# FATA Study: Prevalence of Atrial Fibrillation and Antithrombotic Therapy in Primary Health Care in a Northern City of Portugal

## Estudo FATA: Prevalência de Fibrilhação Auricular e Terapêutica Antitrombótica nos Cuidados de Saúde Primários de um Concelho do Norte de Portugal

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### ABSTRACT

**Introduction:** Atrial fibrillation is the most prevalent sustained arrhythmia. The efficacy of oral anticoagulation has been proved in prevention stroke in these patients. However, this seems to be an underutilized treatment.

**Objectives:** to determine the prevalence of known atrial fibrillation in a Primary Health Care population; to identify major comorbidities, current antithrombotic therapy and evaluate their suitability according to the European Society of Cardiology guidelines.

**Material and Methods**: Observational cross-sectional analytical study. Population: all patients aged 30 or above, enrolled in eight Family Health Units of Vila Nova de Gaia and diagnosed with atrial fibrillation.

**Results:** Prevalence of atrial fibrillation was 1.29% (n = 940), being higher in males ($p$ = 0.01) and increasing with age ($p$ < 0.001). The most common comorbidities were hypertension (76.4%), heart failure (32.0%) and diabetes mellitus (28.2%). A total of 52% was performing anticoagulant therapy, 29% antiplatelet agents and 4% both therapies. Of those with low thrombotic risk, 63.6% was wrongly performing some kind of antithrombotic therapy; among patients with high risk or valvular disease 56.8% was properly undergoing anticoagulant therapy.

**Conclusion:** The prevalence of atrial fibrillation as well as the frequency of the main comorbidities associated with it are in line with the majority of studies. Although most patients are undergoing oral anticoagulation, only 56.8% of those with atrial fibrillation was performing adequate antithrombotic therapy as recommended by the European Society of Cardiology guidelines, which denote a marked underutilization of this treatment.


**Keywords:** Atrial Fibrillation; Fibrinolytic Agents; Stroke; Primary Health Care; Portugal.


### RESUMO

**Introdução:** A fibrilhação auricular é a arritmia sustentada mais prevalente. Está provada a eficácia da anticoagulação oral na prevenção do acidente vascular cerebral nestes doentes. Contudo, este parece ser um tratamento subutilizado.

**Objectivos:** determinar a prevalência de fibrilhação auricular conhecida numa população dos Cuidados de Saúde Primários; identificar as principais comorbilidades, a terapêutica antitrombótica em curso e avaliar a sua adequação segundo as recomendações da European Society of Cardiology.

**Material e Métodos:** Estudo observacional transversal analítico. População: todos os utentes com idade igual ou superior a 30 anos, inscritos em oito Unidades de Saúde Familiar de Vila Nova de Gaia, com diagnóstico de fibrilhação auricular.

**Resultados:** A prevalência de fibrilhação auricular foi de 1,29% (n = 940), sendo superior no género masculino ($p$ = 0,01) e aumentando com a idade ($p$ < 0,001). As comorbilidades mais frequentes foram a hipertensão arterial (76,4%), a insuficiência cardíaca (32,0%) e a diabetes mellitus (28,2%). Um total de 52% realizava terapêutica anticoagulante, 29% antiagregantes plaquetários e 4% ambas as terapêuticas. Dos utentes com baixo risco trombótico, 63,6% estava a fazer erradamente algum tipo de terapêutica antitrombótica; dos utentes com elevado risco ou doença valvular 56,8% estava adequadamente sob terapêutica anticoagulante.

**Conclusão:** A prevalência de fibrilhação auricular bem como a frequência das principais comorbilidades estão de acordo com a maioria dos estudos. Apesar de a maioria dos doentes se encontrar sob anticoagulação oral, apenas 56,8% dos utentes com fibrilhação auricular fazia terapêutica antitrombótica adequada segundo as recomendações da European Society of Cardiology, verificando-se uma subutilização acentuada deste tratamento.


**Palavras-chave:** Fibrilhação Auricular; Anticoagulantes; Acidente Vascular Cerebral; Cuidados de Saúde Primários; Portugal.

## INTRODUCTION

Atrial fibrillation (AF) is the most prevalent sustained arrhythmia in clinical practice, with a 1.5-2% global prevalence in developed countries;[1] however, this may not occur everywhere.[2] There are two published studies on the AF prevalence in the Portuguese population. The Sentinel Physicians Network (*Rede dos Médicos Sentinela*), published in 2003, found a 0.53% AF prevalence in primary healthcare (*Cuidados de Saúde Primários* [*CSP*])[3] and the study FAMA, published in 2010, estimated a 2.5% AF prevalence in the Portuguese population aged or above 40.[4] The prevalence increases with ageing and it is estimated to at least double in the next 50 years in line with population ageing.[5] As an age-related pathology, it is estimated that its incidence doubles for each decade of life from the age of 50[2] and that one in each four by the age of 40 will develop AF.[6]

Beyond age, a higher risk of AF is associated to male gender, family AF history, alcohol misuse, obesity,

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hyperthyroidism, pulmonary embolism (PE) and several cardiovascular pathologies. From these, it is worth mentioning congestive heart failure (CHF), high blood pressure (hypertension – HBP), especially when associated to left ventricular hypertrophy (LVH), dilated or hypertrophic cardiomyopathy, coronary heart disease (CHD), especially with an history of acute myocardial infarction (AMI), heart valve disease and more frequently mitral valve and diabetes mellitus (DM).[2]

Hospital admissions related to AF have increased by approximately 60% over the last 20 years due to population ageing, an increase in both chronic cardiac disorders and use of ambulatory electrocardiographic monitoring,[7] corresponding to increasingly more important causes for health expenditure.[8] Most costs are related to hospital admissions. In the presence of AF, hospital admissions, multiple admissions and cardiovascular-related admissions increase by a factor of 2, 3 and 4, respectively.[9] In addition, the medication itself in patients with AF corresponds to a small part of the costs with this disease.[10]

AF is ranked as 1) first episode of AF – when the arrhythmia presents for the first time, regardless of its duration; 2) recurrent paroxysmal AF – when the arrhythmia ends spontaneously and last less than seven days (usually below 48 hours); 3) recurrent persistent AF – when it lasts over seven days and may persist in the long-term (over a year); 4) persistent AF – when the arrhythmia becomes permanent, diagnosed for years and with unsuccessful or non-attempted cardioversion.[5] The designation 'isolated AF' is used for people aged under 60 with no clinical or echocardiographic evidence of cardiopulmonary disorder, including HBP.[5] The designation 'non-valvular AF' is used for cases of AF in the absence of rheumatic mitral disease, a prosthesis or valve repair.[5]

AF may produce major haemodynamic changes although its outcome is mainly related to thromboembolic events to which AF is associated, with significant impact in terms of morbidity and mortality. It is also an independent risk factor for global mortality as well as for cardiac-related sudden death.[2]

AF-related embolism is responsible for 15% of stroke events[11], which are the most severe and with a worst outcome.[12] An annual 5% stroke incidence in non-rheumatic AF was found (four to five times higher than in general population regardless of the age group),[11,13] increasing to 13-14% in valvular AF.[14] An increase in the percentage of AF-related ischaemic stroke related to patient's age was also found: 1.5% in the 50-59 age group and 23.5% in the 80-89 age group.[14]

As the prevalence of high blood pressure and high cholesterol are similar, if not lower, in Portugal, when compared to the remaining countries in the European Union, the high prevalence rate of stroke in Portugal may be related to the presence of a high prevalence of AF, which is often inappropriately treated.[2]

The efficacy of oral anticoagulation with vitamin K antagonists like warfarin is well proven for stroke prevention in patients with AF (64% reduction in the risk of stroke *vs.* placebo).[15] As regards antiplatelet treatment with acetylsalicylic acid (ASA), its efficacy is lower (21% reduction in non-fatal stroke *vs.* placebo).[16] Other drugs are not recommended.[7] However, the ASA/clopidogrel dual antiplatelet therapy has a higher efficacy when compared to ASA monotherapy, despite a higher bleeding risk when compared to ASA and to oral anticoagulation[17] and this option should only be used in patients refusing any kind of anticoagulation; ASA monotherapy should be used in these patients as well as in those who are not able to tolerate the ASA/clopidogrel dual antiplatelet therapy due to a high bleeding risk. There is no benefit in using the combination of oral anticoagulants (OAC) with antiplatelet agents when compared to OAC monotherapy with an adjusted dosage.[7]

New therapeutic approaches to prevent thromboembolic events in AF have recently arisen, such as the direct thrombin inhibitors such as dabigatran and the factor Xa inhibitors like rivaroxaban and apixaban. These novel drugs have shown to be more efficacious in thrombotic prevention when compared to warfarin,[18,19] showing a marked reduction in the incidence of brain haemorrhage [20] and with the advantage of a daily fixed dose intake. In addition, INR (International Normalized Ratio) levels periodic monitoring is not required. They also have some disadvantages such as dose adjustment according to kidney function, a need for rigorous compliance and the lack of a specific antidote in the case of a bleeding event.[1]

However, despite strong evidence regarding the benefit of the use of OAC in stroke prevention in most patients with AF, this therapy is unfortunately underused and INR levels are often below therapeutic levels in the case of warfarin.[21]

The ranking of thromboembolic risk is a crucial component in clinical evaluation of the patient with AF and represents an indicator of the quality of healthcare delivered to these patients. In a recent update of AF guidelines, the European Society of Cardiology (ESC) strongly recommends a change in clinical practice towards identifying AF patients in 'real low risk' category (i.e. 'aged under 65 and the presence of isolated AF', not in need for any antithrombotic therapy), instead of trying to identify the patients at 'high risk'.[1] Therefore, in all the patients with valvular AF, in whom there is a very high annual risk of thromboembolic complications, OAC therapy

is mandatory.[1] In patients with non-valvular AF, as the annual risk of thromboembolic complications is variable, it is necessary to calculate the level of thromboembolic risk in order to identify the patients with AF in 'real low risk' that do not need any antithrombotic therapy. The ESC recommends the use of $CHA_2DS_2$-VASc score to calculate this risk.[1,5] The bleeding risk, together with the thromboembolic risk, must also be assessed. The ESC recommends the use of the HAS-BLED scorel.[1,5] Nevertheless, the result of this score must not be used by itself to exclude the use of anticoagulant therapy. The score result allows for a correct evaluation of AF patient's bleeding risk and to identify bleeding risk factors for each case allowing for a personalized control intervention.

As stroke represents the major cause for mortality and disability related to cardiovascular diseases in Portugal[7] and AF one of its major risk factors, any preventive measure is clearly important. Considering that cardiovascular pathology corresponds to the first cause of death in the *Agrupamentos de Centros de Saúde (ACeS)* of Gaia and Espinho/Gaia (in 2008-2010),[22] knowledge on the local prevalence of this pathology and the characteristics of the affected population is crucial in order to improve healthcare strategies.

The prevalence of known AF in a group of patients attending to eight *Unidades de Saúde Familiar (USF)* from the municipality of Vila Nova de Gaia was the primary endpoint in our study.

The secondary endpoints included: a) quantification of the major comorbidities associated to AF; b) identification of the antithrombotic therapy currently in use; c) assessment of adequacy of such therapy according to 2012 ESC guidelines.[1]

## MATERIAL AND METHODS

This was an observational, cross-over and analytical study carried out in eight Health Units (USF) from the municipality of Vila Nova de Gaia: USF Arco do Prado, USF Nova Salus, USF Saúde no Futuro (Health units from the ACeS Grande Porto VII – Gaia), USF Além D'Ouro, USF Canelas, USF Nova Via, USF São Félix da Marinha and USF São Miguel (Health units from the ACeS Grande Porto VIII – Espinho/Gaia), with the approval of both ACeS as well as from the Ethics Committee of the *Administração Regional de Saúde (ARS) do Norte*.

Our group of patients involved all the patients aged 30 or above attending the described eight health units. Every patient diagnosed with AF in the clinical record was considered as a case of AF, corresponding to the presence of code K78 – Atrial Fibrillation / Flutter from the International Classification of Primary Care *2nd edition* (ICPC-2)[23] in patient's health problem list.

The studied variables included:

Patient's age

Patient's gender

Comorbidities associated to AF – ranked as "Present" or "Absent", according to the presence or absence of the following comorbidities: HBP, CHF, previous stroke or transitory ischaemic attack (TIA), DM, mitral stenosis or intracavitary thrombus, left ventricular ejection fraction (LVEF) ≤ 40%, AMI, peripheral artery disease (PAD) and the presence of aortic atheromatous plaques. These diagnoses were identified through the patient diagnosis list in the electronic clinical record and/or record of the result of echocardiogram.

Thrombotic risk – obtained through the $HA_2DS_2$-VASc score.

Antiplatelet therapy – ranked as 'ASA', 'clopidogrel', 'ticlopidine', 'triflusal', 'dipyridamole', 'ticagrelor', 'none' or 'not available', according to the therapy followed by the patient at the time of the last medical visit to the USF.

Anticoagulant therapy – ranked as 'acenocumarol', 'warfarin', 'dabigatran', 'rivaroxaban', 'none' or 'not available', according to the therapy followed by the patient at the time of the last medical visit to the USF.

The *Módulo de Informação e Monitorização das Unidades Funcionais (MIM@UF®)* system was used to obtain the list of patients with AF. The remaining data were obtained from the electronic clinical record through the *Sistema de Apoio ao Médico (SAM)* and the *Plataforma de Dados da Saúde (PDS)* software.

These data were coded and recorded into a database built by the authors in Microsoft Excel® 2010 software.

Informed consent was dismissed as no patient identification element was recorded. In addition, as it was a prevalence study and not an interventional study, it did not directly or indirectly interfere with patient care.

Data statistical analysis was made using Microsoft Excel® 2010 and SPSS® version 20.0 software. Data descriptive analysis was based on frequency distribution and on central tendency and absolute dispersion measures. Data inferential analysis was made using contingency tables and chi-square test and a 5% significance level was used.

## RESULTS

Our study involved 73,423 users aged 30 to 103, from which 46.4% were male. From these, 944 were diagnosed with AF (code K78 – Atrial fibrillation/flutter, from ICPC-2), aged 33 to 100 (mean 74.7, standard deviation 9.95 and median 76 years of age), from which 50.4% were male.

A 1.29% known AF prevalence was found, higher in male patients – 1.40% *versus* 1.19% – (Table 1) with a

statistically significant difference ($p = 0.01$).

An increase in AF's prevalence was also found, related to ageing ($p < 0.001$) (Table 1).

HBP was the most frequent comorbidity found (76.4%), followed by CHF (32.0%) and DM (28.2%); 15.9% of the patients presented with previous stroke or TIA history and 9.5% with AMI history. The presence of PAD/aortic atheromatous plaque was found in 8.1% of the patients and valvular disease in 7.3%; 3.1% of these had LVEF of 40% or below. Only one patient had a record of the presence of an intracavitary thrombus.

Patient's thrombotic risk was assessed by $CHA_2DS_2$-VASc score and the 69 patients with valvular disease were excluded, as this corresponds by itself to high thrombotic risk. We found that 2.9% or four patients presented with low risk (*score* = 0), while 7.4% had a score = 1 and 89.6% had a score ≥ 2.

As regards the distribution according to antithrombotic therapy, we found that 52% of our patients were on OAC therapy, 29% were on antiplatelet medication and 4% were on dual OAC + antiplatelet therapy; 7% of the patients did not follow any antithrombotic therapy and in 8% of the patients therapy was undetermined.

Regarding the specific OAC drugs used, we found that warfarin was the most prescribed OAC (75.4%); 20.6% of the patients were on acenocumarol and 4.1% on dabigatran; no patient was on rivaroxaban. As regards antiplatelet therapy, 76.2% of the patients were on ASA, 13.6% on clopidogrel, 7.2% on triflusal, 1.5% on dipyridamole and 1.5% on ticlopidine; no patient was on ticagrelor.

As the indication for antithrombotic therapy depends on patient's thrombotic risk, assessed by $CHA_2DS_2$-VASc score, we studied the adequacy of antithrombotic medication according to the most recent ESC guidelines, issued in 2012.[1]

From the 25 patients with a score = 0 (patients with 'real low risk' and with no indication for antithrombotic therapy), therapy was undetermined in 3 patients. The antithrombotic therapy of the patients with AF and a score = 0 is shown in Table 2.

From the 919 patients with high thrombotic risk (97.4%) and therefore with an indication for antithrombotic therapy (patients with valvular AF and patients with non-valvular AF with $CHA_2DS_2$-VASc score ≥ 1), we found that only 56.8% of these patients were appropriately hypo-

Table 1 – Prevalência de FA conhecida por género e faixa etária

| | | Male | | | Female | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Population | N.º Patients | Percentage % (95% CI) | Population | N.º Patients | Percentage % (95% CI) | Population | N.º Patients | Percentage % (95% CI) | *p*-value |
| Faixa etária (anos) | 30-39 | 8173 | 2 | 0.02 (0-0.05) | 8904 | 0 | 0,00 - | 17077 | 2 | 0.01 (0-0.02) | < 0.001 |
| | 40-49 | 8397 | 14 | 0.17 (0.08-0.26) | 9208 | 3 | 0.03 (0-0.07) | 17605 | 17 | 0.10 (0.05-0.15) | |
| | 50-59 | 7096 | 36 | 0.51 (0.34-0.68) | 7879 | 19 | 0.24 (0.13-0.35) | 14975 | 55 | 0.37 (0.27-0.47) | |
| | 60-69 | 5532 | 98 | 1.77 (1.42-2.12) | 6239 | 72 | 1.15 (0.89-1.41) | 11771 | 170 | 1.44 (1.22-1.66) | |
| | 70-79 | 3328 | 188 | 5.65 (4.87-6.43) | 4244 | 181 | 4.26 (3.65-4.87) | 7572 | 369 | 4.87 (4.39-5.35) | |
| | ≥ 80 | 1557 | 138 | 8.86 (7.45-10.27) | 2866 | 193 | 6.73 (5.81-7.65) | 4423 | 331 | 7.48 (6.70-8.26) | |
| Total | | 34083 | 476 | 1.40 (1.28-1.52) | 39340 | 468 | 1.19 (1.08-1.30) | 73423 | 944 | 1.29 (1.21-1.37) | |
| *p*-value | | 0.01 | | | | | | | | | |

AF – Atrial fibrillation; CI – Confidence interval

Tabela 2 – Distribution of patients with AF and $CHA_2DS_2$-VASc score = 0 by antithrombotic therapy

| | On antiplatelet therapy | No antiplatelet therapy | Total |
|---|---|---|---|
| On OAC | 1 (4.5%) | 5 (22.7%) | 6 (27.2%) |
| No OAC | 8 (36.4%) | 8 (36.4%) | 16 (72.8%) |
| TOTAL | 9 (40.9%) | 13 (59.1%) | 22 (100%) |

AF – Atrial fibrillation; OAC – Oral anticoagulant therapy.

Table 3 – Distribution of patients with AF in high thrombotic risk, according to the antithrombotic therapy

| | $CHA_2DS_2$-VASc score ≥ 1 | Valvular AF | Total |
|---|---|---|---|
| **Non-treated** | 50 (5.9%) | 5 (5.8%) | 55 (6.0%) |
| **OAC** | 422 (49.7%) | 44 (63.8%) | 466 (50.7%) |
| **Antiplatelet agent** | 242 (28.5%) | 13 (18.8%) | 255 (27.7%) |
| **Dual antiplatelet therapy** | 9 (1.1%) | 4 (5.8%) | 13 (1.4%) |
| **OAC + Antiplatelet agent** | 54 (6.3%) | 2 (2.9%) | 56 (6.1%) |
| **Undetermined** | 72 (8.5%) | 2 (2.9%) | 74 (8.1%) |
| **Total** | 849 (100%) | 70 (100%) | 919 (100%) |

AF – Atrial fibrillation; OAC – Oral anticoagulant therapy.

Table 4 – Distribution of patients with AF by the $CHA_2DS_2$-VASc score, according to the antithrombotic therapy

| | Antithrombotic therapy | | | | |
|---|---|---|---|---|---|
| **$CHA_2DS_2$-VASc score** | **No medication** | **With medication** | **OAC** | **Antiplatelet agent** | **OAC + Antiplatelet agent and/or dual antiplatelet therapy** |
| **1** | 8 (13.1%) | 53 (86.9%) | 27 (44.3%) | 20 (32.8%) | 6 (9.8%) |
| **2** | 15 (14.0%) | 92 (86.0%) | 52 (48.6%) | 32 (29.9%) | 8 (7.5%) |
| **3** | 15 (9.4%) | 145 (90.6%) | 97 (60.6%) | 35 (21.9%) | 13 (8.1%) |
| **4** | 6 (2.9%) | 204 (97.1%) | 112 (53.3 %) | 79 (37.6%) | 13 (6.2%) |
| **5** | 5 (4.0%) | 119 (96.0%) | 67 (54.0%) | 38 (30.6%) | 14 (11.3%) |
| **6** | 1 (1.5%) | 65 (98.5%) | 39 (59.1%) | 21 (31.8%) | 5 (7.6%) |
| **7** | 0 (0%) | 33 (100%) | 17 (51.5%) | 12 (36.4%) | 4 (12.1%) |
| **8** | 0 (0%) | 13 (100%) | 9 (69.2%) | 4 (30.8%) | 0 (0%) |
| **9** | 0 (0%) | 3 (100%) | 2 (66.7%) | 1 (33.3%) | 0 (0%) |

AF – Atrial fibrillation; OAC – Oral anticoagulant therapy.

coagulated (Table 3).

This percentage increases to 57.7% when we excluded the patients with a score = 1, in whom antithrombotic therapy is recommended albeit no absolute indication. However, as this therapy is also recommended for these patients, the patients with score = 1 were always considered as patients with high thrombotic risk in our study.

The correlation between $CHA_2DS_2$-VASc score and antithrombotic therapy allows for the conclusion that the greater the score the greater the possibility that the patient is on a medication (Table 4). However, it is not possible to establish a relationship between the score and the type of antithrombotic therapy (Table 4).

We found that the decision to start an antithrombotic therapy is also influenced by patient's age, i.e. the use of this therapy increases with ageing (Table 5). However, it is also not possible to establish a relationship between patient's age and the type of antithrombotic therapy, despite a clear preference for antiplatelet agents having been found at the age extremes (71.4% percentage in youngest patients and 35.4% lower expression in the

Table 5 – Distribution of patients with AF with high thrombotic risk by age group, according to the antithrombotic therapy

| | Antithrombotic therapy | | | | |
|---|---|---|---|---|---|
| **Age group (years)** | **No medication** | **With medication** | **OAC** | **Antiplatelet agent** | **OAC + Antiplatelet agent and/or dual antiplatelet therapy** |
| **40-49** | 2 (28.6%) | 5 (71.4) | 0 (0%) | 5 (71.4%) | 0 (0%) |
| **50-59** | 6 (13.0%) | 40 (87.0%) | 27 (58.7%) | 9 (19.6%) | 4 (8.7%) |
| **60-69** | 16 (10.4%) | 138 (89.6%) | 88 (57.1%) | 41 (26.6%) | 9 (5.8%) |
| **70-79** | 16 (4.8%) | 320 (95.2%) | 198 (58.9%) | 94 (28.0%) | 28 (8.3%) |
| **≥ 80** | 15 (4.9%) | 287 (95.0%) | 153 (50.7%) | 106 (35.1%) | 28 (9.3%) |

AF – Atrial fibrillation; OAC – Oral anticoagulant therapy.

eldest as shown in Table 5).

## DISCUSSION

The AF global prevalence found in our study was above the prevalence found in the study of the Sentinel Physician's Network (*Rede Médicos-Sentinela*)[3] although below the study FAMA,[4] with 0.53% and 2.5% global prevalence, respectively. However, we should mention that the study *Rede* Médicos-Sentinela[3] followed a similar methodology regarding data collection that was similar to the one used in our study – where the prevalence is based in the cases of AF already diagnosed, i.e. with a known AF. In contrast, the study FAMA[4] used included a representative sample of the Portuguese population from which the prevalence of AF was estimated. We should also mention that the study *Rede* Médicos-Sentinela[3] involved patients of all ages (including children), while the study FAMA[4] only included patients aged 40 or below and our study involved patients aged 30 or above (this was the age at which the youngest case of AF was diagnosed). When the population aged 35 or above was considered in the study *Médicos Sentinela*, a 0.94% prevalence of AF was found.

As regards international studies, the prevalence of AF is also variable, namely according to methodology: a 1.12% prevalence was found in the population covered by the USA state insurance system in 2009,[24] involving people aged above 20; a 0.85% prevalence was found in the study ATRIA[25] involving an adult population aged above 20; a 4.4% prevalence was found in the Spanish study OFRECE,[26] following a similar methodology to the study FAMA,[4] which was above the estimated prevalence found until now, pointing to an estimated 2% prevalence of AF in developed countries.[1]

When comparing ours to the prevalence obtained in the study FAMA[4] and OFRECE[26] (that actively searched for the cases of AF in the studied population based on the electrocardiogram) – 1.29% *versus* 2.5% and 4.4%, respectively, we consider that our study may have underdiagnosed AF.

AF is recognized as an ageing-related pathology[1] and our study showed a statistically significant increase in the prevalence of AF with ageing, in line with what was found in the studies *Médicos-Sentinela*,[3] FAMA,[4] study by Naccarelli,[24] ATRIA[25] and OFRECE.[26]

A statistically significant higher AF prevalence in male patients was also found (1.40% *versus* 1.29%, $p = 0.01$), in line with the study *Rede* Médicos-Sentinela[3] and with the study ATRIA.[25] In the latter, beyond the higher AF prevalence in male patients (1.1% *versus* 0.8%, $p < 0.01$), this difference was also found in all age groups, as found in our study. The studies FAMA[4] and OFRECE[26] did not find any differences regarding the AF prevalence between genders.

As regards co-morbidities, differences between the different studies were also found (Table 6): in our study, 76.4% of the patients with AF had HBP, a higher frequency than most of the studies that were considered; the frequency of CHF found in our study was below the frequency found in the study *Rede* Médicos-Sentinela[3] and in line with the frequency found in international studies, namely the study ATRIA,[25] the study by Naccarelli *et al.*[24] and the study OFRECE;[26] as regards DM, a higher frequency was found in our study when compared to the study *Rede* Médicos-Sentinela,[3] to the study FAMA[4] and the study ATRIA[25] and was in line with the frequencies found in the study by Naccarelli[24] and the study OFRECE.[26]

The $CHA_2DS_2$-Vasc score was used for the evaluation

Table 6 – Comparison of comorbidities in patients with AF in different studies

| Study \ Comorbidities | HBP | DM | CHF | HDV | Previous Stroke/ TIA |
|---|---|---|---|---|---|
| **FATA** | **76.4%** | **28.2%** | **32.0%** | **7.3%** | **15.9%** |
| FAMA[4] | 71.0% | 26.4% | NA | NA | NA |
| Rede Médicos Sentinela[3] | 70.8% | 18.9% | 41.2% | 20.1% | 22.3% |
| ATRIA[25] | 49.3% | 17.1% | 29.2% | NA | NA |
| Naccarelli et al[24] | 62.0% | 24.3% | 30.2% | NA | NA |
| OFRECE[26] | 76.0% | 24.5% | 29.4% | NA | NA |

AF– Atrial fibrillation, DM – Diabetes mellitus, CHF – Congestive Heart Failure, HVD, Heart Valve Disease, TIA – Transitory Ischaemic Attack, NA – Not assessed.

of the thrombotic risk, according to the 2012 ESC guidelines[1] and we found that only 2.3% of the patients with non-valvular AF in our study had a low thrombotic risk (score = 0). By contrast, a 32.3% percentage of low-risk patients were found in the study *Rede de Médicos Sentinela.*[3] However, this value was obtained by using a different risk score – the $CHADS_2$ score, which was in use at the time when the study was carried out (2003) – and therefore preventing a direct comparison between these results. Nevertheless, this difference may show that a high number of patients with AF that were considered in low risk of thrombotic events, when using the $CHADS_2$ score, would be excluded when using the new $CHA_2DS_2$-Vasc score.

In our study, only 56.8% of the patients were adequately treated with OAC (regardless of whether a combined antiplatelet therapy was followed), which is in line with the study REACH[27] that showed that approximately 40% of the patients diagnosed with AF were not on any antithrombotic therapy. Several hypothesis were established: the recently updated international guidelines regarding the antithrombotic therapy,[1] which may have still not allowed for direct clinical translation; the refusal of patients/carers to follow anticoagulant therapy when informed of the risks; the difficult handling of anticoagulant drugs in primary care or even the excessive fear of bleeding events associated to these therapies by physicians, mainly when caring for older patients.

Our study showed that 56% of the patients with non-valvular AF and in high risk of thrombotic events (score ≥ 1) were on adequate oral anticoagulation (regardless of whether a combined antiplatelet therapy was followed), in line with what was found in the study REACH[27] (54%). In addition, the single use of antiplatelet agents was found in 29.6% of our patients with high thrombotic risk (score ≥ 1), lower when compared to the study *Rede de Médicos Sentinela*[3] (48.8%). However, this comparison must be carefully considered as the results were based in different risk scores – the $CHA_2DS_2$-Vasc score was used in our study and the $CHADS_2$ score was used in the other two studies it remains useful to demonstrate that a high percentage of patients are not following therapy according to the current guidelines.

As regards antithrombotic therapy, lack of data that allows for establishing whether due to lack of prescription or non-compliance may be considered a limitation which may have biased the results. Some patients may have not be on antithrombotic therapy for a justified reason or may have been on therapy with an alternative diagnosis to AF.

Our study allowed for the conclusion that the greater the thrombotic risk the higher probability that the patients with AF were on antithrombotic therapy and therefore corresponding to a quality indicator for the follow-up of these patients, as the risk of cardiovascular events (beyond thrombotic) increases with the risk score, reaching 40% in 4 years.[27]

Our study involved a large sample of patients attending different Healthcare units (USF) in the municipality of Vila Nova de Gaia and the most recent ESC guidelines were used in its design. Therefore, it may be useful in primary care as Outpatient Hypo-coagulation units have been recently introduced, increasing health professional's awareness towards these issues.

The use of a convenience sample of the population and the fact that the study is based on the clinical record of AF (known AF) instead of based on new diagnosis, should be mentioned as limitations to our study, which may have biased clinical data.

## CONCLUSION

A 1.29% global prevalence of known AF was found in our study, in line with other national (0.53% and 2.5%) and international studies (0.95-4.4%), increasing to above 4.87% in patients aged above 70.

The most frequently found comorbidities included HBP, CHF and DM. These should be adequately monitored and controlled due to the increased bleeding or thrombotic risk related to these pathologies.

As regards therapy, most patients were on OAC. However, according to the new guidelines regarding the use of antithrombotic therapy in AF, we found that only 56.8% of the patients were adequately hypocoagulated and therapy was highly underused. Therefore, medical training on the recent updates regarding the antithrombotic therapy of patients with AF is needed in order to minimize the risk of thromboembolic and/or bleeding events.

The AF screening namely above 65 years of age, according to the recent ESG guidelines, is particularly important, due to underdiagnosed AF found in our study.[1]

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## OBSERVATIONS

This study was presented as a *Poster* at the "*Update em Medicina 2014*" held in Albufeira in 1-4 May 2014 and won an award.

## CONFLICTS OF INTEREST

The authors declare there were no conflicts of interest in writing this manuscript.

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