Reviewer’s report

Title: Association between subthreshold depression and self-care behaviour in people with type 2 diabetes: a protocol for systematic review of observational studies

Version: 0 Date: 17 Mar 2019

Reviewer: Kristin Danko

Reviewer's report:

The submitted protocol provides a comprehensive and methodologically-robust summary of a planned systematic review of the relationship between sub-threshold depression and self-care in adults with type 2 diabetes. The report is presented in accordance with PRISMA-P and is registered on PROSPERO. While I believe the protocol warrants consideration of publication, I have a few concerns and questions I would like to raise with respect to the following:

1) Availability of evidence: The authors mention several times that little is known about subthreshold depression in adults with diabetes and its impact on self care. Notwithstanding variation in definitions and measurement issues for the exposure (subthreshold depression) and the outcome (multidomain 'self care'), it is unclear from the protocol the extent to which the authors believe they will find evidence to address their question. Have preliminary searches been run and do they have a sense of the magnitude of evidence to review?

2) The scope of the question is broad. While I appreciate it is likely to be meaningful to practice and policy, it will take care to operationalize in screening, extraction, and synthesis given how the variable definition of subthreshold depression the fact that it is not routinely measured. Also, the outcome is a composite of several patient behaviours, many of which will be self-reported. Authors should be upfront with these challenges and how they plan to overcome them, and how overall conclusions may be limited by them. Given the challenges of the potential evidence base, I think a random effects meta-analysis model is highly unlikely and may even be inappropriate - even if studies were considered to be comparable across these P, E, O elements, the associational estimates are from observational studies which will likely be adjusted for different study-specific covariates. It's unclear to me whether an overall average of these estimates, even if true effects are allowed to vary, will be meaningful. Can you expand about this and how you will determine their comparability even if sufficient quantitative evidence exists.

3) While the search strategy appears robust, it does not mention if it will/has been peer reviewed; this would be ideal.

4) Given the potential for limited evidence to address your question, can you provide a justification as to why potential citations will be restricted to only those published in English?
5) The self-care behaviours of interest are very vague. How will 'healthy eating' and 'being physically active' be operationalized? Presumably you will have to use what is reported in studies, but it would help to have more information about potential variation and challenges you anticipate with these behaviours and how you will systematically address them.

6) Data extraction notes that you will extract 'study population characteristics'. Given these are observational studies, it is likely that studies will use many of these population characteristics to adjust their association estimates. Suggest adding more details on specific characteristics the review team hypothesize will be important to the association of interest that you will extract, if present. It also notes that you will extract 'measures used' - are these measures for depression or the self care behaviours, or both? Please be explicit. Additionally, can you provide a justification for verification by a 2nd reviewer vs. independent dual abstraction (esp. if you do not anticipate a large evidence base)? There may be challenges with this literature and subjective interpretations - extraction by two reviewers independently will help avoid errors and bias from a single person.

Minor comments:
1) Line 83: I think you are missing a word at the end of this sentence. 'A five year'...period?

2) Line 89: Uses minor depression rather than sub-threshold depression. To avoid confusion, suggest stating all synonyms up front as you have (indicating what you mean by the term, but also it's lack of homogeneity in the field) and then choosing one to use for the rest of the paper.

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