

Atrial Fibrillation and Oral Anticoagulation/Antiplatelet Agents Practices in Low Middle-Income Settings

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ABSTRACT

Background: Atrial fibrillation (AF) is an arrhythmia which is diagnosed by the finding of irregularly irregular ventricular rhythm without discrete P waves in an electrocardiogram. Atrial fibrillation increases risk for intra-cardiac thrombosis and cerebral vascular event. It is a risk factor for ischemic stroke and affects about 33 million people globally and is more common in adults above 65 years. It is a common complication among the patients with cardiovascular diseases. **Aim of the study:** The aim of this study was to audit the use of oral anticoagulation/antiplatelet agents in patients with Atrial Fibrillation at Jakaya Kikwete Cardiac Institute. **Material and methods:** A retrospective descriptive cross-sectional audit study which was conducted at Jakaya Kikwete Cardiac Institute among adult patients with a diagnosis of atrial fibrillation. Patients were identified in the medical records and their age and sex were documented. Cross-checking for the record of risk scores and OAC/antiplatelet prescription was done and recorded in a structured questionnaire which was designed to collect the data. **Data analysis:** The data entry and analysis were done using statistical package for social sciences (SPSS) version 20.0. **Results:** Of 800 patients, 37 (4.6%) were found to have a diagnosis of AF. Among patients with AF, females were 19 (51.4%), those aged 18-39 years were 13 (35.1%) same as those aged 40-64 years, 65+ years were 11 (29.7%). Based on the structural/non-structural diagnosis among patients with AF, 20 (54.0%) were having valvular heart diseases, and the rate of use of oral anticoagulation/antiplatelet agents was 73%. Among those using oral anticoagulation/antiplatelet agents, 24 (88.9%) were using

warfarin, 2 (7.4%) NOAC and 1 (3.7%) was using antiplatelet (table 2). In terms of INR checking 24 (64.9%) were checked. **Conclusion and Recommendations:** The rate of prescription of OAC were high while that for antiplatelet were low. The rate of INR checking in those who were using warfarin were high but not hundred percent. The documentation of risk scores before the prescription of OAC therapy was not done at all. We recommend for the good practice and follow the recommendations from ESC guideline 2020, our local protocol and evidence-based practice for the management of atrial fibrillation.

BACKGROUND

Atrial fibrillation (AF) is an arrhythmia which is diagnosed by the finding of irregularly irregular ventricular rhythm without discrete P waves in an electrocardiogram. Atrial fibrillation increases risk for intra-cardiac thrombosis and cerebral vascular event (1). It predispose a patient to an ischemic stroke if appropriate treatments are not done (2).

More than 33 million people globally are affected by atrial fibrillation and therefore, are likely to suffer from ischemic stroke and hospitalization (3). The prevalence rate of AF ranges between 0.5 to 1% globally. It is more common in adults above 65 years and nearly 60% of patient with a diagnosis of AF are women over 75 years old (4). The prevalence of AF in patients with clinically significant cardiovascular disease 9.1% as compared to 4.6% in subclinical CVD and 1.6% in patients without cardiovascular disease. Therefore, the more clinically significant CVDs is the more likely of suffering from AF (4). The prevalence and incidence of this irregular supraventricular arrhythmia is higher in developed countries than in developing countries (5). In Asian countries, the annual incidence of AF is about 5.38 per 1,000 person-years with an estimated Ischemic stroke ((IS) of 3.0% annually. The prevalence of AF in hospital and community setting ranges between 0.37% to 3.56% and 2.8% to 15.8%, respectively. The prevalence of ischemic stroke in patients with AF ranges between 1.9% to 6.0% and 0.36% to 28.3% in community and hospital respectively(2,6).

Atrial fibrillation is common in patients with hypertension, coronary artery diseases and heart failure and mitral valve stenosis (7–9). In Thailand, among 13207 patients with the diagnosis of systemic hypertension the prevalence of AF was 3.5% between the year 2011 and 2012.

The prominent risk factors for AF in hypertension are age, male gender, Low HDL cholesterol and increased uric acid levels. One can clearly note that, the same traditional risk factors for CVDs are the same as the risk factors for AF (2).

In Africa, the prevalence of AF is lower than in the developed world but is expected to increase significantly over the next few decades. Patients with a diagnosis of AF in African setting are young with a diagnosis of rheumatic heart diseases at large (10).

In Sub Saharan Africa, the prevalence of AF was estimated to be 659.8 and 438.1 per 100,000 population for men and women respectively, representing a growth of 3.4% between 1990 and 2010(5)

In Ethiopia, the prevalence of AF which was reported in the Global Burden of Disease document in 2010 among adult population was 4.3% (5). Furthermore, documented risk factors were hypertension (38%), overweight/obesity (33%), diabetes (12%) and ischemic heart disease(13%) (5,9,11).

In Tanzania, the prevalence of AF is 10% in patients with a diagnosis of hypertension in tertiary Hospital. Significantly associated risk factors for development of AF in the high healthy facility which was documented in this single study are increased body mass index ($BMI \geq 25$), left ventricular ejection fraction $< 50\%$ and left atria diameter of > 40 mm (12).

The excess consumption of alcohol increases the likelihood of atrial fibrillation and atrial remodeling. The study which was conducted in six hospitals in Australia found that abstinence from alcohol reduced arrhythmia recurrences (8).

The clinically significant forms of AF are newly diagnosed AF, paroxysmal AF, Persistent AF, long persistent and permanent AF (9). Permanent AF is the most prevalent type of AF in Africa, possibly due to the lower use of rhythm control strategies than in the developed world. Mortality rates of patients with AF in Africa are high than the rates in developed countries perhaps due to poor health care system and suboptimal medical therapy (5).

AF is frequently associated with ischemic stroke and lung infarction due to thromboembolic events (9). These cardiac and non-cardiac fatal events can be prevented by the use of Vitamin K antagonists (VKA) or None Vitamin K antagonists (NOAC). A wide range of NOACs are available such as rivaroxaban , apixaban , dabigatran and are suitably recommended for use in patients with a diagnosis of none valvular AF and are contraindicated for use in patient with prosthetic mechanical valves (11,13,14)

In patient without rheumatic heart diseases with moderate to high risk for thromboembolic events, warfarin reduced the incidence of stroke with minimum bleeding in randomized controlled trials (15–18). In a Swedish atrial fibrillation cohort study, anticoagulation reduced the risk of ischemia and other embolic events by about seventy five percent irrespective of their baseline characteristics (19).

The use of either VKA or NOACs for prevention of stroke in patients with atrial fibrillation is almost equally effective. The studies which were comparing the efficacy of Warfarin and NOACs found no significant differences between the two groups of drugs to prevent stroke and systemic embolism(17,18,20,21). However, apixaban and high dose dabigatran showed superiority to warfarin in preventing stroke and systemic embolism with low bleeding and mortality rates (18,21). The use of warfarin or NOACs in high-risk patients reduced stroke and all causal mortality by 60–65% and 26% respectively.(22).

The prevalent rate of AF at Jakaya Kikwete Institute is 10%. The rate of use of OAC and bleeding complications and the use of risk scores before the initiation of thrombolytic has not been audited. Therefore, it is the aim of this study to audit the use oral anticoagulation/antiplatelet agents in patients with Atrial Fibrillation at Jakaya Kikwete Cardiac Institute.

METHODOLOGY

Study design was a retrospective descriptive cross-sectional audit study. This audit was conducted at Jakaya Kikwete Cardiac Institute (JKCI) which is a tertiary Hospital located at Muhimbili complex in Dar es Salaam city. The institute, is the only public super specialized Hospital for the treatment of patients with cardiovascular diseases and comorbidities in Tanzania. It comprises of about 100 beds and over 300 staff. Multidisciplinary specialties which are currently available are cardiologists, cardiothoracic surgeons, nurses and supporting staff. Included The all patients with a diagnosis of AF attending at JKCI from November to December 2020. all patients were adults with the age of 18 years or more with a diagnosis of AF were included in this audit. Below the age of 18 years and those without resting 12 lead Electrocardiogram in a Mediprossystem were excluded.

Data collection procedure

All patients with a diagnosis of AF were identified in a system. Age, sex and structural and none structural diagnosis of these patients were obtained. Prescription of OAC, INR checking and the used of scoring systems to asses for risk of stroke and bleeding by the attending physician were cross checked. The type of OAC/antiplatelets which was prescribed was documented.

Data collection tools

Structured questionnaires were used to obtain age and sex of the patients, obtain the information for the use of OAC/antiplatelet, risk scores and record the INR.

Data management and management

The data entry and analysis were done using statistical package for social sciences (SPSS) version 20.0.

Ethical consideration

The permission to conduct this study was obtained from MUHAS Department of Internal Medicine and Jakaya Kikwete Cardiac Institute authorities.

RESULTS

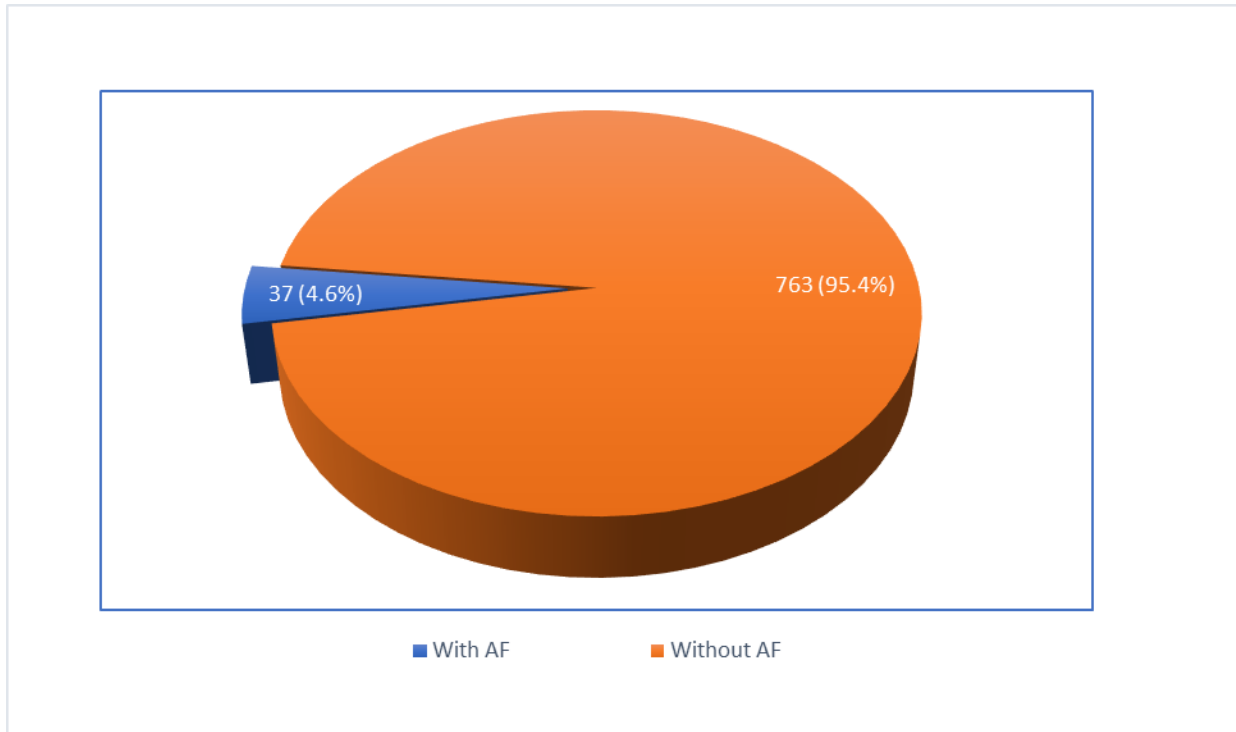


Figure 1: AF diagnosis among patients

Of 800 patients, 37(4.6%) were found to have a diagnosis of AF (Fig1). Among patients with AF, females were 19 (51.4%) (Fig3), those aged 18-39 years were 13 (35.1%) same as those aged 40-64 years, 65+ years were 11 (29.7) (Fig2). Based on the structural/none structural diagnosis among patients with AF, 20 (54.0%) were having valvular heart diseases (Fig4), and the rate of use of oral anticoagulation/antiplatelet agents was 73% (Table 1). Among those using oral anticoagulation/antiplatelet agents, 24 (88.9%) were using warfarin, 2 (7.4%) NOAC and 1 (3.7%) was using antiplatelet (table 2). In terms of INR checking 24 (64.9%) were checked (table 3).

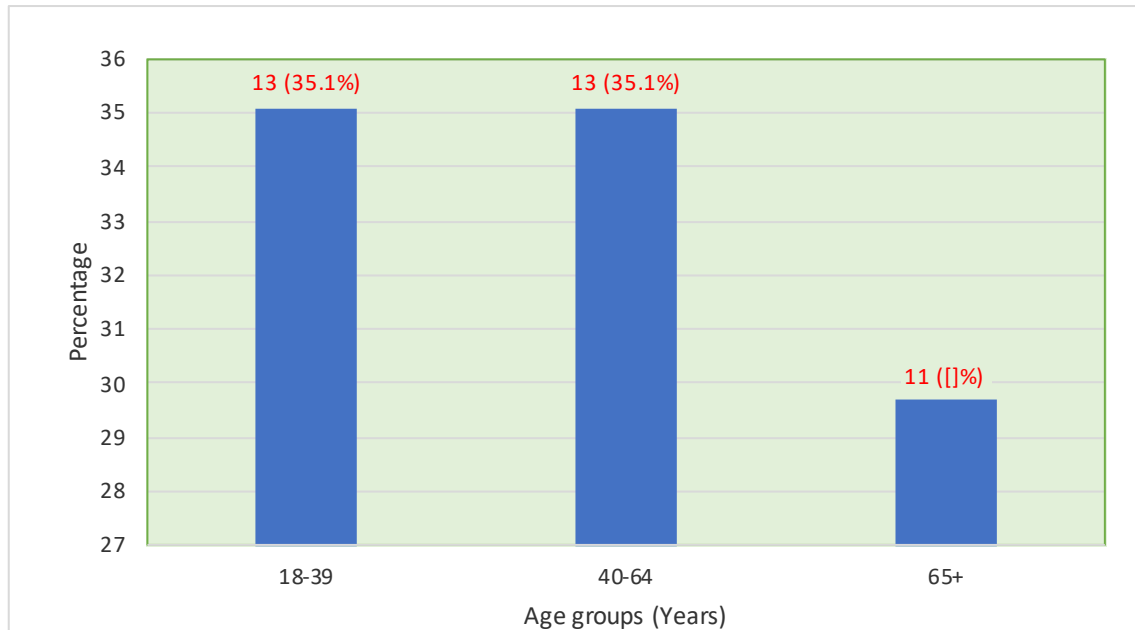


Figure 2: Age distribution among participants



Figure 3: Sex distribution among participants

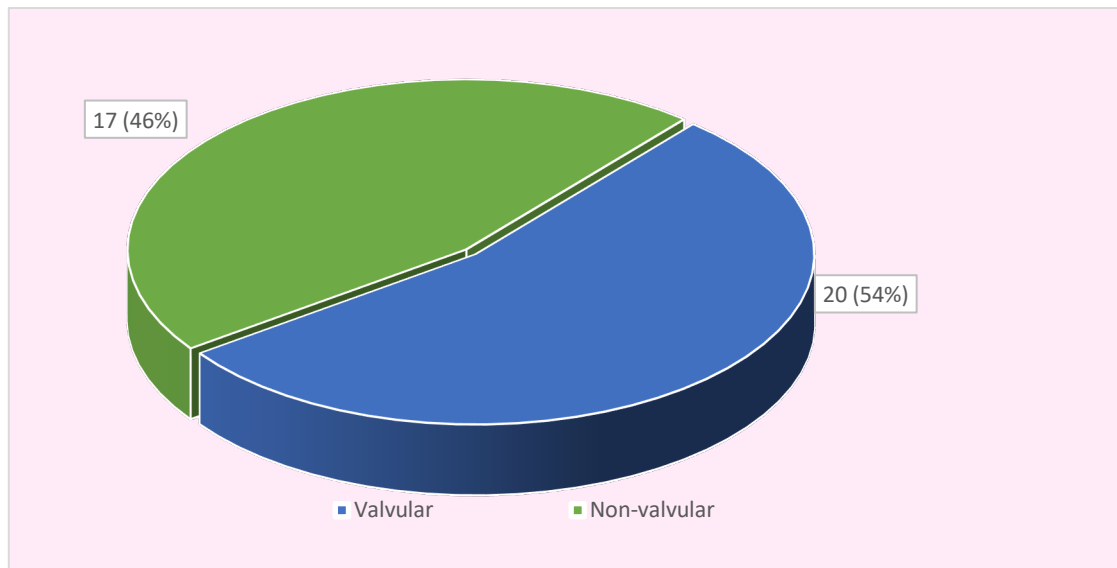


Figure 4: Diagnosis among patients

Table 1: Rate of use of oral anticoagulation/antiplatelet agents in patients with AF at JKCI

Use of OAC/antiplatelet agents	Frequency	Percent
Use	27	73.0
Did not use	10	27.0
Total	37	100.0

Table 2: Oral anticoagulation/antiplatelet agents use patients with AF at JKCI

Use OAC/antiplatelet agents	Frequency	Percent
Warfarin	25	88.9
NOAC	2	7.4
Antiplatelet	1	3.7
Total	27	100.0

Table 3: INR checking

INR checking	Frequency	Percent
Checked	24	64.9
Not checked	13	35.1
Total	37	100.0

DISCUSSION

For the period of November to December 2020 a total number of 800 (eight hundred) patients did an electrocardiogram (ECG) at Jakaya Kiwete Cardiac Institute (JKCI). Their ECGs were stored in the medpro system. Of all who did an ECG, 37(5%) had atrial fibrillation. Majority of these patients with atrial fibrillation were young 13(35%) and middle aged 13(35%), female 19(51%) with a diagnosis of both valvular and none valvular heart disease 20(54%) and 17(46%) respectively. Seventy three percent of the patients with a diagnosis of atrial fibrillation were using oral anticoagulation therapy to prevent thromboembolic events.

The rate of use of oral anticoagulation/antiplatelet agents in patients with AF

Of all 37 patients with atrial fibrillation, 27(73%) were using OAC to prevent thromboembolic events such as ischemic stroke. This rate almost similar to than in which were documented UK (75%) among patients with an intermediate-to-high risk of thromboembolic events in the years 2015(6,23). Also the rate of use of OAC at JKCI is similar to that which was reported at the Aga Khan University Hospital, Nairobi (75%)(24). The rate of use of OAC therapy among patients with AF is high in European countries such as UK and East African countries such as Tanzania and Kenya. However, a significant number of patients(speculating 25%) are still uncovered. It means these patients who are not using any OAC therapies are at a high risk of getting preventable thromboembolic events.

Rates of use of vitamin K antagonist (Warfarin)

The rate of use of warfarin among patient with a diagnosis of AF were high (89%). This rate is approximately similar to that which was documented in a community-based studies in Japan (70%). In comparison to the hospital settings, the rate of warfarin prescription which was documented by our audit is high than that which was reported in Japan (50%)(25). Majority of our patients (54%) had a diagnosis of valvular heart diseases which can explain a high rate of warfarin use as compared to the low rate in Japan. On the other hand, in the developed countries, most of the clinicians currently they use none vitamin K antagonist (NOACs) to prevent stroke among patients with AF if there is no any contraindications. It has been documented by the most of the studies which were conducted in UK, Western Europe, USA, and Korea that the rate of use of warfarin decreased from 70 to 30 after an introduction of NOACs (26,27).

Rate of use of NOACs

The rate of prescription of NOACs which was documented in this audit is only 2(7.4%). This rate is approximately similar to rate (2%) which was documented in developed countries before 2010 when these NOACs were introduced for the first time. Also, this rate is lower than the rate (25-33%) which was documented in USA, Western Europe and Korea in 2013(10,26,28). The lower prescription rate of NOACs which was noted by this audit can reflect a high cost of these drugs in our setting and their use only in none valvular AF. More than half of the patients with atrial fibrillation had none valvular heart conditions which could had been reflecting a high rate of NOACs prescription. None Vitamin K antagonists (NOACs) are effective as VKA to prevent thromboembolic events. Studies to compare these two drugs in the prevention of Venous thromboembolic events indicated a none inferiority results. (17,20,29,30).

The rate of use of antiplatelets

The rate of antiplatelet use to prevent thromboembolic event was just 1 (3.7%) this rate is lower than the rate which was previously documented in UK, Western Europe, and Korea (30%) and China (46%) among patients with CHA₂DS₂-VASc ≥ 2 (27,31,32).

The rate of INR check among patient with AF on VKA

Of all patient with atrial fibrillation, 24 (65%) checked their INR. This rate higher compared to 50% which was reported in Aga Khan Hospital in Nairobi(24). The high rate which is

documented in our study can be explained by the fact that it pooled just INR check regardless of adequate anticoagulation.

The study which was done in Kenya documented the INR of adequate anticoagulated patients. Also, some of the patients at Aga Khan hospital might be under NOAC treatment which does not need an INR checking.

CHA2DS2-VASc and HASBLED scores to predict the risk of stroke, thromboembolic events and bleeding before the use OAC

None of the patients underwent CHA2DS2-VASc and HASBLED scores to predict the risk of stroke, thromboembolic events and bleeding before the use OAC. This malpractice is different from Kenya hospital in which 77% of the patient with a diagnosis were scored before the use of OAC therapies(24). Also, this is in contrary to the ESC 2020 and other guidelines which recommend for the risk stratification before the prescription of OAC therapy among patients with AF (14,33). This diversity can be explained by the lack of our local protocols when this audit was conducted or negligence among the doctors.

CONCLUSION AND RECOMMENDATIONS

The rate of prescription of OAC were high while that for antiplatelet were low. The rate of INR checking in those who were using warfarin were high but not hundred percent. The documentation of risk scores before the prescription of OAC therapy was not done at all.

We recommend for the good practice and follow the recommendations from ESC guideline 2020, our local protocol and evidence-based practice for the management of atrial fibrillation

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