



CLINICAL PROFILE, COMORBIDITIES AND OUTCOMES IN PATIENT WITH CARDIAC ARRHYTHMIAS

General Medicine

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KEYWORDS

INTRODUCTION :

Arrhythmias are a common dilemma confronting the intensivist. ¹

The impact of a given arrhythmia in a given situation depends on the patient's cardiac physiology and function.

Similarly, urgency and type of treatment are determined by the physiological impact of the arrhythmia as well as by underlying cardiac status. ²

All the above "events" suggesting diagnostic and therapeutic urgency and uncertainty are dependent on "patient event factors" that influence the comorbidities in patients with cardiac arrhythmias and there are very few studies that have addressed this in the past and our study aims to bridge this gap. ²

Cardiac arrhythmias are a common problem encountered in the intensive care unit (ICU) and represent a major source of morbidity. ¹ Arrhythmias are most likely to occur in patients with structural heart disease.¹

The inciting factor for an arrhythmia in a given patient may be an insult such as hypoxia, infection, cardiac ischemia, catecholamine excess (endogenous or exogenous), or an electrolyte abnormality. ¹

Bradyarrhythmias may decrease cardiac output due to heart rate alone in patients with relatively fixed stroke volumes, and loss of an atrial kick may cause a dramatic increase in pulmonary pressures in patients with diastolic dysfunction. Similarly, Tachyarrhythmias can decrease diastolic filling and reduce cardiac output, resulting in hypotension, in addition to producing myocardial ischemia. The impact of a given arrhythmia in a given situation depends on the patient's cardiac physiology and function.

METHODOLOGY :

This cross-sectional study assessed among the 50 cases admitted in kamineni institute of medical sciences- Narketpally. To synthesise new learning outcomes over what is currently available and documented globally for patients with cardiac arrhythmia and establish the relationship, if any, between the newly synthesized learning outcomes from each cardiac arrhythmia patient participant and their or their subsequent patient healing outcomes.

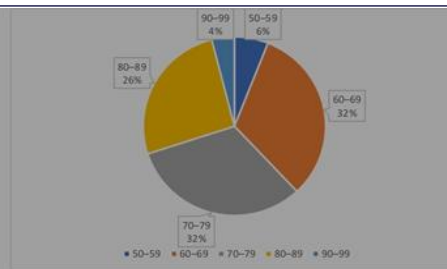
Slide 2

RESULTS :

OBSERVATIONS AND RESULTS

TABLE 1: AGE DISTRIBUTION

Age in years	Count (n=50)	Percentage
50-59	3	6.0%
60-69	16	32.0%
70-79	16	32.0%
80-89	13	26.0%
90-99	2	4.0%
Total	50	100%
Mean $\pm$ SD	70.46 $\pm$ 12.93 years	

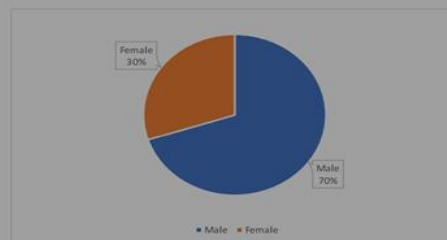


The cohort predominantly comprised elderly individuals, with the highest concentration between 60-79 years. The mean age of approximately 70 years reflects an aging cardiovascular population vulnerable to arrhythmias and heart failure. Very advanced age groups were fewer, indicating progressive mortality or reduced hospital presentation beyond the ninth decade.

[Image from Slide 2]

TABLE 2: SEX DISTRIBUTION

Sex	Count (n=50)	Percentage
Male	35	70.0%
Female	15	30.0%

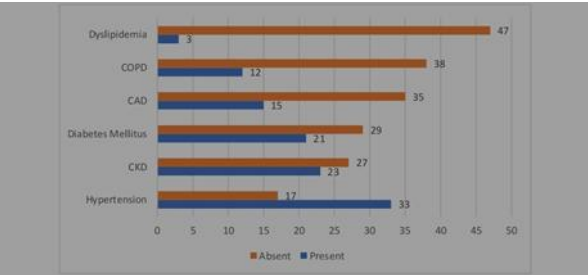


Males constituted the majority of admissions, representing about two-thirds of the study population. This male predominance aligns with known epidemiological trends in cardiovascular disease and arrhythmias. However, the presence of a substantial female subgroup enables meaningful gender-based comparisons in comorbidities, risk factors, and clinical outcomes within the cohort.

[Image from Slide 2]

TABLE 6: PREVALENCE OF COMORBIDITIES

Comorbidity	Present	Absent	Prevalence
Hypertension	33	17	66.0%
CKD	23	27	46.0%
Diabetes Mellitus	21	29	42.0%
CAD	15	35	30.0%
COPD	12	38	24.0%
Dyslipidemia	3	47	6.0%

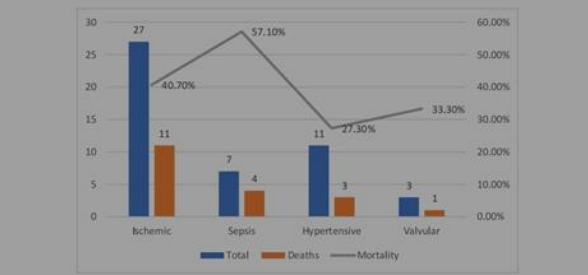


Hypertension emerged as the most prevalent comorbidity, followed by chronic kidney disease and diabetes. Coronary disease and pulmonary pathology were moderately represented, while dyslipidemia was relatively uncommon. This distribution underscores the clustering of cardiometabolic and renal disorders that collectively amplify arrhythmia susceptibility and worsen hospitalization outcomes.

[Image from Slide 2]

TABLE 13: ETIOLOGY VS MORTALITY

Etiology	Total	Deaths	Mortality
Ischemic	27	11	40.7%
Sepsis	7	4	57.1%
Hypertensive	11	3	27.3%
Valvular	3	1	33.3%
P-value			0.122 (NS)



Higher mortality within ischemic and sepsis-related arrhythmias suggests greater systemic and myocardial injury in these groups. However, the absence of statistical significance indicates overlapping risk across etiologies. Mortality therefore appears multifactorial, influenced by age, comorbidities, and cardiac dysfunction rather than etiology alone.

[Image from Slide 2]

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DISCUSSION :

In the present study, the age distribution of the 50 patients presenting with cardiac arrhythmias revealed a predominantly elderly population, with a mean age of 70.46 ± 12.93 years. The highest frequency of patients fell within the 60–79 years age bracket, accounting for 64% of the total cohort. These findings indicated that the incidence of arrhythmias and associated cardiac decompensation rose significantly with advancing age, likely due to the cumulative burden of degenerative myocardial changes and prolonged exposure to cardiovascular risk factors. The relatively smaller proportion of patients in the very advanced age group (90–99 years) potentially reflected a "survivor effect" or reduced hospitalization rates in this demographic.

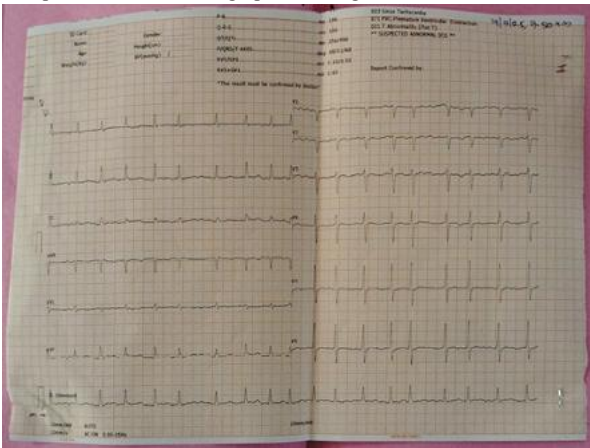
When comparing these results with contemporary literature, a distinct variation in age profiles across different geographical and clinical settings was observed. Our cohort was notably older than the populations described in studies from developing regions or emergency settings. For instance, Dudhreja et al. (2025) reported a much younger mean age of 43.52 years in their emergency department study, and Kiyeng et al. (2023) found a median age of 46 years in a Kenyan cardiac care unit. In contrast, our findings aligned more closely with large-scale registries focusing on atrial fibrillation in

developed or specific high-risk populations. Naser et al. (2017) reported a mean age of 68 ± 13 years, which was statistically comparable to our data. Similarly, Zhao et al. (2025) identified a median age of 73.0 years in their high-complexity cluster, supporting the observation that complex arrhythmia presentations are characteristic of the seventh and eighth decades of life.

Table 17: Comparison of Age Distribution with Other Studies
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Echocardiographic assessment in our study revealed severe myocardial compromise. The estimated mean left ventricular ejection fraction (LVEF) was approximately 30%, with 74% of patients classified as having reduced ejection fraction (<40%). Regional wall motion abnormalities (RWMA) were present in 42% of patients, strongly pointing towards an ischemic etiology. This profile depicted a population where arrhythmia was a consequence of advanced structural heart disease rather than a primary electrical disorder.

Comparison of Echocardiographic Findings with Other Studies



[Image from Slide 4]



[Image from Slide 4]

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CONCLUSION :

The study concluded that hospitalized patients presenting with arrhythmias were predominantly elderly, with a mean age of 70.46 years, which highlighted the vulnerability of an aging population to cardiovascular decompensation. It was established that atrial fibrillation was the nearly universal rhythm disturbance, occurring in 94% of the cohort. Ischemic heart disease was identified as the leading etiological factor, accounting for over half of the cases. The clinical profile was characterized by significant myocardial compromise, as 74% of patients exhibited a severely reduced ejection fraction of less than 40%. Furthermore, the prevalence of hypertension and chronic

kidney disease was high, contributing to the complexity of the cases. While 62% of the patients improved through acute management, a substantial mortality rate of 38% was observed. This mortality was particularly high in sepsis-related cases and was modestly associated with more advanced age. Gender-based differences were notable, particularly the significant female predominance in hypertension. Laboratory parameters often revealed significant azotemia and mild anemia, reflecting a state of chronic systemic illness. Ultimately, the study demonstrated that hospital outcomes were driven by a multifactorial interplay between structural heart disease, severe systolic dysfunction, and a high burden of comorbid metabolic and renal disorders.

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