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## The Prevalence of Atrial Fibrillation Among Acute Medical Admission in Kuwait University Hospital in Sana'a City

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### Abstract

**Objectives:** The aim of the study is to Determine, prevalence, possible risk factors, aetiology and outcome of patient with atrial fibrillation admitted into medical and cardiac units at Kuwait University hospital during 2014-2017.

**Methods and patients:** Cross sectional retrospective review of all files of patients admitted to hospital during 2014 to 2017. We reviewed 2030 Cardiac cases among which 179 were atrial fibrillation. Special form was designed to record general characters, risk factors & out come during hospitalization.

**Results:** The prevalence of atrial fibrillation (A F) was 8% (179/2030). The male to female ratio was 5:4 and their main age was 54±9. The common risk factors were ischemic heart disease, Qat chewer, hyperlipidemia, rheumatic heart disease and smoker represented to (46%,41%, 39%, 38%,38%) respectively. Transthoracic echo was performed for all patients and revealed that 92 (51.9%) had systolic dysfunction, while only 34(18.9%) patient had diastolic dysfunction. Mitral stenosis was detected in 30 (16.7%) patients among rheumatic heart disease (RHD). Regarding outcome of AF we found that 137(77%) was improved and discharged, while 42 (13.4%) was expired, however, 18 patients (10%) was referred to other hospitals.

**Conclusion:** The prevalence of AF in this study was higher than that reported from other countries, and occurred in younger age group. Ischemic heart disease and RHD were prominent risk factors for AF in this study.

**Keywords:** Atrial fibrillation, Risk factors, Cardiac, Yemen.

**Abbreviations:** IHD-Ischemic Heart Disease, RHD-Rheumatic Heart Disease, COPD-Chronic Obstructive Pulmonary Disease, DM-Diabetes Mellitus.

### Introduction

Atrial Fibrillation (AF) is the most common cardiac arrhythmia affecting over 2 million patients in United states of America alone [1]. Much of the morbidity associated with AF is attributed to a 5 to 6 fold increase in the risk of stroke [1]. Pooled data from studies of chronic AF in North America, the United Kingdom & Iceland reported a prevalence of 0.5-1%. In the general population AF is associated with risk factors of cardiovascular disease including, Ischemic Heart Disease (IHD), Rheumatic Heart Disease (RHD), Hypertension & Dilated, Hypertrophic, Restrictive & congenital cardiomyopathy and other related diseases [2-6]. These risk factors were reported from various part of the world [2-6]. However, to the best of our knowledge there is no any study have been done yet in Yemen.

The aim of this study was to determine the prevalence of AF, common characteristics of the patients and possible risk factors and hospital outcome among patients admitted into Kuwait University Hospital in Sana'a city during 2014-2017.

### Patients and Methods

A retrospective cross sectional study was carried out among patients with AF admitted into Kuwait University hospital during January 2014 to Dec 2017, using the Guide line for the management of patient with AF of the America College of cardiology, American heart association & European Society of cardiology [3]. We reviewed all files of the patients admitted to the medical and coronary unite during the period of study. Special form was designed to document demographic data (age, sex, habit, and patient's characters) clinical examination, investigations like Echocardiogram, chest x-ray & Lab data. Possible risk factors or causes of AF included; IHD, RHD, Hypertension, diabetes mellitus, Chronic Obstructive Pulmonary Disease (COPD), & Hyperlipidemia were sought for and recorded from patient's file. The outcome of the patient during hospitalization was recorded and analyzed. We included all patients with AF in both sexes if their age above 5 years, AF documented by ECG and echocardiogram. We excluded cases that treated in the ER. But not admitted to the ward, Age below 5 years and those discharged against medical advice. All data collected was entered into PC and statistically analyzed using SPSS software. Chi square was used to detect the differences between two groups and qualitative data was compared using Fisher's exact test. A probability level of <0.05 was considered statically significant.

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## Results

During the period of study, the total number of admission in medical wards were 5344 patients, of this 2030 were cardiac cases admitted into cardiology unit which reflecting 32% of total admission . The AF among cardiac patients was 179 given prevalence of (8%).The age group and sex of patients is shown in the **Table 1**. The main age of patients was 54 ±9. Year, 100 were males &79 were females given male to female's ratio 5:4. We divided the patients according to age into 3 groups (< 20years, 20 -60 years & >60 years). We found high prevalence of AF in the age group (20 -60 years) in both sexes with no significance differences between them (P value 0.657).

Sex	Age group			Total
	20<	20-60	>60	
Male	14	50	36	100
	-7.30%	-27%	-20%	
Female	12	43	23	79
	-6.70%	-24%	-12%	
TOTAL	26	93	59	179
	-14%	-51%	-32%	

Chi square =0.839 p. Value =0.657

**Table 1:** Age groups and sex distribution of patients with AF.

There was high prevalence of Ischemic Heart Disease (IHD), Qat chewer, Hyperlipidemia RHD, smoker and diabetes mellitus represented (46%,41%,39% 38% 38%,&33%) respectively (**Table 2**). The prevalence of hypertension (18) % and COPD (5%) were not common as other comorbid conditions in these patients with (AF). Ischemic Heart Disease(IHD), smoking, Hyperlipidemia and rheumatic heart disease were independent risk factors in AF with P Value (0.005, 0.006, 0.012&0.041) respectively.

Risk factors	Male	Female	Total	%	P .Value
Hypertension	19	15	34	18	0.482
IHD	55	29	84	46	0.005
RHD	26	43	69	38	0.041
COPD	7	8	15	5	0.769
Hyperlipidemia	45	24	69	39	0.012
DM	35	25	60	33	0.197
Smoking	47	27	69	38	0.006
Qat chewing	33	22	74	41	0.138

**Table 2:** Distribution of risk factors in patients with Atrial fibrillation.

Transthoracic Echo for those patients with AF revealed 92 patients had systolic dysfunction & 34 patients had diastolic dysfunction. The most common lesion in RHD were Mitral stenosis found in 30 patients, Mitral incompetence in 11 patients ,while Aortic valve involved found only in 8 patients.

The outcome of AF patients during hospitalization was shown in **Table 3**. 137 (76.5%) patients discharge with significant improvement, 24(23.5%) patient died & 18(10%) patients referred to other hospital for more advanced management.

Out come	Number	Percentage
Discharge with significant improvement	137	76.50%

Died	24	23.50%
Referred to other hospital	18	10.00%

**Table 3:** Outcome of AF patients during hospitalization.

## Discussion

In this study the prevalence of AF was (8%) higher than reported from Kuwait or Malaysia where they reported prevalence of (4.24% &2.8 %) respectively [8,9]. Possible explanation of this variation could be related to period of study, there study were limited to few months while in our case we included all patient admitted throughout 5 years. Other possible explanation is high prevalence of RHD among our patients. We found that AF was more prevalence in males (55%) than in females (45%) ,this results are coincide with other studies from Gulf , they reported AF among, male was 53% and female 48% nearly same results were reported from Germany [10-12]. The result of this study demonstrated that the main age of our patients admitted with AF is 54 years±9 younger than ages reported from other countries. These may be related to effect of rheumatic fever and (RHD), which is more prevalence in younger age and it leads to high morbidity and mortality in our country. In patient with rheumatic heart disease we found the commonest valve lesions is mitral stenosis. Previous study indicated that RHD is well known cause for (AF) [14,19].

The most important risk factors for AF in our study were (IHD) followed by Hyperlipidemia and (RHD). (IHD) play significant role in atrial fibrillation, however, the (IHD) in our study was higher than previous studies that reported from various countries [13-18]. (IHD) in AF was ranged from (35% - 28%) in Gulf countries and that in Western countries (7.8%-26 %). This high rate in our study may be related to lack of proper follow up of IHD cases & there is no control Program for IHD risk factors. The second significant risk factor for AF in our study was (RHD). Comparing our result to studies from neighbors our results was (38%) higher than any reported before which quoted prevalence of (4,3%-23%) [17-19] (**Table 4**).

	Kuwait hospital (Yemen) %	Germen study %	USA study %	KSA study %	Gulf study %
Main Age	53	67	No data	Na data	57
Male	55	58.9		39	52
Female	44	40.1		60	48
HTN	18	68	57	59	52
CAD	46	26	17	36	28
RHD	38	3.1	4.3	23	16
COPD	5		7.7		5
DM	33	20	15	68	30
Hyperlipidemia	38	48.3			33
Smoking	41	34			23
Qat	30				14

**Table 4:** Comparison between our study and other studies. (Qat) is a green plant used to be chewed by Yemeni people as a traditional habit.

The possible explanation for our high numbers is that rheumatic fever & RHD is still endemic in our country especially in young age groups. Diabetes mellitus (DM) is well known risk for Ischemic heart disease, it was found in 33% in patients with AF in our study, in KSA it was found in 68% which is higher than the results of our study because the prevalence of DM in Saudi Arabia is high in general population (23%) and associated with obesity in (24%) [13]. Smoking is well known risk for ischemic heart disease all over the world, in our study it is present in (38%) of patients with AF, which is higher than that found in Germany (34%) & Gulf study (23%) [14-19]. Qat Chewing in Yemeni people increase the desire for smoking, Qat chewing itself may increases the incidence of AF by it's possible increase in



heart rate & blood pressure [20,21]. Other risk factors such as (DM) did not have significant role in AF in our cases which needs prospective study to clarify their roles. Of interest in this study is the prevalence of AF in hypertension is low when compared to other studies it present in 18%, other causes of AF like COPD and myocarditis are less in proportion.

## Limitations

1. This study was retrospective study we found difficulty on extracting the data from files and information was not systematically organized. We strongly recommend improving the recording system in our hospitals to become in a computerized manner which will facilitate the future researches.
2. The prevalence recorded by this research was underestimated because many cases are Asymptomatic or treated as outpatient, so we recommend further more researches in this field to help health providers in making the proper management plan for example to strongly encourage the use of Long acting penicillin as a primary prevention for rheumatic heart disease.

## Conclusion and recommendations

The prevalence of AF among admitted patients in our study almost higher than other countries and occurred at young age RHD more frequent in our patients & represent the second possible precipitating cause for AF after Ischemic heart disease. Other possible risk factors such as DM & Hypertension were less frequent in our cases. Qat chewing habit was present in considerable number of patients which may increase the risk of Hypertension & AF. It is suggested that further prospective study is needed.

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