PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	The prevalence of type 2 diabetes among older people in Africa: A Systematic Review Study Protocol
AUTHORS	Werfalli, Mahmoud; Musekiwa, Alfred; Engel, Mark; Ross, Ian; Kengne, Andre; Levitt, Naomi

VERSION 1 - REVIEW

REVIEWER	Leonor Guariguata International Diabetes Federation, Belgium
REVIEW RETURNED	26-Feb-2014

GENERAL COMMENTS	This study protocol is clear and to the point, although it could use some revision. A discussion of the utility of the study area and why it is novel is needed. The protocol aims to study the prevalence of type 2 diabetes in people over 55 in sub-Saharan Africa, a relatively small population at the moment although projected to increase. It is curious to focus on this since the majority of diabetes will occur in people under the age of 50 in that continent over the next generations. A discussion of the context and motivation for the proposed analysis would be valuable. The protocol is straightforward. Considering the population in sub-Saharan Africa over 55 years is relatively small (although projected to increase) and the majority of cases occur in people under this age, I think there should be more justification for looking specifically at older adults. The protocol should also outline a specific age range and not just 55+ which will present issues for the meta-analysis for studies using different ages. One other thing to consider, most studies reporting prevalence do not make a distinction for type 2 diabetes and type 1 diabetes but rather report total diabetes prevalence. Easily 95% of diabetes prevalence or more in SSA is due to type 2 diabetes because of the low prevalence/high mortality of type 1 diabetes. This is important to mention and I would consider changing the criteria to include studies reporting the prevalence of any diabetes since you are unlikely to find those just reporting type 2 diabetes. General comments: Be consistent with terminology throughout. For example, use always type 2 diabetes if that is what the aim is, or diabetes if it will include type 1 as well. Define older adults and stick to one term, not using elderly, or simply adults etc. Specific comments: Abstract: Shorten the Methods and analyses section of the abstract for the description of the search strategy and expand on the meta-

analysis section.

Introduction: There are updated figures from the IDF which you may want to use that are available on their website, and make sure you use the correct reference here. There are only a few issues of grammar and missing commas that should be noted.

Line 38 on page 2: IDF has released a guideline for care in older people with diabetes which would be worth mentioning and reviewing.

Simplify "Why it is important to do this review" or take it out altogether.

The meta-analysis should be part of your objectives.

Provide an end age to the age group you are including. Give details on the diagnostic criteria you plan on using and whether or not you will consider other studies that have not been peer-reviewed.

Page 3 Line 26: It does not seem appropriate to be listing participants since this is a systematic review and meta-analysis of secondary data, and not a primary data collection. Thus, this section doesn't belong. Rather there should be a clear inclusion criteria and exclusion criteria as two sections. In the inclusion criteria you would list the types of studies you are collecting, but not "participants". Thus, you would consider studies reporting prevalence of diabetes in people 55 years and older in Africa etc.

Page 3 line 42: repetitive to mention cross-sectional twice, the readership will understand what a cross-sectional study is

Page 3 line 55: lacking primary data, not clinical data since these are population-based studies

Page 4 line 19: avoid repetition of words in this section such as "comprehensive" and using "African" many times. It is understood from the intro and earlier description.

Page 4: line 38: what is 'free word' Internet searches? a search on Google?

Page 5: The quality appraisal section can be simplified. There is some repetition in the language.

Table 1: is this reprinted from another paper? is there permission to use it? If you can modify, perhaps add a column for the point values rather than having them in parentheses at the end of the question

Page 6: I would like more of a description of the statistical models mentioned. What kind of models? What will you be including?

A PRISMA diagram would be helpful.

REVIEWER	Deirdre Tobias
	Harvard School of Public Health, US
REVIEW RETURNED	06-Mar-2014

GENERAL COMMENTS	The authors should specify whether they will conduct a fixed effect or random effects meta-analysis to pooled the effect estimates across studies.
	How will the authors handle study populations that do not use exactly age 55 as their cut-off criteria? For example, if a well-conducted study assesses a population >50 years old, will it be automatically excluded? What if it is >70 years old? Perhaps justify your use of 55 as the cut-point, because it appears somewhat arbitrary. Or, ideally, include estimates for the entire population, rather than just among "older" Africans. This could be a subgroup analysis.
	The authors hypothesize that diabetes rates are higher in Africa than Western countries. What estimates from Western countries will you use as your comparator to make this comparison? How will you statistically test this hypothesis?
	The authors say that if there is significant heterogeneity they will conduct stratified analyses - what variables will you stratify? What is the a priori justification for selecting these variables as potential sources of heterogeneity?

VERSION 1 – AUTHOR RESPONSE

Responses to the comments of Reviewer #1

"A discussion of the utility of the study area and why it is novel is needed".
"A discussion of the context and motivation for the proposed analysis would be valuable".
We agree with these comments and thank the reviewer for pointing this out. The introduction section has been amended to reflect these points.

General comments

Be consistent with terminology throughout. For example, use always type 2 diabetes if that is what the aim is or diabetes if it will include type 1 as well. Define older adults and stick to one term, not using elderly, or simply adults etc.

We agree with these comments and have amended throughout the document as suggested.

Abstract: Shorten the Methods and analyses section of the abstract for the description of the search strategy and expand on the meta-analysis section
We have amended as suggested.

Introduction: There are updated figures from the IDF which you may want to use that are available on their website, and make sure you use the correct reference here. There are only a few issues of grammar and missing commas that should be noted.
Author's response:

Thanks for pointing this out. Agreed. (Please see the tracked changes that have been made in the Introduction section).
Line 38 on page 2: IDF has released a guideline for care in older people with diabetes which would be worth mentioning and reviewing.

Author's response:

The main objective of this work is to systematically review the prevalence of type 2 Diabetes mellitus among the older people in Africa. The IDF guideline for older people is a very promising step to improve and fill the gap of diabetic specifically for this social disadvantage group. It would be very valuable if it has been taken in the account for the studies which emphasize exploring the effectiveness of this guideline compared with usual care or other interventions, which is beyond the scope of this review.
Simplify "Why it is important to do this review" or take it out altogether.

Author's response:

Thanks for this suggestion we have removed the phrase

The meta-analysis should be part of your objectives.

Author's response:

Thanks for pointing this out. Agreed, text amended as follows:
To conduct a systematic review and meta-analysis of studies assessing the prevalence of Type 2 diabetes among older people in African countries.
diabetes among older people in African countries.

Provide an end age to the age group you are including. Give details on the diagnostic criteria you plan on using and whether or not you will consider other studies that have not been peer-reviewed.
Author's response:

Thanks for pointing this out, Agreed. Text amended to indicate the study participants as people aged 55 years and over namely (55-64 years, 65-74 years and 75+ years of age).

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Page 3 Line 26: It does not seem appropriate to be listing participants since this is a systematic review and meta-analysis of secondary data, and not a primary data collection. Thus, this section doesn't belong. Rather there should be a clear inclusion criteria and exclusion criteria as two sections. In the inclusion criteria you would list the types of studies you are collecting, but not "participants". Thus, you would consider studies reporting prevalence of diabetes in people 55 years and older in Africa etc.

Author's response:

Thanks for pointing this, Agreed. Text amended as follows:

Criteria for considering studies for review
Inclusion criteria:
1. Studies describing the prevalence of type 2 diabetes among older adults, resident in countries belonging to the African continent, in the geographic regions of Sub-Saharan Africa and North Africa diagnosed with type 2 diabetes from all ethnicities, socioeconomic and educational backgrounds. Participants should be described as older adults or a minimum of 70% of participants should be within the age groups of 55-64 years, 65-74 years, or 75+ years).

2. Population-based studies, cross-sectional studies of type 2 diabetes. For the purpose of this review, the diagnosis of diabetes can either be made by physician or defined by available measured fasting plasma glucose (FPG), glucose tolerance test (OGTT) or self-reported, according to WHO criteria.

We will consider published articles and unpublished studies reported after 01 January 2000, given that the current criteria for the diagnosis of diabetes have been widely accepted since 1998. Articles published in any language, with full English abstracts will be eligible for inclusion.

Exclusion criteria
1. Studies which include a mixed group of Type 1 and Type 2 participants, or that do not clearly define the type of diabetes as being Type 2, will be excluded.
2. Studies confined to subgroups of patients with type 2 diabetes (with any complication of diabetes mellitus for example: myocardial infarction, eye, kidney or other microvascular or macrovacular complications).
3. Studies that do not include a representative sample of older people aged 55 years or older.
4. Narrative reviews, opinion pieces, letters, or any other publications lacking primary data and/or explicit methods descriptions.
5. Duplicate publications of the same material. When the study has been published in more than one journal/conference, the most complete recent version will be used.
6. They had a low quality scores (equal to or below 5) in the assessment of risk of bias.
Page 3 line 42: repetitive to mention cross-sectional twice, the readership will understand what a cross-sectional study is.
Author's response:
Agreed, Text amended as follows: (please see the inclusion criteria section)
Population-based studies, cross-sectional studies of type 2 diabetes defined by the WHO, will be potentially eligible for inclusion.

Page 3 line 55: lacking primary data, not clinical data since these are population-based studies
Author's response:
Agreed, phrase corrected as following:
Narrative reviews, opinion pieces, letters, or any other publications lacking primary data and/or explicit methods descriptions

Page 4 line 19: avoid repetition of words in this section such as "comprehensive" and using "African" many times. It is understood from the intro and earlier description.
Author's response:
We agree with this comment. and have corrected the phrase as following:
A comprehensive and sensitive search strategy will be undertaken using an African search filter developed by Siegfried 11 to identify prevalence studies conducted from 2000 to 2013.

Page 4: line 38: what is 'free word' Internet searches? a search on Google?
Author's response:
The phrase has been corrected as following:
"… on the ISI Web of knowledge platform."

Page 5: The quality appraisal section can be simplified. There is some repetition in the language.

Author's response:

Thank you for this comment, we have amended the text as follows:

A quality assessment tool, based on guidelines for evaluating prevalence studies as suggested by Hoy and colleagues (Hoy 2012), has been developed (Table 1) and will be applied to screened full-text articles in order to code eligibility decisions and to assess study quality and agreement between investigators. Assessment of bias is built into the quality scoring scale. We plan to evaluate risk of selection and attrition bias using the Cochrane guidelines as set out in Review Manager version 5.2 (http://ims.cochrane.org/RevMan). This will inform the feasibility of and selection of studies for a pooled analysis. Any disagreements will be resolved by discussion and consensus in consultation with the third author to resolve persistent inconsistencies.

Table 1: is this reprinted from another paper? is there permission to use it? If you can modify, perhaps add a column for the point values rather than having them in parentheses at the end of the question.
Author's response:
Thanks for pointing this out.
This table has been adapted from innovative work by Hoy et al (2012) and has been referenced accordingly. In their publication of a systematic review on the prevalence of low back and neck pain; they modified an existing checklist and tested the final tool for inter rater agreement. We have added a column for the point's values as suggested.

A PRISMA diagram would be helpful.
Author's response:
As suggested it has been included as Appendix (4) page (21)

Responses to the comments of Reviewer #2
The authors should specify whether they will conduct a fixed effect or random effects meta-analysis to pool the effect estimates across studies.
Author's response:

Thank you for noting this, the text has been amended accordingly under the title: Data synthesis including assessment of heterogeneity

How will the authors handle study populations that do not use exactly age 55 as their cut-off criteria? For example, if a well-conducted study assesses a population >50 years old, will it be automatically excluded? What if it is >70 years old? Perhaps justify your use of 55 as the cut-point, because it appears somewhat arbitrary. Or, ideally, include estimates for the entire population, rather than just among "older" Africans. This could be a subgroup analysis.

Author's response:
Thank you for pointing this out, the text amended as follows:
In this systematic review, we will include older people aged 55 years and over namely (55-64, 65-74 and 75+). We will contact the corresponding authors of these studies and request the age-specific prevalence and any other missing information, deemed to be relevant.
The authors hypothesize that diabetes rates are higher in Africa than Western countries. What estimates from Western countries will you use as your comparator to make this comparison? How will you statistically test this hypothesis?

Author's response:

We have removed the phrase in response to the reviewer's comment. Testing this hypothesis is actually beyond the scope of this review, however a comparative analysis of this review results with other estimates for the same age groups from Western countries would be valuable.

The authors say that if there is significant heterogeneity they will conduct stratified analyses - what variables will you stratify? What is the a priori justification for selecting these variables as potential sources of heterogeneity?

Author's response:

Thank you for pointing this out. The text has been amended under Data synthesis including assessment of heterogeneity as follows:

a. Subgroup analyses will be conducted by using the following variables age group, sex, setting e.g. urban/ rural geographical region e.g., northern/ southern, Western/ Eastern

VERSION 2 – REVIEW

REVIEWER	Leonor Guariguata International Diabetes Federation, Belgium
REVIEW RETURNED	06-May-2014

GENERAL COMMENTS	Check the consistency of terminology. For example, type 1 or type 2 diabetes should always be lowercase. In some places it was also capitalized (Type 1) etc.

REVIEWER	Deirdre Tobias Harvard School of Public Health, USA
REVIEW RETURNED	07-May-2014

GENERAL COMMENTS	The authors significantly improved upon their original submission and have incorporated the reviewers' comments