Reviewer's report

Title: Use of traditional cooking fuels and the risk of young adult cataract in rural Bangladesh: a hospital-based case-control study

Version: 1 Date: 5 July 2010

Reviewer: Astrid E Fletcher

Reviewer's report:

Major compulsory revisions

1. The abstract should be rewritten since the results and conclusions suggest that the study provides evidence that certain types of biomass fuels are a risk factor for cataract and support the results of other studies. Since there is no comparison with clean fuels this is misleading.

2. More information is required on the data collection, in particular possible bias from the author who both carried out the eye examinations, conducted the interviews and carried out the statistical analysis. Why was a semi-structured questionnaire used? There is a concern that using a semi-structured questionnaire might be particularly subject to interviewer bias, or to errors resulting from variation in the way of asking questions. This and the fact that the author both examined and interviewed people must be included in the Discussion under limitations.

3. Results. No information is provided on response rates. The authors stated earlier in the Methods that people who refused to participate were excluded. It is a drawback of the study that information is not available on either non response or characteristics of non responders as this could be a source of selection bias. This limitation must be addressed in the Discussion.

4. In the Introduction the authors speculate that the higher rates of cataract in women might reflect exposure to biomass cooking fuels but they do not present any results by sex. The authors should give the results by sex in the present study. It was surprising that that such a high proportion of people stated they cooked regularly as this must include men.

5. Table 3 and the analyses shown in Tables 4 and 5 are based on “ever” versus “never” for various types of cooking fuels. As the “never” group includes other types of fuel and as “clean” cooking fuels (kerosene or gas) use was very rare (only 7 controls and no cases), the analysis is contrasting different types of cooking fuels all of which are “unclean fuels”. This analysis may be the reason why cow dung appears to be “protective” because it is being compared to other types of biomass fuels i.e. to rice and wood crops but not to clean fuels. The authors should show for each case/control group the numbers using each of the different types of fuels both alone and in various combinations. The analysis should use this measure to calculate the Odds ratios for different combinations of biomass fuels. It is not at all clear what would be the reference group. Ideally it
would be clean fuels but the numbers are too small. The authors must consider that a major limitation of their study is that homogeneity in the use of biomass fuels in their study population makes it difficult to examine biomass fuels as a risk factor.

6. The discussion is well written but the literature review must include the comment that previous studies have used either clean fuels as the comparison group or other indicators of exposure such as type of stove or the analysis has been carried out only in women.

Minor Essential Revisions

1. Case control recruitment

A key problem in case control studies is possible biases in case and control selection. It is important therefore that the authors give more information on how cases and controls were selected or selected themselves to the clinics. How was information on the floating hospital advertised in the target population? Was proximity to the hospital a factor in attendance? Were people referred from village health centres or other sources? Why did the authors choose 2 different types of controls per case and why did they use hospital rather than population based controls?

2. Case definition. Is the cataract definition of lens opacification and VA <6/18 based on either eye, or the worst eye or both eyes? Why was cataract surgery not based on an aphakic/pseudophakic lens rather than a definition of a report by a qualified ophthalmologist.

3. Please give the exposure on which the sample sizes were calculated. What was the basis for the 30% prevalence of exposure assumption? Why were cases of myopia excluded?

4. History of exposure to cooking fuels. This is the primary exposure and more information is required. How was history of exposure defined? Is it based on household use of cooking fuels, or the exposure based on cooking fuel use by people who cook? Why was the age of exposure taken from 11 years?

5. More details are also required on collection of other data which are presented in the results, for example a diagnosis of hypertension or diabetes. How many people understood these terms and/or could be expected to know if they have these problems. Were other measures used e.g. measured blood pressure or glucose? More information needs to be given on how a family history of cataract was obtained, sunlight exposure and tobacco smoking

6. Table 1 indicates that there is a higher proportion of people with secondary education in both control groups compared to cases, and more cases and eye controls with low incomes compared to non eye controls. The possibility that this be a bias in the control selection rather than a true difference in risk factors should be considered in the Discussion

Discretionary Revisions

1. The Introduction could be shortened as it includes information which is not
directly relevant to the paper or is repetitious. The first two paragraphs could be removed as this is general information and well known to the readers (also cataract is not the leading cause of blindness in developed countries).

2. The description of the previous survey in Bangladesh (third paragraph) has repetition of information and needs to be shorter.

3. Page 4, 3rd and 4th sentence. Either drop or amend because it does not follow that because the proportion of young people in the population is higher in Bangladesh than other countries, there is a difference in the age specific rates of cataract in Bangladesh. If this is the case, a supporting reference should be given.

4. English also needs attention on Page 5 second sentence.

5. Table 1, age groups should be given in the usual way i.e. 20-29, 20-39 etc.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare I have no competing interests