PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The prevalence of Type 2 diabetes in South Africa: a systematic review protocol
AUTHORS	Pheiffer, Carmen; Pillay-van Wyk, Victoria; Joubert, Jané; Levitt, Naomi; Nglazi, Mweete; Bradshaw, Debbie

VERSION 1 – REVIEW

REVIEWER	Daniel Ganu The Adventist University of Africa, Kenya
REVIEW RETURNED	29-Jan-2018

GENERAL COMMENTS	The paper is well written and can be published.

REVIEWER	Ilhan Satman Istanbul University Istanbul Faculty of Medicine, Turkey
REVIEW RETURNED	26-Feb-2018

GENERAL COMMENTS	Please change the references for IDF diabetes estimation such as IDF diabetes Atlas 8th ed.

REVIEWER	Jonathan Shaw Baker Heart and Diabetes Institute, Australia.
REVIEW RETURNED	16-Apr-2018

GENERAL COMMENTS	The authors report a protocol for a systematic review to describe the prevalence of diabetes in South Africa. My main concern is how the data will be put together. Currently, the authors plan to use the data to derive a single national prevalence. However, the data synthesis section seems to underestimate the challenges of achieving this. There will likely be much heterogeneity in the diagnostic criteria applied, the dates the studies were conducted, and the age ranges for which prevalences are reported. These would need addressing in any attempt to synthesize data into a single national prevalence. Furthermore, it is likely that many (probably most) studies are designed to be targeting a specific sub-group of the population (as can be seen by reviewing the titles of prevalence studies in the current manuscript – refs 18-28). Synthesizing data from such studies to derive a national estimate, which is the stated primary aim of the review, would require statistical methods to weight each estimate according to its relative contribution to the overall South African population. This is unlikely to be possible without significant work. Unless the authors can develop a statistical strategy to address this, I would recommend that a narrative description should be the primary aim. Page 2, line 12. 'The purpose of this review is estimate'. Please insert 'to' after 'review'.

	The introduction refers to IDF global estimates from 2013, but more up to date IDF estimates should be used. The text goes on to say that Africa will bear the brunt of a global increase in the number of people with diabetes. Africa may have the largest relative increase, but will only account for a relatively small proportion of the global increase in numbers. The next statement about underestimation by the IDF because of undiagnosed diabetes is not correct, as the IDF data account for high rates of undiagnosed diabetes in Africa.
	The proposed search strategy (table 1) does not attempt to restrict the findings to studies reporting on prevalence or epidemiology in any way. This seems to risk capturing far too many titles.
	Data extraction should include response rates. The 'Characteristics of cases' seems unusual. It is the characteristics of the study population, not just those with diabetes that counts. This should include ethnicity.

VERSION 1 – AUTHOR RESPONSE

BMJ Open

Manuscript ID bmjopen-2017-021029 entitled "The prevalence of Type 2 diabetes in South Africa: a systematic review protocol"

Reviewer report

Comments	
Reviewer #1	**Response**
1. The paper is well written and can be published.	Thank you for the appreciation of our work.
Reviewer #2	
1. Please change the references for IDF diabetes estimation such as IDF diabetes Atlas 8th ed.	Thank you. This section has been rewritten to include more recent estimates and the reference updated. Changes are indicated in red on page 4.
Reviewer #3	
1. My main concern is how the data will be put together. Currently, the authors plan to use the data to derive a single national prevalence. However, the data synthesis section seems to underestimate the challenges of achieving this. There will likely be much heterogeneity in the diagnostic criteria applied, the dates the studies were conducted, and the age ranges for which prevalence are reported. These would need addressing in any attempt to synthesize data into a single national prevalence.	Thank you for raising these pertinent concerns. We have made the following changes in response to this comment: • listed the challenges as study limitations on page 2, • removed the statement about a single national estimate, • changed the aim and methods to reflect that we will identify, collate and synthesize all studies reporting the prevalence of diabetes in South Africa. • deleted reference to quantitative analysis on page 8 (indicated by track changes) and stated "If possible, a meta-regression to explore possible sources of variability in prevalence

	reported between studies will be conducted". Currently the Burden of Disease Research Unit (South African Medical Research Council) has developed a methodology to develop a meta-regression for the prevalence of smoking. In this review of diabetes, if a meta-regression is possible, that methodology will be adapted for analysis of diabetes prevalence.
2. Furthermore, it is likely that many (probably most) studies are designed to be targeting a specific sub-group of the population (as can be seen by reviewing the titles of prevalence studies in the current manuscript – refs 18-28). Synthesizing data from such studies to derive a national estimate, which is the stated primary aim of the review, would require statistical methods to weight each estimate according to its relative contribution to the overall South African population. This is unlikely to be possible without significant work. Unless the authors can develop a statistical strategy to address this, I would recommend that a narrative description should be the primary aim.	These comments have been addressed above.
3. Page 2, line 12. 'The purpose of this review is estimate'. Please insert 'to' after 'review'.	Thank you. This had been corrected.
4. The introduction refers to IDF global estimates from 2013, but more up to date IDF estimates should be used. The text goes on to say that Africa will bear the brunt of a global increase in the number of people with diabetes. Africa may have the largest relative increase, but will only account for a relatively small proportion of the global increase in numbers. The next statement about underestimation by the IDF because of undiagnosed diabetes is not correct, as the IDF data account for high rates of undiagnosed diabetes in Africa.	Thank you. This section has been updated using IDF estimates from 2017, and is indicated in red on page 4. "The International Diabetes Federation (IDF) estimates that in 2017, 451 million adults worldwide had diabetes, with projections of 693 million cases by 2045 [1]. Globally, approximately 50% of diabetes cases are undiagnosed, with the majority of these occurring in low and middle income countries. In Africa, the proportion of undiagnosed diabetes is 69.2%. Furthermore, 77% of all deaths due to diabetes in Africa occurred in individuals younger than 60 years of age [1]"
5. The proposed search strategy (table 1) does not attempt to restrict the findings to studies reporting on prevalence or epidemiology in any way. This seems to risk capturing far too many titles.	Thank you for this comment. The search strategy was developed in consultation with an information scientist. We have selected not to restrict our findings to prevalence to avoid missing potential studies. The number of studies reporting on diabetes in South Africa are manageable for a systematic review, as observed from preliminary literature searches.

6. Data extraction should include response rates. The 'Characteristics of cases' seems unusual. It is the characteristics of the study population, not just those with diabetes that counts. This should include ethnicity.	Thank you. The section on data extraction has been revised by adding "response rate" and changing "cases" to "study population", indicated in red on page 7.
Editorial Requirements:	
- Please revise the Strengths and Limitations section (after the abstract) to focus on the methodological strengths and limitations of your study rather than summarizing the results.	Thank you. These have been revised, and is indicated in red on page 3.

VERSION 2 – REVIEW

REVIEWER	Jonathan Shaw
	Baker Heart and Diabetes Institute, Melbourne, Australia
REVIEW RETURNED	11-Jun-2018

GENERAL COMMENTS	The issues I raised have all been adequately dealt with.