Reviewer’s report

Title: Anxiety and depression in children and adolescents with obesity: a nationwide study in Sweden

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Reviewer: Robert Berkowitz

Reviewer's report:

This manuscript examines the association between anxiety and depression (as defined by either physician diagnosis and/or prescription of medications) in treatment seeking children for obesity compared with a sample (matched on key variables but not on BMI) from the general population in Sweden. The authors report that even when adjusting for other risk factors, obesity remains associated with anxiety and depression to a greater degree in the former group compared to the latter group. The study of the association of obesity with anxiety and depression is an important area of inquiry but there are concerns regarding this manuscript as described below.

Lines 80 - 83. It is commendable that a very large sample of youth enrolled in the Swedish Childhood Obesity Treatment Register to assess and monitor progress in behavioral treatment of obesity and was included in this report. The number of youth and their characteristics who declined treatment was not however reported and it would be useful to understand if such data could be provided by the authors.

Of note, these children and adolescents are to be considered ‘treatment seeking’ as they sought participation in a behavioural program. It is possible, as the authors suggest in the discussion section, that treatment seeking youth are more distressed and, thus, may be more likely to have psychiatric diagnoses - and may be more likely to obtain more professional attention (and perhaps more likelihood of obtaining a psychiatric diagnosis). The authors would strengthen the manuscript by describing the literature on treatment seeking vs representative samples of youth with obesity and whether there are differences in prevalence of psychiatric diagnosis.
The control group was from the general population via a national database and youth were matched on year of birth, sex and living area. However, an important issue is that anthropometric data regrettably were not available on this group; thus, it is not possible to assess BMI within this control condition. The authors would strengthen the discussion about this limitation as they may be comparing a clinical sample with a representative sample; it is possible that greater levels of anxiety and depression are evident in clinical samples compared to epidemiological samples.

In the discussion, the authors mention that one limitation is the lack of BMI data in the general population sample. They report very low rates of diagnosed obesity - this rate seems to be too low and the authors would strengthen the manuscript by describing whether there is under-diagnosing by clinicians of obesity in the database.

If the authors had access to BMI data in the general population group, they might have assessed youth with and without obesity and not in treatment, as well as compared these two groups with the youth with obesity who were treated. It is presumed that the authors are not able to obtain BMI data; do the authors have suggestions for future studies in which BMI data are collected along with data regarding anxiety and depressive disorders?

Anxiety and depression were defined on health care provider diagnosis and/or prescribed medications. There are several issues here: 1) The authors would strengthen the manuscript by describing the heterogeneity and (low) reliability of clinician diagnoses regarding anxiety and depression; 2) There are a number of types of anxiety and mood disorder diagnoses - these are not described; how were diagnoses chosen to be combined? 3) Was there a standard method that clinicians used to make diagnoses? 4) Were the clinicians making diagnoses trained psychiatrists or primary care physicians and were there differences in rates of diagnosis by training?

Although other studies have used 'self-report' methods, there has been great effort in developing validated and reliable methods using standardized questionnaires completed by youth, parents, and clinicians to diagnose anxiety and depression; a more thorough review of the benefits of these standardized methods compared with clinician diagnosis would strengthen the manuscript.
Line 119. Of note, anxiety and depression may be treated by psychotherapy, to which there are no references in the draft. The authors should comment on this.

Lines 172- . Greater levels of anxiety and depression were found in the group of youth with obesity compared with that of the general population. Greater levels were found in girls vs boys and there was an association with parental anxiety and depression. When controlling for parental diagnoses as well as neuropsychiatric diagnoses in youth, the association between obesity in youth anxiety and depression was found as well. These are important results - especially if the authors can respond sufficiently to the earlier concern regarding the potential bias of comparing a clinical sample with a representative sample.

What is the level of association of anxiety and depression with obesity as well as with the other risk factors such as parental disorders and with presence of neuropsychiatric disorders? What is the level of prediction of each of the risk factors including obesity?

Line 268. In the general population sample, only 1.3% of individuals were diagnosed as having obesity. This seems to be an unusually low rate and it would help for the authors to comment on whether obesity in youth is not often diagnosed and/or is under-diagnosed (and what the literature says about obesity diagnosis in youth in the general medical records).

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
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