Reviewer’s report

Title: Prevalence, incidence, and risk factors of primary open-angle glaucoma - a cohort study based on longitudinal data from a German public health insurance

Version: 0 Date: 13 Nov 2018

Reviewer: Alex Black

Reviewer's report:

The manuscript by Kreft and colleagues reports on the prevalence, incidence and risk factors for glaucoma in a German cohort, based on health insurance information.

Major comments:

1. The introduction provides an overview of the global prevalence/incidence of glaucoma, as well as in specific countries. However, the introduction would benefit from some structure in how this information is presented. There needs to be some commentary provided with the specific global or country specific prevalence/incidence information to inform the reader whether these is consistency or not in the current literature. As such, the flow of the introduction is somewhat laboured and difficult to follow at times, as it simply lists information from one study to the next without any linking. A suggestion would be to block the global information, followed by country specific information. The authors should also provide further justification for the need for German-specific glaucoma data.

2. To provide context around the data, an overview of the public health insurer needs to be provided. For example, does this relate only to hospital treatment, or does it also include private medical visits? What proportion of the German population does this insurance company cover?

3. The focus on the analysis is for primary open angle glaucoma (POAG), yet the authors include risk factors that are likely to result in secondary open-angle glaucomas. For example, traumatic glaucoma following injury to the eye, or neovascular glaucoma following retinal vascular occlusions (proliferative diabetic retinopathy and central retinal vein occlusions). As such, further clarity regarding the selection of risk factors should be included.

4. Some further clarification is needed on the coding of co-morbidities or risk factors (L178 and Table 4). How are these coded in the health insurance data, and how far back does this information exist in the medical records? For example, do the health insurance companies have information regarding refractive error, and are these updated regularly (e.g. change in refractive error following cataract surgery and intraocular lens implantation)?

5. The discussion would benefit from the commentary on the findings. For example, is there any potential reasons for the gender differences in the validation strategies (L368)? What about the higher incidence rates for females compared to males (L378), which is a novel finding. Some comparisons
with other global and European data would also be beneficial, highlighting whether there are any country specific trends that arise from the differences, or whether these are data-related differences.

Minor comments:

L191 - Suggest rephrase "quarter-specific"
L203 - Are the numbers presented here the total cohorts used in the analyses?
L206 - How was "under suspicion" determined?
L213 - Include a statement noting the follow-up period somewhere around here
L229 - Suggest rephrasing "coincidences" to highlight the temporality requirement for potential causal predictors.
L274 - The authors comment on the absolute differences being marginal - yet 2,823 to 1,992 for the incidence rates is nearly a 30% variation.
L365 - The incidence rates seem to be within the previously reported ranges, rather than higher?
L377 - It is unclear what is meant by "higher health consciousness" in this context.

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

Yes

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

Yes

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

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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