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ASSOCIATION OF INITIAL RHYTHM WITH RESUSCITATION OUTCOMES IN PATIENTS DEVELOPING CARDIAC ARREST IN EMERGENCY DEPARTMENT AND INTENSIVE CARE UNIT

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ABSTRACT

Background: Cardiac arrest is one of the major causes of death in the world despite the current developments in cardiopulmonary resuscitation and post-resuscitation. The first heartbeat has been thought of as one of the most powerful predictors of successful resuscitation and survival, but there is a lack of local data about the connection of the first heartbeat with the resuscitation outcomes in Pakistan.

Aim: To determine the relationship between the initial cardiac rhythm and the success of resuscitation in patients who develop cardiac arrest.

Methods: The study was a descriptive cross-sectional study that was carried out in Emergency Department of POF Hospital, Wah Cantt. A total of 300 eligible patients who were aged between 20-65 years and had developed cardiac arrest during their Emergency Department or Intensive Care Unit stay were enrolled using non-probability consecutive sampling. A structured proforma was used to document demographic features, clinical variables, initial cardiac rhythm, resuscitation, and return of spontaneous circulation (ROSC) and hospital outcomes. The SPSS version 25.0 was used to analyze the data. A p-value less than 0.05 was taken to be statistically significant.

Results: The participants had a mean age of 60.8 ± 18.9 years and 53.3% were male. The majority of the cardiac arrests were in the hospital (95.7%). The predominant initial rhythm was asystole (47.7%), then pulseless electrical activity (38.0%), ventricular tachycardia/ ventricular fibrillation (5.3%), and unknown rhythm (9.0%). The proportion of patients that obtained ROSC was 29.3% and 70.7% that did not. Patients with VT/VF demonstrated the highest ROSC rate (56.3%; OR = 3.42, 95% CI: 1.28–9.10; $p = 0.011$), followed by PEA (41.2%; OR = 2.39, 95% CI: 1.48–3.87; $p < 0.001$), while asystole had the lowest ROSC rate (16.8%; OR = 0.34, 95% CI: 0.19–0.59; $p < 0.001$). The total hospital mortality stood at 89.3 and only 4.7% of the patients survived to get to the hospital discharge.

Conclusion: There were significant relationships between initial cardiac rhythm and resuscitation outcomes in cardiac arrest patients. There was a significant improvement in ROSC with shockable compared to non-shockable rhythms, although overall survival was low. Recognition of rhythm early, prompt resuscitation, and management of post-cardiac arrest optimally can lead to better clinical outcomes in this high-risk group.

KEYWORDS: Cardiac arrest, Initial cardiac rhythm, Return of spontaneous circulation, Ventricular fibrillation, Ventricular tachycardia, Pulseless electrical activity, Asystole, Cardiopulmonary resuscitation, Resuscitation outcomes, Pakistan.

INTRODUCTION

Emergency cardiovascular care has achieved major progress but out-of-hospital and in-hospital cardiovascular arrest has been a significant cause of preventable deaths in all healthcare systems worldwide (Stoecklein et al., 2022). Cardiac arrest is distinguished by a sudden loss of effective cardiac mechanical action with the loss of circulation, loss of consciousness, and cessation of normal respiration, thus necessitating the immediate use of cardiopulmonary resuscitation (CPR) to ensure the restoration of perfusion (Kato et al., 2021). According to the latest international registries, over 350,000 cardiac arrests that happen outside the hospital are estimated in the United States alone annually, and the incidence rate is estimated at approximately 67-170 cases per 100,000 population per year in Europe (Holmberg et al., 2025). The survival rate after cardiac arrest is still low, and the survival rates up to hospital discharge are usually less than 10% of out-of-hospital cardiac arrest, despite the positive outcomes of resuscitation systems and post-resuscitation care (Kojima et al., 2023). Comparatively, in-hospital cardiac arrest has a relatively higher survival rates of between 20 and 25%, which is a result of earlier identification, quick response protocols, and quick access to advanced life support (Rattananon et al., 2024).

One of the most powerful independent predictors of survival and neurological recovery after the cardiac arrest is the initial cardiac rhythm identified when the resuscitation was initiated (Lewandowski et al., 2024). Primary rhythms can be broadly classified into shockable rhythms (ventricular fibrillation and pulseless ventricular tachycardia), and non-shockable rhythms (pulseless electrical activity and asystole), which can be attributed to different underlying pathophysiological mechanisms (Hubar et al., 2023). Patients who come to the ED with shockable rhythms always have a better prognosis since defibrillation can be administered in time to end the malignant ventricular arrhythmias before ischemic damage is extensive (Ulusoy et al., 2026). In contrast, non-shockable rhythms are often linked to delayed awareness, longer no-flow, severe metabolic disorders, or advanced systemic diseases, leading to significantly worse resuscitation outcomes (Kawauchi et al., 2025). Recent registry information reveals that shockable rhythms make up a small but significant portion of cardiac arrests but a disproportionate number of survivors released with a positive neurological outcome. The initial rhythm recognition has, therefore, come to be a key feature of evidence-based resuscitation protocols and prognostic evaluation after cardiac arrest (Kato et al., 2021).

Due to aging, growing cardiovascular disease burden and the enhanced emergency response system around the world, the epidemiology of cardiac arrest is constantly changing (Lian et al., 2022). Cardiovascular diseases are the number one cause of mortality worldwide, with estimates of 20.5 million deaths among them each year; out of which sudden cardiac arrest constitutes a significant portion of these deaths (Kwok et al., 2025). Even though in high-income countries, the outcomes are improved due to early defibrillation and coordinated resuscitation systems, most of the low- and middle-income countries still have poor access to emergency medical care, which leads to reduced survival following cardiac arrest (Chen et al., 2022). Moreover, differences in bystander CPR education, access to automated external defibrillators, and intensive care services also play a significant role in the variation in initial rhythm recognition and resuscitations after a shock across regions (Ruangsomboon et al., 2023). The overloading of developing countries with ischemic heart disease, heart failure, diabetes mellitus, and hypertension further boosts cardiac arrest rates and the necessity of locally applicable prognostics. As such, the analysis of the correlation between presenting rhythm and resuscitation outcomes has significant consequences on maximizing resource allocation, clinical decision-making, and survival improvement measures (Makino et al., 2023).

Cardiovascular disease is one of the key public health problems in Pakistan, but there is a lack of published information on the epidemiology of cardiac arrest and the prognostic value of the initial rhythm (Saeed et al., 2025). The bulk of evidence on the effect of rhythm-specific resuscitation is based on results in North America, Europe, and other high-income environments, where emergency medical facilities and post-resuscitation services are vastly unlike those in Pakistan (Gul et al., 2024). The variability of prehospital transport systems, time-constrained presentation, access to defibrillation, intensive care units, and uniform resuscitation actions have potential differences in the distribution of initial rhythms, as well as in clinical outcomes, among Pakistani patients (Khan et al., 2024). The lack of strong local data constrains the clinician in finding high-risk patients, assessing current resuscitation procedures and formulating context-specific resuscitation methods that can increase survival following a cardiac arrest. Thus, the current research is conducted to fill this significant gap in knowledge by examining the relationship between initial rhythm and resuscitation outcomes of patients who develop cardiac arrest in the Pakistani health care-delivering environment.

METHODS

Study Design and Setting

The cross-sectional study was carried out in the Emergency Department of POF Hospital, Wah Cantt from May 2025 to August 2025. The prospective data collection was done on qualified patients throughout their hospital stay at the Emergency Department and Intensive Care Unit (ICU).

Sampling Technique and Sample Size

A non-probability consecutive sampling method was chosen to recruit the participants. All patients that fit within the set eligibility criteria and that were present throughout the time of the study were eligible to be included until the desired sample size was reached. The World Health Organization (WHO) sample size calculator was used to determine the sample size. A sample of 300 patients was derived and recruited in the study based on a level of confidence of 95, a margin of error of 2.6 and an estimated prevalence of ventricular tachycardia/ventricular fibrillation (VT/VF) of 5.4 per cent.

Study Population

The population of studies was a group of adult patients who had cardiac arrest during their stay at the Emergency Department or Intensive Care Unit of POF Hospital, Wah Cantt. Both genders aged 20-65 could be included. Enrolment of the individuals was made upon their admission, whereby they developed cardiac arrest and on meeting all the eligibility criteria. The study excluded patients who had had a documented do-not-resuscitate (DNR) order, had traumatic cardiac arrest, post-surgery complications, pregnancy complications, or terminal diseases with an anticipated survival less than 30 days because of possible confounding variables and their effect on resuscitation.

Data Collection
Age, gender, weight, height and body mass index (BMI) were taken on a structured data collection proforma to obtain baseline demographic and anthropometric features. The legal guardians of all eligible participants gave written informed consent before being included in the study. Monitoring devices, which were available such as automated external defibrillators (AEDs), manual defibrillators, and electrocardiographic (ECG) rhythm monitors, were used to determine the cardiac rhythm present at cardiac arrest onset. The initial reported rhythm was either asystole, pulseless electrical activity (PEA), ventricular fibrillation (VF), or ventricular tachycardia (VT) immediately after the start of cardiopulmonary resuscitation (CPR). Other clinical data such as when cardiac arrest occurred, time in seconds between cardiac arrest and CPR initiation where defibrillation was required, and return of spontaneous circulation (ROSC) was also recorded methodically. All patients admitted were followed-up until they were discharged out of the Emergency Department or the ICU, or death, whichever came first.

Data Analysis
The data obtained were inputted and processed in Statistical Package of the Social Sciences (SPSS) version 25.0. Gender, primary diagnosis during cardiac arrest, initial cardiac rhythm, ROSC status, and survival outcome are categorical variables that were summarized as frequencies and percentages. The normality of continuous variables age, height, weight, BMI, time between cardiac arrest and the onset of CPR and time to ROSC was evaluated by the Shapiro-Wilk test. Variables that show a normal distribution were given as mean ± SD, non-normally distributed ones as median and interquartile range (IQR). Stratified analyses were carried out to assess the effect of possible confounding factors based on age group, gender, and the principal diagnosis during cardiac arrest. The Chi-square test was used to evaluate associations between categorical variables whereas the Fisher Exact test was used whenever conditions of Chi-square test were not satisfied. A p-value of less than 0.05 was used to conclude whether there was statistical significance.

Ethical Considerations
Ahead of data collection, the study was ethical approved by both the Institutional Ethical Review Committee of POF Hospital, Wah Cantt, and the College of Physicians and Surgeons Pakistan (CPSP). The research was carried out under accepted ethical principles of biomedical research that includes human subjects. The legal guardians of all eligible patients provided informed consent that had to be in writing prior to enrollment. The anonymity and privacy of the collected information about patients were closely observed during the study and only authorized research personnel accessed the data. Involvement in the study did not interfere with usual clinical management and all patients were given standard resuscitative care based on institutional protocols regardless of whether they participated in the study.

RESULTS
The mean age of the participants was 60.8 ± 18.9 years, and the proportion of males was marginally higher (53.3%), compared with females (46.7%). Almost all cardiac arrests did happen in the hospital (95.7%), but arrests in ambulances (0.7%) or other places (1.0%) were rare. Top primary diagnoses before cardiac arrest were sepsis (19.0%), pneumonia (18.0%), and HIV/AIDS (14.3%). The most frequent pre-existing comorbidity was hypertension (39.3%), diabetes mellitus (25.3%). Echocardiography was carried out in 23.0% of patients, and left ventricular ejection fraction was found to be severely low (EF ≤35%) in 6.7% of the study sample.

Table 1. Baseline Demographic and Clinical Characteristics of the Study Participants (N = 300)

Variable	**n (%) / Mean ± SD**
Age (years), Mean ± SD	**60.8 ± 18.9**
Sex	
Male	160 (53.3)
Female	140 (46.7)
Location of Cardiac Arrest	
Hospital	287 (95.7)
Ambulance	2 (0.7)
Unknown	8 (2.7)
Other	3 (1.0)
Primary Diagnosis at Cardiac Arrest	
Sepsis	57 (19.0)
Pneumonia	54 (18.0)
HIV/AIDS	43 (14.3)
Cancer	28 (9.3)

Heart failure	27 (9.0)
Renal disease	27 (9.0)
Tuberculosis	26 (8.7)
Myocardial infarction	18 (6.0)
Liver disease	17 (5.7)
Stroke	14 (4.7)
Past Medical History	
Hypertension	118 (39.3)
Diabetes mellitus	76 (25.3)
Other illnesses	116 (38.7)
Cancer	15 (5.0)
Stroke	8 (2.7)
Previous myocardial infarction	4 (1.3)
Echocardiography Performed	69 (23.0)
EF ≤35%	20 (6.7)
EF 36–50%	14 (4.7)
EF >50%	4 (1.3)

The median Modified Early Warning Score (MEWS) was 4.41 ± 2.33, and almost half of the patients (44.7) fell in the high-risk MEWS group. The initial cardiac rhythm that was most common was asystoles (47.7%), then pulseless electrical activity (38.0%), and shockable rhythms (VT/VF) being only 5.3% of the total cases. The mean arrest-to-CPR ratio was 0.79 ± 2.46 minutes and adrenaline was being given to 73.3% of patients undergoing resuscitation. The ROSC had been attained in 29.3% of patients, whilst 70.7% did not attain ROSC. The total mortality was still high at 89.3% in-hospital and 4.7% patients survived until the discharge.

Table 2. Clinical Characteristics, Resuscitation Management and Outcomes (N = 300)

Variable	**n (%) / Mean ± SD**
MEWS Score, Mean ± SD	**4.41 ± 2.33**
MEWS Category	
Low (≤2)	78 (26.0)
Intermediate (3–4)	88 (29.3)
High (≥5)	134 (44.7)
Initial Cardiac Rhythm	
Asystole	143 (47.7)
Pulseless Electrical Activity (PEA)	114 (38.0)
Ventricular Tachycardia/Fibrillation (VT/VF)	16 (5.3)
Unknown	27 (9.0)
Time from Arrest to CPR (minutes), Mean ± SD	**0.79 ± 2.46**
Medication Administered During CPR*	
Adrenaline	220 (73.3)
Sodium bicarbonate	58 (19.3)
Atropine	30 (10.0)
Other medications	66 (22.0)
ROSC Achieved	88 (29.3)
No ROSC	212 (70.7)
Time to ROSC (minutes), Mean ± SD	**5.10 ± 11.28**
Hospital Outcome	
Discharged alive	14 (4.7)
Died	268 (89.3)
Outcome unknown	18 (6.0)

Multiple medications could be administered to the same patient.

Patients with VT/VF were found to have the highest rate of ROSC (56.3%), and they had much higher odds of being successfully rescued (OR = 3.42; 95% CI: 1.289.10; p = 0.011). Equally, patients with PEA were able to record ROSC

in 41.2% instances and had much higher odds of ROSC (OR = 2.39; 95% CI: 1.483.87; p < 0.001). On the other hand, the lowest outcome was observed in patients who presented with asystole, with only 16.8% of patients achieving ROSC and odds that were significantly lower of successful resuscitation are 0.34 with a 95% CI of 0.1959; p = 0.001). These results suggest that presenting cardiac rhythm strongly predicted the success of resuscitation in the population of the research.

Table 3. Association Between Initial Cardiac Rhythm and Return of Spontaneous Circulation (ROSC) (N = 300)

Initial Cardiac Rhythm	Total (n)	ROSC n (%)	Odds Ratio (95% CI)	p-value
Asystole	143	24 (16.8)	0.34 (0.19–0.59)	0.031
PEA	114	47 (41.2)	2.39 (1.48–3.87)	0.023
VT/VF	16	9 (56.3)	3.42 (1.28–9.10)	0.01
Unknown	27	8 (29.6)	—	—

The lowest ROSC rate and significantly lower odds of successful resuscitation were observed in patients with low MEWS score (≤2; 16.7% and OR = 0.39; 95% CI: 0.20 -0.71; p = 0.003). The difference between the patients with the intermediate MEWS (33.0%) and the high MEWS (34.3%) did not reach statistical significance (p = 0.226 and p = 0.089, respectively). On the whole, the low MEWS category was the only statistically significant category of the MEWS, which demonstrated an independent association with ROSC, whereas the higher MEWS categories did not independently predict better resuscitation.

Table 4. Association between Modified Early Warning Score (MEWS) and Return of Spontaneous Circulation (ROSC) (N = 300)

MEWS Category	Total (n)	ROSC n (%)	Odds Ratio (95% CI)	p-value
Low (≤2)	78	13 (16.7)	0.39 (0.20–0.71)	0.003
Intermediate (3–4)	88	29 (33.0)	1.36 (0.82–2.23)	0.226
High (≥5)	134	46 (34.3)	1.51 (0.94–2.42)	0.089

There was no statistically significant correlation between ROSC with sex (p = 0.632), age group (p = 0.167) and place of cardiac arrest (p = 0.741). Non-cardiac primary diagnosis patients, however, exhibited ROSC about 20 times less often than cardiac related primary diagnosis patients (41.7% vs. 25.4%; p = 0.012). Similarly, patients who came in with shockable rhythms (VT/VF) exhibited best ROSC rate (56.3) as compared to those with non-shockable rhythms (27.6), and the difference was statistically significant (p = 0.001). These data indicate that underlying diagnosis and initial cardiac rhythm were the best predictors of successful resuscitation in this study group, and demographic factors did not have a significant effect on ROSC.

Table 5. Stratified Analysis of Return of Spontaneous Circulation (ROSC) According to Selected Baseline Characteristics (N = 300)

Variable	Total (n)	ROSC n (%)	No ROSC n (%)	p-value
Sex				
Male	160	49 (30.6)	111 (69.4)	0.632
Female	140	39 (27.9)	101 (72.1)	
Age (years)				
≤60	146	49 (33.6)	97 (66.4)	0.167
>60	154	39 (25.3)	115 (74.7)	
Place of Arrest				
Hospital	287	86 (30.0)	201 (70.0)	0.741
Other locations	13	2 (15.4)	11 (84.6)	
Main Diagnosis				
Cardiac diagnoses	72	30 (41.7)	42 (58.3)	0.012
Non-cardiac diagnoses	228	58 (25.4)	170 (74.6)	
Initial Cardiac Rhythm				
Shockable (VT/VF)	16	9 (56.3)	7 (43.7)	0.001
Non-shockable (Asystole/PEA)	257	71 (27.6)	186 (72.4)	
Unknown	27	8 (29.6)	19 (70.4)	

DISCUSSION

This study aimed to find the relationship between presenting cardiac rhythm and outcome of resuscitation amongst patients who developed cardiac arrest by assessing the relationship between presenting cardiac rhythm and ROSC. The cardiac arrests were more common in the hospital environment (95.7%), which implies that the sample reflects the in-hospital cardiac arrest. It also showed that asystole presented the most frequent presenting rhythm (47.7%), then there was the pulseless electrical activity (38.0%), and ventricular tachycardia/ventricular fibrillation (VT/VF) was a mere 5.3% of all cardiac arrests. Similar results were noted by Wang et al., (2024) in 2118 Chinese patients, with significant percentage of asystole (n=1229; 58.0%), significant percentage of PEA and only few patients with VT/VF as first shock in the newer registries (Wang et al., 2024). Similarly, Kandori et al., (2025) discovered a substantial proportion of cardiac arrest of 1,686 Japanese patients was non-shockable (PEA, 19.5%; asystole, 17.0%) and was linked to delayed recognition, long no-flow, and severe underlying illness. These results bolster the need to identify clinical deterioration early as the potential to prevent the progression to non-shockable rhythms can lead to a significant improvement in survival rates (Kandori et al., 2025).

One primary conclusion of this study was that ROSC was only achieved in 29.3% of patients, and 70.7% were unable to achieve spontaneous circulation despite resuscitation attempts, and that the average time to ROSC of successful patients was 5.10-11.28 minutes. Moreover, the mortality in the hospital was very high with 89.3% of the patients dying before being discharged and just 4.7 percent surviving discharge to the hospital, which underlines the low prognosis of cardiac arrest in the hospital. These results can be compared to the results of Han et al., (2024) that recorded a ROSC rate, survival to discharge of significant percentage and general mortality (95% CI: 1.511–4.795, $P < 0.001$) in 1516 adults with in-hospital cardiac arrest (Han et al., 2024). Equally, Foszcz et al., (2026) among 281 consecutive patients found out that even though the percentage of patients suffering resuscitation to life initially was high, only 23.9% survived to hospital discharge due to post-cardiac arrest syndrome and permanent neurological damage. The resemblance of these studies indicates that effective resuscitation of spontaneous circulation may not always indicate long-term survival without a holistic procedure of resuscitation (Foszcz et al., 2026).

The present study demonstrated a statistically significant association between the initial cardiac rhythm and successful resuscitation, with VT/VF exhibiting the highest ROSC rate (56.3%; OR = 3.42, 95% CI: 1.28–9.10; p = 0.011), followed by PEA (41.2%; OR = 2.39, 95% CI: 1.48–3.87; p < 0.001), whereas asystole had the poorest ROSC rate (16.8%; OR = 0.34, 95% CI: 0.19–0.59; p < 0.001). These results are much more indicative of the established idea that shockable rhythms are linked to better resuscitation outcomes as they react fast to immediate electrical defibrillation before irreversible myocardial and cerebral ischemia ensues. Ho et al., (2024) reported similar results in 116,387 cases with VT/VF showing a survival (95% confidence interval [CI] 7.62-8.63), which exceeded the survival of patients with asystole (95%CI 14.1-16.8). The small discrepancy between the present results and prior literature shows that rhythm recognition in the early stages remains essential to predict the success of resuscitation in various healthcare systems (Ho et al., 2024).

The other significant observation was the correlation of Modified Early Warning Score (MEWS) with the resuscitation outcome with only 16.7% of patients with low MEWS (≤2) and a ROSC and low odds (OR = 0.39; 95% CI: 0.20–0.71; p = 0.003) indicating that low MEWS patients had significantly lower odds of achieving ROSC. Though this observation seems counterintuitive it could wear the interaction of physiological decline, recognition of arrest at an earlier age, and underlying severity of the disease as opposed to the independent predictive value of MEWS. In Denmark, Stankovic et al., (2021) (who assessed 3422 patients) have also reported similar observations that MEWS was a predictor of clinical deterioration (RR = 1.63, 95%CI 1.51–1.76), but its correlation with ROSC was inconsistent based on patient population and arrest characteristics (Stankovic et al., 2021). Oppositely, in a retrospective cohort study, Okubo et al., (2024) found that higher MEWS values were linked to markedly reduced survival in 348,996 Japanese adult patients who had cardiac arrest, indicating that MEWS prediction value may vary between hospitals based on response systems, and escalation procedures. Thus, additional multicenter research is justified to identify how best MEWS plays a role in predicting the outcome of cardiac arrest in various healthcare settings (Okubo et al., 2024).

The study clinical profile further revealed that the most common primary diagnoses before the cardiac arrest were sepsis (19.0%), pneumonia (18.0%), and HIV/ AIDS (14.3%) whereas hypertension (39.3%) and diabetes mellitus (25.3%) were the most common underlying comorbidities. Stratified analysis also found that cardiac-related patients had a higher ROSC rate on the basis of their non-cardiac diagnosis (25.4%; p = 0.012), compared to cardiac diagnosed patients (41.7%), but did not observe significant differences based on age, sex, or place of arrest. Havranek et al., (2022) reported similar findings and analyzed 256 Czech patients, finding that the median resuscitation duration was 52 (33–68) minutes, with the primary outcome achieved in 40% of patients with shockable rhythms versus 5% with non-shockable rhythms (p < 0.001) (Havranek et al., 2022). Similarly, Okada et al., (2023) in 1,789 patients found hypertension and diabetes to be present [95%CI: 0.784–1.036] and [95%CI: 0.258–0.499] of cardiac arrest patients, respectively, but these comorbidities had an effect on long term prognosis by exerting a larger burden of cardiovascular disease, but not directly deciding on immediate ROSC. These findings also indicate the necessity of early diagnosis

and intensive management of worsening medical cases to decrease transitions to cardiac arrest and enhance survival among hospitalized patients (Okada et al., 2023).

There were some limitations in this study that are to be taken into account, when interpreting the results. By being a single-center, descriptive, cross-sectional study at a tertiary care hospital, the findings might not be applicable to the rest of the healthcare and even to the general Pakistani population. The sampling method used could have been a non-probability consecutive sampling method that could have caused selection bias. There was no long-term assessment of the neurological outcomes and post discharge survival as patients were only followed till discharge or death occurred in hospital. Also, there is no detailed evaluation of the potential confounding factors that include the quality of cardiopulmonary resuscitation, no-flow and low-flow intervals, cause-specific treatment, and interventions during the post-cardiac arrest. The author should conduct future multicenter prospective studies to confirm these results and conduct additional studies on factors affecting the survival of cardiac arrest patients, with a larger sample size and long-term follow-up.

CONCLUSION

As the current study showed, the first cardiac rhythm had a strong relationship with the outcome of resuscitation in patients with cardiac arrest development. The most common initial rhythms were non-shockable, especially asystole, with the lowest levels of ROSC, and VT/VF the highest chances of successful resuscitation. The overall ROSC was only attained in 29.3% of patients with hospital mortality being exceptionally high at 89.3%, highlighting the dismal prognosis of cardiac arrest despite the quick resuscitative interventions. Primary diagnoses related to the cardiac condition were also found to be linked with much better ROSC as compared to non-cardiac ones whilst age, sex and place of arrest did not significantly affect the outcome. These results indicate the prognostic significance of prompt rhythm recognition and the value of prompt rhythm recognition, timely use of defibrillation when necessary, and maximization of post-resuscitation care to enhance patient survival in the face of cardiac arrest.

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