

Peer Review

Review of: "The Influence of Glycemic Status and Sociodemographic Factors on Patients' Dental Caries Risk and Experience in Lagos, Nigeria"

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I have carefully reviewed the manuscript entitled "The Influence of Glycemic Status and Sociodemographic Factors on Patients' Dental Caries Risk and Experience in Lagos, Nigeria." The study addresses a relevant and underexplored public health issue, particularly in sub-Saharan Africa, by investigating the association between glycemic status and dental caries in a Nigerian population. While the manuscript contributes important insights, several strengths and limitations should be acknowledged to improve the rigor and clarity of the article.

Study Relevance and Rationale

The topic is timely and relevant, particularly given the rising prevalence of type 2 diabetes mellitus (T2DM) globally and in Nigeria. The introduction clearly outlines the rationale, supported by current global and regional statistics.

However, the introduction would benefit from a more detailed explanation of the mechanisms linking T2DM and dental caries, especially differentiating between direct metabolic effects and behavioral mediators (e.g., diet, oral hygiene, medication use).

Study Design and Methodology

The controlled cross-sectional design is appropriate for exploratory analysis; however, its limitations in inferring causality must be more strongly emphasized in both the discussion and conclusion.

Inclusion and exclusion criteria were well-defined and strengthened internal validity, although excluding detailed HbA1c profiles and duration of diabetes is a missed opportunity to stratify findings by level of

glycemic control.

Data Collection and Assessment Tools

The use of the DMFT index and CAMBRA framework is methodologically sound and aligned with international best practices. The calibration process for the examiner is commendable and enhances the reliability of clinical findings.

However, the lack of granular dietary data and oral hygiene behavior weakens the ability to contextualize the clinical outcomes.

Statistical Analysis

The combination of bivariate and multivariate analysis is appropriate; however, the **lack of statistically significant findings in the adjusted model** raises concerns about power or potential residual confounding.

Notably, the finding that **tertiary education was associated with higher caries risk** (aOR = 3.70; $p = 0.026$) contradicts much of the existing literature. This warrants further exploration — was this due to misclassification, sample composition, or an interaction effect with another variable (e.g., age or diet)?

Interpretation of Results

The discussion appropriately acknowledges the non-significant findings and provides plausible hypotheses for observed trends. However, it often blends speculation with conclusion, particularly around biological mechanisms (e.g., AGEs, salivary glucose) without direct measurement in this study.

Greater clarity is needed on how "new caries" was assessed longitudinally if the study design was cross-sectional. If this was based on retrospective self-report or clinical records, this should be clearly stated.

Limitations

The limitations are partially addressed but could be more explicitly acknowledged, especially:

Absence of dietary logs or validated food frequency questionnaires.

Lack of data on fluoride exposure (water supply or toothpaste use).

Non-matched groups for key variables such as age and income, which may bias comparisons.

This manuscript explores a clinically and socially significant topic and provides useful descriptive data for the Nigerian context. However, **greater care must be taken in the interpretation of non-significant associations, and limitations in design and analysis should be more clearly addressed.** With revisions

to strengthen the discussion, acknowledge limitations, and clarify methodology, the manuscript has the potential to contribute to the literature on diabetes and oral health disparities.

Declarations

Potential competing interests: No potential competing interests to declare.