Reviewer's report

Title: A Comparison of Two Methods for Estimating Prevalence Ratios

Version: 1 Date: 5 October 2007

Reviewer: Thomas Behrens

Reviewer's report:

General
The authors address an important issue in analytical epidemiology which has been discussed for several years. However, no final conclusions to the various approaches to estimate prevalence ratios in cross-sectional studies have been reached so far. Briefly, the authors prefer their own COPY method for calculating the PR over the Poisson regression with robust estimates if the MLE is on the boundary of the parameter space and the model fails to converge.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Background: The authors discuss the modeling of a logistic regression against the background of the rare disease assumption. Two issues should be more clearly pointed out: The rare disease assumption does not apply to case-control-studies in general where the disease under investigation is either rare or the assumption is not required because controls are selected by incidence density sampling. Choosing between OR and PR may represent a problem in cross-sectional studies where the studied disease is oftentimes not rare, and the calculation of the OR may lead to false perceptions if interpreted as a relative risk.

Methods: Since every article should stand on its own, the authors should present in more detail how the exact estimates were yielded instead of merely citing an earlier publication (p. 8).

The finding that in multivariable analyses the statistical significance of estimates depended on the choice of model should be further discussed with respect to the problem of stepwise regression techniques.

The statement on p. 16, 1st paragraph should be modified. A model is not ‘incorrect’ in itself (neither would be a logistic regression). The results may only give a false perception if interpreted as PR or RR. For the same reason, the authors should apply more caution when stating that results of a model were ‘biased’ (e.g. on p.16, 3rd paragraph).

In accordance with the published literature, the authors recommend a log-linear binomial regression to model prevalence data. In contrast to recent publications
that favor the robust Poisson, the authors recommend their own COPY method when the model fails to converge. However, we had considerable problems to apply the COPY method to real data sets with many variables since the method used considerable computational time and memory (unlike the authors’ statement on p. 17 that 10,000 copies of a data set would be a feasible approach). Therefore, we would still prefer the Robust Poisson in the case of non-convergence. It is noteworthy that in the present manuscript most results were very similar when using the one or other method and only in some malign cases, results between the two methods differed.

Citation #28 is a reviewer’s report for another article which does not qualify as a proper publication and should therefore not be cited.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

- Abstract: The first sentence should include „in cross-sectional studies”.
  The statement that the article compares two of the “better” methods is judgmental and should be avoided.

- Add “vaso-” (‘20 of 39 observations were constricted’) (p.11, 2nd paragraph)

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Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions

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

Quality of written English: Acceptable

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.