


Research Paper



## Evaluation of the results of cardiopulmonary resuscitation in Iraqi patients

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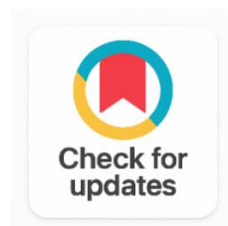
Hypertension

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### ABSTRACT

**Background:** Despite significant progress, cardiac arrest with no warning (SCA) remains a primary cause of mortality in many regions of the world. SCA can occur due to a variety of causes (cardiac/non-cardiac), situations (witnessed/unwitnessed), and locations (out of hospital or in-hospital).

**Objective:** This paper aims to evaluate of the results of cardiopulmonary resuscitation in Iraqi patients.

**Patients and Methods:** This paper was presented as a cross-sectional study of the evaluation of the results of cardiopulmonary resuscitation in Iraqi patients, where it covered cardiopulmonary patients in different hospitals in Iraq from 24th January 2021 to 15th August 2022. Cardiac arrest was characterized as an unresponsive adult patient who is either not breathing properly or is not breathing at all, with no carotid pulse or evidence of circulation. This study was including patients who have ages above 50 to 80 years for 62 cases patients. The methodology process of collected data were analysed and implemented by SPSS.

**Results and Discussion:** The purpose of this study was to see how several situations affected the success rate of CPR. As previously stated, CPR outcomes were notably ineffective in those with hypertension, diabetes, as well as heart and renal disorders. Survival following resuscitation can be influenced by factors such as the procedure's quality and urgency, the treatment team's expertise, the patient's age, underlying condition, and individual characteristics. The first identified cardiac rhythm failed to substantially correlate with the CPR success rate, as noted in the findings section. However, the greatest rate of success was found in VF as well as VT, PEA, as well as ASYSTOLE rhythms, respectively. According to 2018 research, CPR has a 29% 30-day survival rate. It went on to indicate that 45% of those with a favourable resuscitation result had VF and VT as their first cardiac

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rhythm; 40% exhibited a PEA rhythm, whereas 15% did not have a rhythm. Similarly, in the current study, the success rate for CPR was about 41% in participants whose first identified cardiac rhythm following monitoring was VF and VT.

**Conclusions:** The present study is a follow-up epidemiological inquiry into cardiac arrest in this hospital, and it has indicated that previous medical histories were an important factor in CPR results. Furthermore, persons who do not have the underlying condition have a far better probability of surviving. In conclusion, we found that a considerable majority of patients who suffered in-hospital cardiac arrest had poor outcomes. These are caused by the presence in co-morbidities.

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## 1. INTRODUCTION

Despite significant progress, cardiac arrest with no warning (SCA) remains a primary cause of mortality in many regions of the world. SCA can occur due to a variety of causes (cardiac/non-cardiac), situations (witnessed/unwitnessed), and locations (out of hospital or in-hospital) [1], [2], [3], [4]. Because of this variability, a basic set of coordinated interventions is required to establish a common strategy for effective resuscitation [5]. Cardiac arrest can occur both within and outside of the hospital. In the United States and Canada, around 350,000 persons have a cardiac arrest and are resuscitated each year (almost half of whom are in-hospital) [6], [7], [8], [9]. One in every five in-hospital patients in affluent nations is predicted to pass away from cardiac arrest, with less than 20% surviving to release. Hospitals across the world have therefore created Cardiopulmonary Resuscitation (CPR) groups, also known as Code Blue Teams, that operate in-hospital settings in accordance with previously established standardized hospital standards such as the American Heart Association (AHA) CPR recommendations [10], [11], [12], [13], [14].

Sudden cardiac arrest becomes a prevalent medical condition that has a high death rate. Cardiopulmonary resuscitation (CPR) represents a therapeutic technique that improves a patient's chances of survival after a cardiac arrest or heart failure [15]. CPR, on the other hand, is a collection of interventions used to give an adequate amount for blood and oxygen for the patient following cardiac arrest.

Cardiac arrest can occur because of a medical condition, including pulmonary failure, stroke, heart disease, cancer, poisoning, electrocution, drowning, and frostbite [16], [17]. This paper aims to evaluate of the results of cardiopulmonary resuscitation in Iraqi patients.

## 2. METHODOLOGY

This paper was presented as a cross-sectional study of the evaluation of the results of cardiopulmonary resuscitation in Iraqi patients, where it covered cardiopulmonary patients in different hospitals in Iraq from 24th January 2021 to 15th August 2022. Cardiac arrest was characterized as an

unresponsive adult patient who is either not breathing properly or is not breathing at all, with no carotid pulse or evidence of circulation. This study was including patients who have ages above 50 to 80 years for 62 cases patients. The methodology process of collected data were analysed and implemented by SPSS.

To follow that, this study also dealt with distributions of cardiopulmonary patients' baseline outcomes based on age, sex, and BMI with fewer and greater than 28.64, which these outcomes can be seen in Table 1, Table 2, and Table 3. To progress of outcomes, this paper were studied features of cardiopulmonary patients changes outcomes based on symptoms, where include breathlessness, chest pain, fatigue, feeling dizzy, pain, weakness, or numb legs, swollen limbs, and very fast or slow heartbeat as well as features of cardiopulmonary patients changes outcomes based on comorbidities where have these parameters which are Cancers, Cardiac diseases, Diabetes, Hypertension, Others, and Renal disorder which are these outcomes can be resulted in Table 4 and Table 5.

To further of outcomes, this paper was assessed post-operative complications outcomes of cardiopulmonary patients, which are acute lung injury, arterial hypoxemia, death, and pneumonia, that can be found in Table 6. This paper was presented measurements of CPR % in cardiopulmonary patients with Cardiac Rhythmia where get one of these parameters, which are Asystole, Pulseless electrical activity (PEA), ventricular tachycardia (VT), and ventricular fibrillation (VF) as well as this data was extended with recovered of measurements of CPR % in cardiopulmonary patients with the use of Defibrillator in cumulative of patients where the results can be cleared in Figure 1 and Figure 2.

This paper was assessed of success of CPR % with cardiopulmonary patients based on the Glasgow Outcome Scale (GOS), where The Glasgow Outcome Scale (GOS) was used to assess outcomes in regard to ROSC, Survival to Discharge, as well as Clinical Status at Discharge that can be seen in Figure 3.

### 3. RESULTS AND DISCUSSION

**Table 1.** Distributions of Cardiopulmonary Patients' Baselines Outcomes Based on Ages

Descriptive Statistics	Value
N (Valid)	62
N (Missing)	0
Mean	65.0000
Std. Error of Mean	1.14520
Median	65.0000
Mode	50.00
Std. Deviation	9.01729
Variance	81.311
Skewness	.000
Std. Error of Skewness	.304
Range	30.00
Minimum	50.00
Maximum	80.00
Sum	4030.00

**Table 2.** Distributions of Cardiopulmonary Patients' Baselines Outcomes Based on Sex

	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Females	23	37.1	37.1	37.1
Males	39	62.9	62.9	100.0
Total	62	100.0	100.0	137.1

**Table 3.** Distributions of Cardiopulmonary Patients' Baselines Outcomes Based on BMI

BMI	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
<28.64	19	30.6	30.6	30.6

>28.64	43	69.4	69.4	100.0
Total	62	100.0	100.0	130.6

**Table 4.** Features of Cardiopulmonary Patients Change Outcomes Based on Symptoms

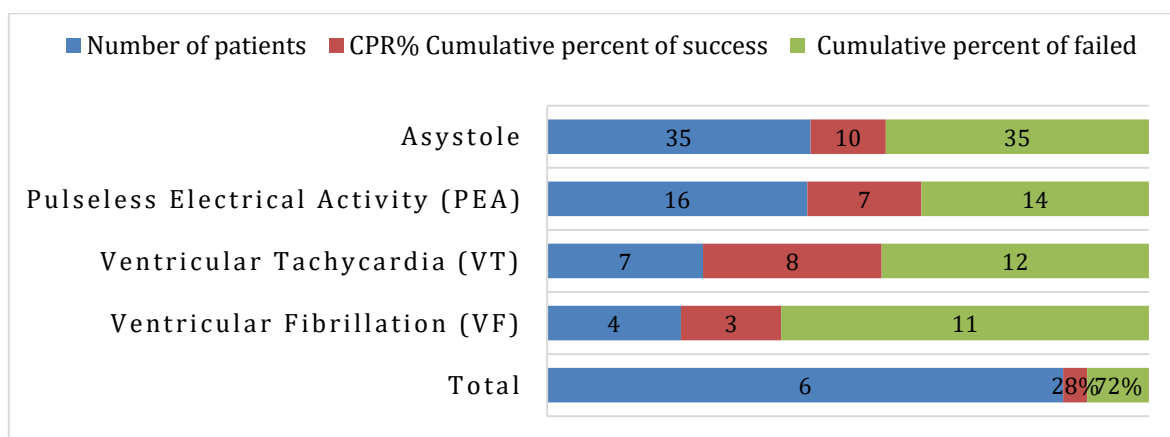
Symptom	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Breathlessness	10	16.1	16.1	16.1
Chest pain	17	27.4	27.4	43.5
Fatigue	6	9.7	9.7	53.2
Feeling dizzy	6	9.7	9.7	62.9
Pain, weakness, or numb legs	7	11.3	11.3	74.2
Swollen limbs	9	14.5	14.5	88.7
Very fast or slow heartbeat	7	11.3	11.3	100.0
Total	62	100.0	100.0	438.6

**Table 5.** Features of Cardiopulmonary Patients Change Outcomes Based on Comorbidities

Comorbidity	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Others (unspecified)	6	9.7	9.7	9.7
Cancers	9	14.5	14.5	24.2
Cardiac diseases	7	11.3	11.3	35.5
Diabetes	21	33.9	33.9	69.4
Hypertension	17	27.4	27.4	96.8
Others	1	1.6	1.6	98.4
Renal disorder	1	1.6	1.6	100.0
Total	62	100.0	100.0	434

**Table 6.** Post-Operative Complications Outcomes of Cardiopulmonary Patients

Complication	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
None	42	67.7	67.7	67.7
Acute lung injury	6	9.7	9.7	77.4
Arterial hypoxemia	5	8.1	8.1	85.5
Death	6	9.7	9.7	95.2
Pneumonia	3	4.8	4.8	100.0
Total	62	100.0	100.0	425.8



**Figure 1.** Measurements of CPR % in Cardiopulmonary Patients with Cardiac Rhythmia

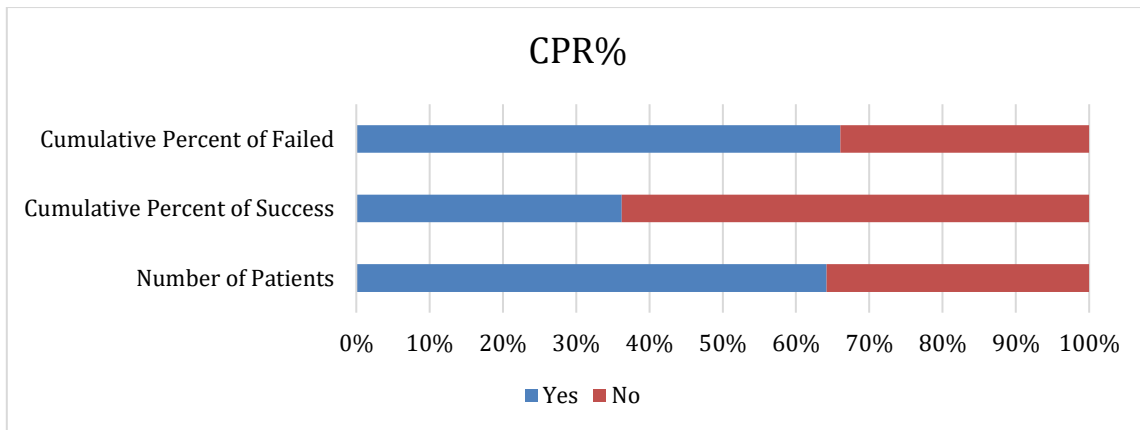


Figure 2. Measurements of CPR % in Cardiopulmonary Patients with the Use of a Defibrillator

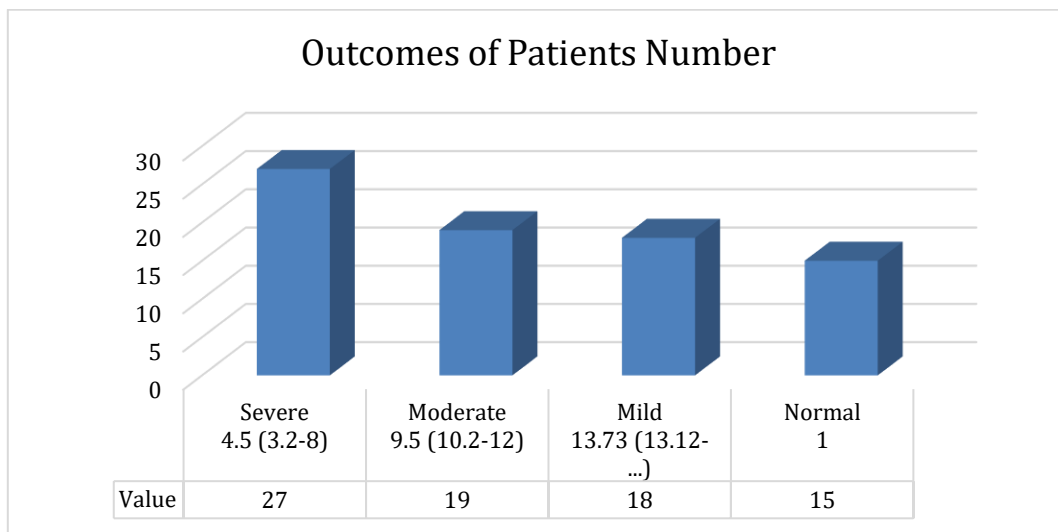


Figure 3. Assessment of Success of CPR % with Cardiopulmonary Patients Based on the Glasgow Outcome Scale (GOS)

### 3.1. Discussion

The purpose of this study was to see how several situations affected the success rate of CPR. As previously stated, CPR outcomes were notably ineffective in those with hypertension, diabetes, as well as heart and renal disorders. Survival following resuscitation can be influenced by factors such as the procedure's quality and urgency, the treatment team's expertise, the patient's age, underlying condition, and individual characteristics.

Retrospective research conducted in Switzerland in early 2018 indicated that CPR had a success rate of 13% and that patients survived for 30 days. Like the findings of our survey, the most prevalent underlying conditions that resulted in resuscitation failure in this study were heart failure, a myocardial infarction (MI), kidney failure, diabetes, and, ultimately, metastatic cancers. The study also found that the more complicated the condition, the decreased chances of survival following CPR. In 2015, research in the United States found a resuscitation success rate of 21.9 percent, with dialysis patients having the lowest success rate [18].

The first identified cardiac rhythm failed to substantially correlate with the CPR success rate, as noted in the findings section. However, the greatest rate of success was found in VF as well as VT, PEA, as well as ASYSTOLE rhythms, respectively. According to 2018 research, CPR has a 29% 30-day survival rate. It went on to indicate that 45% of those with a favourable resuscitation result had VF and VT as their first cardiac rhythm; 40% exhibited a PEA rhythm, whereas 15% did not have a rhythm. Similarly, in the current

study, the success rate for CPR was about 41% in participants whose first identified cardiac rhythm following monitoring was VF and VT [19].

Another study found that 62.6% of first post-cardiac arrest monitoring rhythms were asystole, 28.7% were PEA, and 8.8% were non-shockable. CPR was successful 25.6% of the time. However, survival upon discharge was just 2.4%. An analysis in 2019 discovered that persons having an initial rhythm with asystole nor PEA were significantly fewer likely to survive the following CPR as compared to characters in VF and VT start rhythms [20]. The study also found that the restoration and resumption of spontaneous circulation had a success rate of 25.32%.

#### 4. CONCLUSION

The present study is a follow-up epidemiological inquiry into cardiac arrest in this hospital, and it has indicated that previous medical histories were an important factor in CPR results. Furthermore, persons who do not have the underlying condition have a far better probability of surviving. In conclusion, we found that a considerable majority of patients who suffered in-hospital cardiac arrest had poor outcomes. These are caused by the presence in co-morbidities.

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#### Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Dr. Basim Mahmood Owaid Al-Ameri	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓	
Dr. Mohammed Qasim Kadhim Alsudani	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓	✓
Dr. Nazzal Jebur Mzaiel	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓

C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

#### Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

#### Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

#### Ethical Approval

Not Applicable.

#### Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.




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