Reviewer’s report

Title: Depression differed by midnight cortisol secretion, alexithymia and anxiety between diabetes types: a cross sectional comparison

Version: 0 Date: 14 Feb 2017

Reviewer: Emily Baron

Reviewer's report:

Thank you for giving me the opportunity to read the manuscript entitled "Atypical depression versus melancholia in diabetes in a cross sectional comparison - depression differs between diabetes types by midnight cortisol secretion, alexithymia and anxiety". Though the methods described are sound, I feel the manuscript could be improved in a number of ways. I first give general comments, and then provide more detailed feedback for each section.

General comments:

- The title is too long, and is actually misleading: 1) it is not depression that is investigated in this research study, but rather depressive symptoms, as a screening tool is used, not a diagnostic assessment; 2) similarly, it is participants’ clinical characteristics that are measured, not atypical depression or melancholia per se - the fact that characteristics differ between the two diabetes types, suggesting different subtypes of depression, is a finding of the paper, not the main research question.

- I feel the rationale for the study is missing. The authors describe the differences between melancholia and atypical depression well, and the effects of depression on the prognosis of individuals with diabetes, but it is less clear why authors choose to investigate both depression and MSC among that population. Am I right in thinking that one type of depression is more likely to lead to increased cortisol secretion? Which in turn may worsen prognosis of diabetes? If this is the case, then this really needs to be foregrounded in the introduction. Authors also briefly mention in the conclusion why understanding the different clinical presentation of depression among the two types of diabetes may be beneficial for treatment, but this should already appear in the introduction, to support the need for this research.

- While I understand why it is important to be able to distinguish depression types among individuals with diabetes, it is still unclear why authors hypothesise that depression types would differ between individuals with type 1 and type 2 diabetes.
- I fear the sample of participants with type 2 diabetes is too small; the small sample is mentioned in the limitation section of the manuscript, but even if non-parametric analyses are used I feel authors should be more cautious when interpreting the results of the study.

- The scale used to assess depressive and anxiety symptoms is a screening tool, and authors should be wary of using the terms depression and anxiety for those who screen above the cut-off. Also, it may be worth explaining in the methods that the type of depression/depressive symptoms presented by participants isn't measured by this screening tool, but by assessing alexithymia, anthropometrics etc.

Specific comments

Abstract:

- The background section of the abstract suggests that the type of depression reported by patients with type 1 and type 2 diabetes are being compared; but actually, the study focuses on comparing the characteristics of individuals with type 1 or type 2 diabetes, with and without symptoms of depression.

- Line 39-54: The way the results are reported is very confusing, especially the sentence "the prevalence rates were for depressed/non-depressed persons: high MSC T2D 17%/44% etc." (line 46-51). I realise there are many results to report, but perhaps authors should use full sentences and reduce the number of results if they are limited by the word count.

Introduction:

- P 5 lines 11-19: I would switch the two sentences around - first explain what the aim of the study is, and then what you hypothesise. Also, why is this hypothesised? What evidence is there to suggest that the two types of diabetes may be associated with different types of depression? This isn't clear from the literature reviewed in this section.

Method:

- Were all eligible patients systematically approached to take part in the study? Who approached them? Why were they sometimes recruited by the physicians and sometimes the nurses (p5 line 31)? This has an impact on the generalisability of the authors' findings, especially given the small sample recruited.
- P5 line 58-P6 line 6 - I would merge this information within the different subparagraphs on the different measures captured. How recent was the data collected from the medical records?

- P6 line 31-33: Authors should specify what a cut-off of 61 or above on that scale indicates

- P7 line 45-55: Authors should be a bit more specific regarding the outcome variable that they are investigating when they are using non-parametric tests - are these tests used to compare measures between the two types of diabetes? To compare participants with vs. without depressive symptoms? Is this done separately for type 1 and type 2 diabetes?

Results:

- P8 line 24: Given that individuals with severe mental disorders were excluded from the study, it would be worth explaining which 'clinical psychiatric diagnoses' are referred to here

- P8 line 38-41: Another example where full sentences should be used to report results - the sentence is confusing as it stands.

- I would forego table 2 - I don't see the benefit of running non-parametric analyses, if the crude and adjusted ORs are then presented using a logistic regression (table 3).

- P9 line 4-6: I understand what the authors mean here, but it sounds like MSC levels were collected over a period of time, which isn't the case. Perhaps change the wording to "MSC levels were highest when collected in spring" etc.

Discussion:

- Though the authors understandably highlight the main findings of the study, it would be worth reporting the prevalence of depressive symptoms among the sample of type 1 and type 2 diabetes first.

- P10 line 4-9: The sentence "To distinguish between depression types…" seems out of place, and would be of better use in the introduction/conclusion. Also, melancholia and atypical depression are categorised as different subtypes of depression because they present with different clinical characteristics; saying that it is important to be able to distinguish between these two types of depression is important because they differ in clinical expression is a circle argument!
- It would be good if authors spent more time discussing why individuals with type 1 or type 2 diabetes present with different types of depression. Also, what are the implications of these findings on the treatment of diabetes and depression?

Table 2: I would include all the information in the footnote in the main method section of the manuscript.

Table 3:
- The number of participants with type 2 and type 1 diabetes is different than in the previous tables - why is that?
- Change 'P' to 'P-value' to stay consistent, under Type 1 diabetes

Typos:
- P4 line 55 - there is an extra comma
- Page 5 line 31: spell out the dates - from March to December 2009.
- P5 line 58 - typo in the word 'described'
- P8 line 19 - T1D, not TID
- P8 line 36 - include 'individuals' or 'participants' after 'Depressed and non-depressed'

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

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes
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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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