Missed opportunities in statin therapy: A critical appraisal of prescription practices in sub-Saharan Africa

The systematic review and meta-analysis by Tassew et al. on statin prescription patterns among Type 2 diabetes mellitus (T2DM) patients in Africa addresses an important gap in cardiovascular disease prevention in sub-Saharan Africa [1]. While the study provides insights into the underutilization of statins in this population, several critical aspects of the analysis require further examination. In this correspondence, we highlight areas where the study's methodology could be strengthened, and we propose additional factors that should be considered to improve future research on statin use in Africa.

First, we would like to acknowledge the authors' comprehensive review of a neglected topic. Statin prescription in low-resource settings, particularly in Africa, is a pressing issue given the rising burden of cardiovascular diseases (CVD) in patients with diabetes. The broad database search and adherence to the PRISMA-2020 guidelines are commendable. Additionally, the inclusion of multiple observational studies helps provide a snapshot of real-world practices in Africa, where data is often scarce.

One of the major limitations of this study lies in the high heterogeneity ($I^2 = 92$ %) observed across the included studies. The authors acknowledge this heterogeneity but do not explore it in depth. While a random-effects model was applied, this approach alone does not fully account for the significant differences between studies. The high I^2 statistic indicates that the variability among the studies may stem from factors other than random chance, such as differences in healthcare infrastructure, socioeconomic conditions, or patient demographics across the included countries. Given the wide range of settings (Ethiopia, Ghana, Tanzania, Botswana) and the variations in sample size and study design, it would have been beneficial to conduct a more robust subgroup analysis based on healthcare setting or country [2].

Furthermore, while the authors attempt to explain this heterogeneity through statistical methods, the lack of a detailed discussion on how local healthcare systems or policy differences affect statin prescription patterns is a missed opportunity. For example, health policies and the availability of statins likely vary significantly between urban and rural settings or between public and private healthcare providers in Africa. A deeper analysis could have explored how these structural factors contribute to prescription patterns [3,4].

Another major critique is the limited discussion on socioeconomic barriers to statin use. The authors briefly mention government insurance as a factor associated with higher statin prescription rates but fail to adequately explore other systemic barriers, such as medication affordability, healthcare access, or cultural beliefs about medication. In many sub-Saharan African countries, out-of-pocket costs for medications like statins are prohibitive, and public health systems are under-resourced, leading to inconsistent medication availability. These factors can significantly impact prescription rates and should have been addressed more comprehensively in the analysis [5].

Moreover, the study focuses exclusively on quantitative data from observational studies, omitting any qualitative insights into the experiences of healthcare providers or patients. A mixed-methods approach could provide a richer understanding of the barriers to statin prescription, especially in regions where the healthcare infrastructure is weak. This oversight limits the study's ability to offer actionable recommendations for increasing statin use among T2DM patients.

Several methodological issues also warrant attention. First, the study only included articles published in English, which introduces a significant risk of language bias. Given that French, Portuguese, and Arabic are widely spoken in several African countries, excluding non-English studies may have led to an incomplete understanding of the true statin prescription patterns across the continent. This exclusion limits the generalizability of the findings and may skew the results toward Anglophone countries with different healthcare systems compared to their Francophone or Lusophone counterparts.

Additionally, the meta-analysis relies heavily on cross-sectional studies, which provide a snapshot of statin use at a single point in time but do not account for changes in prescription patterns over time. Longitudinal studies would offer more robust evidence regarding the factors that influence statin prescription in Africa. Furthermore, no studies from countries like Nigeria or South Africa—two of the largest and most populous nations in Africa—were included in the review. This omission raises concerns about the representativeness of the data.

Another flaw lies in the reliance on published literature, which introduces a risk of publication bias. Studies that report higher prescription rates or more favorable outcomes are more likely to be published, potentially skewing the meta-analysis results. The authors attempt to address publication bias using a funnel plot, but the analysis remains limited by the small number of studies included (n = 10), making it difficult to draw definitive conclusions about the true prevalence of statin use in Africa.

The authors also overlook cultural differences in medical practice that may influence statin prescription. In some African countries, there may be hesitancy among healthcare providers to prescribe long-term medication like statins due to concerns about patient adherence, especially in rural or economically disadvantaged areas. Cultural beliefs about medication, trust in Western medicine, and the role of traditional medicine are all factors that could influence statin prescription patterns, yet these are not addressed in the study [6].

To address the limitations outlined above, future studies should adopt a multi-level approach that includes both quantitative and qualitative data. Researchers should explore the structural barriers to statin prescription, such as healthcare infrastructure, medication availability, and economic factors, alongside the clinical determinants of statin use.

Additionally, broadening the inclusion criteria to non-English studies would provide a more comprehensive understanding of statin use across Africa.

Moreover, future research should aim to include data from longitudinal studies to capture changes in prescription patterns over time and should consider incorporating longitudinal studies to assess the impact of specific interventions aimed at improving statin use in T2DM patients. Finally, expanding the geographic scope of the review to include more African countries, particularly those with larger populations, would improve the representativeness of the findings.

CRediT authorship contribution statement

Stephan Mayntz: Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Rose Peronard:** Conceptualization, Investigation, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no conflict of interests.

References

[1] Chekol Tassew W, Ferede YA, Zeleke AM. Prescribing patterns of statins and associated factors among type 2 diabetes mellitus patients in Africa: a systematic review and meta-analysis. Metabol Open 2024;23:100297.
[2] Chepp V. Comparative subgroup analysis in qualitative interview studies: does sample size matter? Chest 2024;166(3):423–4.
[3] Harrison MA, Marfo AFA, Annan A, Ankrah DNA. Access to cardiovascular medicines in low- and middle-income countries: a mini review. Glob Health Res Policy 2023;8(1):17.
[4] Li C, Spencer G, Husain MJ, Nugent R, Auzenne D, Kostova D, et al. Barriers to accessibility of medicines for hyperlipidemia in low- and middle-income countries. PLOS Glob Public Health 2024;4(2):e0002905.
[5] Yenet A, Nibret G, Tegegne BA. Challenges to the availability and affordability of essential medicines in African Countries: a scoping review. Clinicoecon Outcomes Res 2023;15:443–58.
[6] McQuaid EL, Landier W. Cultural issues in medication adherence: disparities and directions. J Gen Intern Med 2018;33(2):200–6.

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