Reviewer's report

Title: Pattern of childhood Ocular Morbidity in Rural Eye Hospital, Central Ethiopia

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Reviewer: Kristina Tarczy-Hornoch

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This paper provides information on the pattern of ocular disease in children presenting to an eye hospital in central Ethiopia. One of the most interesting findings is the lower than expected prevalence of trachomatous eye disease among children presenting to an eye hospital. More methodological clarification is needed, however, with regard to how individual patients were categorized. More care needs to be taken in discussing findings in comparison to other studies. Specific points follow:

Major points:

1) Methods: Explain which children underwent refraction. Was it only those with decreased visual acuity not attributable to another cause? Or were all children, including 0-5 years old, refracted?

2) Methods: provide definitions of myopia, hyperopia and astigmatism used.

3) Methods: It seems each patient only received one diagnosis (Table 2). If they came because of allergic conjunctivitis and were incidentally found to be myopic, were they diagnosed with myopia or with conjunctivitis? Were they counted as myopic for analysis of causes of visual impairment, but conjunctivitis for Table 2 classification of ocular morbidity? If they came because of myopia and were incidentally found to have active trachoma, were they counted as a trachoma case or not?

4) Methods: How did author define cause of visual impairment? For refractive error, was vision rechecked with refractive correction to confirm that visual impairment was truly due to refractive error?

5) Methods: What was the definition of amblyopia (as a cause of visual impairment)? Was there a requirement that best corrected acuity be below a certain level, and that there be an amblyogenic factor present?

6) Tables: Table 2: A 95% CI is given, but it is not clear for what value this is the 95% CI.

7) Results: Visual impairment causes are provided, but the different causes add up to over 100%. Were multiple causes assigned? Please also provide percentage for glaucoma/uveitis. Please also clarify whether these are the
causes of bilateral visual impairment cases, or any visual impairment in either eye.

8) Results: The association of visual acuity (VA) with age is mentioned, but not the nature of the association- VA better in older children? Also, was this VA in better eye?

9) Results: UCVA is used in table, but text refers to presenting VA- should it be presenting VA in table as well?

10) Discussion is organized by most common morbidities, but some discussion is also needed with regard to the morbidities that are the most common causes of visual impairment, which in this study were refractive errors, amblyopia, and keratitis, and only then trauma.

11) Discussion of refractive errors:
This study reports: (1) proportion of eye hospital visits that are because of refractive error (11.4%), and (2) proportion of visual impairment presenting to an eye hospital that is because of refractive error (55.5%). This study can not estimate the prevalence of refractive error in the general population, or even the prevalence of refractive error sufficient to cause visual impairment in the general population. The author should be very careful to compare like to like when comparing to other studies. For example, he cites for comparison a prevalence of refractive error of 15.8% in Chile, but this figure measures something entirely different from what was measured here. In the study from Chile, 15.8% was the prevalence of decreased uncorrected VA in the worse eye in the population. The same comments apply to the Refractive Error Study in Children (RESC) study from China. On the other hand, these RESC papers do comment on the proportion of visual impairment that is attributable to refractive error, and this could be discussed in the context of the present findings. There is a large series of other RESC studies from various countries which could also be discussed. Comparison to these and other papers with regard to the proportion of visual impairment–refractive error cases that are due to a particular type of refractive error are appropriate The comparison to the Nigerian study may or may not be appropriate- the references are mis-numbered, so I can not tell which study is referenced.

12) Discussion of refractive errors:
With regard to the proportion of eye hospital visits due to refractive error (11.4%), the authors says that the prevalence of refractive error could be higher in the general population- but it could equally be lower- a study of prevalence within a clinic population gives absolutely no indication of the prevalence of disease in the population.

13) General: The author should not use “incidence” to describe prevalence, and should not use “prevalence” without defining the denominator (e.g. prevalence of a condition among patients presenting to the eye clinic); in general it would be better to speak of proportions of a defined group having a condition, rather than
prevalence, unless it is a true population-based measure of the frequency of the condition.

14) Discussion of trachoma: it seems that the reason for presenting to clinic might be a diagnosis other than trachoma, but the child could still have trachoma. If the percentage of cases classified as trachoma is low, this might not really reflect the prevalence of trachoma in the clinic population. What is the total percentage of kids who had active trachoma, regardless of whether another diagnosis was used in the table 2 classification of ocular morbidities? This is the number that is relevant to whether trachoma control is improving.

15) Discussion of trachoma: it would be helpful here to reiterate the findings on trachoma prevalence from several years earlier, for comparison, and also to give the year of the earlier survey finding a higher prevalence.

16) Discussion of strabismus: same comments as for refractive error above- the author should be sure to compare only to studies reporting comparable measures.

Minor points:

1) General: Some editing of grammar is required.

2) Abstract: Include mention of determining the cause of visual impairment.

3) Abstract conclusion: Change “because they lead to” to “because they can lead to”

4) Methods, paragraph starting “Demographic data…” The word “disorder” is missing after “ocular”

5) Results: “The highest frequency of ocular morbidities was diagnosed in the 11-15 year age group, followed by the < 5 years age group. (Figure 1)” This should be rephrased as “The age group with the most patients was the 11-15 year age group, followed by….”

6) Results, visual impairment: Move reference to Table 1 earlier in sentence (Table 1 does not show data on bilateral visual impairment).

7) Tables: Give column totals and percentages of column totals in table 2.

8) Tables: what is p value in table 2- male vs. female?

9) Tables: Table 2: Define TT, VAD, NLDO, CO, RE (also define abbreviations such as CO in text)

10) Tables: table 3 column numbers don’t add up to totals, eg for corneal penetration and corneo-scleral penetration. “Corneo-scleral” also needs to be indented.

11) Discussion of trachoma: define SAFE
12) Discussion of trachoma: add bolded words to clarify:
“Moreover, the southern regional state, where the present study was conducted, had one of the highest....”
“The present study was carried out in a population where trachoma....”

13) Discussion of strabismus should be a separate paragraph.

14) References: There are obvious errors in the reference list, with some numbers used twice, and some references listed twice. Reference numbers used in the text do not match reference list (eg “reference 22” in discussion of strabismus is supposed to be a Nigerian study, but reference 22 in the reference list is not a Nigerian study; “reference 28” in refractive error discussion of study of schoolchildren in six districts actually refers to ref. 27 in reference list).

Discretionary:

1) Introduction: Amblyopia section should be a separate paragraph from epidemiology of pediatric blindness. Blindness statistics should give some sense of most common causes of childhood blindness. Causes of ocular morbidity should be a separate paragraph again.

2) Discussion of keratitis: the author should point out that corneal scarring is a problem in its own right, as it can cause visual impairment that is difficult to treat except with corneal surgery, which may not be available to this population; then, in addition, it is even more problematic in childhood because amblyopia may develop, which can then limit the benefits of surgery later in life.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

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.