Reviewer’s report

Title: Relationship between visceral fat thickness and bone development in sedentary obese youths

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Reviewer: Shilpa Bhupathiraju

Reviewer’s report:

COMMENTS FOR THE AUTHOR:
Summary: Obesity has been associated with greater bone mineral density (BMD) due to the weight bearing effect of the tissue on the skeleton. However, in recent years, obesity and osteoporosis have both increased dramatically. Freitas Jr. et al. examined the cross-sectional associations between visceral fat thickness and bone health in a sample of sedentary obese youths. While their results are interesting there are major concerns with the respect to study design and the manuscript, in general, which threaten the internal validity of their findings. These are outlined below:

MAJOR COMPULSORY REVISIONS:
1. The manuscript itself was particularly difficult to read and is very poorly written. The authors should thoroughly reformat the manuscript per the journal guidelines.
2. There are numerous spelling and grammatical mistakes throughout the manuscript. The manuscript needs to be written in concise, logical, and grammatically correct English.
3. Title: The term “bone development” is misleading as the authors are only looking at cross-sectional associations.
4. Background:
   a. What do the authors imply by the term “chronicle” comorbidities?
   b. Please replace terms like “increased” with “higher” in cross-sectional studies as this implies an actual change in the variable of interest.
5. Participants
   a. Please list the name of the local institution
   b. Second paragraph – Which measurements were taken at the campus
   c. Please provide in complete detail the number of participants who responded, the number who were eligible, number excluded, number refused etc. Were there any systematic differences between those who chose to participate vs those who did not? A flow chart would be helpful.
   d. Please describe briefly how obesity was defined in your study rather than pointing the readers to reference number 12.
e. How was physical activity assessed? Was it through a questionnaire? If so, was this validated?

f. The authors use the term children and adolescents throughout the manuscript. What age groups do these refer to?

6. Bone mineral content and density
   a. Please replace the term “bone development” with BMD

7. Ultrasound measures
   a. Please provide more detail on how the thickness of the abdominal adipose tissue was measured. Which area constituted the abdominal area? What was the CV% for these measures?

8. Pubertal stage
   a. Did the authors use a standardized questionnaire to assess pubertal stage? Was this questionnaire validated?

9. Statistical analyses
   a. Did the authors consider adjusting for other important confounders like dietary intake (calcium and vitamin D), height (to adjust for skeletal size), parental income, physical activity (although only sedentary individuals were recruited, it is still important to adjust for this variable) etc.? It appears that the lack of complete adjustment for other important confounders makes their results less valid.

10. Results
   a. Please provide a justification for presenting both BMC and BMD results
   b. Second paragraph – Pubertal stage affected…..What do these numbers represent? Adjusted means? What does the P-value represent? Is it the P-value for a chi-square test?

11. Discussion
   a. Second paragraph – relationship between IAAT and bone variables are mediated by factors, such as gender. The authors did not examine potential effect modification by gender and, therefore, cannot make this claim. If they tested for effect modification by gender, they should list in the methods and results section.
   b. The discussion, in particular, is poorly written.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests