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Non-vitamin K antagonist oral anticoagulants *vs.* warfarin: historical trends and the current situation in Croatia

Ivan Zeljković*, Sanda Sokol Tomić, Ivica Benko, Ana Jordan, Nikola Pavlović, Šime Manola, Andrej Novak, Ante Lisičić

Dubrava University Hospital, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Ivan Zeljković, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-91-7823-289 / E-mail: ivanzeljkov@gmail.com

ORCID: Ivan Zeljković, https://orcid.org/0000-0002-4550-4056 • Sanda Sokol Tomić, https://orcid.org/0000-0002-4551-9231 Ivica Benko, https://orcid.org/0000-0002-1878-0880 • Ana Jordan, https://orcid.org/0000-0001-5610-6259 Nikola Pavlović, https://orcid.org/0000-0001-9187-7681 • Šime Manola, https://orcid.org/0000-0001-6444-2674 Andrej Novak, https://orcid.org/0000-0002-7828-4870 • Ante Lisičić, https://orcid.org/0000-0002-4365-9652

Introduction: Starting in 2010, non-vitamin K antagonist oral anticoagulants (NOACs) were approved in Croatia for the prevention of systemic thromboembolism in patients with atrial fibrillation. Unlike warfarin, which requires continuous monitoring of anticoagulant effect due to its narrow therapeutic index, NOACs offer a predictable and stable anticoagulant effect, making them a preferred therapeutic option.[1-3] However, in Croatia, NOACs have only recently (as of 2026) been placed on the primary ("A") list of the Croatian Health Insurance Fund (Fund), whereas since 2016, Fund covered 50% of the cost for a select group of patients based on specific criteria. The aim of this study was to evaluate the impact of socioeconomic conditions on NOAC utilization.

Patients and Methods: We conducted an observational, retrospective analysis of NOAC utilization from January 2012 to October 2026 using national data on NOAC market share alongside gross domestic product (GDP) per county, publicly available from the Croatian Bureau of Statistics.

Results: The adoption of NOACs in Croatia grew substantially until 2015 (when the NOAC share reached approximately 15%, with warfarin accounting for the remaining 85%), followed by a steady and strong increase of approximately 50% annually through the end of 2023, when NOAC market share reached approximately 70%. Subsequently, a further significant surge in NOAC utilization was observed, reaching a market share of approximately 90% (with warfarin dropping to 11%) in the last 2 years. Nevertheless, substantial regional variation in utilization persists across counties. County GDP exerted a strong influence on NOAC prescription rates. Coastal counties continue to demonstrate significantly higher NOAC uptake compared to inland counties, particularly those in eastern part of Croatia.

Conclusion: NOAC adoption has increased markedly in Croatia over the past 15 years, accompanied by a corresponding decline in warfarin use. Lower county-level GDP (reflecting lower household income) is associated with reduced NOAC utilization for thromboembolism prevention in patients with atrial fibrillation. Although all NOACs are currently equally available to all patients, significant regional disparities still persist, highlighting potential socioeconomic inequalities in access to NOAC therapy.

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