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Clinical Profile of Patients with Atrial Fibrillation Presenting to Cardiac Centre at Lumbini Province of Nepal

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ABSTRACT

Background: Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia and a major cause of stroke, disability, and mortality. Its prevalence increases with age and varies according to underlying cardiovascular diseases. This study aimed to evaluate the clinical profile of patients with AF.

Methods: A hospital-based cross-sectional observational study was conducted at Gautam Buddha Community Heart Hospital. Patients diagnosed with atrial fibrillation and presenting to the outpatient department during the study period were included. Demographic and clinical information, including age, sex, underlying cardiovascular conditions, and treatment details, were collected using a structured data collection form. Data were analyzed using descriptive statistical methods and presented as frequencies and percentages

Results: Among the study participants, 58% were females and 42% were males. More than half of the patients belonged to the age group above 65 years, indicating an increasing prevalence of AF with advancing age. Rheumatic heart disease was the most common associated condition, accounting for 31% of cases, followed by systemic hypertension (29%) and dilated cardiomyopathy (14%). Oral anticoagulant therapy was being used by 84% of patients.

Conclusion: Atrial fibrillation was more common among older adults. Rheumatic heart disease remained an important cause of AF, while systemic hypertension was more frequently observed in older patients. The high utilization of oral anticoagulants reflects improving adherence to evidence-based management strategies for stroke prevention in AF.

Keywords: TPI; Bradycardia; PCI; Cardiac Perforation

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INTRODUCTION

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia encountered in clinical practice and represents a major global public health challenge.[1] AF is characterized by disorganized electrical activity within the atria, leading to ineffective atrial contraction and an irregularly irregular ventricular rhythm. The prevalence of AF increases markedly with advancing age and the presence of cardiovascular comorbidities such as hypertension, diabetes mellitus, valvular heart disease, heart failure, and coronary artery disease. AF is associated with substantial health care utilization, frequent hospital admissions, reduced quality of life, and increased health care costs.[2] The overall lifetime risk of developing AF is estimated to be approximately 30% to 40% among White individuals,[2–4] around 20% among African American individuals,[2] and about 15% among Chinese individuals.[5]

Beyond its high prevalence, AF is associated with significant morbidity and mortality. Patients with AF have a 1.5- to 2-fold increased risk of all-cause mortality compared with those without AF.[6,7] Meta-analyses have demonstrated that AF is associated with a wide range of adverse cardiovascular and systemic outcomes, including a 2.4-fold increased risk of stroke,[7] a 1.5-fold increased risk of cognitive impairment or dementia,[8] a 1.5-fold increased risk of myocardial infarction (MI),[9] a 2-fold increased risk of sudden cardiac death,[10] a 5-fold increased risk of heart failure (HF), a 1.6-fold increased risk of chronic kidney disease (CKD), and a 1.3-fold increased risk of peripheral artery disease (PAD).[7] These complications contribute substantially to disability, recurrent hospitalization, and premature death among affected patients.

There have been studies on atrial fibrillation from the eastern and central parts of Nepal.[11–16] However, data regarding the clinical profile and disease patterns associated with AF in western Nepal remain limited. Therefore, we aimed to study the pattern of diseases associated with atrial fibrillation in patients from western Nepal through a study conducted in Lumbini Province.

METHODS

This observational study was conducted at Gautam Buddha Community Heart Hospital from August 2025 to March 2026. Patients presenting to the outpatient department with a diagnosis of atrial fibrillation (AF) and who provided informed consent were enrolled in the study. Consecutive eligible patients attending the hospital during the study period were included. Demographic characteristics, including age and sex, were recorded for all participants. Clinical evaluation was performed, and blood pressure measurements were obtained using standard procedures. Each patient underwent a detailed assessment to identify associated cardiovascular and systemic diseases as well as potential risk factors related to atrial fibrillation. Laboratory investigations included renal function tests, lipid profile, serum uric acid level, hemoglobin estimation, and random blood sugar measurement. Cardiac evaluation was performed using electrocardiography (ECG) to confirm atrial fibrillation and assess associated rhythm abnormalities. Transthoracic echocardiography was carried out to evaluate cardiac structure and function, including chamber dimensions, valvular abnormalities, and ventricular function. Ultrasonography of the abdomen was also performed to identify associated abdominal or systemic abnormalities when indicated. All clinical and investigation findings were recorded in a predesigned proforma. The collected data were reviewed for completeness and entered into a database for analysis. Descriptive statistical methods were used to summarize the findings. Continuous variables were expressed as mean and standard deviation where appropriate, while categorical variables were presented as frequencies and percentages. The observed findings were tabulated, and percentage calculations were performed to describe the distribution of associated diseases and clinical characteristics among patients with atrial fibrillation. Data entry, management, and statistical analysis were carried out using Statistical Package for

the Social Sciences (SPSS) version 22.0. The results were presented in tables and figures where applicable.

RESULTS

A total of 107 patients with atrial fibrillation were included in the study. The majority of patients were elderly, with 58 (54%) patients aged more than 65 years. Patients aged 45–65 years constituted 33 (31%) of the study population, while 16 (15%) patients were younger than 45 years. Regarding associated clinical conditions, rheumatic heart disease was the most common underlying disorder, present in 33 (31%) patients, followed closely by systemic hypertension in 31 (29%) patients. Dilated cardiomyopathy was identified in 15 (14%) patients, while thyroid disorders were present in 8 (7%) patients. Coronary artery disease and degenerative valvular heart disease were less frequent, occurring in 6 (5%) and 4 (3%) patients, respectively. With respect to antithrombotic therapy, oral anticoagulants were the most commonly prescribed medications and were used by 90 (84%) patients. Antiplatelet agents were being taken by 13 (12%) patients, whereas 4 (4%) patients were not receiving any antithrombotic therapy at the time of evaluation. Rate-control therapy was widely utilized among study participants. A total of 101 (94%) patients were receiving at least one medication for ventricular rate control. Digoxin was prescribed in 28 (26%) patients, either alone or in combination with other rate-control agents.

Table 1. Baseline characteristics and treatment profile of patients with atrial fibrillation (n=107)

Characteristics	Number (%)
Age years	
Less than 45	16 (15)
45 to 65	33 (31)
More than 65	58 (54)
Associated condition	
Rheumatic heart disease	33 (31)
Systemic hypertension	31 (29)
Dilated cardiomyopathy	15 (14)
Thyroid disorder	8 (7))
Coronary artery disease	6 (5)
Degenerative valvular heart disease	4 (3)
Medications	
Oral anticoagulant	90 (84)
Antiplatelet	13 (12)
None	4 (4)
Medication for rate control	
Any medication	101 (94)
Digoxin	28 (26)

DISCUSSION

This study demonstrated a female preponderance among patients with atrial fibrillation (AF) presenting to a cardiac center in Lumbini Province, Nepal. More than half of the study participants were female, suggesting that women constitute a significant proportion of patients seeking medical care for AF in this region. The prevalence of AF increased with advancing age, with the majority of patients belonging to the age group above 65 years. This finding is consistent with the established epidemiology of AF, which shows a strong association between increasing age and the development of atrial structural and electrical remodeling that predisposes individuals to the arrhythmia. The higher frequency of AF among elderly patients in our study highlights the growing burden of age-related cardiovascular disease in Nepal. Our findings are comparable to those reported by Gautam MP et al.[11] from central Nepal, who also observed a predominance of female patients with AF. Similarly, Shah SP et al.[13] from eastern Nepal reported a higher proportion of female patients among individuals diagnosed with AF. In contrast, Dhungel S et al.[12] reported a greater frequency of male patients in their study population from central Nepal. These variations may be related to differences in study populations, referral patterns, geographic characteristics, prevalence of underlying heart diseases, and health-seeking behavior among men and women in different regions of Nepal. Rheumatic heart disease (RHD) was the most common underlying condition associated with AF in our study, accounting for nearly one-third of cases. This observation is consistent with the findings

of Gautam MP et al.[11] and Shah SP et al.[13], both of whom identified RHD as the leading cause of AF in their respective cohorts. Despite improvements in preventive and therapeutic strategies, RHD remains a major public health problem in developing countries and continues to contribute significantly to the burden of AF. Chronic rheumatic involvement of the mitral valve results in left atrial enlargement and elevated atrial pressure, creating a favorable substrate for the development and maintenance of AF. Systemic hypertension was the second most common associated condition, being present in 29% of patients. Hypertension is a well-recognized risk factor for AF because it contributes to left ventricular hypertrophy, diastolic dysfunction, and left atrial enlargement. Dilated cardiomyopathy was identified in 14% of patients and represented another important contributor to AF. Structural cardiac remodeling, ventricular dysfunction, and atrial dilatation associated with cardiomyopathy are known mechanisms promoting atrial arrhythmogenesis. Thyroid disorders were present in 7% of patients, a finding similar to that reported by Gautam MP et al.[11] Hyperthyroidism is a recognized reversible cause of AF and should be actively investigated in affected patients, as appropriate treatment may improve rhythm control and overall cardiovascular outcomes. The majority of patients in our study were receiving oral anticoagulant therapy, with 84% prescribed anticoagulants for stroke prevention. This proportion was higher than that reported by Dhungana SP et al.[15] and may reflect increasing awareness among clinicians regarding the importance of thromboembolic risk reduction in AF. Antiplatelet therapy alone was prescribed in 12% of patients, while 4% were not receiving either anticoagulant or antiplatelet therapy. Although anticoagulation remains the cornerstone of stroke prevention in eligible AF patients, barriers such as bleeding concerns, financial constraints, limited access to monitoring facilities, and patient preference may influence treatment decisions. Rate-control therapy was prescribed in 94% of patients, indicating that ventricular rate control remains a primary management strategy in routine clinical practice. Digoxin was used in 26% of patients and remained one of the commonly prescribed rate-control agents. The continued use of digoxin may be attributed to its affordability, availability, and particular usefulness in patients with heart failure or sedentary lifestyles

CONCLUSIONS

Atrial fibrillation was observed more frequently among female patients and predominantly affected the elderly population, particularly those older than 65 years. Rheumatic heart disease was the most common underlying cause or associated condition, underscoring its continuing importance in the burden of atrial fibrillation in Nepal. Systemic hypertension and dilated cardiomyopathy were also commonly associated with atrial fibrillation. Most patients were receiving oral anticoagulant therapy for stroke prevention, and rate-control medications were widely utilized for symptom management. These findings highlight the importance of early detection of atrial fibrillation, appropriate evaluation of associated cardiovascular diseases, and adherence to guideline-directed anticoagulation and rate-control strategies to improve patient outcomes and reduce disease-related complications.

Limitations

This was a hospital-based study conducted at a single cardiac center and may not represent the general population. As a retrospective study, it was subject to limitations related to incomplete or inaccurate documentation. Stroke risk scores were not evaluated, and follow-up data were unavailable. Therefore, the long-term complications, morbidity, and mortality associated with atrial fibrillation could not be assessed.

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