

# Relationship between Dysrhythmia Occurrence and Type of Surgery among Patients post Cardiac Surgery

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DOI: 10.47750/pnr.2022.13.S09.304

## Abstract

**Background:** A dysrhythmia is an irregular heartbeat that has been described as fluttering, racing, or skipping a beat. Other symptoms include dizziness, lightheadedness, shortness of breath, chest discomfort, sweating, and fainting. Some people, on the other hand, have no symptoms and are astonished when a dysrhythmia is identified during a normal check-up with a doctor.

**Material and Methods:** A cross-sectional descriptive design adopted from 31th October 2021 to 13th July 2022 to achieve the objectives of the present study. The sample size was (100) patients (males and females), out of those participants (12) patients were excluded from the study sample.

**Results:** (23%) patients presented with dysrhythmia post open heart surgery, high percentage were tachycardia occurred in (6%) patients, atrial fibrillation appeared in (5%) patients, and (3%) patients presented with premature ventricular contraction, (2%) of patient appeared right bundle branch block, 1st degree AV Block and Asystole respectively. While (1%) Left bundle branch block, Atrial Flutter and Ventricular Fibrillation respectively.

**Conclusion:** Postoperative dysrhythmias are common in heart surgery patients. Tachycardia and atrial fibrillation are the most common postoperative dysrhythmias. The treatment's general difficulties are similar to those advised in other situations. Finally, due to conduction system stress, Bradyarrhythmias are usually reported after cardiac surgery. Although conduction abnormalities frequently resolve on their own, permanent pacemaker implantation may be necessary.

**Keywords:** dysrhythmia, Type of Surgery, Cardiac Surgery.

## INTRODUCTION

Recent studies have placed more importance on dysrhythmia post cardiac surgery, and as treatments and medical technology advance and the median survival time for patients with post-operative dysrhythmia increases (1-5years), the number of studies examining Cardiac post-operative dysrhythmia has increased.

Dysrhythmias are extremely common consequences following cardiac surgery and are a major cause of morbidity and mortality. The most frequent postoperative cardiac rhythm abnormality is atrial tachyarrhythmia. Bradyarrhythmias and ventricular arrhythmias are less common (Ball et al., 2016). Each arrhythmia's clinical relevance is determined by its duration, ventricular response rate, underlying heart function, and comorbidities. In fact, arrhythmias that may be well tolerated in a younger patient can be a major source of morbidity and mortality following congenital heart surgery (Perrier et al., 2017).

## Objectives:

This paper describes and Relationship between Dysrhythmia Occurrence and Type of Surgery among Patients post Cardiac Surgery and their demographical characteristics.

## Material and Methods:

In this descriptive study, questionnaire were used to collect data from 100 patients in Mosul Center of Cardiology and cardiac Surgery for the period from October 31,2021 to October 6, 2022. After data collection, descriptive and inferential statistic were used by (SPSS) version 27 to analyze the data and find the results. Chi-square test and  $P < 0.05$  significance level, used to find out relationships between variables of the study

## Results:

The table (4-1) shows that the largest proportion of patients belong to the age group of (6-18) years (39%), and the highest percentage of the study sample is male (52%). Also, the largest proportion of research sample (45%) belong to primary education group. Regarding marital status, the table presents that the highest percentage of patients are married (56%). The research sample produced four types of jobs that patients engage in, and the highest percentage of them (56%) were for unemployed. For residence the highest percentage of participants live in the city (63%). For smoking, as the table shows, the largest percentage of respondents (85%) did not smoke.

Table (4-1): The Frequency and Percentage Distribution of Sociodemographic Characteristics of the Study Participants:

Variables		Frequency	Percentage
Age Group	6 - 18	39	39.0
	19 - 31	7	7.0
	32 - 44	15	15.0
	45 - 57	22	22.0
	58 - 71	17	17.0
	Total	100	100%
Gender	Male	52	52.0
	Female	48	48.0
	Total	100	100%
Educational Level	Literacy	11	11.0
	Read and write	23	23.0
	Primary Education	45	45.0
	Secondary Education	13	13.0
	High Education	8	8.0
	Total	100	100%
Marital Status	Single	42	42.0
	Married	56	56.0
	Widow	1	1.0
	Divorced	1	1.0
	Total	100	100%
Occupation	Employed	8	8.0
	Unemployed	56	56.0
	Student	30	30.0
	Retired	6	6.0
	Total	100	100%
Residence	Urban	63	63.0
	Rural	37	37.0
	Total	100	100%

<b>Smoking</b>	Smoker	<b>11</b>	<b>11.0</b>
	Never Smoking	<b>85</b>	<b>85.0</b>
	Former smoker	<b>4</b>	<b>4.0</b>
	<b>Total</b>	<b>100</b>	<b>100%</b>

Table (4-2): The Frequency and Percentage of Dysrhythmia that appeared post Cardiac Surgery:

<b>Variables</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Occurred Dysrhythmia</b>	Negative	<b>77</b>	<b>77.0</b>
	Atrial Fibrillation	<b>5</b>	<b>5.0</b>
	Premature Ventricular Contraction	<b>3</b>	<b>3.0</b>
	Tachycardia	<b>6</b>	<b>6.0</b>
	Right Bundle Branch Block	<b>2</b>	<b>2.0</b>
	Left Bundle Branch Block	<b>1</b>	<b>1.0</b>
	1st degree AV Block	<b>2</b>	<b>2.0</b>
	Atrial Flutter	<b>1</b>	<b>1.0</b>
	Ventricular Fibrillation	<b>1</b>	<b>1.0</b>
	Asystole	<b>2</b>	<b>2.0</b>
	<b>Total</b>	<b>100</b>	<b>100%</b>

Table (4-3): The Frequency and Percentage of Dysrhythmia according to the Type of Surgery:

<b>Dysrhythmia</b>	<b>F</b>	<b>%</b>	<b>Type of Surgery</b>	<b>F</b>	<b>%</b>
<b>Atrial Fibrillation</b>	5	21.75	CABG	2	8.7
			MVR	2	8.7
			AVR	1	4.35
<b>Premature Ventricular Contractions</b>	3	13.05	CABG	2	8.7
			TOF	1	4.35
<b>Tachycardia</b>	6	26.1	ASD	2	8.7
			VSD	2	8.7
			TOF	1	4.35
			LA mass	1	4.35
<b>RBBB</b>	2	8.7	TOF	2	8.7
<b>LBBB</b>	1	4.35	AVR	1	4.35
<b>1st degree AV Block</b>	2	8.7	ASD+MVR	2	8.7
<b>Atrial Flutter</b>	1	4.35	CABG	1	4.35
<b>Ventricular Fibrillation</b>	1	4.35	CABG	1	4.35
<b>Asystole</b>	2	8.7	DVR+TVR	1	4.35
			MVR	1	4.35
<b>Total</b>	<b>23</b>	<b>100.0</b>	<b>Total</b>	<b>23</b>	<b>100.0</b>

## Discussion:

As mentioned earlier, the table (4-1) shows the highest percentage (39%) of study participants belong to (6-18 years) age group, while the lowest percentage (7%) of them belong to (19-31 years) age group. In a study conducted in Belgium on 744 patients, the results of the study confirmed that the diagnosis of congenital heart defects is detected at ages from 1 month to 14 years, and this result agrees with the results of the current study (Massin & Dessy, 2006). And (52%) of the study samples were males, while (48%) were females. It is noted that the difference is very small between the percentage of females and males. The results of the study conducted in the United Kingdom confirmed that gender difference does not affect the incidence of heart disease, but the effect is on the outcome of the disease (Khamis et al., 2016).

For educational level, (45%) of the study samples have a primary educational level, and the lowest percentage (8%) of them have a high education. A study conducted by the European Journal of Cardiology, the results of the study showed that 17% of the sample was in the primary education level, while 60% in the secondary education level, this study does not agree with the results of the present study, and this may be due to the difference in the environment and community culture (Bruthans et al., 2016).

For marital status, Table (4-1) shows that the highest percentage of patients (56%) were married, and (42%) of them were single, while the lowest percentage (1%) of patients for each of divorced and widow. In a study conducted by the American Heart Association, the percentage of married people was 67%, while the percentage of unmarried people was 32%, which is similar to the percentages of the current study, which shows that the number of married people is greater than the unmarried ones (Schultz et al., 2017).

For Occupation, the table (4-1) shows that the highest percentage (56%) of patients were unemployed, and (30%) of them were students, while the lowest percentage (6%) of them were retired. The results of a study conducted in Boston showed that 44% of the study sample are employees, which represented the highest percentage, and these results disagreed with the current study, this may be due to the fact that the ages of the participants in the current study are small, as well as the difficulty of obtaining employment in our country (Pack et al., 2015). And dealing with Residence, the table (4-1) shows that the highest percentage (63%) of participants were living in urban area, while the lowest percentage (37%) were living in rural area. In a study conducted in Ghana, the percentage of residents residing in the city was 67%, while the percentage of patients residing in the rural area was 37%, and this result is consistent with the results of the current research (Kodaman et al., 2016). Finally regarding Smoking, the table (4-1) shows that the highest percentage (85%) of patients were never smoking, while the lowest percentage (4%) were former smokers. In a study conducted by the American Medical Association (AMA), the percentage of smokers was (46%), while the lowest percentage was of non-smokers (39%), and these results disagree with the results of the current research, and this may be due to the large percentage of women in our sample, and as it is mentioned earlier that smoking among younger ages and women is unacceptable in our society (Duncan et al., 2019).

Table (4-2) shows that the highest percentage of patients (77%) does not have dysrhythmia after cardiac surgery, while (6%) had tachycardia and (5%) had atrial fibrillation. The results of a study conducted by the European Journal of Cardiac and Thoracic Surgery showed that a small percentage (35%) of patients who underwent cardiac surgery develop dysrhythmia after the operation, and these results are consistent with the results of the current research (Greenberg et al., 2017).

Table (4-3) shows that dysrhythmia occurred in 8 patients (34%) who underwent to correct congenital heart malformations surgeries, (6 patients) undergoing coronary artery bypass graft CABG, and (6 patients) undergoing heart valves replacement, and (2 patients) undergoing repair of atrial septal defect and mitral valve replacement. In a study conducted by the American Heart Association about the occurrence of dysrhythmia after correcting congenital heart malformations and the study sample was 232 patients, the study proved that 43% of patients developed dysrhythmia and this is consistent with the current study (Houck et al., 2019).

## Conclusion:

Postoperative dysrhythmias are common in heart surgery patients. Tachycardia and atrial fibrillation are the most common postoperative dysrhythmias. The treatment's general difficulties are similar to those advised in other situations. Finally, due to conduction system stress, Bradyarrhythmias are usually reported after cardiac surgery. Although conduction abnormalities frequently resolve on their own, permanent pacemaker implantation may be necessary.

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