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ORIGINAL ARTICLE

Impact of Direct Oral Anticoagulants Versus Vitamin K Antagonists on Quality of Life: A Cross-Sectional Study Using PACT-Q2 and EQ-5D-3L Questionnaires in Algerian Patients

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ABSTRACT

Background. Vitamin K antagonists (VKAs) and direct oral anticoagulants (DOACs) are both effective in preventing thromboembolic events; however, they differ in terms of treatment burden, which may influence patients' quality of life (QoL). This study aimed to assess and compare treatment satisfaction and health-related quality of life (HRQoL) among Algerian patients treated with DOACs versus VKAs. **Methods.** A cross-sectional study was conducted in Algiers between February and May 2024, including 63 adult patients receiving either VKAs or DOACs. Patient-reported outcomes were assessed using two validated instruments: the Perception of Anticoagulant Treatment Questionnaire (PACT-Q2) to evaluate treatment satisfaction and the EQ-5D-3L to measure HRQoL. An additional exploratory question assessing the perceived overall impact of treatment on QoL was analyzed and cross-tabulated with EQ-5D outcomes. **Results.** Patients treated with DOACs reported significantly higher treatment satisfaction and utility scores compared to those on VKAs. The mean PACT-Q2 score was 1.3 in the DOAC group versus 4.52 in the VKA group, indicating a lower perceived treatment burden with DOACs. The average EQ-5D-3L utility score was 0.57 in the DOAC group and 0.50 in the VKA group. Patients who transitioned from VKAs to DOACs demonstrated improved HRQoL (utility score increased from 0.44 to 0.53), whereas those who switched from DOACs to VKAs experienced a decline (from 0.47 to 0.43). Lower HRQoL was associated with greater anxiety, discomfort, and limitations in usual activities. **Conclusion.** In real-world Algerian settings, DOACs are associated with higher treatment satisfaction and better HRQoL compared to VKAs. These findings support the integration of patient-centered criteria into anticoagulant selection, particularly in resource-constrained environments.

Keywords: Direct oral anticoagulants, vitamin K antagonists, quality of life, PACT-Q2, EQ-5D-3L, oral anticoagulation.

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1. INTRODUCTION

Oral anticoagulants are cornerstone therapies in the prevention and treatment of thromboembolic disorders, including atrial fibrillation and venous thromboembolism. In Algeria, non-valvular atrial fibrillation (NVAF) — the most prevalent form of cardiac arrhythmia (1) — is estimated to affect approximately 187,686 individuals annually and represents a significant public health concern, associated with high morbidity and a considerable economic burden. In 2014, the average cost per NVAF patient exceeded standard healthcare expenditures by 113% (2).

For decades, vitamin K antagonists (VKAs), such as acenocoumarol, have been the standard of care. While their clinical efficacy is well established, VKAs present several limitations, including a narrow therapeutic window, multiple drug and food interactions, and the need for regular monitoring through the international normalized ratio (INR) test. These constraints can place a significant burden on patients, not only medically, but also psychologically, socially, and financially (3).

In recent years, direct oral anticoagulants (DOACs) have emerged as effective alternatives, offering comparable efficacy with more predictable pharmacokinetics and fewer monitoring requirements. Their fixed-dose regimens, reduced interaction profiles, and the absence of routine coagulation testing represent a shift toward more patient-centered care. These features have generated growing interest in their potential to improve health-related quality of life (HRQoL), an increasingly important outcome in the management of chronic diseases (4).

This article aims to explore and compare the impact of VKAs and DOACs on patients' quality of life, highlighting how treatment choice can influence daily functioning, mental well-being, treatment satisfaction, and overall health perception.

2. MATERIALS AND METHODS

Cross-sectional study of patients' quality of life

To assess the impact of oral anticoagulants (VKA/DOACs) on the quality of life of patients suffering from cardiac and thromboembolic pathologies, a cross-sectional survey was carried out from February 2024 to May 2024 at various health establishments and pharmacies in Algiers. For this purpose, QoL questionnaires (PACT-Q2, EQ-5D-3L) were completed in 63 patients:

PACT-Q2 (Perception of Anti-Coagulant Treatment) is a validated tool used to assess patients' satisfaction with their anticoagulant treatment by exploring its impact on their quality of life. (5) This impact is analyzed across several dimensions, with each item rated on a 5-point Likert scale: not at all, a little, moderately, very, or extremely. Reflecting the way anticoagulant therapy influences patients' daily lives: Perception of treatment: This section assesses patients' satisfaction with various aspects of their anticoagulant treatment, such as efficacy, side effects, compliance, and adherence. Impact on daily life: This section looks at how the treatment affects the patient's daily life, including time constraints, ease of use, and restrictions.

EQ-5D (European Quality of Life-5 Dimensions 3 Level version) is a standardized tool developed by the EuroQol group to measure general health (6), comprising a five-dimensional descriptive section: mobility, personal care, usual activities, pain/comfort, and anxiety depression.

In addition to the PACT-Q2 questionnaire, an exploratory question was added to capture the patient's overall perception of the treatment's impact on their quality of life (perceived impact: significantly positive, positive, neutral, negative, or significantly negative). This subjective variable was then cross-analyzed with the results from the EQ-5D-3L questionnaire to assess the consistency between overall perception and self-reported health status.

The study was in accordance with the Declaration of Helsinki, the anonymity of patients is respected.

Analysis of study data

To examine the differences in satisfaction and quality of life between different groups of patients on VKA and DOACs, the results of the PACT questionnaire were converted into a score: a coefficient of (0) for the answer: a little / not at all; coefficient of (0.25) for the answer: moderately ; a coefficient of (0.5) for the answer: very / extremely.

A high score reflects a negative perception of the medication and a lower quality of life, leading to reduced comfort, whereas a low score suggests better treatment acceptance and greater well-being.

The utility was established based on responses to the EQ-5D-3L questionnaires dedicated to patients on VKA or DOACs, using the weighting matrix validated by the HAS (Haute Autorité de santé)(7).

3. RESULTS

This study included a total of 63 patients undergoing oral anticoagulant therapy (figure 1). Among them, 83% (n=52) remained on their initial treatment, while 17% (n=11) experienced a change in anticoagulant therapy during follow-up. The duration of treatment varied across the population, with 13% of patients receiving anticoagulation for 1 to 3 months, 14% for 4 to 6 months, 21% for 7 to 12 months, 16% for 1 to 2 years, 24% for 2 to 5 years, and 13% for more than 5 years.

In terms of demographic characteristics, the majority of patients were female (60%), while males accounted for 40% of the study population. Regarding age distribution, most patients were between 71 and 80 years old (27%), followed by those aged 61 to 70 years (24%) and 51 to 60 years (21%). Patients over 80 years represented 17% of the sample, while younger age groups were less represented, with 8% aged 36 to 50 years and only 3% aged 18 to 35 years.
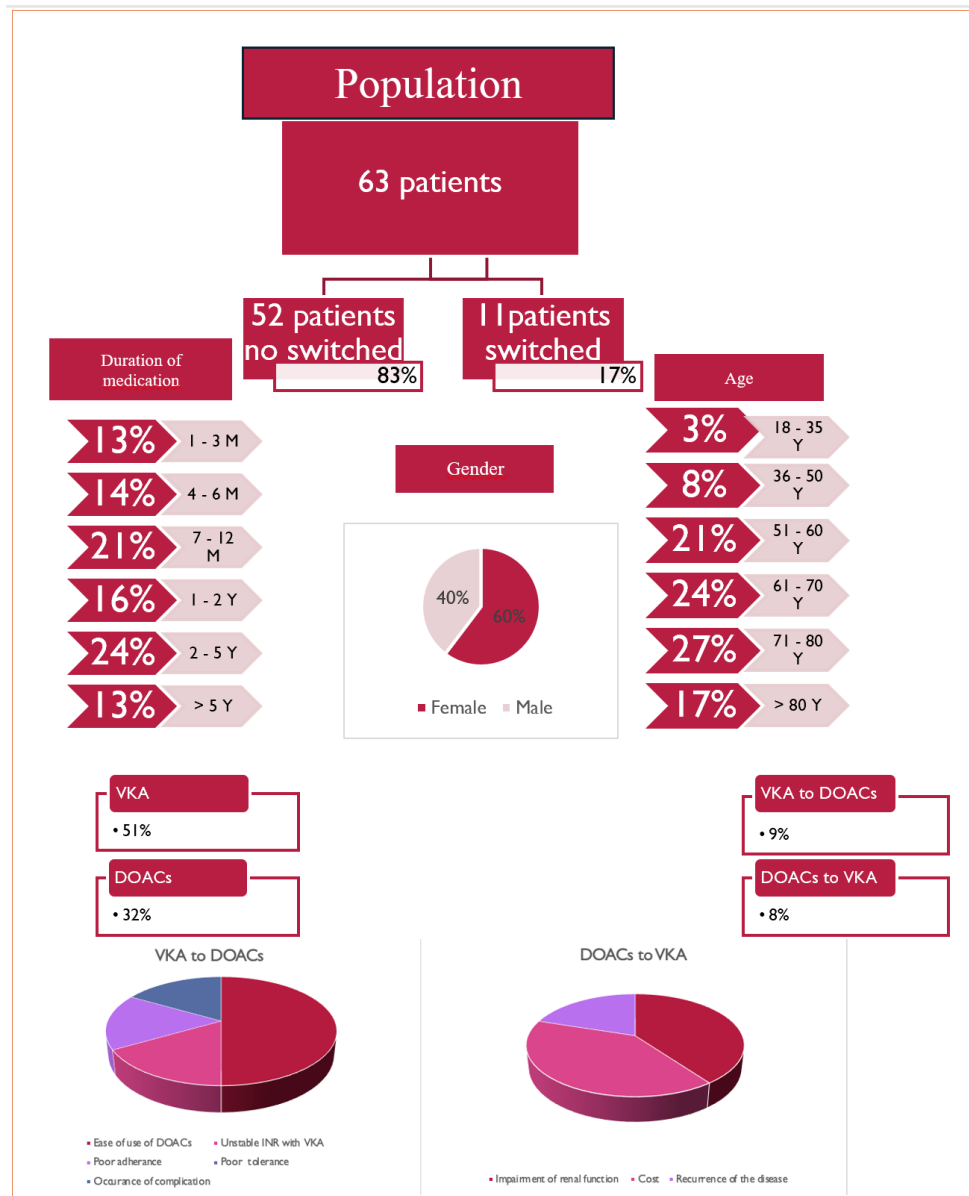
Figure 1. Profile of the population auditioned to assess the impact of DOACs / VKA on quality of life.

Concerning the type of anticoagulants used, 51% of patients were treated with vitamin K antagonists (VKAs), primarily acenocoumarol, and 32% were on direct oral anticoagulants (DOACs). Treatment switching was observed in 9% of patients who moved from VKAs to DOACs and in 8% who switched from DOACs to VKAs.

The reasons for switching from VKAs to DOACs included the ease of use of DOACs, unstable INR values under VKA therapy, poor adherence, intolerance, and the occurrence of complications. On the other hand, the main reasons for switching from DOACs to VKAs were impaired renal function, the high cost of DOACs, and disease recurrence.

Table 1. Comparison of quality of life and patient satisfaction characteristics between patients on stable treatment with a VKA and patients who switched from a VKA to a DOAC or from DOAC with the PACT-Q2 and EQ-5D questionnaires.

		Stable Treatment		Before switch		After switch	
		VKA	DOAC	VKA	DOAC	VKA	DOAC
PACT Questionnaire		n= 32	n= 20	n=5	n=6	n=6	n=5
How difficult is it to take your anticoagulant treatment (e.g. pills or injections, number of pills or injections, frequency of intake etc.)?	Not at all/a little	65,60%	100,00%	50,00%	100,00%	60,00%	100,00%
	Moderately	18,80%	0,00%	16,70%	0,00%	20,00%	0,00%
	Very/extremely	15,60%	0,00%	33,30%	0,00%	20,00%	0,00%
How bothered are you by taking your anticoagulant treatment?	Not at all/a little	46,80%	100,00%	33,40%	100,00%	60,00%	100,00%
	Moderately	28,10%	0,00%	16,60%	0,00%	20,00%	0,00%
	Very/extremely	25,10%	0,00%	50,00%	0,00%	20,00%	0,00%
Some anticoagulant treatments may need dose adjustment; how difficult is this for you?	Not at all/a little	37,50%	NA	0,00%	NA	20,00%	NA
	Moderately	18,80%	NA	16,70%	NA	40,00%	NA
	Very/extremely	43,70%	NA	83,30%	NA	40,00%	NA
It is recommended that certain foods be avoided while taking an anticoagulant treatment; how difficult is this for you?	Not at all/a little	30,50%	NA	0,00%	NA	20,00%	NA
	Moderately	32,00%	NA	0,00%	NA	20,00%	NA
	Very/extremely	37,50%	NA	100,00%	NA	60,00%	NA
It was recommended that certain foods be avoided while taking an anticoagulant treatment; how difficult is this for you?	Not at all/a little	NA	NA	NA	NA	NA	16,70%
	Moderately	NA	NA	NA	NA	NA	0,00%
	Very/extremely	NA	NA	NA	NA	NA	83,30%
Certain medications CANNOT be taken at all while you are on anticoagulant treatments; how difficult is this for you?	Not at all/a little	71,80%	95,00%	66,60%	100,00%	60,00%	50,00%
	Moderately	12,50%	5,00%	33,40%	0,00%	20,00%	16,70%
	Very/extremely	15,70%	0,00%	0,00%	0,00%	20,00%	33,30%
How difficult is it for you to take your anticoagulant treatment when you are away from home?	Not at all/a little	78,20%	100,00%	100,00%	100,00%	60,00%	100,00%
	Moderately	18,80%	0,00%	0,00%	0,00%	20,00%	0,00%
	Very/extremely	3,00%	0,00%	0,00%	0,00%	20,00%	0,00%
How difficult is it for you to take you to plan your time around your anticoagulant treatment (e.g. appointments with nurses, doctors, labs, etc.)?	Not at all/a little	46,90%	95,00%	16,70%	100,00%	0,00%	100,00%
	Moderately	21,90%	5,00%	33,30%	0,00%	40,00%	0,00%
	Very/extremely	31,20%	0,00%	50,00%	0,00%	60,00%	0,00%
How bothered are you by the medical follow-up required with your anticoagulant treatment?	Not at all/a little	25,00%	100,00%	0,00%	100,00%	0,00%	100,00%
	Moderately	37,50%	0,00%	16,70%	0,00%	20,00%	0,00%
	Very/extremely	37,50%	0,00%	83,30%	0,00%	80,00%	0,00%
Etes-vous ennuyé(e) par le suivi médical que nécessite votre traitement anticoagulant	Not at all/a little	21,90%	100,00%	16,70%	100,00%	20,00%	100,00%
	Moderately	28,10%	0,00%	16,70%	0,00%	0,00%	0,00%
	Very/extremely	50,00%	0,00%	66,60%	0,00%	80,00%	0,00%
Because of potential side effects (e.g. minor bruises, bleeding, etc.), do you limit your usual activities (i.e. work, leisure, social or physical activities, etc.)?	Not at all/a little	34,40%	85,00%	33,30%	100,00%	20,00%	66,60%
	Moderately	28,10%	10,00%	16,70%	0,00%	40,00%	16,70%
	Very/extremely	37,50%	5,00%	50,00%	0,00%	40,00%	16,70%
How worried are you about having to interrupt or stop your anticoagulant treatment?	Not at all/a little	28,10%	50,00%	16,70%	80,00%	40,00%	50,00%
	Moderately	34,40%	45,00%	33,30%	20,00%	40,00%	16,60%
	Very/extremely	37,50%	5,00%	50,00%	0,00%	20,00%	33,40%
How much physical discomfort do you have due to bruises or pain?	Not at all/a little	25,10%	65,00%	33,30%	60,00%	40,00%	83,30%
	Moderately	43,80%	30,00%	33,30%	20,00%	20,00%	16,70%
	Very/extremely	31,10%	5,00%	33,40%	20,00%	40,00%	0,00%
Overall, how satisfied are you with your anticoagulant treatment?	Not at all/a little	78,10%	5,00%	100,00%	0,00%	100,00%	0,00%
	Moderately	9,40%	15,00%	0,00%	20,00%	0,00%	0,00%
	Very/extremely	12,50%	80,00%	0,00%	80,00%	0,00%	100,00%
Do you feel more dependent on others (e.g. partner, family, nurse, etc.) because of your anticoagulant treatment?	Not at all/a little	25,00%	85,00%	16,70%	80,00%	10,00%	66,70%
	Moderately	37,50%	5,00%	33,30%	20,00%	40,00%	33,30%
	Very/extremely	37,50%	10,00%	50,00%	0,00%	50,00%	0,00%
Has this treatment impacted your quality of life	Significantly negative impact	31,20%	0,00%	83,30%	0,00%	60,00%	0,00%
	Negative impact	34,40%	0,00%	16,70%	0,00%	20,00%	0,00%
	Neutral	34,40%	10,00%	0,00%	20,00%	20,00%	16,70%
	Postive	0,00%	20,00%	0,00%	20,00%	0,00%	0,00%
	Significantly positive impact	0,00%	70,00%	0,00%	60,00%	0,00%	83,30%
		EQ-5D-3L Questionnaire					
Mobility	Not at all/a little	68,80%	65,00%	83,30%	60,00%	60,00%	83,30%
	Moderately	28,10%	30,00%	16,70%	20,00%	20,00%	16,70%
	Very/extremely	3,10%	5,00%	0,00%	20,00%	20,00%	0,00%
Self-care (washing or dressing)	Not at all/a little	50,00%	30,00%	16,60%	20,00%	60,00%	16,60%
	Moderately	21,80%	20,00%	66,70%	40,00%	20,00%	66,70%
	Very/extremely	28,20%	50,00%	16,70%	40,00%	20,00%	16,70%
Usual activities (work, study, housework, family or leisure activities)	Not at all/a little	34,30%	35,00%	20,00%	35,00%	40,00%	20,00%
	Moderately	46,90%	25,00%	30,00%	25,00%	40,00%	30,00%
	Very/extremely	18,80%	40,00%	50,00%	40,00%	20,00%	50,00%
Pain/discomfort	Not at all/a little	40,60%	70,00%	50,00%	40,00%	50,00%	50,00%
	Moderately	28,20%	20,00%	16,60%	40,00%	20,00%	16,60%
	Very/extremely	31,20%	10,00%	33,40%	20,00%	30,00%	33,40%
Anxiety/depression	Not at all/a little	46,90%	100,00%	16,70%	100,00%	5,00%	100,00%
	Moderately	25,00%	0,00%	33,30%	0,00%	35,00%	0,00%

| | Very/extremely | 28,10% | 0,00% | 50,00% | 0,00% | 60,00% | 0,00% |

Regarding patient satisfaction data (table 1), as analyzed by the PACT questionnaire (figure 2). A high score indicates that the patient has a negative perception of the drug and a lower quality of life, leading to reduced comfort. This is evident for VKAs, which scored 4.51, while DOACs scored 1.3. Patients on DOACs (score: 1.3) report significantly better quality of life compared to those on VKAs (score: 4.52), indicating that switching to DOACs generally results in a better quality of life. On the other hand, quality of life worsens when patients switch from DOACs to VKAs, while an improvement is observed when switching from VKAs to DOACs. The difference between these groups is around 3 points

The utility scores derived from the EQ-5D-3L questionnaire were used to assess the impact of anticoagulant treatments on patients' quality of life. The average utility value was higher among patients treated with DOACs (0.57) compared to those receiving VKAs (0.50), indicating a better health-related quality of life with direct oral anticoagulants. Moreover, switching from a VKA to a DOAC resulted in a notable increase in utility, from 0.44 to 0.53. Conversely, switching from a DOAC to a VKA led to a decline in utility, from 0.47 to 0.43. These findings highlight the positive impact of DOACs on perceived quality of life, particularly in dimensions related to pain/discomfort and anxiety/depression.
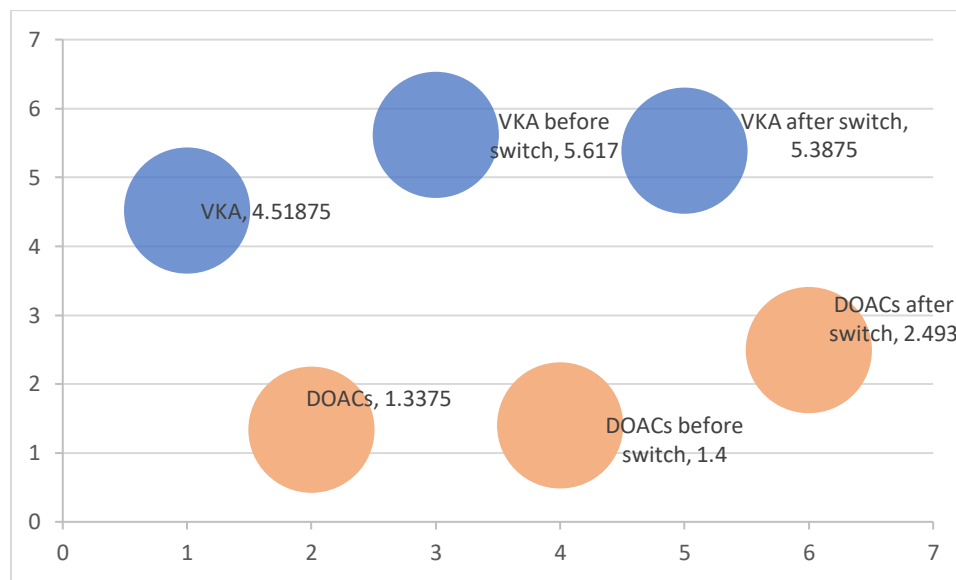
Figure 2. Graphical representation of scores for each patient group.

4. DISCUSSION

The results of our study highlight a significant improvement in the quality of life of patients treated with direct oral anticoagulants (DOACs) compared to those on vitamin K antagonists (VKAs), both in terms of treatment satisfaction (PACT-Q2) and perceived utility (EQ-5D-3L). This difference is mainly explained by the fewer constraints associated with DOACs, such as the absence of regular biological monitoring, fixed dosing, and limited food and drug interactions.

The studied population shows a clear preference for DOACs, particularly among patients who experienced a treatment switch. The average perception score (PACT-Q2) decreased from 4.51 for VKAs to 1.3 for DOACs, indicating greater comfort and better treatment acceptance. Similarly, the average utility score from the EQ-5D-3L questionnaire was higher among DOAC users (0.57) compared to those on VKAs (0.50), reflecting an improved perception of overall health status. Furthermore, patients who switched from VKAs to DOACs showed a clear improvement in utility scores (from 0.44 to 0.53), while those who switched from DOACs to VKAs experienced a decline in quality of life (from 0.47 to 0.43).

Our results concerning patient satisfaction with DOACs are in line with previous studies highlighting their perceived advantages. Although the present study did not investigate the initial reasons for prescribing a DOAC instead of a VKA, this issue was comprehensively addressed in a prior publication by our team (8). The literature further supports these observations, underlining the benefits of DOACs in terms of quality of life—particularly owing to their ease of use, lower psychological burden due to the absence

of intensive monitoring, and improved adherence. In the same prior study, 92% of physicians expressed appreciation for the simplicity of DOACs, compared to only 38% for VKAs, mainly because of the dietary restrictions and frequent INR checks required with VKAs (8). These constraints may partly explain the high discontinuation rates associated with VKAs, reported to reach up to 50% in some studies (9). Additionally, our findings are consistent with other evidence suggesting that DOACs may contribute to shorter hospital stays, a key element in the broader evaluation of patient well-being and quality of life (8).When examining specific dimensions, patients on DOACs reported better preservation of autonomy, lower levels of anxiety, and a reduced burden from medical examinations in their daily lives. In contrast, patients on VKAs—especially those with a negative perception of their health—reported greater interference with daily activities and a more pronounced emotional burden. These constraints contribute to an overall more negative perception of VKA therapy.

Moreover, the study reveals that the perceived burden of vitamin K antagonists (VKAs) is particularly pronounced among patients with a negative self-assessment of their health. Frequent dose adjustments, strict dietary restrictions, and regular INR monitoring were identified as major sources of discomfort. These constraints often translate into limited autonomy, reduced ability to carry out daily activities, and increased emotional strain—especially among patients who already perceive their health as poor.

Although VKAs remain clinically effective, their complex management may amplify feelings of instability and reduce treatment acceptability. This reinforces the need for more patient-centered approaches, particularly for vulnerable populations. In contrast, direct oral anticoagulants (DOACs) were generally associated with better tolerance and a lower psychological and logistical burden.they were perceived to cause little or no emotional distress (e.g., depression) and dramatically reduced the frequency and perceived burden of medical follow-ups.

Although DOACs improve both clinical outcomes and patient quality of life, their high cost and limited reimbursement in Algeria significantly restrict access. Financial barriers lead some patients to discontinue treatment or revert to VKAs, despite better satisfaction with DOACs. These access issues, along with clinical contraindications in certain populations, must be considered when selecting anticoagulant therapy in real-world settings.

In summary, the data suggest that treatment choice should not rely only on clinical efficacy, but also on patients' quality of life, emotional well-being, and ability to manage long-term therapies. DOACs, due to their simplicity and lower perceived burden, may offer an advantageous alternative, particularly in real-world settings where treatment adherence is critical.

This study has several limitations. First, the relatively small sample size (63 patients) may limit the generalizability of the results to the broader Algerian population. Nonetheless, this reflects real-world conditions, where the prescription of DOACs remains constrained by economic barriers and limited access. Second, the cross-sectional design precludes any evaluation of long-term treatment outcomes.

Despite these limitations, the use of validated instruments—PACT-Q2 and EQ-5D-3L—and the consistency of findings across both tools enhance the study's internal validity. The observed alignment between patient-reported satisfaction and health utility scores also reinforces the reliability of the results.

However, neither PACT-Q2 nor EQ-5D-3L accounts for individual-level factors such as age, comorbidities, educational attainment, or socioeconomic status, all of which could independently influence perceived quality of life regardless of the anticoagulant used. The lack of adjustment for these potential confounders may introduce bias. Future research should include multivariable analyses to better isolate the independent effect of anticoagulant type on patient-reported outcomes. Moreover, findings are based solely on descriptive statistics; no inferential tests were conducted to assess the statistical significance of observed differences.

5. CONCLUSION

This study highlights significant differences in quality of life and treatment satisfaction between patients receiving vitamin K antagonists (VKAs) and those treated with direct oral anticoagulants (DOACs). While VKAs remain clinically effective, their complex management, frequent monitoring requirements, and lifestyle restrictions contribute to a higher perceived treatment burden. In contrast, DOACs offer a more favorable patient experience, reflected in higher utility scores and greater satisfaction, particularly among individuals who previously struggled with VKAs.

The analysis also demonstrates a strong correlation between patients' subjective perceptions of treatment impact and objective health-related quality of life (HRQoL) measures, emphasizing the importance of incorporating patient-reported outcomes into therapeutic decision-making. Given the lower psychological and functional burden associated with DOACs, they appear to be a more suitable option for enhancing treatment adherence and improving daily well-being, especially in real-world clinical settings.

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