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In the interest of transparency and to help readers form their own judgements of potential bias, Nature Portfolio journals require authors to declare any competing financial and/or non-financial interest in relation to the work described in the submitted manuscript.

Competing interests declaration

- ☐ We declare that none of the authors have competing financial or non-financial interests as defined by Nature Portfolio.
- ☒ We declare that one or more of the authors have a competing interest as defined by Nature Portfolio.

JA reports research support from Nestle Healthcare Nutrition, Eli Lilly, Epitomee, UnitedHealth Group, Novo Nordisk, KVKTech, and WW; he serves as a consultant for Regeneron, Brightseed, Boehringer Ingelheim, Intuitive, Novo Nordisk, Eli Lilly and WW. He did not receive payment for his work here. SN, GF, MC, and AM are employees and shareholders at WW. YRH served as a consultant for WW on this manuscript. He reported receiving grants from the American Gastroenterological Association Health Disparities Award and ASCO/Pfizer Conquer Cancer.

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Large Language Models (LLMs), such as ChatGPT, do not currently satisfy our authorship criteria. Notably an attribution of authorship carries with it accountability for the work, which cannot be effectively applied to LLMs. Use of an LLM should be properly documented in the Methods section (and if a Methods section is not available, in a suitable alternative part) of the manuscript.

- ☒ We confirm that the author list of this manuscript does not include any Large Language Models (LLMs).

Policy information about Authorship: inclusion & ethics in global research

All authors are encouraged to provide an "Inclusion & Ethics" statement where relevant.

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- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
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- ☒ We have provided a full data availability statement in the manuscript.

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Confirm that all relevant data are deposited into a public repository and that accession codes are provided.

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Code availability statement

For all studies using custom code or mathematical algorithm that is deemed central to the conclusions, the manuscript must include a statement under the heading "Code availability" describing how readers can access the code, including any access restrictions. Code availability statements should be provided as a separate section after the data availability statement but before the References.

☐ We have provided a full code availability statement in the manuscript

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Does not apply

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- ☒ ☐ Macromolecular structural data
- ☒ ☐ Unique biological materials
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- ☒ ☐ Human embryos, gametes and/or stem cells
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- ☒ ☐ Clinical data
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I certify that all the above information is complete and correct.

Typed signature Jamy Ard

Date Feb 22, 2024