

Point-by-point response to reviewers' comments

On behalf of all authors, we gratefully acknowledge the editorial team and reviewers for their valuable and constructive comments on our manuscript titled *“Income Inequalities in Dental Caries and Dental Care Levels Among 12-Year-Old Children: An Ecological Study in a High-Income Country and a Lower Middle-Income Country.”* The responses to the reviewers' comments, together with the corresponding revisions in the manuscript, are detailed below. All authors have agreed upon the amendments made. The manuscript has also been carefully revised for English language editing and to reduce similarity by a co-author and native English speaker.

Responses to the comments of the reviewers

Reviewer 4

Thank you for the opportunity to review your manuscript. The topic is relevant and timely, and the comparative approach between two countries with different economic backgrounds provides valuable insights. Below you will find detailed feedback intended to help improve the clarity, methodological transparency, and overall impact of your work. 1. Relevance and originality The topic is relevant from a public health perspective and presents an interesting comparison between two very different economic contexts (Sri Lanka and Wales). The originality lies in linking income, income inequality, and dental caries experience in the same age group. However, the paper is largely descriptive and correlational, without developing the analysis toward deeper mechanistic or causal implications. It would be useful to argue more clearly why the comparison between these two countries (and not others) is relevant for the generalization of conclusions.	The comparison between the two countries was initiated due to the sabbatical visit by the lead author Dr Ratnayake to Wales. It was agreed by the team that a comparison could be undertaken given that the data sets available for both countries provided data for the same age group and the time period under investigation. Furthermore, for both countries, dental care is free at the point of access. Furthermore, there has been an opportunity for all collaborators on this project to learn more about the public health implications by comparing a middle-income country with a high-income country.
2. Title and abstract The title reflects the content but could be reformulated for clarity, e.g.: “Income Inequalities and Dental Caries in 12-Year-Olds: An Ecological Comparison Between a	Thank you for that suggestion. We have now amended the title as suggested

High- and a Lower-Middle-Income Country”.	
In the abstract: Clearly state that the design is ecological and what limitations it implies, to avoid causal interpretation. Include the mean DMFT values for each country.	Authors have now added a statement on the limitation of ecological study design to the abstract under the conclusion section. Mean DMFT of both countries now have been added under the results section of the abstract. Abstract Background/Objectives: This study aimed to assess whether income was associated with dental caries experience and dental care levels among 12-year-old children in two contrasting economic contexts, Sri Lanka (lower-middle-income) and Wales (high-income) regardless of national income status. Methods: An ecological study design was used with published data. For Sri Lanka, income parameters included household income, mean per-capita income, and the Gini coefficient. For Wales, the Welsh Index of Multiple Deprivation was used. Dental caries was assessed using the DMFT index and its components (DT, MT, FT), while dental care was assessed using the care index, restorative index, and treatment index. Pearson correlations were used to explore associations between income measures and both caries experience and dental care indices across districts in Sri Lanka and unitary authorities in Wales. Results: The mean DMFT for 12-year-old children was 0.6 in both Sri Lanka and Wales, with caries prevalence of 30.4% and 29.6%, respectively. In Sri Lanka, both mean household income and per-capita income showed moderate, statistically significant positive correlations with DMFT ($r = 0.47$, $p = 0.01$). Income inequality, measured by the Gini coefficient, was positively associated with caries experience ($r = 0.42$, $p=0.03$). In Wales, higher deprivation (lower income) was moderately associated with increased DMFT, in areas within the 20% ($r=0.54$, $p<0.01$), 30% ($r=0.53$, $p<0.01$), and 50% ($r=0.61$, $p<0.01$) deprived quintiles. Dental care indices showed no clear association with income in either of the countries. Conclusions: Income-related disparities in dental caries were evident in both countries. Prevention strategies should focus on higher-income groups in Sri Lanka and on deprived populations in Wales. However, as this was an ecological study, the results are subject to

	ecological fallacy and should therefore be interpreted with caution.
3. Introduction The introduction is detailed but relatively long; some passages (e.g., global statistics) could be condensed. Although recent literature is cited, a clearer discussion of the gaps in previous research that justify this study would be useful.	Thank you. The authors believe that a discussion of the gaps in previous research have been addressed in both the introduction and discussion section.
4. Methods Explain more clearly why data from different years were used (2014 for WIMD vs. 2015/2016 for oral health data) and how this could affect results. Highlight the lack of an absolute income measure for Wales as an important limitation. Present earlier in this section the methodological differences in caries recording (DMFT vs. D3MFT), not only in the limitations. Indicate the sample size for each district/unitary authority.	The following section was added to the methods section to clarify the limitations and reasoning of two data sets from two different years. ‘For Wales, income-related measures from the Welsh Index of Multiple Deprivation (WIMD) were last reported in 2014, and no updated dataset was available for the same year as the oral health survey. Therefore, the 2014 WIMD data were used as the closest available proxy to align with the 2015/2016 oral health dataset. While the use of data from different years may introduce a minor temporal mismatch, this approach ensured the most up-to-date and comparable data sources were utilized. ” The limitations in the lack of an absolute income measurement for Wales and the two different measurements of DMFT in the two countries have been explained and discussed in the limitations. We believe that this section is more appropriate in the limitations section as opposed to the methods. The number of districts and unitary authorities have been added to the methods section. ‘Oral health-related variables and income-related variables were compared across the 25 districts of Sri Lanka and the 22 unitary authorities of Wales’
5. Results Tables are dense; reformat for readability.	Tables have now been reformatted for improved readability. However, authors decided to keep the CI as footnotes to avoid

Add confidence intervals directly into the tables, not only in the footnotes. Define clearly what thresholds are used for terms such as “positive” or “moderate” correlations.	unnecessary clutter within the Table. The threshold levels have been defined according to the Cohens’ guideline. The following statement have been added. The strength of the correlations was interpreted according to Cohen’s guidelines, with coefficients classified as mild ($r \approx 0.10$), moderate ($r \approx 0.30$), and strong ($r \approx 0.50$).
6. Discussion Clearly mark statements that are hypotheses (e.g., sugar consumption) and separate them from actual results. Emphasize more strongly the risk of ecological fallacy and the fact that individual-level conclusions cannot be drawn. Discuss more explicitly how methodological differences in measuring caries and income could affect comparability. Add a more structured section on the practical implications for public health policy.	Thank you. The authors feel that the additional sections to the discussion have now addressed these points and consequently strengthened this section.
7. Other observations Some in-text references are inconsistently formatted (e.g., [6] without a space). Check consistency of monetary units and conversions. Give descriptive titles to figures (e.g., “Relationship between income measures and DMFT in Sri Lanka”). Consider adding a simple comparative graph between the two countries, not only separate tables.	The titles of figures have been amended. References have now been formatted according to the journal guidelines. It was not prudent to add a comparative graph between the two countries as the income measures and DMFT measures were not similar.

8. Conclusion Reformulate the conclusion to clearly reflect the ecological nature of the study and its methodological limitations. Avoid wording that suggests causality; focus on observed associations and recommendations for future research. Shorten the conclusion slightly and retain only the key messages.	The conclusion section has been amended as follows; This ecological study found that both absolute and relative income measures were associated with dental caries and its components in Sri Lanka, whereas in Wales, income inequality showed a positive association with caries experience. No associations were observed between income indicators and reactive dental care in either setting. Given the ecological design and temporal differences in data sources, these findings should be interpreted with caution. Future research using individual-level data is needed to better understand the social determinants of oral health in children. From a public health perspective, preventive efforts may warrant attention to more affluent subgroups in Sri Lanka and to deprived populations in Wales
9. References Standardize reference formatting (spacing, punctuation, style). Ensure consistency in citation style (articles, reports, links, DOI).	References have now been formatted according to the journal guidelines.

Thank you,

Yours' sincerely,

Dr. Dilini Lalanthi Ratnayake (Corresponding author) on behalf of all authors