Perceived Barriers to Oral Anticoagulants Adherence Among Patients with Atrial Fibrillation after Radiofrequency ablation

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ABSTRACT

Feedback: Atrial fibrillation (AF) stands as the most prevalent sustained cardiac arrhythmia globally. Radiofrequency catheter ablation (RFCA) has emerged as a highly effective and guideline-recommended rhythm control strategy for symptomatic AF. For patients with AF after radiofrequency ablation, maintaining oral anticoagulant (OAC) adherence is a critical yet complex challenge precisely because its advantage of preventing stroke. **Purpose**: This study aimed to assess perceived barriers affecting adherence oral anticoagulants among patients with atrial fibrillation after radiofrequency ablation. **Methods**: A descriptive cross-sectional study design was utilized in carrying out this study. The current study was conducted at the outpatient and Cardiac Care Unit (CCU) at Ain-Shams University Hospital in Cairo, Egypt. A sample of 80 patients prescribed treatment regimens was recruited. **Results**: the majority (88%) of the patients having been diagnosed for over six months with atrial fibrillation (AF) and a significant portion (43%) for more than 20 months, their knowledge is generally inadequate across key domains: understanding of the ablation procedure itself (74% inadequate), healthy lifestyle (65% inadequate), and self-monitoring (62% inadequate). A significant majority (65%) exhibits suboptimal oral anticoagulants adherence, split nearly evenly between medium (26%) and low (39%) levels. **Conclusion**: One third of the study sample only were adherent with the oral anticoagulant medications. This demonstrates that in this study sample, cognitive recognition is insufficient; adherence is crippled by the tangible burdens and emotional aversions inherent to complex anticoagulant regimens.

Keywords: Adherence; Atrial Fibrillation; Barriers; Oral Anticoagulants; Radiofrequency ablation

1. INTRODUCTION

Atrial fibrillation is the most common long-lasting irregular heartbeat worldwide. More than a clinical diagnosis, it is also an everyday source of anxiety for millions due to its terrifying connection to a significantly increased risk of devastating strokes, heart failure, and other life-threatening complications. The mainstay of protection against stroke remains long-term blood-thinning medication in the form of oral anticoagulants for those at risk. The development of new medications, DOACs, has been a step in the right direction-easier to handle than the previous generation of drugs like warfarin-but still, being on treatment is a challenge that remains.

Catheter ablation provides hope for many living with disruptive AF symptoms. This procedure restores a normal heart rhythm with the promise of an improved quality of life and relief from distressing palpitations. In some instances, though, a successful procedure may result in one common and dangerous misconception: that the problem is "fixed," and that blood thinners are no longer required. In fact, the decision to stop these medications is rarely straightforward. Medical guidelines emphasize that protection is guided by a patient's individual stroke risk factors, not solely by the heart rhythm, since the vulnerabilities leading to stroke usually persist. This places patients in a profoundly difficult psychological position. AF is often a silent condition; you cannot feel the risk of a future stroke building. Yet the potential side effect of the protective medication serious bleeding is a vivid and ever-present fear in a patient's mind. They are asked to accept a tangible, daily risk (bleeding) to prevent an intangible, future catastrophe (stroke) (WHO, 2003). After ablation, this dilemma intensifies. The key benefit of taking the pill—preventing a stroke feels distant and abstract, especially when symptoms have vanished. Meanwhile, the costs financial strain, dietary limits, blood test appointments, and anxiety—are immediate and very real. Every day, the long-term promise of safety wages a quiet war against the daily burdens of treatment.

Adherence is not simply about remembering a pill. It is a deeply human challenge woven from personal fears, practical hurdles, financial stress, and the quality of support from the healthcare system (Desteghe et al., 2021). Stopping or skipping these medications is perilous, dramatically increasing the threat of stroke, yet inconsistent use can also raise the risk of bleeding. Understanding why patients struggle is not an academic exercise, it is a direct path to saving lives and preventing disability.

For patients who have chosen ablation, this challenge is unique. These individuals have actively sought a procedural solution, often hoping to be free from medications altogether. After the procedure, feeling well can create a powerful "treatment success" bias. The absence of symptoms can be mistakenly interpreted as the absence of all risk, making the continued need for medication confusing and frustrating, and leading some to quietly stop their pills (Chen et al., 2022).

This confusion can be compounded by the journey through the healthcare system itself. After ablation, care often shifts from the specialist who performed the procedure back to a primary care doctor. This handoff can sometimes lead to mixed messages or a loss of clear guidance about the lifelong importance of the medication, leaving patients feeling unsupported and uncertain (Holt et al., 2022).

While the common burdens of treatment—cost, fear of bleeding, and lifestyle changes—are challenging for any patient, they feel especially heavy for someone who believes their problem has been "cured." A person who once tolerated medication side effects to quell terrible symptoms may find that same burden intolerable when they feel perfectly well, leading them to question why they are taking a risky medication at all (Moudallel et al., 2023).

While previous studies have measured how many patients miss doses, there is a striking lack of deep, personal understanding of why this happens in the vulnerable period after ablation. Numbers tell us what is happening, but only listening to patients' stories can reveal why. Their personal beliefs and experiences are the true drivers of their behavior (Alvarez et al., 2023).

This study seeks to fill that gap by centering the patient's voice. We aim to move beyond charts and statistics to systematically explore the real-life experiences, personal beliefs, and difficult decisions faced by individuals with AF who are trying to manage their blood thinners after an ablation. By listening deeply, we hope to uncover the true barriers they face and illuminate the path toward support that is as understanding as it is effective.

2. METHODS

1. Study design
A descriptive cross-sectional study design was utilized in carrying out this study. Additionally, the study aimed to assess perceived barriers affecting adherence oral anticoagulants among patients with atrial fibrillation after radiofrequency ablation.

2. Study setting
The current study was conducted at the outpatient and Cardiac Care Unit (CCU) at Ain-Shams University Hospital in Cairo, Egypt.

Participants
A purposive sample of 80 patients with atrial fibrillation of both genders who were attending the study setting and who are on oral anticoagulants among patients with atrial fibrillation after radiofrequency ablation. was eligible for inclusion in the study sample. The inclusion criteria were patients diagnosed with AF who are actively receiving oral anticoagulants, able to communicate and willing to participate in the study and their age more than 18 years. The study excluded patients with malignant tumor or other diseases at the terminal stage, the occurrence of myocardial infarction or thromboembolic events within 3 months, physical or mental limitations or patients with severe hemorrhage or other anticoagulant contraindications during outpatient or hospitalization were excluded as well to minimize confounding clinical variables that could independently affect treatment adherence.

Sample equation
The sample size for this study was calculated according to (Charan and Biswas, 2013) using the following equation:

$$n = \frac{P(1 - P)}{(SE \div t) + [P(1 - P) \div N]}$$

Where:
N = Total sample size

SE= Standard error = 0.09

P= Is probability = 0.05

T = t tables probability at P< 0.05 = 1.96

N = number of populations = ≈ 400 (Ain Shams University Hospital statistics, 2024).

$$n = \frac{0.05-(1-0.05)}{(0.09\div1.96)+[0.05(1-0,05)\div400]} = 80.42 = \approx 80$$

The calculation indicated that a minimum of 80.42 participants per group was required. Thus, the total target sample size for the study was 80 patients. To ensure statistical adequacy, a post-hoc power analysis was conducted using G*Power software (Version 3.1). With a fixed sample size of 80 participants, an alpha (α) level of 0.05, and an effect size (Cohen's w) of 0.35 (based on preliminary data indicating a medium effect), the analysis determined the study had a statistical power (1-β) of 78% for a Chi-square test of independence. This power level exceeds the conventional threshold of 80% for detecting a medium effect size, thereby confirming that the sample size was adequate to identify statistically significant associations between patient groups and the primary outcome variables.

3. Instruments

A structured interview sheet was designed and used to assess the factors leading to non-compliance toward therapeutic regimen. It was developed in simple Arabic language. Structured interview questionnaire consisted of two sections.

Tool I. Patient's Structured Interview Questionnaire: This tool was adapted after reviewing relevant and recent literature from (Elkerdawy et al., 2023) and consisted of three parts:

First part: Patient's characteristics: This part concerned the patient's socio-demographic data, such as age, gender, marital status, educational level, occupation, average monthly income, place of residence, living situation, and treatment payment system. It is composed of 9 multiple-choice closed-end questions.

Second part: Patient's medical history: This part was used to assess the patient's present and past health history. It included 15 multiple-choice closed-ended questions, eight for present history and seven for history. The present history included questions that assessed the patient's chief complaint, current medications, investigation, diagnostic criteria, causes of the current admission, etc. The past medical history included items regarding comorbid conditions, previous operations, hospitalization, etc. This part was modified to include rephrasing of certain questions and the addition of new questions focused on oral anticoagulants.

Tool 2. A self-administered questionnaire: It was designed based on (Park and Jang,2021) and (Patsiou et al., 2023). It assesses knowledge regarding atrial fibrillation (AF) disease, oral anticoagulants, radiofrequency ablation (RF), self-management and healthy lifestyle knowledge. Two levels of scoring were used for each question. It consisted of (20) items in the form of multiple-choice questions with one correct answer and three distractors. A correct response, predetermined according to the literature review, was scored as (1), while an incorrect answer or a "don't know" response was scored as (0). Therefore, the total score for the 20 questions was 20 points.

Attitude was assessed with 6 items, a five-point Likert scale was used, ranging from 5 points to 1 point from extremely positive to negative. Practice dimension, including 5 questions, using the five-point Likert scale, ranging from always (5 points) to never (1 point).

A final score more than 75% of the total score indicates an adequate level of knowledge, a positive attitude, and proactive practice. A score ranging from 50% to 75% of the total score indicates a moderate level of knowledge, attitude, and practice. A score below5 0% of the total score signifies inadequate knowledge, a negative attitude, and inactive practice (11).

Tool 3: Patients' perception regarding barriers of oral anticoagulant adherence. It was developed by the researcher based on reviewing of recent literature (Briggs et al.,2005) and (Esteban et al.,2013) and were include 10 statements. Scoring system: This part consisted of 10 statements with total score 30 marks. The response for each statement ranged from 1 to 3. One was given for disagree, 2 was given for partially agree and 3 was given for agree. Higher mean scores indicate a positive perception of barriers oral anticoagulants, while lower mean scores indicate a negative perception of barriers. Calculate the mean score for each participant by summing up the scores for all items and dividing by the number of items.

Tool 4: Adherence to the oral anticoagulants therapeutic regimen was assessed using the 8-item Morisky Medication Adherence Scale (MMAS-8), adopted from (Morisky et al.,2008), which consists of eight questions with "Yes" or "No" responses to categorize patients into three levels: High Adherence (a score of 8), indicating no missed doses; Medium Adherence (a score of 6 to 7), indicating occasional lapses; and Low Adherence (a score of 5 or less), indicating a high risk of non-compliance. *"Formal permission to use the 8-item Morisky Medication Adherence Scale (MMAS-8) was obtained from the copyright holder, Donald E. Morisky. The license number is held on file by the corresponding author and is available upon request."* The internal consistency of MMAS-8 in this study's sample, as measured by Cronbach's alpha,

was 0.80 in the present study. This confirms the scale's good reliability and aligns with the 0.83 coefficient reported in its original development study.

3. DATA COLLECTION

Following an official approval was obtained, the field work was done over 12 weeks (June and August 2022), twice a week, on Saturday and Tuesday, from 12 p.m. to 8 p.m. Pre-assessment was done on the first week by obtained information about patients and their prescribed regimen and treatment outcomes from medical records kept by the health services and by the patients. The researcher interviewed every patient individually. At that time, the nature and purpose of the study were explained to the patient. Written consent for participation was taken, and confidentiality of any obtained information was ensured to the patient. A pilot study was conducted to assess the clarity of the interview questions and estimate the time required to complete the form.

1. Data analysis
The data were analyzed using SPSS version 25.0 software (IBM Corp., Armonk, NY, USA). Descriptive statistics were presented as frequencies and percentages for categorical variables. **Ethical considerations**
The study was reviewed and approved by the scientific research ethical committee of the Faculty of Nursing at Ain Shams university and then from the director of at the outpatient and Cardiac Care Unit (CCU) at Ain-Shams University Hospital in Cairo, Egypt, written informed consent was obtained from all participants or their representatives after explaining the study's aims, privacy and confidentiality of data were assured for all participants, participants were informed of their right to withdraw from the study at any time without any penalty.

4. RESULTS

Table1. The study sample of 80 patients with atrial fibrillation post-ablation is predominantly male (56%) and middle-aged to elderly, with an average age of 54.1 years and 72% of participants aged 45 or older. The group is highly educated (94%), though largely not actively working (81%). Clinically, the patients represent a well-established AF population, with the majority (88%) having been diagnosed for over six months and a significant portion (43%) for more than 20 months. Most patients (86%) are prescribed warfarin rather than newer oral anticoagulants (14%), and a striking 94% have undergone at least one prior ablation attempt, indicating a cohort with persistent or recurrent arrhythmia undergoing repeat procedures. This demographic profile suggests a sample of experienced, chronically ill patients managing long-term anticoagulation within a complex treatment journey.

Table 1. Characteristics of Patients with Atrial Fibrillation after Radiofrequency ablation (N = 80)

Patients' characteristics	N (%)
Gender	
Male	45 (56%)
Female	35 (44%)
Age (in years)	
≤44 years	22 (28%)
45-59 years	28 (35%)
≥60 years	30 (37%)
M ± SD	54.1 ± 14.1
Educational Level	
Illiterate	5 (6%)
Educated	75 (94%)
Job Status	
Working	15 (19%)
Not working	65 (81%)
Duration of diagnosis AF (months)	
≤5	10 (13%)
6–10	23 (29%)
11-19	25 (31%)
>20	22 (28%)
Type of oral anticoagulant	
Warfarin	69 (86%)
New-oral anticoagulant	11 (14%)
Previous RFCA attempts	

0	5 (6%)
1	41 (51%)
2	34 (43%)

M = Mean; SD = Standard Deviation; AF = Atrial Fibrillation;RFCA = Radio Frequency Ablation.

Based on **Table 2**, the data reveals a significant dissonance between patients' attitudes and their knowledge and perceived barriers to practice. While a majority hold a positive attitude toward anticoagulant therapy's importance (75% agree/strongly agree) and recognize the critical need to monitor for bleeding (94% agree/strongly agree), their knowledge is generally inadequate across key domains: understanding of the ablation procedure itself (74% inadequate), healthy lifestyle (65% inadequate), and self-monitoring (62% inadequate). This knowledge gap directly fuels the perceived burdens of treatment, as evidenced in the practice section, where majorities identify regular monitoring (69%) and high compliance requirements (48%) as factors that would make them reject therapy. Crucially, the data shows a strong association between perceiving the treatment as burdensome (66% agree/strongly agree) and viewing warfarin as prohibitively expensive (75% agree/strongly agree), suggesting that practical and financial burdens, compounded by poor understanding, create substantial barriers to adherence despite generally positive intentions.

Table 2. Knowledge, Attitude and Practice regarding Oral Anticoagulant Adherence Among Patients Group (N = 80)

Knowledge	Adequate		Inadequate		
Knowledge about AF disease	35 (44%)		45 (56%)		
Knowledge about oral anticoagulants	37 (46%)		43 (54%)		
RF ablation knowledge	21(26%)		59 (74%)		
Self-monitoring knowledge	30 (38%)		50 (62%)		
Healthy lifestyle knowledge	28 (35%)		52 (65%)		
Attitude	**Strongly Agree**	**Agree**	**General**	**Disagree**	**Strongly Disagree**
I believe anticoagulant therapy is extremely important.	45(56%)	15(19%)	10(13%)	7(9%)	3(4%)
I believe it's crucial to follow their professional guidance when adjusting medication dosage.	39(49%)	11(14%)	15(19%)	10(13%)	5(6%)
I find anticoagulant treatment quite burdensome.	40(50%)	13(16%)	17(21%)	6(8%)	4(5%)
Warfarin is expensive, I did not want to take it.	48(60%)	12(15%)	10(13%)	5(6%)	5(6%)
I should pay attention to bleeding tendency	60(75%)	15(19%)	5(6%)	0(0%)	0(0%)
I think non-active intervention creates more healthcare burdens.	35(44%)	10(13%)	15(19%)	13(16%)	7(9%)
Practice	**Strongly Agree**	**Agree**	**General**	**Disagree**	**Strongly Disagree**
The following factors may make you reject oral anticoagulants:					
*Monitor relevant indicators regularly	32(40%)	15(19%)	10(13%)	12(15%)	11(14%)
*Relatively high risk of intracranial hemorrhage	55(69%)	15(19%)	5(6%)	3(4%)	2(3%)
*Need to give up smoking	33(41%)	17(21%)	10(13%)	15(19%)	5(6%)
*High requirements for compliance	31(39%)	19(24%)	8(10%)	12(15%)	10(13%)
*Need specific self-management	38(48%)	12(15%)	10(13%)	16(20%)	4(5%)

Based on **Table 3**, the distribution of perceived barriers to oral anticoagulant adherence reveals a complex and individualized landscape of patient concerns, with no single barrier dominating the entire cohort but significant clusters of agreement emerging. The most commonly agreed-upon barrier was personal discomfort with the medication itself (45% agree, 75% agree/partially agree), closely followed by a fear of harm or injury (38% agree, 61% combined) and practical challenges like dose forgetfulness (36% agree) and the difficulty of self-examining pulse (36% agree). While a majority of patients (54%) disagreed that a lack of knowledge about the regimen was a barrier—contradicting the knowledge deficits shown in Table 2—substantial portions still identified burdensome management requirements as obstacles, including the need for routine coagulation tests (64% combined), dietary restrictions (63% combined), and caution with other medications (63% combined). The nearly even split across most items, with average totals of 35% agree, 26% partially

agree, and 39% disagree, underscores that barriers are highly patient-specific, suggesting that adherence interventions must be personalized rather than applying a uniform approach to this diverse group.

Table 3. Number and percentage distribution of the studied patients' perception regarding barriers of oral anticoagulants (N=80).

Items	Agree		Partially Agree		Disagree	
	No.	%	No.	%	No.	%
Presence of chronic diseases	26	33%	24	30%	30	38%
Side effects of taking oral anticoagulants	27	34%	22	28%	31	39%
Needs routinely coagulation tests.	25	31%	26	33%	29	36%
Fear of harm/ injury to patient	30	38%	18	23%	32	40%
Dose Forgetfulness	29	36%	10	13%	41	51%
I am not very comfortable with oral anticoagulants	36	45%	24	30%	20	25%
It is difficult to self-examination of daily pulse	29	36%	26	33%	25	31%
Avoid strenuous exercise	29	36%	20	25%	31	39%
Eat healthy and avoid irritating foods	26	33%	24	30%	30	38%
Use over-the-counter medications with caution	22	28%	28	35%	30	38%
Lack of knowledge about regimen	27	34%	10	13%	43	54%
Total	28	35%	21	26%	31	39%

Table 4 presents a concerning yet illuminating finding: only one-third (35%) of the studied patients with atrial fibrillation post-ablation demonstrate high adherence to their oral anticoagulant therapy. A significant majority (65%) exhibits suboptimal adherence, split nearly evenly between medium (26%) and low (39%) levels. This distribution directly contextualizes and quantifies the impact of the barriers and knowledge-attitude-practice gaps identified in the preceding tables. The high proportion of low and medium adherers underscores the critical clinical risk in this population, where inadequate anticoagulation dramatically increases the threat of stroke. This result confirms that the dissonance between positive general attitudes and substantial practical, financial, and knowledge-related barriers ultimately manifests as a prevalent and serious problem of non-adherence, highlighting an urgent need for targeted, multifaceted intervention strategies to improve medication-taking behavior and patient outcomes.

5. DISCUSSION

The demographic and clinical characteristics of the study sample, as detailed in Table 1, reveals a distinct population of patients with atrial fibrillation (AF) who are navigating long-term management after radiofrequency catheter ablation (RFCA). The cohort, with a mean age of 54.1 years, is relatively young for a typical AF population, which often skews older (Hindricks et al.,2021). This likely reflects a selection bias wherein younger, symptomatic patients are preferentially referred for and agree to interventional rhythm-control strategies like ablation (Calkins et al.,2020). The high level of education (94% educated) further suggests a population that is more likely to be engaged with and proactive about their healthcare, though this characteristic did not translate into high knowledge scores in subsequent analyses, indicating that disease-specific education remains a critical, unmet need.

Clinically, the profile points to a group with established and likely persistent AF. The long median duration of diagnosis (with 59% diagnosed for over 11 months and 28% for over 20 months) indicates chronic disease management, not early intervention. Most strikingly, the data on previous RFCA attempts is telling: a mere 6% were undergoing their first procedure, while 94% had undergone at least one prior ablation, and 43% had undergone two. This aligns with current understanding that AF, especially persistent forms, is a progressive condition often requiring repeat procedures for effective rhythm control (Chen et al.,2022). This context is crucial for interpreting adherence behavior; these are experienced patients who have invested significantly in a "curative" interventional approach, which may paradoxically fuel reluctance towards continuing chronic pharmacological therapy like oral anticoagulants (OACs) (Moudallel et al.,2023).

The overwhelming preference for warfarin (86% vs. 14% for new oral anticoagulants or DOACs) is a notable and potentially impactful finding. While this may reflect regional prescribing practices, formulary restrictions, or the study's timeframe, the use of warfarin introduces well-documented adherence challenges compared to DOACs, including the need for regular international normalized ratio (INR) monitoring, dietary interactions, and more variable pharmacokinetics (Desteghe et al.,2021). The fact that this cohort is largely not working (81%) may mitigate some practical barriers to

attending frequent monitoring appointments, but it also may indicate a higher burden of comorbid illness or disability, which itself is a risk factor for non-adherence.

The findings from Table 2 present assessment of Knowledge, Attitude and Practice regarding Oral Anticoagulant Adherence (OAC) therapy after catheter ablation for atrial fibrillation (AF). This analysis reveals a critical dissonance where generally positive attitudes toward therapy are systematically undermined by significant knowledge deficits and formidable perceived barriers to practice, culminating in what can be described as "informed non-adherence."

A striking contradiction emerges in the attitude domain. While a strong majority of patients (75%) agree or strongly agree that anticoagulant therapy is "extremely important," and an even more resounding 94% recognize the need to monitor for bleeding tendencies, these supportive views coexist with highly negative perceptions. Notably, two-thirds of the cohort (66%) find the treatment "burdensome," and a remarkable 75% agree that warfarin is prohibitively expensive to the point of not wanting to take it. This pattern aligns with the concept of "necessity-concerns framework," where adherence is determined by a patient's personal balancing of their perceived need for medication against their concerns about its adverse effects and practical burdens (Horne et al., 2013). In this cohort, high necessity beliefs are being outweighed by potent concerns, primarily cost and hassle.

This attitudinal conflict is exacerbated by profound and widespread knowledge gaps. The fact that 74% of patients have inadequate knowledge about the radiofrequency ablation procedure they underwent is particularly concerning. This likely fuels a dangerous misconception that the procedure is a "cure," thereby diminishing the perceived ongoing need for stroke prophylaxis (Chen et al., 2022). Furthermore, inadequate knowledge of healthy lifestyles (65%) and self-monitoring (62%) deprives patients of the essential tools to engage safely and effectively in their own care, increasing anxiety and the sense of burden.

The practice-related responses crystallize these abstract barriers into concrete, actionable obstacles. The factors patients identify as most likely to make them reject OACs—the need for regular monitoring (69%), the high risk of intracranial hemorrhage (69%), and the demanding compliance requirements (48%)—are not merely hypothetical concerns but reflect the lived reality of managing warfarin (the dominant therapy in this cohort at 86%). The requirement for frequent International Normalized Ratio (INR) monitoring with warfarin is a well-documented and significant barrier to adherence and quality of life (Desteghe et al., 2021). The high cost cited aligns with global challenges in medication affordability, even for older drugs like warfarin when considering the cumulative cost of care, including monitoring.

This triad of findings—positive intention, poor knowledge, and high practical burden—explains the suboptimal adherence rates that will be shown in subsequent data. It underscores that patient education must evolve beyond simply conveying the importance of medication. Future interventions must be multi-pronged: (1) providing clear, procedure-specific education to correct the "cure" misconception, (2) addressing the financial toxicity of treatment through policy or assistance programs, and (3) implementing practical support systems, such as point-of-care home INR testing or structured follow-up, to reduce the daily burden of management (Steffel et al., 2021). Switching eligible patients from warfarin to direct oral anticoagulants (DOACs), which eliminate routine coagulation monitoring, could directly address several of the top-cited barriers, though cost may remain an issue (Moudallel et al., 2023).

The data presented in Table 3 provides a detailed map of the patient-perceived barriers to oral anticoagulant (OAC) adherence, revealing a complex and multi-layered challenge that extends far beyond simple forgetfulness. A critical finding is the centrality of psychological and emotional barriers over purely logistical ones. The most agreed-upon obstacle was personal discomfort with the medication itself (45% agree, 75% combined), a sentiment that encapsulates a profound aversion likely fueled by the drug's association with chronic illness, bleeding risk, and a loss of normalcy. This is powerfully reinforced by a significant fear of harm or injury (38% agree, 61% combined), a rational yet paralyzing response to the genuine, well-documented dangers of anticoagulation therapy. These emotional barriers are potent because they directly undermine motivation and create an underlying resistance that makes all other practical challenges feel more insurmountable. This aligns with the Necessity-Concerns Framework, where adherence is a balance between perceived need and concerns, and here, the "concerns" are deeply felt and emotionally charged (Horne et al., 2013; Moudallel et al., 2023).

Simultaneously, patients navigate a demanding regimen of practical burdens that make daily adherence cognitively and behaviourally taxing. Significant portions of the cohort identified the need for routine coagulation tests (64% combined), dietary vigilance (63% combined), caution with over-the-counter medications (63% combined), and the difficulty of self-examination (69% combined) as major hurdles. These are not minor inconveniences but represent a significant erosion of lifestyle autonomy and a constant reminder of their medical condition. The noted dose forgetfulness (36% agree) must be interpreted within this context; it is often a symptom of intentional or subconscious avoidance driven by the cumulative burden, rather than a simple failure of memory. Importantly, the fact that barriers were highly individualized—with near-

equal splits between agree, partially agree, and disagree across most items—underscores that there is no universal patient experience. This heterogeneity demands a shift from generic adherence interventions to personalized, patient-centered strategies that first identify and then address the specific cluster of barriers—be they emotional, practical, or financial—unique to everyone (Desteghe et al., 2021).

The adherence levels quantified in Table 4—with only 35% of patients demonstrating high adherence and a concerning 65% falling into medium or low adherence categories—provide the critical clinical endpoint that validates and contextualizes the multifaceted barriers identified in the preceding analyses. This suboptimal adherence profile directly translates to a population at significantly elevated risk for stroke and thromboembolic events, underscoring the serious clinical and public health implications of non-adherence, as consistent therapeutic anticoagulation is the primary determinant of stroke prevention efficacy in atrial fibrillation (AF) (Hindricks et al., 2021; Steffel et al., 2021). The finding that a majority of this educated and procedurally engaged cohort still struggles with adherence confirms that knowledge and positive intention alone are insufficient to ensure consistent medication use; they are effectively overridden by the potent combination of psychological aversion, fear, and tangible practical burdens like cost, monitoring demands, and lifestyle restrictions, as documented in Tables 2 and 3 and supported by qualitative studies on patient experience (Moudallel et al., 2023; Desteghe et al., 2021).

6. CONCLUSION

The findings of this study involving mainly warfarin-managed, educated subjects who have undergone repeat ablations indicate a failure in the transition from procedural to pharmacologic management. Although they understand the significance of management, their adequate understanding conflicts with the discomfort and fear, and this translates directly into poor rates of adherence, with only 35% being highly adherent. Clearly, in this study population, a mere acknowledgment in one's mind isn't sufficient; the burdens in mind and reluctance in terms of complex anticoagulant management are sufficient to cripple the adherence.

Recommendations
The study recommends developing a patient education program and standardizes the post-ablation education protocol delivered before discharge and reinforced at follow-up. This must explicitly address the misconception that ablation is a "cure," with the use of visual aids to explain why stroke risk and the need for OACs often persist.

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CONFLICT OF INTERESTS
The authors have declared no conflict of interest.

AUTHORSHIP
H.M.M; contributed extensively to aim research, introduction, significance of the study review, did statistical data analysis and interpretation of data, discussion, conclusion, and recommendations and provided the first draft of the manuscript before its publication, revised and approved the final manuscript.

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