OPEN PEER REVIEW

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Peer Review Report for "Prediction Models for Type 2 Diabetes Risk in the General Population: A Systematic Review of Observational Studies"

Author(s): Samaneh Asgari, Davood Khalili, Farhad Hosseinpanah, Farzad Hadaegh

Review Timeline:

Submit Date: 20 Sep 2020
Revised Date: 7 Feb 2021
Accepted Date: 13 Feb 2021

Revision (0)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE: Reviewer | Revision (0) 17 Oct 2020

Dear AE,
In reading this systematic review that the authors by using TRIPOD and PROBAST checklist evaluated prediction models for I-T2DM and U-T2DM.
They evaluated 46 studies and found that the most common reported predictors for T2 DM were age and BMI.
The authors reported the following indices:
- Internal and external validation, AUC or C-statistics and D-statistics, discrimination index, and ROB.
- Ultimately they concluded that the newly developed model did not increase our ability in screening/predicting T2DM.
The authors had a nearly comprehensive literature review and used an advanced statistical model for this systematic review.
I strongly suggest that a Ph.D. in statistics technically review the manuscript.
The manuscript has some typo and grammatical errors including:
1) In the abstract line 24-25 this sentence" Generally, unless new risk factors or new methodological aspects" needs a verb.
2) Line 86
"One reviewer (S.A) was extracted data" should be corrected (remove was)

3) Line 87
Monitoring data collection was done by three independent reviewers (D.Kh, F.H, F.H).
Needs correction
4) Line 174 typo and grammatical error
5) Line 343 please elaborate FHDM
6) In figure S1 Iran is listed but a number of the developed models is not mentioned. Is it zero or missed?
7) The authors should elaborate their model for this systematic review in a separate paragraph.
Thanks.

REFEREE: Reviewer | **Revision** (0) 26 Dec 2020

Dear AE,
Title: Prediction models for type 2 diabetes risk in the general population: a systematic review of observational studies
This manuscript has reviewed the prediction models for undiagnosed and incident type 2 diabetes using standard tools such as the TRIPOD checklist.
The paper is well designed and well written. I have just a few minor editing comments for the authors:
1. Line 146: says that “3 articles of U-T2DM (47, 51)” But only 2 references have been given.
2. Line 183: It is recommended to report the range (Min and Max) of the predictors used for model developing beside Median (IQR).
3. Tables 1&2: in the footnote we see “Values are n(%); IQR: Interquartile range”. Please remove the note as percentages and Med (IQR) have not been reported in the table.
4. Fig S1: Horizontal Axis labels are not clear. It is better to report these findings in a table.
Thanks.

Koorosh Etemad: Reviewer | **Revision** (0) 29 Dec 2020

Dear AE,
Comments for the authors:
- In Objective: Please start with the concept that how this article can help to diagnose of Type 2 Diabetes in the general population in order to reduce the unknown cases
- In Method: Please explain Keywords that have been used for search.
Thanks.

REFEREE: Associate Editor | **Revision** (0) 6 Jan 2021

Dear EIC,
In addition to the reviewers' comments, please use the word "continuous" instead of "continues" throughout the manuscript.
Thanks.

Fereidoun Azizi & Dr. Azita Zadeh-Vakili: EIC | **Revision** (0) 6 Jan 2021

Dear Author,

Your article is reviewed by the reviewers carefully. According to their comments, this document needs minor revision. Please follow their comments as requested.

Thanks.

OPEN PEER REVIEW

Revision (1)

Reply to Reviewers

Ideally, the reviewing process can significantly improve the submitted manuscripts by allowing the authors to take into account the advice of reviewers. Author(s) must reply to all reviewers' comments in a separate Word file, point by point. A "**Reply to Reviewers**" document is submitted along with revised manuscript during submission of revised files, summarizing the changes that the authors made in response to the reviewers' comments. The responses to reviewers' comments specifies how the authors addressed each comment the reviewers made.

You can read the authors' responses to the reviewers' comments in the next page.

Reviewers' Comments:

Reviewer 1:

In read this systematic review that the authors by using TRIPOD and PROBAST checklist evaluated prediction models for I-T2DM and U-T2DM.
They evaluated 46 studies and found that the most common reported predictors for T2 DM were age and BMI.

They reported the following indices:
Internal and external validation, AUC or C-statistics and D-statistics, discrimination index, and ROB. Ultimately they concluded that the newly developed model did not increase our ability in screening/predicting T2DM.The authors had nearly comprehensive literature review and used advanced statistical model for this systematic review. I strongly suggest that a PhD of statistics technically review the manuscript.

The manuscript has some typo and grammatical errors including:

1) In the abstract line 24-25 this sentence" Generally, unless new risk factors or new methodological aspects" needs a verb.

Response: *Agreed, the sentence was edited. (Page 2, line 25)*

2) Line 86
"One reviewer (S.A) was extracted data" should be corrected (remove was)

Response: *Agreed, the sentence was edited. (Page 5, line 94)*

3) Line 87
Monitoring data collection was done by three independent reviewers (D.Kh, F.H, F.H). Needs correction

Response: *Agreed, the sentence was edited. (Page 6, line 95)*

4) Line 174 typo and grammatical error

Response: *Agreed, the sentence was edited. (Page 10, lines 178-179)*

5) Line 343 please elaborate FHDM

Response: *Agreed, the sentence was edited. (Page 17, lines 348-349)*

6) In figure S1 Iran is listed but number of developed model is not mentioned.
Is it zero or missed?

Response: *Agreed, as requested by reviewer 3(comment 4) we represented the figure into the table (Table S12).*

7) Please elaborate your model for this systematic review in a separate paragraph

Response: *Agreed, we explain our model for the current systematic review in the method part (Data source and study selection). We also had more clarification on prediction models that we used in the current systematic review. In this review we focused on the regression based prediction models and other prediction models such as machine learning models were excluded. (Page 4,5, lines 63-88)*

Reviewer 2:

1- In Objective: Please start with concept that how this article can help to diagnosis of Type 2 of Diabetes in general population in order to reduce the unknown cases

Response: *Agreed, The prevalence and incident of T2DM is increasing and since about 50% of the patients are not aware of their disease (1), prediction models could be useful to lower the rate of undiagnosed diabetes among our population.(Page 4, lines 53-55)*

2-In Method: Please explain Key words that have been used for search

Response: *Agreed, some key words were listed in the method part. (Page 5, lines 86-87)*

Reviewer 3:

Title: Prediction models for type 2 diabetes risk in the general population: a systematic review of observational studies

This manuscript has reviewed the prediction models for undiagnosed and incident type 2 diabetes using standard tools such as TRIPOD checklist.

The paper is well designed and well written. I have just few minor editing comments:
1. Line 146: says that “3 articles of U-T2DM (47, 51)” But only 2 references have been given.

Response*: Agreed, the references were corrected. (Page 9, line 154)*

2. Line 183: It is recommended to report the range (Min and Max) of the predictors used for model developing beside Median (IQR).

Response: *Agreed, the range of predictors used instead of median number. (Page 10, line 189)*

3. Tables 1&2: in the footnote we see “Values are n (%); IQR: Interquartile range”. Please remove the note as percentages and Med (IQR) have not been reported in the table.

Response: *Agreed. We are sorry for this typological error.*

4. Fig S1: Horizontal Axis labels are not clear. It is better to report these findings in a table.

Response: Agreed**,** *the results of the Fig S1 reported in the Table* S12.

Associate Editor's Comments:

Associate Editor 1:
In addition to the reviewers' comments, please use the word "continuous" instead of "continues" throughout the manuscript.

Response: *Agree, all words were corrected.*

1. Ogurtsova K, da Rocha Fernandes J, Huang Y, Linnenkamp U, Guariguata L, Cho NH, et al. IDF Diabetes Atlas: Global estimates for the prevalence of diabetes for 2015 and 2040. *Diabetes research and clinical practice*. 2017;**128**:40-50.

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Revision (1)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE: Associate Editor | **Revision** (1) 13 Feb 2021

Daer EIC,
The authors have responded satisfactorily all the concerns found in the previous version of the manuscript. The manuscript is acceptable for publication in the IJEM.
Thanks.

Fereidoun Azizi & Dr. Azita Zadeh-Vakili: EIC | **Revision** (1) 13 Feb 2021

Dear Author,
The revised manuscript is acceptable for publication.
Thanks.