Reviewer's report

Title: Economic burden of diabetes mellitus in the WHO African Region

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Reviewer: Peter EH Schwarz

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General
The topic what the authors addressed is very interesting und unquestionable important in its field, because studies on economic burden of diabetes in African are always lacking. However, the creditability of the data is doubtful. I hope the authors could check their data more carefully.

In general, the text has many examples of poor English usage. The manuscript requires careful revision by a native English speaker.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The errors of the data:

The economic loss due to diabetes was US$42.65 billion in African! I think this number could shock not only me but also all readers. According to the data of World Bank in 2007, the GDP of Sub-Saharan Africa was 622 billion (1). That means, diabetes mellitus should run away with nearly 7% GDP.

So I checked carefully the data and recalculated some parts of them using the author’s “analytical model”. The largest portion of the costs calculated by the authors was cost of insulin (Table 1 in manuscript), it was US$ 36 billion. This is just the problem. According to the data in the manuscript there were 1.053 million patients treated with insulin, the consumption of insulin is 14600 IU per person per year. Therefore, from these data one IU insulin costs $2.34 (36 billion/[1.053 million x 14600]). According to the AFRO medicines price (2), the cost of insulin per 40 IU ranges between $1.20 and 5.66, i.e. $0.03 – 0.14 per IU in Africa. The price of insulin was overestimated tenfold in this study. The authors must be asked to recalculate their data.

2. Abbreviations:

There were so many terms and their abbreviations, but the abbreviation appears
excursively everywhere in the manuscript, so that the reader would be very easily confused. A list of abbreviations could be useful. In addition, the abbreviation should be defined at first use, after it, should only abbreviations be used not full names.

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Minor Essential Revisions (the author can be trusted to make these)

1. I know that the WHO African region is not as same as the geographical Africa. But not every reader knows that. Their difference should be mentioned.

2. The first section of Background is about the definitions of the two types of diabetes. It’s discouraged to explain the definitions in so big space. This section is not relevant to topic. It should be either deleted or shortened in a sentence.

3. The link of reference 2 is out of date, please update it.

4. In the second section of Background “About 113100 people died of the disease…” It is not an accurate statement, because only a small proportion diabetics died directly from hyperglycemia, the most died from complications. From “In 2000, the prevalence of diabetes…” to the end of the section, reference(s) should be cited to explain wherefrom these data.

5. In the third line of the fourth section “US$54 495 billion” should be “54.495”. The decimal point was missed.

6. Again in this section, the antepenultimate line, “insulin dependent diabetes mellitus” should be written as type I diabetes. The terms in the study must be coherent.

7. In the section of “Analytical model”, the formulas were all marked in numbers, but it seems that these numbers have not played any roles. Some of them were even repeated. These numbers should be removed.

8. Page 5, the penultimate section, “The annual use of insulin per patient per year is 14600 IU, i.e. 40 IU per day time 365 day in a year [4].” The data here is not coincident with those of the cited reference.

9. Page 6, the section under the CDT formula, “We estimated that, in a year, … and one electrocardiogram”, the authors mentioned four diagnostic tests, but the test of blood sugar was missed.

10. Discussion, the first key finding, the data here is not coincident with those of the Table 1.

11. Discussion, the seventh key finding, “US$38 312 147 215”, this number is not coincident with that in Table 1.

12. Page 10, the last section, the first sentence, “Kirigia and Sambo [10] have indicated that…”, normally if the authors cite their own article, their name should not appear, but rather “our previous study”. Furthermore, the cited reference [10] is not written by Kirigia and Sambo at all.

13. Table 1, all the percentages of grand total cost must be recalculated. The sum of them does not equal 100.
14. Figure 1, there are two boxes signed in “Indirect cost”, one belongs to another. This could confuse the reader. Please remark this.

Anyway, there are so many errors in this manuscript, especially, the data were wrongly calculated, which could affect the conclusion of the study, a lot of works must be done before publication.

(2) http://www.who.int/medicines/publications/afro-essential_med_price_indicator_nocover.pdf

**Level of interest:** An article of limited interest

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests