

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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This study presents a cross-sectional analysis investigating the complex interplay between glycemic status (specifically diabetes mellitus), sociodemographic factors, and the risk and experience of dental caries. Given the well-established systemic and oral health implications of diabetes, including an increased susceptibility to dental issues, a comprehensive examination of these associations, particularly considering the influence of various sociodemographic elements, is highly relevant to public health and informs targeted oral health interventions for vulnerable populations. A significant strength of this research lies in its clear objective to understand these relationships comprehensively by utilizing robust statistical analyses. The study's approach of collecting data on sociodemographic characteristics, glycemic status, and oral health indicators from both diabetic and non-diabetic individuals provides a comparative framework essential for identifying the specific impact of diabetes. The assessment of caries risk and experience using standard clinical diagnostic criteria ensures a degree of consistency and reliability in the oral health data collected. The application of both bivariate analyses (chi-square and t-tests) and multivariate logistic regression models is another strong point. Bivariate analyses are useful for identifying initial associations, while the use of multivariate models is crucial for adjusting for potential confounders. This allows the study to determine independent predictors of caries risk and experience, providing a more nuanced understanding of the direct and indirect effects of diabetes and sociodemographic factors. Reporting adjusted odds ratios (aOR) with 95% CI enhances the statistical rigor and interpretability of the findings. The study effectively highlights several key findings with significant implications. The observation that diabetics had a significantly higher mean age, were more prevalent among female participants, and had lower educational attainment and income disparities

compared to non-diabetics underscores the demographic and socioeconomic profile of the diabetic cohort in this study. These disparities are crucial context for understanding the potential exacerbation of oral health inequalities. Furthermore, the bivariate analysis revealing a strong association between diabetes and high caries risk is a direct confirmation of the well-known link between these two conditions. This finding reinforces the need for increased vigilance and preventive measures in diabetic individuals. The subsequent analysis within the diabetic group, showing that lower income and education were associated with significantly higher odds of developing new caries over 36 months, provides valuable insights into the specific socioeconomic vulnerabilities within the diabetic population that contribute to poorer oral health outcomes. The identification of ethnicity as a significant factor, with variations in caries risk and prevalence among different ethnic groups (Yoruba and Igbo participants), adds another layer of complexity to the associations studied. This finding suggests that cultural or genetic factors, or potentially variations in access to care and health behaviors linked to ethnicity, may also play a role in oral health disparities among diabetics. Such insights are vital for developing culturally sensitive and targeted interventions. The conclusion drawn by the study, that diabetes is a determinant of caries risk and experience and that sociodemographic disparities further exacerbate oral health inequalities, is well supported by the presented results. This emphasizes the multifactorial nature of oral health challenges in diabetic populations and the need for a holistic approach to prevention and management that considers not only glycemic control but also the broader socioeconomic context of individuals. However, despite its valuable contributions, this cross-sectional study presents several opportunities for improvement that, if addressed, could significantly enhance its scientific impact and the strength of its recommendations. A primary limitation inherent to the cross-sectional design is its inability to establish causal pathways. While the study identifies associations, it cannot definitively determine whether diabetes or specific sociodemographic factors directly *cause* increased caries risk or experience. Longitudinal studies, as recommended by the authors, are essential to explore these causal relationships over time. While the study collected data on sociodemographic characteristics and glycemic status, a more detailed assessment of glycemic control within the diabetic group (e.g., using HbA1c levels) and the duration of diabetes could provide a more nuanced understanding of how the level and duration of hyperglycemia influence caries outcomes. Similarly, collecting more detailed information on dietary habits, oral hygiene practices, and access to dental care for all participants would allow for a more comprehensive adjustment for potential behavioral and environmental confounders. The assessment of caries risk and experience, while using standard criteria, could benefit from a more detailed breakdown of the severity and location of caries lesions. Differentiating between incipient and advanced caries, or

analyzing caries patterns on specific tooth surfaces, might provide deeper insights into the specific ways diabetes and sociodemographic factors influence the progression of the disease. Furthermore, while the study identifies associations, the practical implications for developing specific, targeted preventive interventions could be more explicitly detailed. Translating the statistical findings into concrete recommendations for tailoring oral health education, routine dental screenings, and access to care based on the identified high-risk sociodemographic profiles within the diabetic population would significantly enhance the study's utility for practitioners and policymakers. In conclusion, this study makes a valuable contribution by highlighting the significant associations between diabetes, sociodemographic factors, and caries risk and experience. Its strengths lie in the comprehensive data collection, the use of robust statistical analyses, and the identification of key demographic and socioeconomic vulnerabilities. However, to maximize its impact and inform more effective public health strategies, future research should transition to longitudinal designs to establish causality, incorporate more detailed assessments of glycemic control and potential confounders, provide a more nuanced analysis of caries outcomes, and explicitly translate findings into actionable, targeted preventive interventions for high-risk diabetic populations.

Declarations

Potential competing interests: No potential competing interests to declare.