Author’s response to reviews

Title: Associations between medical students’ beliefs about obesity and clinical counseling proficiency

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This is included in our resubmission cover letter. It is also attached here:

Technical Comments:

1. Please separate Discussion and Conclusions sections.

We have separated the two sections, and added a sentence in the conclusion section (Conclusions section, Lines 281-288)

2. Consent to participate: Written or Verbal Consent needs to be stated in Ethics Approval Section.

Students provided written consent. This was added in the ethics section (Line 296).

3. Under the heading "Funding", please declare the role of the funding body in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript.

Included the following sentence: The funding body had no role in the design of the study, did not have a role in the data collection, analysis, or interpretation, and did not have a role in writing or editing of the manuscript (Lines 303-305).
4. On uploading your revisions, please remove any tracked changes or highlighting and include only a single clean copy of the manuscript.

Done, thank you.

Reviewer reports:

Anthony Worsley, PhD (Reviewer 1): Thank you for attending to the points I raised. Your responses are to the point and helpful.

Jean Welsh (Reviewer 2):

Thank you to the authors for their responses to my comments on the first review. I have only a few addition comments:

1. Abstract. Introduction. Line 1. Is it true that "healthcare providers attribute obesity to controllable factors”? The way that this is written suggests that this statement is true for all healthcare providers and that they attribute obesity only to controllable factors and not more to those that are controllable then uncontrollable.

We agree the line as originally written was too strongly worded, and have changed the sentence to the following: “Despite evidence that biological and genetic factors contribute strongly to obesity, many healthcare providers still attribute obesity more to controllable behavioral issues rather than factors outside a person’s control.” (Lines 25-29) The evidence for this is in Foster et al., Obesity research 2003.

2. Abstract. Lines 39-40. Similar to above, the students weren't asked whether controllable or uncontrollable factors caused obesity they were asked which contributed more, correct? It's important to reflect in the results that they were being asked about the relative importance of the different types of factors.

Correct, we have added the line “When asked to rate the importance of individual factors…” (Lines 38-39) to clarify that students were actually rating each of the individual factors listed.

3. Lines 61-62. Does the evidence show that the genetics are a "major determining factor in obesity" or an important contributor? A "determining factor" suggests that no matter what a person does, they will be obese if they have the genes for it.
We’d like to clarify. Twin studies and adoption studies have concluded that the heritability of obesity is between 0.40 to 0.70 (Allison et al., 1996; Maes et al., 1997; Price et al., 1987; Sorensen et al., 1989; Stunkard et al., 1986a; Stunkard et al., 1990; Stunkard et al., 1986b)—almost the same as the heritability of height, and greater than for heart disease or breast cancer.

This doesn’t imply that environmental factors play no role at all. For example, for the trait of height, “tallness alleles” does not guarantee that a child will become tall. A young child can only reach the full potential of their height genes in the setting of nutritious food and good medical care (Visscher et al., 2008). We can reasonably say that “a major determining factor for height lies in your genes,” even though environmental and behavioral factors can still alter one’s ultimate height.

Similarly, today’s abundance of calorie-dense foods has created the ideal environment for weight genes to fully manifest, that is—genes determine to a large extent who within our environment will become obese, although there are certainly factors that could alter the outcome.

We have revised the line to, “Numerous studies, however, demonstrate that genetics and heredity are a major factor in determining who within society will have obesity,” to clarify our meaning (Lines 62-63).

4. Lines 73-74. While it is true that there are important factors outside a person's control that influence one's risk of being obese, evidence for the statement that obesity "results primarily from factors outside an individual's control" is not provided.

This claim is based on the research on the heritability of obesity as cited earlier in the paragraph (highlighted in the response to reviewer point 3). For clarity, the sentence now states, “The evidence on the heritability of obesity suggests that obesity results primarily from factors outside an individual’s control.”

5. Lines 282-284. The authors state in the concluding paragraph, “Finally, the lack of education about the physiology of obesity in medical schools contributes to the prevalence of misconceptions about the disease and the prevalence of negative biases among physicians” but this was not a conclusion that can be drawn from this study. This is better presented (with a reference) and discussed in the discussion section. If that is done, then reference to this as a possible solution to the problem identified in this study would be reasonable to include in the conclusion.

We agree with the reviewer that the statement quoted above is not supported by our study. We have deleted that text from the manuscript, and added the following to the conclusion, “Our findings suggest that educating healthcare providers on the biological causes of obesity could help reduce bias and improve care for both weight-related and unrelated health problems. Research about the most effective methods for teaching the basis of obesity and reducing bias is sparse, however[48, 56, 57], and more studies are needed to identify best practices.”