Reviewer's report

Title: Revisiting the J shaped curve, exploring the association between cardiovascular risk factors and concurrent depressive symptoms in patients with cardiometabolic disease: Findings from a large cross-sectional study.

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Reviewer: Susan Everson-Rose

Reviewer's report:

- Major Compulsory Revisions

1. The link between depressive symptoms and cardiovascular disease risk is well known and well documented in the literature. This relation has been observed in community samples and patient populations, with some evidence that the relation actually is stronger in patients. It also is understood that there can be no one “exact physiological mechanism explaining the relationship between depression and cardiometabolic diseases.” Therefore, a more compelling rationale for this study is requested to inform readers more clearly of the unique contributions of these analyses.

2. The authors acknowledge the low uptake of depression screening but I find it troubling that less than 1/3 of those eligible were screened. Per supplementary Table 1, those screened were older, more likely to be male and somewhat healthier than those who were not screened. I would like to see a discussion of how this may have influenced results; e.g., women tend to report more depressive symptoms and score higher than men on HADS-D and similar depression screening instruments. Additionally, is there any information on factors that may have contributed to the low screening rates that could also have influenced the data (e.g., biases at particular clinics in terms of who “needs” screening).

3. Looking at Figure 2, with its 4 panels, it appears the strongest J-shaped relation is for BMI, with a J-shape also evident for SBP but much less of a J-shape for either DBP or total cholesterol. This is not what the text describes, however, which implies a clear and strong J-shape association of each of these 4 CVD risk factors with HADS-D scores. Please clarify.

4. Please present associations of the CVD risk factors with the continuous HADS score. While “7” may be a typical cut-point used with HADS, it is nonetheless arbitrary. It is important to know if increasing CVD risk is associated with increasing depressive symptoms.

5. I do not quite follow the logic of the argument urging care with aggressive lowering of CVD risk factors. Perhaps clarifying that an “optimal risk factor level” may need to be considered that is not just the lowest possible value of BP or BMI or cholesterol would help solidify this argument. And what about the case when
an "optimal" value differs if the outcome considered is MI, for example, versus clinically manifest depression?

- Minor Essential Revisions

1. “Incidence” of high depressive symptoms is used erroneously at least twice when prevalence is the correct term; the study did not look at incident depression. But it does raise the question of whether depression history was ascertained for the patients? This would be a strong predictor of future depressive episodes so lack of such information should be an acknowledged limitation.

2. Please define "DCCT"

3. "Obese" category should be BMI = or > 30 kg/m2, rather than 35 kg/m2.

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I have no conflicts, financial or otherwise, to disclose.