Reviewer's report

Title: Home Exposure to Arabian Incense (Bakhour) and Asthma Symptoms in Children: A Community Survey in Two Regions in Oman

Version: 3 Date: 19 January 2009

Reviewer: Giorgio Bedogni

Reviewer's report:

I was asked to review this paper as BMC statistical referee.

Major Compulsory Revisions

Abstract/methods: please, add that the study was performed in 2 cities with different prevalence of asthma.

Methods/subjects: the 2 regions (Muscat and South Sharqiyah) were selected from a total of 10 cities which were in turn selected by stratified multi-stage sampling to be representative of Oman. I expect that sampling weights were used to ensure that. My question is: was there any need to use such weights to ensure that the studied schools were representative of *all* schools of Muscat and South Sharqiyah?

Methods/subjects: the fact that the population of Muscat “comes from most regions of the country” is not important here because the original study (ISAAC) sampled it to be representative of whole Oman with other 9 countries.

Methods/questionnaire: do you have validity and repeatability data for the arabian version of the ISAAC questionnaire? It is even better if you have already published them. Nonetheless, please report them in the text (or write that they are not available).

Methods/questionnaire: the coding of a key variable of the study, i.e. frequency of incense use, is surprising: never or rarely vs. 1-2 times per wk vs. > 2 times per wk. Wouldn’t it be more understandable to write: < 1 vs 1-2 vs 2? This could avoid subjective interpretation of “never” and “rarely”.

Methods/questionnaire: how do you expect that parents interpret the question “Does exposure to bakhour affect your child breathing”? I suppose that you want to capture something more than asthma here. More importantly, explain why you use 2 outcomes, i.e. “asthma” and “affected by bakhour” in your study. This is even more important if you consider that, according to your analysis, the predictors of the 2 outcomes are different.

Methods/questionnaire: which modifications did you do to the original ISAAC questionnaire list? Did you just add bakhour use? Please, provide validity and reliability data for the items you added to the list.
Methods/outcome measures: your definition of asthma is composite: 1) wheezing in the past 12 months or 2) ever had asthma + other core asthma symptoms. This makes your data not comparable to the ISAAC ones, which is not important for the aim of your study. However, this could make your data not comparable to those of other studies, including those of asthma risk factors, which is important for the aim of your study. Please, comment on this point in the discussion.

Table 1: “1-3” and “>3” wheezing episodes are part of the same variable. How did you take into account this fact when performing the Chi-squared test? Were these items evaluated separately or as part of the same variable as they should (and as was done with logistic regression)?

Table 1: the prevalence of bakhour use is VERY high in both Muscat and South Sharqiyah. There are 1241*0.915 = 1136 children in Muscat and 1200*0.91 = 1092 in South Sharqiyah exposed to bakhour. The power to detect a difference of 0.915 vs 0.910 at alpha = 0.05 with n = 1200 per group is VERY low: 0.22. Thus, although the outcome (asthma prevalence) is unevenly distributed by design in the 2 cities, this is not for the main predictor. Please, comment on this fact and discuss how it is expected to influence your results.

Table 1: “<1”, “1-2” and “>2” times per wk are part of the same variable. How did you take into account this fact when performing the Chi-squared test? Were these items evaluated separately or as part of the same variable as they should (and as was done with logistic regression)? Your main conclusion relies on the accuracy of the frequency of bakhour usage so you must be very clear on this point (see also previous comment on coding of bakhour). Personally, I would trust more the fact that at multivariable analysis, bakhour usage was NOT associated with asthma prevalence (despite the clear fact that there is very low power to detect this effect). The clinical relevance and accuracy of reporting of this outcome is in fact higher that that associated with the “child affected by bakhour” outcome. To put your results into context, you should nonetheless compare your study to other studies using the SAME outcomes. Do they exist for “child affected by bakhour” outcome?

Table 2: give the list of the factors for which OR was adjusted.

Table 3: give the list of the factors for which OR was adjusted.

Table 4: add 95% confidence intervals to the prevalence of respiratory symptoms.

Minor Essential Revisions

Results: please, give the respondent rate separately for Muscat and South Sharqiyah.

Results: please, add standard deviations to the mean values, e.g. 11 (2) years.

Results: you speak of (known or potential) confounding variables. Please, discuss them BRIEFLY in the introduction making a SHORT review of the
Methods/statistical analysis: performed is performed.

Methods/statistical analysis: Chi-square is Chi-squared test (which variant?).

Methods/statistical analysis: multivariable is better than multiple (or multivariate) when referring to logistic regression.

Discretionary Revisions

Although there is nothing intrinsically wrong in using logistic regression to model predictors of prevalence, especially when a case-control design is used, it must be clear that the odds ratios at prevalence > 5-10% are not synonyms of prevalence ratios.

**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