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ORIGINAL ARTICLE

Evaluation of efficiency and outcome of Cardiopulmonary resuscitation

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ABSTRACT:

Background: Cardiopulmonary resuscitation (CPR) is a lifesaving intervention and the cornerstone of resuscitation from cardiac arrest. The present study was conducted to evaluate the efficiency and outcome of CPR. **Materials & Methods:** 210 cases of Cardiopulmonary resuscitation performed in the department of both genders were studied. Advanced cardiac life support (ACLS) techniques were used to survive the patient. Those survived were recalled regularly for 1 year for follow up. **Results:** Out of 210 cases, males were 120 and females were 90. We found that out of 210 cases, 30 occurred in emergency room, 90 in ICU, 20 in special ward, 45 in general ward and 25 in diagnostic ward and arrests were restored in 5, 65, 14, 40 and 22 cases respectively. Out of this, 23, 60, 11, 34 and 18 survived till 1 year follow up respectively. The difference was significant (P< 0.05). **Conclusion:** Maximum survival after CPR and at 1 year follow up. The best way to improve survival rate after cardiac arrests is to impart regular training and updates in CPR to all personnel.

Key words: Advanced cardiac life support, Cardiopulmonary resuscitation, Emergency room

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INTRODUCTION

Worldwide, there are >135 million cardiovascular deaths each year, and the prevalence of coronary heart disease is increasing. Globally, the incidence of out-of-hospital cardiac arrest ranges from 20 to 140 per 100 000 people, and survival ranges from 2% to 11%.[1] In the United States, >500 000 children and adults experience a cardiac arrest, and <15% survive. This establishes cardiac arrest as one of the most lethal public health problems in the United States, claiming more lives than colorectal cancer, breast cancer, prostate cancer, influenza, pneumonia, auto accidents, HIV, firearms, and house fires combined.[2]

Cardiopulmonary resuscitation (CPR) is a lifesaving intervention and the cornerstone of resuscitation from cardiac arrest.[3] Survival from cardiac arrest depends on early recognition of the event and immediate activation of the emergency response system, but equally critical is the quality of CPR delivered. Both animal and clinical studies demonstrate that the quality of CPR during resuscitation has a significant impact on survival and contributes to the wide variability of survival noted between and within systems of care.[4] CPR is inherently inefficient; it provides only 10% to 30% of normal blood flow to the heart and 30% to 40% of normal blood flow to the brain even when delivered according to guidelines. This inefficiency highlights the need for trained rescuers to deliver the highest-quality CPR possible.[5] The present study was conducted to evaluate the efficiency and outcome of CPR.

MATERIALS & METHODS

The present study comprised of 210 cases of Cardiopulmonary resuscitation performed in the department of both genders. The written consent was obtained from family members of all cases. Cardiac arrest was defined by the absence of a detectable pulse (pulselessness), by the patient unresponsiveness, or by any arrest rhythms noticed on monitors.

Data pertaining to cases such as name, age, gender etc. was recorded. Advanced cardiac life support (ACLS) techniques were used to survive the patient. Those survived were recalled regularly for 1 year for follow up. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of cases

Total- 210		
Gender	**Males**	**Females**
Number	120	90

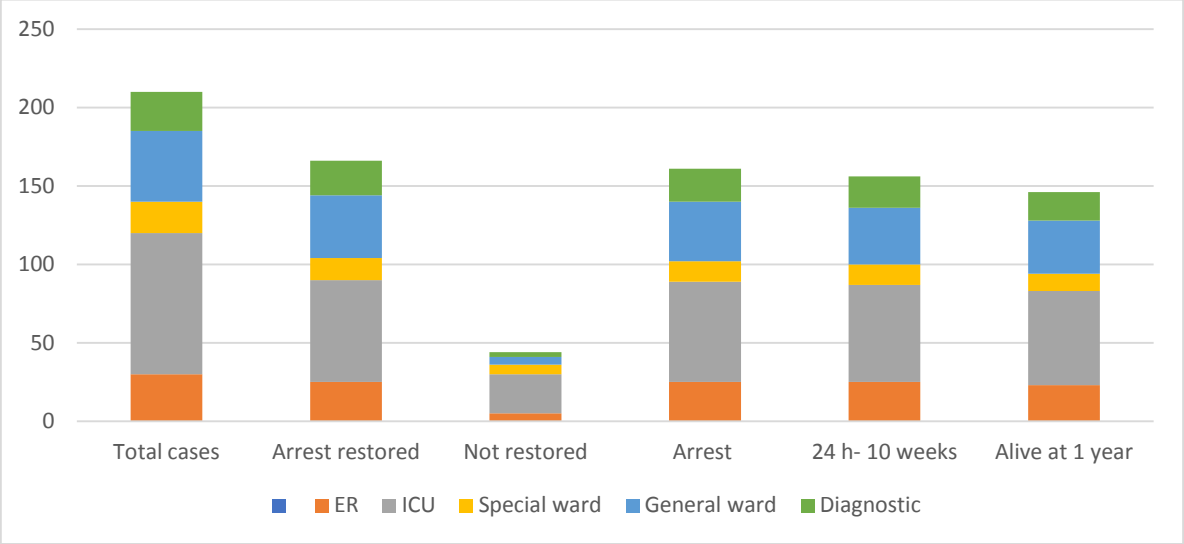
Table I shows that out of 210 cases, males were 120 and females were 90.

Table II Assessment of parameters

Area	Total cases	Arrest restored	Not restored	Arrest to 24	24 h- 10 weeks	Alive at 1 year	P value
ER	30	25	5	25	25	23	0.05
ICU	90	65	25	64	62	60	
Special ward	20	14	6	13	13	11	
General ward	45	40	5	38	36	34	
Diagnostic	25	22	3	21	20	18	

Table II, graph I shows that out of 210 cases, 30 occurred in emergency room, 90 in ICU, 20 in special ward, 45 in general ward and 25 in diagnostic ward and arrests were restored in 5, 65, 14, 40 and 22 cases respectively. Out of this, 23, 60, 11, 34 and 18 survived till 1 year follow up respectively. The difference was significant (P< 0.05).

Graph I Assessment of parameters



DISCUSSION

Poor-quality CPR should be considered a preventable harm. In healthcare environments, variability in clinician performance has affected the ability to reduce healthcare-associated complications, and a standardized approach has been advocated to improve outcomes and reduce preventable harms.[6] The use of a systematic continuous quality improvement (CQI) approach has been shown to optimize outcomes in a number of urgent healthcare conditions. Despite this evidence, few healthcare organizations apply these techniques to cardiac arrest by consistently monitoring CPR quality and outcomes. As a result, there remains an unacceptable disparity in the quality of resuscitation care delivered, as well as the presence of significant opportunities to save more lives.[7] Visual observation provides qualitative information about depth and rate of chest compressions, as well as rate and tidal volume of ventilations. Although invasive hemodynamic monitoring (via intra-arterial and central venous catheters) provides superior quantitative data about patients' physiology, direct observation can reveal important artifacts (eg, pads were not selected on the monitor/defibrillator, "flat" arterial pressure waveform from a turned stopcock obstructed the arterial line tubing), as well as the recognized limitations of feedback technology of CPR performance described above.[8] The present study was conducted to evaluate the efficiency and outcome of CPR.

We found that out of 210 cases, males were 120 and females were 90. Joshi et al[9] investigated the circumstances, incidence and outcome of cardiopulmonary resuscitation (CPR) at a tertiary hospital. The main outcome measures were; (following CPR) return of spontaneous circulation, survival for 24 hours, survival from 24 hours to 6 weeks or discharge, alive at 1-year. For survivors, an assessment was made about their cerebral performance and overall performance and accordingly graded. All these data were tabulated. Totally 419 arrests were reported in the hospital, out of which 413 were in-hospital arrests. Out of this, 260 patients were considered for resuscitation, we had about 27 survivors at the end of 1-year follow-up (10.38%).

We found that out of 210 cases, 30 occurred in emergency room, 90 in ICU, 20 in special ward, 45 in general ward and 25 in diagnostic ward and arrests were restored in 5, 65, 14, 40 and 22 cases respectively. Out of this, 23, 60, 11, 34 and 18

survived till 1 year follow up respectively. Boyde et al[10] in their study CPR outcome analysis was done. They have reported survival to discharge improvement from 25% to 36%. Of course, both the results of survival to discharge are much higher than our results (10.38%). The authors stated that they were not sure whether the change in guidelines has improved survival to discharge rate, or the intense training programme has made a difference. They stated that the limiting factor for their study was that they did not follow the survived patients for 1-year. Thigpen et al.'s study of IHCAs reported an improvement in the survival to discharge rate from 17.5% to 28%. Although there have been more recent changes, the fundamental changes implemented in 2006 have been maintained in the 2010 ARC revisions.[11]

Basic life support skills are generally taught and practiced individually or in pairs. In actual practice, CPR is frequently performed as part of a full resuscitative effort that includes multiple rescuers and advanced equipment.[12] These additional resources allow tasks to be performed in parallel so that CPR can be optimized while the team determines and treats the underlying cause of the arrest.[13] However, the performance of secondary tasks frequently consumes large portions of time and can detract from CPR quality if not managed carefully. Resuscitation team composition varies widely, depending on location (in hospital versus out of hospital), setting (field, emergency department, hospital ward), and circumstances. Little is known about the optimal number and background of professional rescuers.[14]

CONCLUSION

Authors found that maximum survival after CPR and at 1 year follow up. The best way to improve survival rate after cardiac arrests is to impart regular training and updates in CPR to all personnel.

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