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Original Research

Efficiency and outcome of cardiopulmonary resuscitation

[1]Dilshad T P, [2]Sindhura S, [3]R C Krishna Kumar

[1,2]Assistant Professor, [3]Medical Director, PK Das Institute of Medical Sciences, Vaniamkulam, Ottapalam, Kerala, India

ABSTRACT:

Aim: evaluate the efficiency and outcome of cardiopulmonary resuscitation. **Methodology:** One hundred fifty- six cardiopulmonary resuscitation patients of either gender were selected for this prospective, observational study. 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 156 cases, males were 90 (57.6%) and females were 66 (42.4%). Out of 156 cases, 18 cardiac arrests occurred in special ward, 26 in general ward, 45 in diagnostic ward, 35 occurred in emergency room and 32 in ICU. Arrests were restored in 18, 23, 41, 32 and 30 cases respectively. Out of this, 17, 19, 39, 29, 27 survived till 1 year follow up respectively. The difference was significant (P< 0.05). **Conclusion:** Maximal survival following CPR and after a year of monitoring. The greatest method to increase the survival percentage following cardiac arrests is to provide ongoing CPR instruction and updates.

Key words: Cardiopulmonary resuscitation, Advanced cardiac life support, Breathing

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Corresponding author: Sindhura S, Assistant Professor, 3Medical Director, PK Das Institute of Medical Sciences, Vaniamkulam, Ottapalam, Kerala, India

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INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a life-saving emergency procedure performed on individuals who are experiencing cardiac arrest or are not breathing.[1] CPR is designed to maintain blood circulation and oxygen delivery to vital organs until professional medical help can arrive.Early detection of the event and prompt activation of the emergency response system are essential for cardiac arrest survival, but the standard of CPR administered is also crucial.[2] The effectiveness of CPR during resuscitation has a major impact on survival and contributes to the large diversity of survival found within and within systems of care.[3] Even when performed as directed, CPR is essentially ineffective; it only restores 10% to 30% of the heart's normal blood flow and 30% to 40% of the brain's normal blood flow. This inefficiency emphasizes the requirement for experienced rescuers to provide the best CPR possible.[4]

Poor CPR should be viewed as a damage that may be avoided. A systematic strategy has been recommended to improve outcomes and lessen avoidable harms because heterogeneity in clinician performance has reduced the potential to reduce healthcare-associated problems in healthcare environments.[5] It has been demonstrated that the application of a systematic continuous quality improvement (CQI) methodology improves results in a number of urgent medical diseases.[6]The present study was conducted to evaluatethe efficiency and outcome of cardiopulmonary resuscitation.

METHODOLOGY

A sum total of one hundred fifty- six cardiopulmonary resuscitation patients of either gender were selected for this prospective, observational study. The study was commenced once ethical review and clearance committee approved the study. Family members of all patients gave written consent in vernacular language.

Inclusion criteria was patients aged> 18 years who had sustained either an in- or out-of-hospital cardiac arrest and were admitted in emergency department. Exclusion criteria was patients who were reported dead on hospital arrival and those who had an advance directive of no CPR.

Demographic profile of cases such as name, age, gender etc. was recorded. Advanced cardiac life support (ACLS) techniques were used to survive the patient. Successful resuscitation, or return of spontaneous circulation (ROSC)was defined by the American Heart Association as the restoration of a remarkable spontaneous rhythm that produces more than a sporadic gasp, transient palpated pulse, or arterial waveform. Those survived were recalled regularly for 1 year for follow up. Results thus obtained were subjected to statistical analysis using Mann Whitney U test. P value less than 0.05 was considered significant.

RESULTS

Table 1 Distribution of cases

Total- 156		
Gender	**Males**	**Females**
Number (%)	90 (57.6%)	66 (42.4%)

Out of 156 cases, males were 90 (57.6%) and females were 66 (42.4%) (Table 1, Graph 1).

Graph 1Distribution of cases

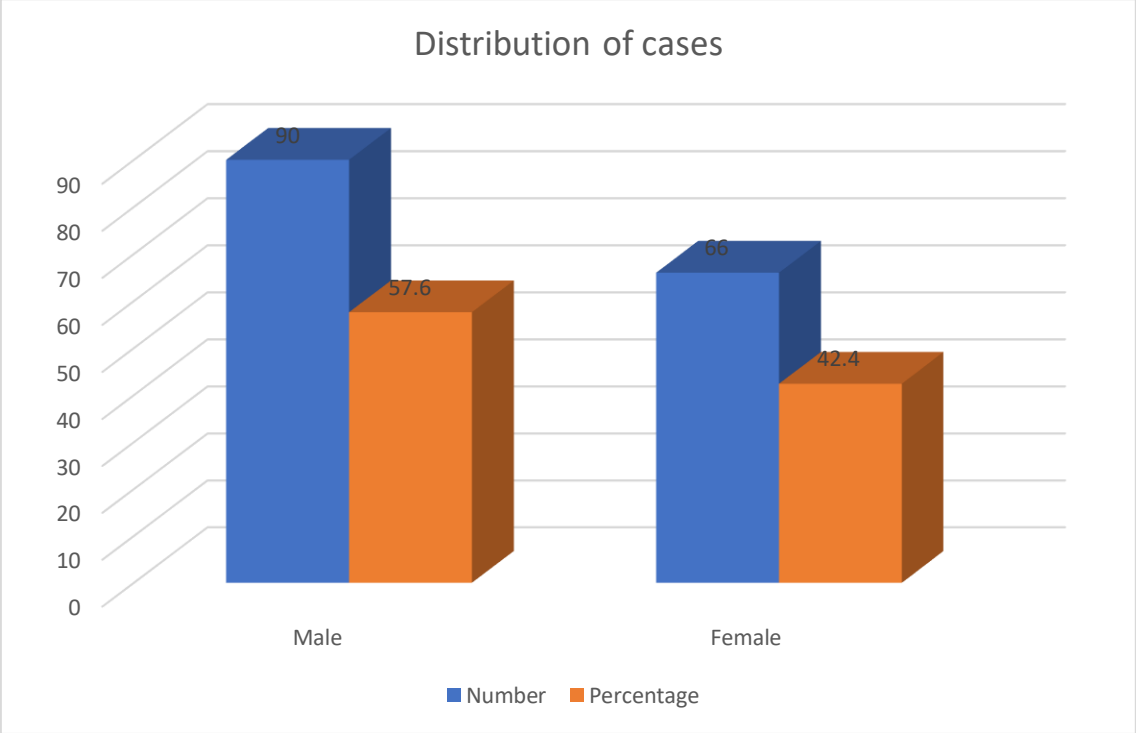
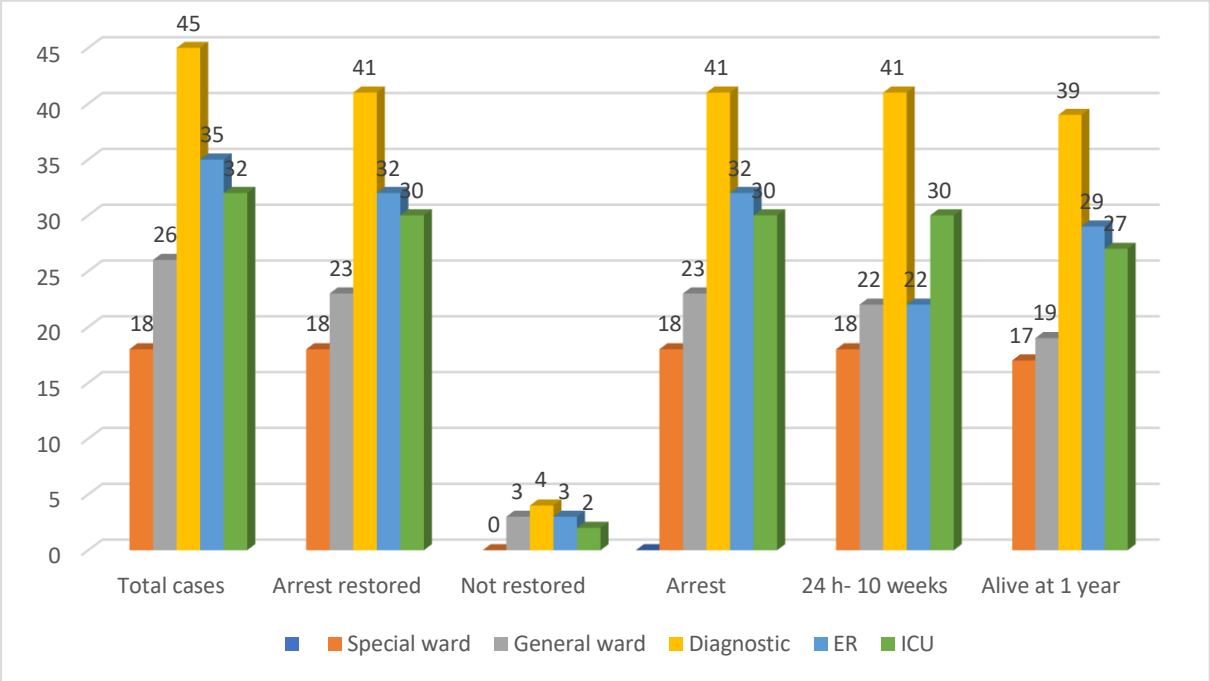


Table 2Assessment of parameters

Area	Total cases	Arrest restored	Not restored	Arrest to 24	24 h- 10 weeks	Alive at 1 year	P value
Special ward	18	18	0	18	18	17	0.05
General ward	26	23	3	23	22	19	
Diagnostic	45	41	4	41	41	39	
ER	35	32	3	32	22	29	
ICU	32	30	2	30	30	27	

Out of 156 cases, 18cardiac arrests occurred in special ward, 26 in general ward, 45 in diagnostic ward, 35 occurred in emergency room and 32 in ICU. Arrests were restored in 18, 23, 41, 32 and 30 cases respectively. Out of this, 17, 19, 39, 29, 27 survived till 1 year follow up respectively. The difference was significant (P< 0.05) (Table 2, graph 2).

Graph 2Assessment of parameters



DISCUSSION

Cardiac arrest can result from a variety of underlying medical conditions, including heart disease, lung failure, poisoning, malignancy, various types of strokes, electrocution, drowning, frostbite, etc.[7] Nearly 95% of people who experience sudden cardiac death pass away before they can be sent to the hospital, and if CPR is not administered after cardiac arrest, the chance of death rises by 7–10% for every minute that passes. These days, there are two main types of cardiopulmonary resuscitation: basic life support (BLS) and advanced life support (ALS).[8]

Despite this evidence, few healthcare organizations apply these techniques to cardiac arrest by consistently monitoring CPR quality and outcomes.[9] 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.[10]Visual observation provides qualitative information about depth and rate of chest compressions, as well as rate and tidal volume of ventilations.[11,12]The present study was conducted to evaluatethe efficiency and outcome of cardiopulmonary resuscitation.

In our study, out of 156 cases, males were 90 (57.6%) and females were 66 (42.4%). Rudiger et al.'s[13] investigation included a CPR outcome analysis. They found an increase in survival to discharge from 25% to 36% (after the implementation of the ARC 2006 guidelines). Naturally, both of the survival to discharge results are significantly greater than our results (10.38%). The authors admitted that they were unsure if the strict training program or the modification in rules had an impact on the survival rate at discharge. They claimed that the failure to track the survivors for a full year was the study's limiting element.

Our results showed that out of 156 cases, 18 cardiac arrests occurred in special ward, 26 in general ward, 45 in diagnostic ward, 35 occurred in emergency room and 32 in ICU. Arrests were restored in 18, 23, 41, 32 and 30 cases respectively. Out of this, 17, 19, 39, 29, 27 survived till 1 year follow up respectively. Moezzi Met al[14] in their study found that the success rate of CPR did not significantly differ between men and women. The comparison of the success rates of CPR in the age range of 14 to 64 with the group over 64 showed a significant difference between the age groups. The data analysis showed no discernible variation in CPR success rates among seasons. The success rate of CPR during the morning shift differs significantly from that during the evening shift and night, according to research on the frequency of cardiac arrest and its success rate at the hospital changing. Only between the emergency department and critical care units, the results of the twofold comparison showed a substantial difference in the success rate of CPR.

Boyde et al[15] performed a CPR outcome analysis in their trial. They reported an increase in survival to discharge from 25% to 36%. Naturally, both of the survival to discharge results are significantly greater than our results (10.38%). The authors admitted that they were unsure if the strict training program or the modification in rules had an impact on the survival rate at discharge. They claimed that the failure to track the survivors for a full year was the study's limiting element.

Andersen et al[16] analyzed the relationship between age and outcome in individuals who experienced cardiac arrest outside of a hospital.There were

101,968 individuals represented in all. 39% of the population was female, with a median age of 66 years. Of the patients who were included, 31,236 (30.6%) had sustained ROSC, 9761 (9.6%) made it to hospital release, and 8058 (7.9%) had a positive neurological result. The percentage of patients who had ROSC was lowest in those who were 95–99 years old (23.5%) and greatest in those who were under 20 years old (34.1%). The proportion of patients who survived and had a satisfactory neurological prognosis was highest in patients under 20 years old (16.7%), and it was lowest in patients aged 95 to 99 years old (1.7% and 1.2%, respectively). There appeared to be a steady loss in survival and good neurological outcomes in both the overall cohort and the individuals with ROSC.

CONCLUSION

Authors found that maximal survival following CPR and after a year of monitoring. The greatest method to increase the survival percentage following cardiac arrests is to provide ongoing CPR instruction and updates.

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