

# The study on knowledge-attitude-practice of primary care physician toward anticoagulants therapy in Non-valvular atrial fibrillation patients in Shanghai of China

**Shasha Ye**

Zhongshan Hospital Fudan University

**Tianhao Wang** (✉ [tianhao74@hotmail.com](mailto:tianhao74@hotmail.com))

Zhongshan Hospital Fudan University <https://orcid.org/0000-0002-4361-223X>

**Arthur Liu**

Fudan University

**Ying Yu**

Zhongshan Hospital Fudan University

**Zhigang Pan**

Zhongshan Hospital Fudan University

**Jie Gu**

Zhongshan Hospital Fudan University

---

## Research article

**Keywords:** Non-valvular atrial fibrillation, anticoagulant therapy, primary care physician, knowledge-attitudes-practices

**Posted Date:** January 8th, 2020

**DOI:** <https://doi.org/10.21203/rs.2.20341/v1>

**License:**  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

**Version of Record:** A version of this preprint was published on August 15th, 2020. See the published version at <https://doi.org/10.1186/s12875-020-01236-4>.

# Abstract

## Background

As the large number of CHS centers in China face the majority of NVAF patients, primary care physicians (PCPs) play the primary role in the prevention of embolization. Therefore, an awareness of anticoagulant management in NVAF patients must be brought into focus among PCPs in China. This study will help primary care physicians (PCPs) increase their awareness of oral anticoagulant (OAC) therapy for non-valvular atrial fibrillation (NVAF) to prevent embolization.

## Method

This was a cross-sectional observational study of 462 PCPs in community health service (CHS) centers across Shanghai. We used a self-administered questionnaire to collect data from September to December 2017. A stratified random cluster sampling was adopted in the 90 CHS centers with the family medicine residency program.

## Result

Among 462 participants, 69.3% (320/462) of females with a medical bachelor's degree and more than 10 years of work experience predominated in the 30 to 49 years of age group. The mean score for "knowledge," "attitude" and "practices" of OAC therapy in NVAF patients among PCPs was  $3.68 \pm 2.752$ ,  $53.62 \pm 7.148$ , and  $37.63 \pm 10.336$ , respectively. The level of knowledge of OAC therapy in NVAF patients among PCPs was insufficient in over half (75.8%) of participants. The majority (89.8%) of PCPs had a positive attitude and 68.0% had modest performance in the anticoagulant management of NVAF patients.

## Conclusion

The knowledge and behaviors of PCPs were insufficient in OAC therapy to prevent embolization in NVAF patients. The study also revealed the positive attitudes of participants, and their desire to learn the latest knowledge of OAC therapy.

## Background

Atrial Fibrillation (AF) is the most common type of cardiac arrhythmias, especially in the elderly, and its prevalence increases with age<sup>[1]</sup>. The incidence of stroke in patients with AF is six times higher than those without AF, due to atrial contractile dysfunction and mural thrombosis formation<sup>[2, 3]</sup>. According to the 2010 Global Burden of Disease Study, the number of AF patients worldwide is 33 million, of which more than 13% were over 80-years of age<sup>[1]</sup>. The burden of AF and associated strokes in China have increased significantly in recent years. The prevalence of AF has grown 20-fold, while the prevalence of AF-associated stroke has increased 13-fold in the past 11 years<sup>[1, 4]</sup>. Nearly 10 million AF patients live in

China, of which the proportions of valvular, non-valvular and lone AF are 12.9%, 65.2%, and 21.9%, respectively [1]. More than 24.8% AF patients in China have suffered ischemic strokes [2], and AF patients with cerebral arterial thrombosis are generally characterized by high morbidity, mortality, disability, and recurrence rates. These features make anticoagulant therapy a high priority for stroke-prevention strategies of AF [5][6].

Substantial research shows that oral anticoagulant (OAC) therapy can greatly reduce the risk of the cerebrovascular incidents in AF patients, and reduce the relative risk of ischemic stroke by about 62% [7]. However, non-valvular atrial fibrillation (NVAF) is the most common type of AF and the adherence to OAC therapy in NVAF patients in China is unsatisfactory, particularly in primary care settings [2]. In 2002, one Chinese study suggested that only 2% of NVAF patients were on OAC therapy [2, 8], while another study found that less than 3% of 224 AF patients were on such therapy [5]. Additionally, a mere 11.2% of AF patients in China were on OAC therapy from 2008–2011 according to the RE-LY study [9, 10].

The standardization of OAC therapy in NVAF management is still in the initial stages in China [5]. Many countries have established OAC therapy guidelines to instruct physicians how to manage NVAF patients [5]; however, China has no such guidelines. Moreover, doctors from different regions and hospitals lack consistency when providing advice to NVAF patients regarding OAC use [5].

To improve NVAF patients' prognoses, it is important to strengthen the use of OAC therapy in the long-term management of NVAF and actively follow-up with continuous health education programs [5, 11]. Primary care physicians (PCPs) play a vital role in achieving this goal. Community Health Service (CHS) centers are indispensable due to their vast coverage, accessibility and convenience for disease prevention [12]. NVAF patients require long-term OAC therapy, and life-long management [12]; therefore, professional and effective NVAF management strategies provided by PCPs in community-based medical settings can meet the needs of AF patients. Such procedures also support the ongoing reformation of the medical system in China [12]. The diagnosis and treatment of NVAFs are not standardized in most CHS centers [12, 13], and an awareness of anticoagulant management in NVAF patients must be brought into focus among PCPs in China. As the large number of CHS centers in China face the majority of NVAF patients, they play the primary role in the prevention of embolization.

So far, inadequate studies and analyses of the influencing factors have been performed in PCP knowledge, attitude and behavior (KAP) concerning anticoagulant management in NVAF patients. Thus, it was imperative to conduct this research using a self-administered questionnaire (seen in supplementary 3). This study can help Chinese PCPs increase their awareness through Continuing Medical Education (CME) and training on anticoagulant management to prevent embolization. We aimed to investigate the KAPs of PCPs in Shanghai and identify the influencing factors. With comprehensive care provided by PCPs to improve the adherence of OAC therapy among NVAF patients in CHS centers, we expect reductions in the morbidity of AF-related stroke, as well as improvements in the quality of life and prognosis of AF patients.

## Methods

### Sample size

Pi ( $\pi$ ) is the rate of knowledge of anticoagulation in AF, and was set to 0.5<sup>[14]</sup>. We set a 95% confidence interval with permissible error ( $\delta$ ) equaling to  $0.1\pi$  using the following formula<sup>[16]</sup>:

$$N = \frac{\mu_{\alpha}^2 \pi(1-\pi)}{\delta^2} = \frac{\mu_{0.05}^2 \times 0.5(1-0.5)}{(0.1 \times 0.5)^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16 \approx 384$$

Alpha ( $\alpha$ ), which is also called the false positive rate, is misidentified as a differential probability when a correct null hypothesis is rejected.

In general, we set  $\alpha \leq 0.05$  as the threshold<sup>[16]</sup>. Mu ( $\mu_{\alpha}$ ) was set as  $\mu_{0.05}$  equaling 1.96, which referred to the corresponding value of  $\mu$  when set at the threshold of  $\alpha$ <sup>[16]</sup>.

A total of 460 participants were enrolled in the study, allowing for a 10% non-response rate, a 10% invalid return rate, and limited research fees.

### Study setting and population

We used a cross-sectional design survey to assess the PCPs' KAP relating to anticoagulant management of NVAf in the Shanghai community. The study covered 18 out of 90 CHS centers with family medicine residency programs in Shanghai: six CHS centers were in urban areas, six were in urban-rural areas, and six were in rural areas.

Stratified random cluster sampling was adopted among PCPs working in CHS centers from September to December 2017. PCPs were assessed by anonymous questionnaires. The 245 CHS centers in Shanghai were divided into three levels: urban, urban-rural, and rural. The ratio of urban, urban-rural, and rural CHS centers was 80:84:81, which is equal to 1:1:1. Ninety CHS centers with family medicine residency programs were stratified by urban, urban-rural, and rural regions. We used the random number table to choose CHS centers in a 1:1:1 ratio.

We first counted the total number of PCPs in the 90 CHS centers, prior to sampling. We then selected each sample from one random CHS center and all were sampled evenly among different areas, including urban, urban-rural, and rural. No PCPs were excluded from the investigation. We then proceeded with the analyses when the number of participants reached 460. Written consents were obtained from participants before completing questionnaires.

### Questionnaires

We used a self-administered questionnaire which was composed of four parts (seen in the supplementary material) to collect data from PCPs in the Shanghai community. The questionnaire was developed according to the theory of KAP. Based on the theory, the KAP questionnaire was divided into three sections, including knowledge, attitudes, and practices toward anticoagulation in NVAF patients. The original items of the questionnaire were generated from the results of literature reviews that covered domestic and international studies on anticoagulant therapy in patients with NVAF. The items were screened during two rounds of consultations, which is called the Delphi technique<sup>[15]</sup>. The clarity and intelligibility of each item of the KAP questionnaire were pre-tested.

## Data collection

Questionnaires required approximately 10–20 minutes for PCPs to complete. All data collection teams participated in a training workshop and had the opportunity to pretest the questionnaire within a designated population. The investigators who collected the data did not participate directly in the management of the PCPs. The questionnaires were requested to be completed independently on site and collected on time. Questionnaires with repetitive patterns of answers or those in which all responses were the same were excluded following manual assessments. Data collection was conducted from September to December 2017. Following the collection of questionnaires, all data were entered into an EpiData3.1 Database twice. The data were then entered into the SPSS statistical package, version 22.

## Data analysis

Descriptive data, including frequency distributions, percentages, means, and standard deviations were used to present the distributions of each question in the questionnaire. Statistical inferences were made using the normality test, analysis of variance, and multivariate linear regression analyses.

The normality test was used to determine whether the population obeyed the normal distribution by observational data. The frequency or frequency distribution of variable values were estimated according to the law of area distribution under a normal distribution curve<sup>[14]</sup>.

In statistics, regression analysis refers to a statistical analysis method for determining the interdependent quantitative relationship between two or more variables. Regression analyses can be divided into unitary regression and multivariate regression according to the number of variables involved. In regression analyses, if there are two or more independent variables, it is called multiple regression. In fact, a phenomenon is often associated with multiple factors such as those in this study, and it is more effective and more practical to predict or estimate the dependent variable based on the optimal combination of multiple independent variables than to predict or estimate only one independent variable. Therefore, multiple linear regression analyses were more practical than unitary linear regression for this study<sup>[14]</sup>.

## Results

# Population

A total of 467 questionnaires were distributed and a total of 462 questionnaires were completed, giving a response rate of 98.93%. The age distribution of the PCPs showed that 10.6% were under age 30, 39% were 30–39 years, 41.6% were 40–49 years, 7.6% were 50–59 years, and 1.3% were 60 years or older. Most participants had high-education backgrounds. A total of 83.8% of participants had a bachelor's degree, while 8.8% had a master's degree. Most PCPs had worked over 10 years (343; 74.3%) with a "physician" title (326; 70.6%), while approximately 52.4% received residency training for family medicine (242 participants) (Table 1).

Table 1  
Demographic Characteristic of PCPs

Variable	No(%)
Sex	
·Male	142(30.7)
·Female	320(69.3)
Age	
·≤30 years old	49(10.6)
·30~39 years old	180(39.0)
·40~49 years old	192(41.6)
·50~59 years old	35(7.6)
·>60 years old	6(1.3)
Maximum Educational Level	
·Technical School Graduate	3(0.6)
·College Degree	45(9.7)
·Undergraduate Degree	387(83.8)
·Master's Degree	27(5.8)
Types of CHS Centers	
·The Urban-Rural	148(32.0)
·The Rural	158(34.2)
·The Urban	156(33.8)
Professional Title	
·Resident	90(19.5)
·Physician	326(70.6)
·Associate Senior Physician	44(9.5)
·Chief Physician	2(0.4)
Working Years	
·>5 years	46(10.0)
·5~10 years	73(15.8)

Variable	No(%)
·10–15 years	96(20.8)
·15–20 years	100(21.6)
·20–25 years	83(18.0)
·>25 years	64(13.9)
Attending Training	
·Yes	242(52.4)
·No	220(47.6)

## The Reality and Reason of Anticoagulation in AF

The majority (50.6%) of patients with NVAF were 70–79 years old. With regard to OAC therapy, we found that 41.6% of PCPs treated NVAF with aspirin in more than 70% of their patients, while only 0.4% of PCPs treated NVAF with OAC in more than 70% of their patients

Our study showed that the top three obstacles for starting OAC therapy in NVAF patients included 1) monitoring coagulation function tests (78.79%), 2) lack of essential medicines in the community (63.20%), and 3) fear of bleeding in patients with NVAF (60.39%). The investigation also found that the first three major barriers that affected NVAF patients' compliance included 1) monitoring coagulation function tests (68.40%), 2) worrying about bleeding in patients with NVAF (64.50%), and 3) the lack of essential medications in CHS centers (50.43%) (Fig. 1).

## Knowledge, attitude, and practice

The average score on the KAP questionnaire was  $102.29 \pm 18.517$ . The average scores for the subscales of knowledge, attitude, and practice were  $3.68 \pm 2.752$ ,  $53.62 \pm 7.148$  and  $37.63 \pm 10.336$ , respectively. All scores in the three dimensions were normally distributed and the cut-offs for the three dimensions were based on similar studies<sup>[16]</sup>. The total scores for the KAP questionnaire and each section for knowledge, attitude, and practice were calculated and categorized as poor ( $\leq 39.0\%$ ), fair (40.0%–69.0%), and good ( $\geq 70.0\%$ )<sup>[16]</sup>.

In this study, 4.5% of PCPs scored a “good” level of knowledge, while 75.8% had an “inadequate” level of knowledge. The majority (89.8%) of PCPs had positive attitudes towards anticoagulation therapy in AF patients; however, 19.0% had unsatisfactory practices of treating AF with OAC therapy (**Table 2**).

**Table S1** shows that 62.55% (289 participants) of PCPs knew how to diagnose AF, 52.16% (241 participants) knew the frequency of the coagulation function for NVAF patients with long-term warfarin

therapy, and 38.96% (180 participants) knew the target range of INR when warfarin therapy was used in patients with NVAF who were under the age of 75 years. Nevertheless, 96.10% (444 participants) did not know which clotting indicators should apply in NVAF patients treated with warfarin. A total of 94.8% (438 participants) of PCPs did not know the score for predicting bleeding risk in patients with NVAF, and 86.58% (400 participants) did not know of HAS-BLED, which is a bleeding risk scoring system.

The highest scoring attitude item was “to tell NVAF patients about medication and food that affect warfarin's anticoagulant effects,” while the lowest scoring attitude item was “more concerns about the risk of bleeding in AF patients than the risk of stroke in AF patients.” The scores of each item are shown in **Table S2**

The highest scoring practice question was “Have you ever made a differential diagnosis based on the duration of the onset of AF when treating AF patients?”, while the lowest scoring item was “The AF patient in item E8 had gastrointestinal bleeding three months ago, which has stopped for 1 week. Would you give this patient oral anticoagulant therapy?” The scores of each item are shown in **Table S3**

## Influence Factors Analysis

Using the knowledge score, attitude score and practice score as the dependent variable respectively, other factors were set as independent variables. The results of the stepwise regression method and multiple linear regression analyses are shown in **Table 3**. According to the order of independent variable effects from large to small, the time that PCPs practiced medicine, whether the practice was outpatient, and the type of CHS center were all related to the knowledge score. Knowledge score, sex, and whether the patient was in an inpatient ward were related to the attitudes of PCPs. Knowledge score, outpatient practice and attitude score were related to the practice score.

## Analysis of knowledge acquisition approaches and willingness survey

In this survey, a total of 89.4% of community PCPs hoped to acquire more knowledge about OAC therapy related to AF through special lectures or courses. Second, community PCPs hoped to learn and update their knowledge related to anticoagulant therapy in NVAF patients through relevant guidance, literature, and special

## Discussion

The study revealed that 66.3% of PCPs treated less than 50 NVAF patients per year and only 5% of doctors had over 150 NVAF patients per year. Therefore, the number of NVAF patients seeking medical

attention in community clinics was far less than the number of NVAF patients in China. The reason for this finding may be due to the majority of NVAF patients going to tertiary and secondary hospitals for treatment. The specific results of the survey indicated that 41.6% of PCPs treated more than 70% of their NVAF patients with aspirin for OAC therapy, while only 0.4% of PCPs treated over 70% of their NVAF patients with warfarin for OAC therapy. Many other studies showed that the rate of warfarin therapy for NVAF patients in China was less than 2% [2, 5], and Huiping Chen et al. [19] suggested that the management of NVAF patients in CHS centers was not standardized adequately in China. The results of this survey are similar to those of the above studies. However, Bai Y et al. [20] showed that warfarin was superior to aspirin and no antithrombotic therapy was required to reduce the risk of stroke in older patients with AF. Our study revealed the high risk of stroke in NVAF patients in Shanghai's community. PCPs should also more frequently consider the anticoagulant, warfarin, for NVAF patients in the community.

More than half (75.8%) of the GPs had inadequate knowledge scores, indicating that doctors were deficient in their knowledge of OAC therapy for NVAF. This study is consistent with the results of Changing Wang et al. [3] who also observed the unsatisfactory knowledge of OAC therapy in NVAF patients among physicians. Even so, 89.8% of PCPs had good scores in the attitude portion of the study. This indicated that PCPs recognized the importance of OAC therapy in NVAF; however, 68.0% of PCPs received a score of average, and only 13.0% of PCPs scored high in the behavioral component of the questionnaire. This study found that not all PCPs knew how to diagnose AF and most PCPs did not routinely apply assessment tools to evaluate the relevant risks of NVAF patients in their clinical practice. The low awareness of such tools for stroke- and bleeding-risk calculations among NVAF patients was noted, and we concluded that the management of OAC therapy in NVAF patients was not ideal.

Warfarin anticoagulant therapy has several limitations [21], including the effect of variability (associated with the clinical and genetic factors), and drug-drug and drug-food interactions. Such limitations are essential for patient education; however, 65.58% of PCPs answered questions incorrectly with regard to the factors, genes, drugs, and food that were prone to interacting with warfarin. Therefore, most PCPs did not provide adequate levels of education to NVAF patients. The latest studies have shown that among NVAF patients, the newer OAC is superior to warfarin for the prevention of AF-related strokes [22]. However, we found that 81.39% of PCPs did not know of the newer OAC therapy because most PCPs in the community did not have a good understanding of the literature, despite having a positive attitude toward acquiring such knowledge.

The risk of stroke and bleeding among NVAF patients must be calculated before OAC therapy. PCPs should make the most appropriate clinical decisions after weighing the risk of bleeding against the benefit of stroke prevention in NVAF patients. CHADS2-VASc score and HAS-BLED score are two valuable tools in making such clinical decisions; however, we found that most participants did not have a good understanding of either tool. Thus, we encourage and advise up-to-date CME among PCPs who work in the community, especially in the application of easy scoring systems to assist in superior clinical decision

making. The practice score of PCPs in OAC for NVAF patients was average; however, they had a positive attitude toward OAC. Thus, we inferred that the under-treatment of OAC in NVAF patients was due to the lack of knowledge. A total of 94.4% of PCPs answered that they would participate in a specific CME program based on our questionnaire (question: if training of AF disease and anticoagulation were available, would you participate?). As their willingness was high, we anticipate the establishment of an effective CME program to assist PCPs provide OAC therapy to NVAF patients.

In the multiple linear regression analysis, the PCPs' knowledge score was related to their years of practice, whether they were in outpatient service, and their type of CHS center. Physicians with more years of experience and solid clinical abilities may have superior performances in managing NVAF patients. Conversely, our study found that PCPs with fewer years of practice had higher knowledge scores.

PCPs who are in inpatient settings (some CHS centers have inpatient service) had higher knowledge scores than those in outpatient settings. We found that PCPs met less NVAF patients in outpatient clinics, and therefore, have less motivation to acquire the necessary knowledge to treat such patients. The PCPs in community hospitals in the urban and rural areas had the highest knowledge score, followed by those in community hospitals in central urban areas, with those in suburban community hospitals having the lowest knowledge scores.

The medical resources in the central urban areas are relatively abundant compared to those in the urban-rural junctions and suburbs<sup>[23]</sup>. Thus, such a factor incentivizes a large number of NVAF patients to attend the superior hospitals for treatment. Patients in the suburbs have a poor awareness of health<sup>[24]</sup> and as a result, PCPs in downtown and suburban areas have less opportunities to manage NVAF patients. Such a factor may explain the low knowledge scores among PCPs in the central urban and suburban regions. However, no relevant studies have been performed to discuss the reasons for the above results. The sample size of our study can be expanded to further assess such factors.

Our study also revealed the influences of attitude and behavioral scores (seen in Supplementary material 2). Based on KAP theory, individuals gradually acknowledge content when relevant information is perceived or received<sup>[25]</sup>. Therefore, PCPs' attitudes toward OAC therapy in NVAF patients can be changed when their need for knowledge is satisfied. Thus, selective CME training on OAC therapy can improve PCPs' awareness of treating NVAF patients with OAC.

## **Strengths And Limitations**

This was a cross-sectional study of 462 community PCPs to determine their knowledge, attitudes, and practices towards anticoagulant therapy for AF in Shanghai. To our knowledge, this was the largest cross-sectional observational study of KAPs for PCPs relating to OAC therapy in NVAF patients. This study investigated the current conditions of OAC treatment in NVAF patients from PCPs' perspectives and PCPs' desires to acquire additional relevant knowledge on the topic. The results of this study provide guidance for better knowledge training and health education on anticoagulant therapy for NVAF patients. This

study also details comprehensive intervention measures to improve the rate of anticoagulant therapy in the community.

Due to the limited time and resources for this study, this research can be improved further. This study included only a subset of the demographic characteristics of community PCPs and may not fully reflect the reality of the management of OAC therapy in NVAF patients. Therefore, future studies should include multiple other factors to complement and verify the conclusions of the current study. This study is a cross-sectional survey of the current situation, and thus, intervention studies should be performed in the future to explore possible confounding factors.

## **Conclusion**

The knowledge and behaviors of PCPs were insufficient in OAC therapy to prevent embolization in NVAF patients. The study also revealed the positive attitudes of participants, and their desire to learn the latest knowledge of OAC therapy.

## **Abbreviations**

PCPs: primary care physicians;

OAC: oral anticoagulants

NVAF: non-valvular atrial fibrillation

KAP: knowledge, attitudes and practices

CHS: community health service

AF: Atrial Fibrillation

INR: international normal ratio

POCT: Point-of-care testing

## **Declarations**

### **Availability of data and materials**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### **Acknowledgements**

The authors are grateful to the sources of funding that supported this study.

## **Funding**

Important weak discipline construction-General medicine project, Health and Family Planning System, Shanghai (2015ZB0601).

The Special project of Resident standardization training from the Education Department of Zhongshan Hospital at Fudan University, Shanghai (Resident standardization training fund 014)

## **Author information**

### **Affiliations**

Department of General Practice, Zhongshan Hospital, Fudan University, Shanghai, 200032, China

Tianhao Wang ,Ying Yu, Zhigang Pan ✉ Jie Gu

Department of Family Medicine,Jiahui International hospital, Shanghai, 200233, China

Shasha Ye, Arthur Liu

### **Contributions**

PZG is responsible for the design and funding of the research. YSS, WTH, YY and GJ designed the questionnaire. YY,AL carried out the data collection. , GJ and PZG supervised the project. YSS and WTH analysed the data and drafted the first manuscript. All authors participated in the critical revision of the manuscript and approved the final version.

### **Corresponding author**

Correspondence to Zhigang Pan

### **Ethics declarations**

### **Ethics approval and consent to participate**

Documentation of informed consent was secured at the beginning of the survey, initially using an wechat and later using a checkbox for affirmation (Y/N) of having read and agreed to the Informed Consent agreement. The confidentiality of all GPs was guaranteed, and the study protocol was approved byThe Medical Ethics Committee of Zhongshan Hospital of Fudan University

### **Consent for publication**

Not applicable.

### **Competing Interests**

The authors declare that they do not have any conflicts of interests.

## References

- [1] "Suggestions of Chinese experts on the diagnosis and treatment of atrial fibrillation in the elderly" writing group. Chinese experts suggest the diagnosis and treatment of elderly patients with nonvalvular atrial fibrillation (2016) [J]. Chinese Journal of Geriatrics, 2016, 35(9):915-928.
- [2] Changying Wang, Dayi Hu. Investigation on the use of warfarin by doctors in county hospitals to prevent stroke in patients with nonvalvular atrial fibrillation [J]. Journal of Chongqing Medical University, 2015(5):781-784.
- [3] Changying Wang. Investigation on the cognitive status of doctors in county hospitals in preventing stroke in patients with atrial fibrillation [D]. Chongqing Medical University, 2015.
- [4] Yutao Guo. The current situation and changes of clinical epidemiology and antithrombotic management of atrial fibrillation in elderly patients in China [J]. Chinese Journal of Cardiovascular and Cerebrovascular Diseases for the Elderly, 2017, 19(9):988-990.
- [5] Nan Wu, Qing Gu, Yuxia Guan et al. Management status of warfarin anticoagulant therapy in patients with atrial fibrillation [J]. Chinese Journal of Nursing, 2014, 49(3):337-340.
- [6] [Freedman B](#), [Potpara TS](#), [Lip GY](#). Stroke prevention in atrial fibrillation [J]. Lancet, 2016 Aug 20;388(10046):806-17.
- [7] [Benjamin A Steinberg](#), [Jonathan P Piccini](#), Anticoagulation in atrial fibrillation[J]. [BMJ](#). 2014; 348: g2116.
- [8] Ziqiang Zhou, Dayi Hu, Jie Chen et al. Epidemiology of atrial fibrillation in China [J]. Chinese Journal of Internal Medicine, 2004, 43(7):491-494.
- [9] Oldgren J, Healey J S, Ezekowitz M, et al. Variations in cause and management of atrial fibrillation in a prospective registry of 15,400 emergency department patients in 46 countries: the RE-LY Atrial Fibrillation Registry [J]. Circulation, 2014, 129(15):1568-1576.
- [10] Chaohui Dong, Ye Xiao, Huanjie Zheng et al. Analysis on the status of anticoagulant therapy in hospitalized patients with nonvalvular atrial fibrillation in department of cardiovascular medicine [J]. The Journal of Practical Medicine, 2016, 32(16):2737-2739.
- [11] Chunhua Huang, Bei Xue, Xiaoxin Liu. Advances in the study of warfarin compliance improvement strategies for patients after heart valve replacement[J]. Chinese Journal of Practical Nursing, 2017, 33(25).

- [12] Xueyuan Guo, Caihua Sang, Changsheng Ma et al. Community management of atrial fibrillation [J] . China Medical Tribune, 2013-02-04
- [13] Vivian W. Y. Lee PharmD BCPS (AQ Cardiology), Tamc C S, Yan B P, et al. Barriers to warfarin use for stroke prevention in patients with atrial fibrillation in Hong Kong [J]. Clinical Cardiology, 2013, 36(3):166–171.
- [14] Wiemer P M M, Kottmann T, Starrach M, et al. Evaluation des Kenntnisstandes der Leitlinien zur Antikoagulation bei Vorhofflimmern [J]. Herzschrittmachertherapie + Elektrophysiologie, 2015, 26(2):1-7.
- [15] Ying Zhan, Han Zhou. Current status of warfarin anticoagulant therapy in patients with nonvalvular atrial fibrillation[J]. New Chinese Clinical Medicine, 2016, 9(11):1027-1029.
- [16] Maolin Du, Fuyan Wang. Medical statistics (M). Beijing: People's Military Medical Press,2015.11.
- [17] Mcmillan S S , King M , Tully M P . How to use the nominal group and Delphi techniques[J]. International Journal of Clinical Pharmacy, 2016, 38(3):655-662.
- [18] Bhebhe, L.T., C. Van Rooyen and W.J. Steinberg, Attitudes, knowledge and practices of healthcare workers regarding occupational exposure of pulmonary tuberculosis. African Journal of Primary Health Care & Family Medicine, 2014. 6(1).
- [19] Huiping Chen, Kejiang Cao. Community management of atrial fibrillation[J]. Chinese Journal of General Practice,2015, 13(3):344-345.
- [20] Bai Y, Guo SD, Deng H, Shantsila A, et, al. Effectiveness and safety of oral anticoagulants in older patients with atrial fibrillation: a systematic review and meta-regression analysis[J]. Age Ageing, 2018 Jan 1;47(1):9-17.
- [21] Roldán I, Marín F. On the way to a better use of anticoagulants in nonvalvular atrial fibrillation. Proposed amendment to the Therapeutic Positioning Report UT/V4/23122013[J]. Revista Española De Cardiología, 2016, 69(6):551-553.
- [22] Frain B, Castelino R, Bereznicki L R. The utilization of antithrombotic therapy in older patients in aged care facilities with atrial fibrillation.[J]. Clinical & Applied Thrombosis/hemostasis, 2017:107602961668642.
- [23] Lina Zhou, Qinghong Shi, Min Kang. The exploration of social volunteer work in a general hospital on the outskirts of Shanghai[J]. Medicine and Society, 2014, 27(10):42-44.
- [24] Jingheng Huang. Healthiness Education. Fourth Edition[M]. Fudan University Press, 2006.

## Tables 2 And 3

Due to technical limitations, tables 2 and 3 are only available as a download in the supplemental files section.

## Figures

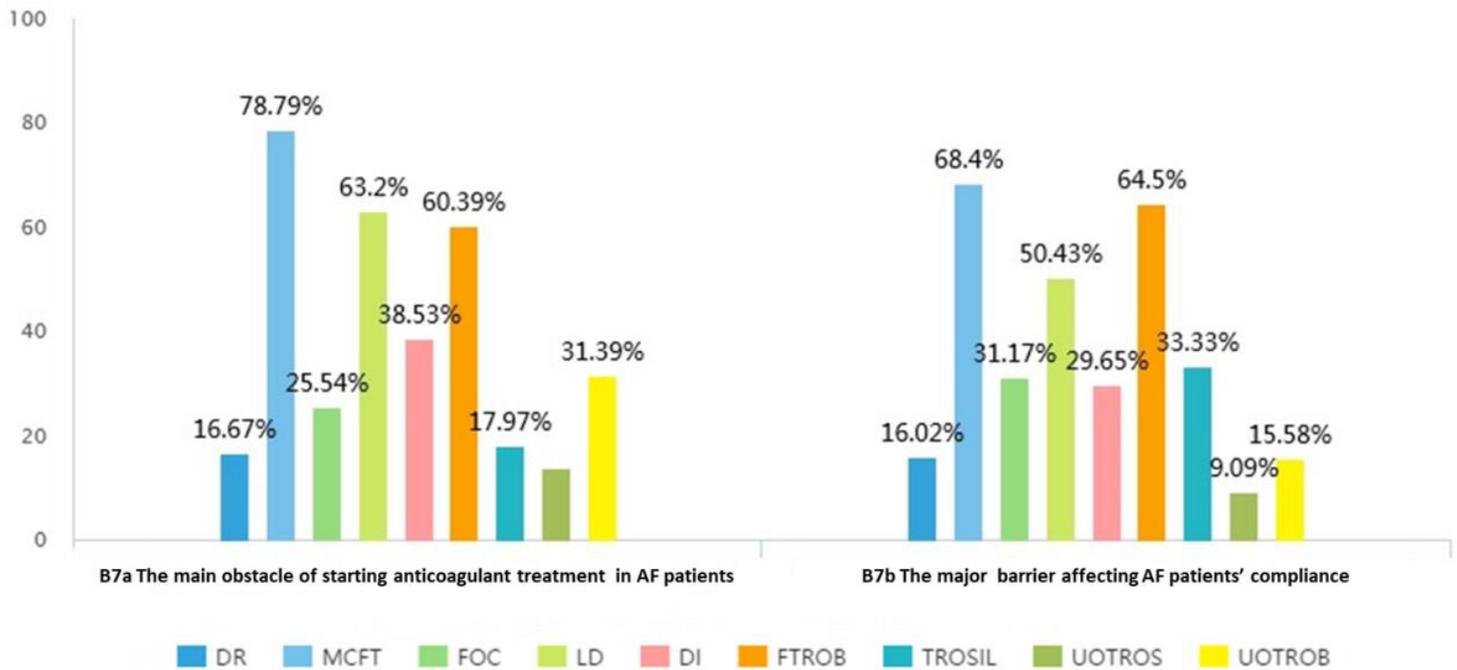


Figure 1

The main barriers for starting OAC therapy and affecting patients' compliance. \*DR=dietary restrictions MCFT=monitoring coagulation function tests FOC=fees of coagulation LD=lack of medications DI=drug-drug interactions FTROB=fear of the risk of bleeding TROSIL=the risk of stroke is low (patients) UOTROS=unsure of the risk of stroke (doctors) UOTROB=unsure of the risk of bleeding (doctors)

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [TableS1.pdf](#)
- [TableS2.pdf](#)
- [TableS3.pdf](#)
- [Table3.pdf](#)
- [Table2.pdf](#)
- [STROBEchecklistcrosssectional.doc](#)