Reviewer’s report

Title: Healthcare reimbursement costs of children with type 1 diabetes in the Netherlands, a observational nationwide study (Young Dudes-4)

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Reviewer: Juan Oliva-Moreno

Reviewer's report:

The manuscript title: "Healthcare reimbursement costs of children with type 1 diabetes in the Netherlands, a observational nationwide study (Young Dudes-4)" is an interesting paper that adds information of interest in an area with important gaps in analysis and evaluation such as the health cost of children with type 1 diabetes.

Authors use a database that allows them to analyze the results of 6,710 children distributed over 81 hospitals over a three-year period (2009-2011).

The aims of the paper are "to investigate both the overall and diabetes-specific healthcare costs as derived from reimbursement data related to the management of Dutch children with T1DM aged 0 to 18 years". Also, the authors point out "we also investigated its course, determinants and differences according to size of hospitals."

I think it is a good work with great potential. Precisely because of the possibility of having such an interesting database, my opinion is that authors should delve into some lines of analysis, discussed in the discussion section, but not developed in the main results.

Major comments.

1. Authors should add methodological features that help to characterize the study: retrospective, prevalence based, etc.

2. Costs should be valued in a base year to facilitate comparison of results. To do this, the authors should choose one of the years for reference and use the Dutch Consumer Price Index (or the specific consumer price index for sanitary products) as a reference for updating the cost data for the base year.

3. What does secondary care include? Hospitalizations and consultations with specialists? Diagnostic tests are also included? If possible, it would be convenient disaggregate secondary care.
4. Given the strong weight of the devices-related costs and secondary costs items, it would be advisable to disaggregate these items, if possible, by indicating the main cost items associated with devices and indicating which are the most costly Diagnosed Related Groups.

5. Authors analysed the overall costs of children with type 1 diabetes. I did not understand how the authors identify their second goal in the Results section or explain in the Method section how they differentiate all health care costs from diabetes-specific health care costs.

6. The results are shown by center type. However, since the distribution of children between centers is not likely to be random, the complexity of children treated in one type of center may be very different from those treated in another. This is recognized by the authors in the discussion section: "…it is likely that larger centers treat more complex cases".

However, if this is so, the analysis performed loses interest over other possible ones. Thus, it would be reasonable to suggest to the authors the realization of another type of analysis that would provide information of interest such as:

- Differentiate between children with good and bad glycemic control
- Differentiate between children with and without DM related problems (hypoglycaemia, ketosis without acidosis, ketoacidosis, retinopathy, nephropathy and peripheral neuropathy)
- Differentiate between boys and girls
- Differentiate by age of children (eg, 0-6 years old, 7-12 years old, and 13-18 years old)

Bivariate or even multivariate analysis would be indicated.

Authors can consult, for example, Table 4 of the following reference: López-Bastida et al. Social economic costs of type 1 diabetes mellitus in pediatric patients in Spain: CHRYSTAL observational study. Diabetes Res Clin Pract. 2017 May; 127:59-69.

7. Discussion section:

The authors point out that "Differences in organization and accessibility of health care and standards of diabetes care hamper the comparison of such costs between countries." Certainly, this is one of the sources of variability between results observed between articles. However, the authors should also consider the methodological differences between studies, the different
population profiles analyzed and the differences between the unit costs of health services between countries.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

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