Predictors of Atrial Arrhythmia Recurrence after Catheter Ablation: Socioeconomic Impact in Low to Middle-Income Countries

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To the Editor,

We read with great interest the article by Ternes et al., recently published in the Arquivos Brasileiros de Cardiologia, with its accompanying insightful editorial.[1,2] This multicentre prospective cohort study of consecutive patients across three centres in Brazil provided valuable insights into the predictors of atrial arrhythmia recurrence following first-time catheter ablation. It highlighted its clinical setting in a middle-income country and reported outcomes similar to those in high-income countries. However, the results must be interpreted cautiously, and some points merit further discussion.

Firstly, socioeconomic factors play an important role in patient accessibility to catheter ablation and affect overall outcomes.[3,4] It is well described that, compared to high-income countries, patients with atrial fibrillation (AF) have poorer outcomes in low-middle-income countries in terms of death, years of life lost and disability-adjusted life years.[5] Interestingly, even in high-income countries, there appears to be a difference in AF ablation outcomes based on income brackets.[6,7] We believe that current results reflect Southern Brazil's private practice and inferences about the outcomes of a middle-income country should be interpreted in that context. Further clarification of the referral pathways to these private centres and the socioeconomic status of recruited patients should be considered to better contextualise results.

Secondly, in the context of broader patient accessibility, the time from the diagnosis of AF to catheter ablation is a pivotal variable that was not sufficiently described. For instance, in Australia, a high-income country, holding private healthcare insurance resulted in a quicker and higher chance of receiving a catheter ablation than publicly covered patients.[7] Hence, having more insights about the socioeconomic and healthcare status of patients included in the study by Ternes and colleagues, and the subsequent interval from AF diagnosis to catheter ablation, would provide further information regarding benchmarking against high-income countries.[1]

Furthermore, the methods employed to detect the recurrence of atrial tachycardia, such as the percentage of patients who received Holter monitoring post-catheter ablation and the duration of monitoring, were not sufficiently detailed. This is crucial for providing evidence of a more accurate assessment of the burden of atrial tachyarrhythmia.

We appreciate the challenges in providing timely catheter ablation for atrial arrhythmias, especially in Brazil, and commend the authors for this important study. To highlight such disparities, we suggest that further studies should be carried out to include real-world populations from various regions across Brazil and with different socioeconomic backgrounds.

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Keywords

Socioeconomic Disparities in Health; Catheter Ablation; Atrial Fibrillation.

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Manuscript received April 07, 2025, revised manuscript April 14, 2025, accepted April 14, 2025

DOI: https://doi.org/10.36660/abc.20250248i

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Reply

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We appreciate the thoughtful comments provided in the Letter to the Editor regarding our article, "The Southern Brazilian Registry of Atrial Fibrillation (SBR-AF Registry): Predictors of Atrial Arrhythmia Recurrence after First-Time Catheter Ablation".[1] The points raised about socioeconomic factors, referral pathways, and monitoring methods are valuable and warrant further clarification to contextualize our findings.

Our study cohort of 1,043 consecutive patients was indeed treated across three private institutions in Southern Brazil. Notably, Santa Catarina accounted for nearly 600 of the estimated 6,000 atrial fibrillation (AF) ablations performed in Brazil in 2024, representing 10% of the national total despite comprising only 3.8% of Brazil's population, with approximately 8 million inhabitants.[2] This highlights the region's significant contribution to AF ablation procedures, likely driven by its robust healthcare infrastructure and higher socioeconomic indicators compared to other Brazilian states. For instance, Santa Catarina boasts a *per capita* income of approximately BRL 2,200 per month, significantly higher than the national average of BRL 1,625.[2] Additionally, its Human Development Index (HDI) of 0.792 is among the highest in Brazil. These socioeconomic aspects likely facilitate better access to specialized care, including catheter ablation, and may contribute to improved health outcomes.

We acknowledge that socioeconomic factors can impact treatment and control of comorbidities such as hypertension, diabetes, and obesity, which are known to increase the risk of AF recurrence after ablation.[3] However, our findings suggest that a technically adequate ablation procedure can mitigate some of these risks. For example, our study reported a low complication rate of 2.1% and recurrence rates comparable to high-income countries (19% for paroxysmal AF and 30% for persistent AF after a first procedure), underscoring the potential of high-quality procedural care to overcome certain socioeconomic limitations.

We agree with that the lack of detailed data on the time from AF diagnosis to ablation limits our ability to fully benchmark against high-income countries. Similarly, we concur that the methods for detecting asymptomatic AF recurrence, such as implantable monitoring to define AF burden rather than a simplistic binary definition of recurrence imposes an important limitation. Without a more robust monitoring system, asymptomatic recurrences may be underreported, potentially underestimating the true burden of atrial tachyarrhythmia. Unfortunately, this is an important limitation of our prospective registry. Future studies should incorporate standardized, long-term monitoring protocols to address this limitation.

To further address disparities, we would certainly support the initiative for studies encompassing diverse regions of Brazil and varying socioeconomic backgrounds. Expanding research to other centers to include public healthcare settings and underrepresented populations would provide a more comprehensive understanding of AF ablation outcomes across Brazil. We thank the authors for their insightful critique and hope our study serves as a foundation for future investigations into equitable access to AF care in low- and middle-income countries.

Sincerely,
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Letter to the Editor

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