satisfactory awareness. In the groups 52.66 % of HOs, 70.96% of PGTs and 58.8% of SNs responded correctly. The knowledge and skills about pediatric CPR, response rate was classified as satisfactory awareness. In the groups 52.23 % of HOs, 63.33% of PGTs and 45.96% of SNs responded correctly. The knowledge about new changes in AHA 2010 guidelines for CPR was classified as poor or very poor awareness. In the groups 26.34% of HOs, 46.94% of PGTs and 22.60% of SNs responded correctly.*

***Conclusion:*** *Doctors and nurses in the tertiary care hospitals of Peshawar city had satisfactory knowledge about CPR; however their knowledge was poor regarding the newly published AHA 2010 guidelines for CPR.*

***Key Words:*** *Cardiopulmonary resuscitation, knowledge and practice, healthcare professionals.*

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## INTRODUCTION

Cardiac arrest is abrupt cessation of cardiac pump function, which may be reversible but will lead to death in the absence of prompt intervention. Sudden cardiac death (SCD) is natural death from cardiac causes; heralded by abrupt loss of consciousness within 1 hour of the onset of an acute change in cardiovascular status.[1] Its important causes include coronary heart disease and its consequences (80%), cardiomyopathies (10 to 15%) and others including cardiac arrthymias, myocardial, valvular, congenital disorders and various electrolyte disturbances.[2,3] Its annual number in the United States have ranged from less than 200,000 to more than 450,000 SCDs annually. These figures suggest an overall incidence between one and two deaths per 1000 persons among the general population.[4-8]

The response to a cardiac arrest is driven by two urgent principles: (1) restoring a spontaneous circulation as quickly as possible; and (2) maintaining continuous artificial circulatory support until return of a spontaneous circulation has been achieved. To achieve these goals, the management strategy is divided into five elements: (1) initial assessment and summoning an emergency response team; (2) basic life support (BLS); (3) early defibrillation by a first responder (if available); (4) advanced life support; and (5) post-cardiac arrest care.

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If successful, the algorithm is followed by a sixth element, long-term management.[9, 10]

Early records from Egyptian mythology and the Bible suggest that mouth-to-mouth and mouth-to-nose respiration were among the earliest resuscitative efforts using artificial respiration.[11,12] One of the first authenticated cases of recovery following artificial respiration using the mouth-to-mouth technique was the resuscitation of a suffocated miner by Tossach in 1744.[13] In 1960 Kouwenhoven, Knickerbocker and Jude documented 14 patients who survived cardiac arrest with the application of closed chest cardiac massage.[14] That same year, at the meeting of the Maryland Medical Society in Ocean City, MD, the combination of chest compressions and rescue breathing was introduced.[15] Two years later, in 1962, direct-current, monophonic waveform defibrillation was intruduced.[16] In 1966 the American Heart Association (AHA) developed the first cardiopulmonary resuscitation (CPR) guidelines, which have been followed by periodic updates until the most recent guidelines in 2010.[17] During the past 50 years these techniques have saved hundreds of thousands of lives around the world. These lives demonstrate the importance of resuscitation research and clinical translation and are cause to celebrate this 50th anniversary of CPR.[18]

Resuscitation training is not organized in Pakistan. Many of our hospitals don't have cardiac arrest teams and initial resuscitation is performed by the doctors present at the time of the arrest. However large proportion of doctors in Pakistan have had no further resuscitation training besides what was taught in medical school. They therefore lack the knowledge, skill and confidence to manage a cardiac arrest.[19, 20] There is abundant literature about the performance of specialist doctors in BLS and ALS skills but a search of the literature has revealed that doctors in general have poor knowledge in resuscitation.[20-22] Secondly changes had been made in new 2010 AHA guidelines for CPR. It is not known whether doctors in Peshawar city have incorporated those changes in their clinical practice. The aim of this study was to evaluate the basic knowledge and practice of CPR and the new changes in 2010 AHA guidelines for CPR amongst doctors and staff nurses in tertiary hospitals of Peshawar City.

## METHODOLOGY

This descriptive cross sectional study was conducted from 25th of October to 30th December 2011, in three major tertiary hospitals of Peshawar city including Lady Reading Hospital, Khyber Teaching Hospital and Hayatabad Medical Complex. Study population was consisted of house officers, postgraduate trainees and staff nurses. In a study by K. Shreedhara Avabratha et al. the adequate awareness rate among interns about the new 2010 CPR guidelines was 13.33%.[23] Using Raosoft Inc. calculators for sample size determination, the estimated sample size was 163 for each group, keeping margin of error at 5%, confidence level at 95%, population size of 2000 and using the aforementioned response distribution. At the end of study, 75% of the participants were expected to return their completed questionnaire. To get the above required numbers of participants, 225 participants were needed. So 225 questionnaires were distributed among doctors and the same number in staff nurses. A total of 345 participants returned their completed questionnaires. Among these staff nurses were 165(40%), House officers 90(30%) and Post graduate trainees were 90(30%). Random sampling technique was used. Persons who have not completed their questionnaire, medical students, nursing students and consultants were not included in the study. A structured self administered questionnaire based on 2010 AHA guidelines of CPR, comprising of twenty five multiple choice questions was used to test the knowledge and practice of CPR among house officers, postgraduate trainees and staff nurses in different specialties of these three hospitals. Awareness among the participants was classified as follows. A correct response rate of >70% to a question was considered as excellent awareness, 50% to 69% was considered as satisfactory awareness while a response rate of 30 to 49% was considered as poor and less than 30% as very poor awareness. Knowledge categorization of the individual participant was performed as follows. Score of >76% (19 or more correct responses) was considered as excellent knowledge, 60% to 72% (15-18 correct responses) was considered as satisfactory knowledge while a score of 24 to 56% (6-14 correct responses) was considered as poor and less than 20% (0-5 correct responses) as very poor knowledge. Permission was taken from all the institutional heads before starting study at their institution. The study protocol was approved by hospital ethical committee.

The aspects interrogated in the questionnaire were about the assessment of responsiveness, process of CPR, its requirements, airway, breathing and circulation in unconscious patients of different age groups. This questionnaire also covered the skills of CPR, how to assist in breathing, giving chest compressions and new changes made in 2010 AHA guidelines for CPR. The results were analysed using an answer key prepared from the advanced cardiac life support manual.

## STASTICAL ANALYSIS

It was performed using statistical package for social sciences (SPSS) version 16.0. The frequency and percentage of correct response to each question was determined in house officers, postgraduate trainees, staff nurses and according to specialty. Furthermore average percentages of correct responses to the whole questionnaire, questions regarding basic knowledge and skills of CPR, Pediatric CPR and AHA 2010 guidelines for CPR were determined in three participants groups. Knowledge categorization of participating groups was also made into excellent, satisfactory, poor and very poor by determining its frequency and percentage. All the data were presented in the forms of tables.

## RESULTS

A total of 345 staff members participated in the study. Among these, staff nurses were 165 (40%), house officers 90 (30%) and postgraduate trainees were 90 (30%). Our study had 60% participants from medicine & allied disciplines and 40% from surgery & allied disciplines (Table I).

Average correct response rate to a question was 48.85 % in the whole population. In the groups 43.74% of house officers, 60.41% of postgraduate trainees and 42.41% of staff nurses responded correctly to a question. It is shown in Table II.

Regarding the basic knowledge and skills of CPR (Questions 1, 5, 10, 12, 13, 18, 24, 25) correct response rate was satisfactory and was classified as satisfactory awareness. Average correct response rate to these questions was 60.80%. In the groups 52.66% of house officers, 70.96% of postgraduate trainees and 58.8% of staff nurses responded correctly to these questions. The correct response rates to individual questions among three participants groups are highlighted in Table II and III.

The knowledge and skills about pediatric CPR (Questions 15, 19, 20, 21, 22, and 23) average correct response rate was satisfactory and was classified as satisfactory awareness. However the response to some individual questions was poor. Average correct response rate to these questions was 53.84%. In the groups 52.23% of house officers, 63.33% of postgraduate trainees and 45.96% of staff nurses responded correctly to these ques-

**DISTRIBUTION OF PARTICIPANTS ACCORDING TO THE GENDER AND SPECIALTY**

| Variables | House Officers | | Postgraduate Students | | Staff nurses | | Total | |
|---|---|---|---|---|---|---|---|---|
| | n | (%) | n | (%) | n | (%) | n | (%) |
| Male | 72 | 80 | 69 | 76.7 | 24 | 14.5 | 165 | 47.8 |
| Female | 18 | 20 | 21 | 23.3 | 141 | 85.5 | 180 | 52.2 |
| Medicine & allied disciplines | 54 | 60 | 54 | 60 | 100 | 60.6 | 208 | 60.28 |
| Surgery & allied disciplines | 36 | 40 | 36 | 40 | 65 | 39.4 | 137 | 39.7 |

Table I

**CORRECT RESPONSE RATES IN THREE PARTICIPANTS GROUPS FOR WHOLE QUESTIONNAIRE, QUESTIONS REGARDING BASIC KNOWLEDGE AND SKILLS OF CPR, PEDIATRIC CPR AND AHA 2010 GUIDELINES FOR CPR**

| Type of questions | Average correct response rate in all participants (%) | Correct response rate in HOs (%) | Correct response rate in PGs (%) | Correct response rate in staff nurses (%) | Medicine & allied disciplines correct response (%) | Surgery & allied disciplines correct response (%) |
|---|---|---|---|---|---|---|
| Whole questionnaire (1-25) | 48.85 | 43.74 | 60.41 | 42.41 | 49.22 | 47.92 |
| Basic knowledge and skills of CPR (Questions 1, 5, 10, 12, 13, 18, 24, 25) | 60.80 | 52.66 | 70.96 | 58.8 | 63.57 | 62 |
| Pediatric CPR (Questions 15, 19, 20, 21, 22, and 23) | 53.84 | 52.23 | 63.33 | 45.96 | 53.65 | 51.98 |
| AHA 2010 guidelines for CPR(Questions 2, 3, 4, 6, 7, 8, 9, 11, 14, 16, 17) | 31.96 | 26.34 | 46.94 | 22.60 | 30.44 | 29.8 |

Table II

**CORRECT RESPONSES RATES FOR QUESTIONS REGARDING BASIC KNOWLEDGE AND SKILLS IN THREE PARTICIPANT GROUPS**

| S. No. | Questions | House Officers correct response, N (%) | Postgraduate students correct response N (%) | Staff Nurses response, N (%) | Medicine & allied discipline correct N (%) | Surgery & allied disciplines N (%) | Whole population N (%) |
|---|---|---|---|---|---|---|---|
| 1 | What will be your first response? | 57(63.3) | 69(76.7) | 107(64.8) | 144(69.2) | 89 (65) | 233(67.5) |
| 5 | During this CPR what will be the ratio between chest compressions and ventilations given by you? | 54(60) | 69(76.7) | 90(54.5) | 126(60.6) | 87(63.5) | 213(61.7) |
| 10 | While giving chest compressions maximum movements should made on? | 36(40) | 39(43.3) | 64(38.8) | 90(43.3) | 49(35.5) | 139(40.3) |
| 12 | If you are offered only one drug for CPR which drug will you choose? | 69(76.7) | 75(83.3) | 117(70.9) | 156(75) | 105(76) | 261(75.7) |
| 13 | What is the dose of adrenaline during CPR? | 39(43.3) | 42(46.7) | 62(37.6) | 82(39.4) | 61(44.4) | 143(41.4) |
| 18 | What is the location for chest compression in adults? | 66(73.3) | 69(76.7) | 115(69.7) | 152(73.1) | 98(71.5) | 250(72.5) |
| 24 | If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first response? | 72(80) | 75(83.3) | 112(67.9) | 164(78.8) | 95(69.3) | 259(75.1) |
| 25 | You are witnessing an adult unresponsive victim who has been submerged in fresh water and just removed from it. He has spontaneous breathing, but he is unresponsive. What is the first step? | 69(76.7) | 72(80) | 100(60.6) | 144(69.2) | 97(70.8) | 241(69.9) |
| | Average correct response | 52.66 | 70.96 | 58.8 | 63.57 | 62 | 60.80 |

TABLE III

tions. The correct response rates to individual questions among three participants groups are highlighted in Table II and IV.

The knowledge about new changes in AHA 2010 guidelines for CPR (Questions 2, 3, 4, 6, 7, 8, 9, 11, 14, 16, 17) was classified as poor or very poor awareness.

**CORRECT RESPONSES RATES FOR QUESTIONS REGARDING PEDIATRIC CPR IN THREE PARTICIPANT GROUPS**

| S. No. | Questions | House Officers correct response, N (%) | Postgraduate students correct response N (%) | Staff Nurses response, N (%) | Medicine & allied discipline correct N (%) | Surgery & allied disciplines N (%) | Whole population N (%) |
|---|---|---|---|---|---|---|---|
| 15 | What is the recommended position for chest compression in a six months old infant for CPR? | 42(46.7) | 48(53.3) | 78(47.3) | 100(49.6) | 68(48.1) | 168(48.7) |
| 19 | What is the location for chest compression in infants? | 45(50) | 54(60) | 75(45.5) | 106(51) | 68(49.2) | 174(50.4) |
| 20 | How do you give rescue breathing in infants? | 51(56.7) | 60(66.7) | 100(60.6) | 128(6.5) | 83(60.6) | 211(61.2) |
| 21 | What is depth of compression in Children during CPR? | 54(60) | 54(60) | 74(44.8) | 107(51.4) | 75(54.7) | 182(52.8) |
| 22 | What is depth of compression in neonates during CPR? | 36(40) | 63(70) | 57(34.5) | 96(46.2) | 60(43.8) | 156(45.2) |
| 23 | What is the chest compression and ventilation ratio in a new born? | 54(60) | 63(70) | 81(49.1) | 122(58.7) | 76(55.5) | 198(57.4) |
| | Average correct response | 52.23 | 63.33 | 45.96 | 53.65 | 51.98 | 53.84 |

TABLE IV

Average correct response rate to these questions was 31.96%. In the groups 26.34% of house officers, 46.94% of postgraduate trainees and 22.60% of staff nurses responded correctly to these questions. The correct response rates for these questions are highlighted in Table II, V and VI.

Overall 12.8% of the staff members knew about the new CAB sequence. For this question the correct response rates were 30%, 10% and 4.8% in post graduate trainees, house officers and staff nurses respectively. Only 30.1% of the participants emphasized more on fast and effective chest compressions during CPR. For this question the correct response rates were 46.7%, 23.3% and 24.8% in postgraduate trainees, house officers and staff nurses respectively. At least 2 inches chest compression during CPR as mentioned in the updated CPR guidelines, only 23.2% of the staff members had idea regarding this change. For this question the correct response rates were 43.3%, 23.3% and 21.1% in post graduate trainees, house officers and staff nurses respectively. About 2010 CPR guidelines by AHA 35.1% of the participants were aware that new updates have been published. For this question the correct response rates were 60%, 33.3% and 22.4% in postgraduate trainees, house officers and staff nurses respectively.

Regarding score of the individual participants in whole questionnaire, excellent knowledge status was achieved by only 3(0.8%) of the participants while satisfactory knowledge status was achieved by 83(23.1%) of the participants. Majority had poor 247 (68.6%) or very poor 12(3.3%) knowledge status. No one answered all the questions correctly (Table VII).

## DISCUSSION

The results of this study showed that doctors and nurses in tertiary care hospitals of Peshawar City have satisfactory knowledge about CPR especially 2005 AHA guidelines but their knowledge was poor regarding new updates in 2010 AHA guidelines for CPR. It is in accordance with published literature as K.Shreedhara Avabratha et al recently demonstrated that interns have poor knowledge about CPR especially new changes in 2010 AHA guidelines for CPR.[23]

**CORRECT RESPONSES RATES FOR QUESTIONS REGARDING AHA 2010 CPR GUIDELINE IN THREE PARTICIPANT GROUPS**

| S. No. | Questions | House Officers correct response, N (%) | Postgraduate students correct response N (%) | Staff Nurses response, N (%) | Medicine & allied discipline correct N (%) | Surgery & allied disciplines N (%) | Whole population N (%) |
|---|---|---|---|---|---|---|---|
| 2 | The proper way to determine unresponsiveness in a person seen lying upside down in a street is? | 39(43.3) | 54(60) | 50(30.3) | 89(42.8) | 54(39.4) | 143(41.4) |
| 3 | Once you have confirmed that the person is unresponsive to your calls what will be your next step? | 18(20) | 24(26.7) | 24(14.5) | 37(17.8) | 29(21.2) | 66(18.3) |
| 4 | 21(23.3) next step? | 42(46.7) | 32(19.4) | 60(28.2) | 35(25.8) | 95(27.5) | |
| 6 | In the period of one minute how many compressions should be applied to the patient's chest during this process? | 21(23.3) | 27(30) | 41(24.8) | 55(26.4) | 34(24.8) | 89(25.8) |
| 7 | Up to what extend will you compress patient's chest during this resus citation? | 21(23.3) | 39(43.3) | 20(21.1) | 51(24.5) | 29(21.2) | 80(23.2) |
| 8 | What will be your sequence of actions in this entire emergency situation? | 9(10) | 27(30) | 8(4.8) | 32(15.4) | 12(8.8) | 44(12.8) |
| | Average correct response | 26.34 | 46.94 | 22.60 | 30.44 | 29.8 | 31.96 |

TABLE V

Early institution of CPR can double or triple the victim's chances of survival from sudden cardiac arrest.[24,18] It is found that CPR plus early delivery of shock with a defibrillator within 3 to 5 min of collapse can provide survival rates as high as 49 to 75%.[18] However in our study only 31.9% participants knew about the defibrillation role in CPR. In another questionnaire based study only 37.4% knew about the defibrillation role in CPR.[23] The newest development in the 2010 AHA guidelines for CPR is a change in the BLS sequence steps from ABC (Airway, Breathing, Chest compressions) to CAB (Chest compression, Airway, breathing).[18] The reason for this being in the vast majority, cardiac arrest is due to VF or pulseless VT and the critical elements for these are chest compressions and early defibrillation. But in our study only 12.8% of the participants were aware of CAB sequence, 25.8% about compression rate, 23.2% about extent of compression and 61.7% regarding compression ventilation ratio.

Training in resuscitation skills is difficult for doctors who have completed their graduation. Busy residency schedules and lack of resources act as barriers. Doctors still are expected to learn resuscitation skills in the clinical setting, where there is little opportunity to correct poor techniques.[25] Given this situation and the fact that many junior doctors are not competent in carrying out effective cardiopulmonary resuscitation,[26,27] perhaps training in advanced life support should become a standardized and mandatory component of all medical school in undergraduate and postgraduate curriculums.[25] Also resuscitation skills need to be refreshed and updated according to practicing guidelines. Short courses

**CORRECT RESPONSES RATES FOR QUESTIONS REGARDING AHA 2010 CPR GUIDELINE IN THREE PARTICIPANT GROUPS**

| S. No. | Questions | House Officers correct response, N (%) | Postgraduate students correct response N (%) | Staff Nurses response, N (%) | Medicine & allied discipline correct N (%) | Surgery & allied disciplines N (%) | Whole population N (%) |
|---|---|---|---|---|---|---|---|
| 9 | On what specific action will you put more emphasis while trying to save the patient's life? | 21(23.3) | 42(46.7 | 41(24.8) | 61(29.3) | 43(31.4) | 104(30.1) |
| 11 | When should we use defibrillator for assessing rhythm during CPR? | 21(23.3) | 48(53.3) | 41(24.8) | 65(31.2) | 45(32.8) | 110(31.9) |
| 14 | If intravenous line is not established adrenaline could be given through which of the following preferred route? | 45(50) | 63(70) | 66(40) | 100(48.1) | 74(54) | 174(50.4) |
| 16 | In which year American Heart Association recently updated its new guidelines about BLS/ ACLS? | 30(33.3) | 54(60) | 37(22.4) | 73(35.1) | 48(35) | 121(35.1) |
| 17 | More emphasis in the most recent guidelines by American Heart Association is on? | 36(40) | 45(50) | 36(21.8) | 75(36.1) | 42(30.7) | 117(33.9) |
| | Average correct response | 26.34 | 46.94 | 22.60 | 30.44 | 29.8 | 31.96 |

TABLE VI

**DISTRIBUTION OF PARTICIPANTS ACCORDING TO THE SCORES**

| Gades | Scores | House Officers N (%) | Postgraduate Students N (%) | Staff nurses, N (%) | Medicine & allied discipline N (%) | Surgery & allied dislines N (%) | Whole population N (%) |
|---|---|---|---|---|---|---|---|
| Excellent | 19-25 (>76%) | 0(0) | 3(3.3) | 0(0) | 2(1) | 1(0.7) | 3(0.8) |
| Satisfactory | 15-18 (60-72%) | 15(16.7) | 60(66.7) | 8(4.8) | 50(24.1) | 33(24) | 83(23.1) |
| Poor | 6-14 (24-56%) | 72(80) | 27(30) | 27(30) | 148(79.7) | 100(73) | 247(68.6) |
| Very poor | 0-5 (0-20%) | 3(3.3) | 0(0) | 9(5.5) | 9(4.3) | 3(2.2) | 12(3.3) |

Table VII

can be offered to personnel who already have taken a course previously to spare funds and assure effective revision.[19] As found by Cooper et al, there was significant improvement in the knowledge and skills of people who have taken BLS course six months ago after taking a short ILS (Immediate Life Support) course.[28]

Implementation of new resuscitation guidelines has been shown to improve outcomes.[29,30] A mean of expediting guidelines implementation (a process that may take from 18 months to 4 years) is needed.[31,32] Impediments to implementation include delays in instruction (e.g., time needed to produce new training materials and update instructors and providers), technology upgrades (e.g.,

reprogramming AEDs), and decision making (e.g., coordination with allied agencies and government regulators, medical direction and participation in research).[18]

Challenges remain if we are to fulfill the potential offered by the pioneer resuscitation scientists. We know that there is a striking disparity in survival outcomes from cardiac arrest across systems of care, with some systems reporting 5-fold higher survival rates than others.[33,34] Although technology, such as that incorporated in automated external defibrillators (AEDs), has contributed to increased survival from cardiac arrest, no initial intervention can be delivered to the victim of cardiac arrest unless bystanders are ready, willing, and able to act. Moreover, to be successful, the actions of bystanders and other care providers must occur within a system that coordinates and integrates each facet of care into a comprehensive whole, focusing on survival to discharge from the hospital. In order to achieve the above objectives, the scientists and healthcare providers participating in a comprehensive evidence evaluation process analyzed the sequence and priorities of the steps of CPR in light of current scientific advances to identify factors with the greatest potential impact on survival. On the basis of the strength of the available evidence, they developed new recommendations in the form of 2010 AHA guidelines for CPR and Emergency Cardiovascular Care (ECC).[18]

In these new guidelines there was unanimous support for continued emphasis on high-quality CPR, with compressions of adequate rate and depth, allowing complete chest recoil, minimizing interruptions in chest compressions and avoiding excessive ventilation. High-quality CPR is the cornerstone of a system of care that can optimize outcomes beyond return of spontaneous circulation. Return to a prior quality of life and functional state of health is the ultimate goal of a resuscitation system of care.[18]

## CONCLUSION

Awareness regarding new 2010 AHA guidelines for CPR among doctors and nurses is very poor and their knowledge and skills needs to be updated. This study buttresses the need for regular CPR training with special emphasis on new guidelines for health care professionals in our hospitals.

## LIMITATIONS

The knowledge of participants was evaluated with the help of questionnaire only and practical skills of CPR were not performed by the participants in front of investigators in this study. Secondly participants were not checked for taking any help. So the bias of outside help by the participants for answering questionnaire cannot be excluded.

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## AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

| | |
|---|---|
| **IS**: | Data analysis, Manuscript writing. |
| **SARS:** | Manuscript writing, data collection. |
| **MF:** | Manuscript writing |
| **MH:** | Conceive the idea, Final approval of the Manuscript |
| **AH, Sh, MZ & HU:** | Data collection |

## CONFLICT OF INTEREST

Authors declare no conflict of interest

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NONE DECLARED