CORRESPONDENCE

Consideration on 'Exploring the link between dietary inflammatory index, inflammatory biomarkers, and sleep quality in adults with obesity: a pilot investigation'

International Journal of Obesity; https://doi.org/10.1038/s41366-025-01976-2

To The Editor:

We read with great interest the article "Toğuç H, Öngün Yılmaz H, Yaprak B. Exploring the link between dietary inflammatory index, inflammatory biomarkers, and sleep quality in adults with obesity: a pilot investigation. International Journal of Obesity. 2025;49:1037-1042" [1], recently published in The International Journal of Obesity. We commend the authors for the originality with which they interconnect dietary inflammation, systemic biomarkers, and subjective sleep quality in a clinical sample of adults with obesity. Integrating the Dietary Inflammatory Index (DII) with biomarker data and sleep assessment offers an innovative framework that may stimulate further translational research.

However, the novelty of this approach warrants cautious interpretation. As a pilot study, its cross-sectional design captures both exposure (DII) and outcomes (hs-CRP, PSQI) simultaneously, limiting the ability to infer directionality. Reverse causality and biological circularity remain plausible explanations for the observed associations.

The sample was drawn from a single outpatient clinic in Malatya (Turkey), with 124 participants from an initial pool of 176. A 30% refusal rate may introduce selection bias, and the small sample size limits statistical power and external validity.

Regarding dietary exposure, the DII was calculated using a three-day self-reported food diary, which initially incorporated 32 of the 45 nutrients in the validated algorithm. This reduced nutrient panel and potential under- and over-reporting may lead to misclassification of dietary inflammatory potential. Furthermore, the DII lacks a diagnostic threshold to distinguish "inflammatory" from "non-inflammatory" diets, limiting its clinical applicability. Nonetheless, large-scale population studies have confirmed its epidemiological utility [2].

Sleep quality was assessed solely via the Pittsburgh Sleep Quality Index (PSQI), a validated tool (sensitivity 89.6%, specificity 86.5%) [3], but inherently subject to subjective variability and potential misclassification. The absence of objective measures such as polysomnography is noteworthy. Nearly 80% of participants were classified as "poor sleepers", potentially limiting the analysis's ability to discriminate among exposure levels.

From a biological perspective, relying on a single hs-CRP measurement as the sole inflammatory marker neglects more sensitive upstream cytokines such as IL-6 or TNF-α. Key confounders were not assessed, including habitual physical activity, chronotype, psychosocial stress, and risk of obstructive sleep apnoea (OSA). Individuals with OSA often exhibit intermittent hypoxia and NF-κB-mediated inflammatory activation, both of which can impair sleep quality [4, 5].

Additionally, the lack of adjustment for multiple comparisons and the absence of data on anti-inflammatory medication use may increase the risk of false-positive findings, particularly in light of the modest correlation coefficients reported ($r \approx 0.25$). Data collection spanned from November 2021 to May 2022, but seasonal variability in diet or chronotype was not accounted for.

In conclusion, this pilot study offers important proof of concept: low-grade inflammation, measured via hs-CRP, is associated with DII and BMI. While these findings support the biological plausibility of diet-inflammation links, causality cannot be inferred. Nonetheless, a targeted nutritional approach remains a promising avenue in managing obesity.

Angelo Pietrobelli[1] and Marco Zaffanello[1]✉
[1]*Department of Surgery, Dentistry, Gynecology and Pediatrics, University of Verona, 37129 Verona, Italy.*
✉*email: marco.zaffanello@univr.it*

DATA AVAILABILITY

This paper is a letter to the Editor. No raw data are available.

REFERENCES

1. Toğuç H, Öngün Yılmaz H, Yaprak B. Exploring the link between dietary inflammatory index, inflammatory biomarkers, and sleep quality in adults with obesity: a pilot investigation. Int J Obes. 2025;49:1037–42.
2. Mohammadi S, Hosseinikia M, Ghaffarian-Bahraman A, Clark CCT, Davies IG, Yousefi Rad E, et al. Dietary inflammatory index and elevated serum C-reactive protein: a systematic review and meta-analysis. Food Sci Nutr. 2023;11:5786–98.
3. Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry Res. 1989;28:193–213.
4. Frangopoulos F, Zannetos S, Nicolaou I, Economou NT, Adamide T, Georgiou A, et al. The complex interaction between the major sleep symptoms, the severity of obstructive sleep apnea, and sleep quality. Front Psychiatry. 2021;12:630162.
5. Lavalle S, Masiello E, Iannella G, Magliulo G, Pace A, Lechien JR, et al. Unraveling the complexities of oxidative stress and inflammation biomarkers in obstructive sleep apnea syndrome: a comprehensive review. Life. 2024;14.

AUTHOR CONTRIBUTIONS

AP, MZ, conceptualisation and writing.

COMPETING INTERESTS

The authors declare no competing interests.

Received: 9 July 2025 Revised: 28 August 2025 Accepted: 26 November 2025
Published online: 12 December 2025

ADDITIONAL INFORMATION

Correspondence and requests for materials should be addressed to Marco Zaffanello.

Reprints and permission information is available at http://www.nature.com/reprints

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.