Reviewer's report

Title: Heritability of Cardiovascular Risk Factors in a Brazilian Population: Baependi Heart Study

Version: 1 Date: 13 December 2007

Reviewer: Jenny H Barrett

Reviewer's report:

This manuscript reports an analysis of the heritability of cardiovascular risk factors using a population-based sample of extended families from a city in Brazil. There have now been numerous similar studies, but some novelty lies in the fact that this is the first such study based on a Brazilian population. The interest of the paper could be enhanced by expanding slightly on the overview given of similar studies conducted to date.

1. It is interesting to see how the estimates of heritability often increase in Model 2 compared with 1 and decrease with Model 3 compared with 2. Since the authors are presenting heritability as the proportion of total variation (i.e. variation in the trait as measured before adjustment for covariates) that is explained by polygenes, which I agree is the best way to do this, I am quite surprised that the estimates increase so much with the inclusion of age and sex terms. The authors state that this reflects "increased precision". It would be useful if they could elaborate on this.

For the reverse effect (reduction in heritability estimates, especially when medication is included in the model), I can see why this should be the case. As the authors suggest, this is because the covariate explains a part of the familial aggregation of the trait. However I would dispute the conclusion in the Discussion that this reflects a genetic basis for response to treatment. It seems more likely that being on treatment is a marker for unusual values of the trait (e.g. high blood pressure), and hence explains some of the genetic variation.

2. Overview of other studies. In Table 4, I don't see what model the estimates from the Baependi study come from. They don't (all) correspond to the results in Table 2 (or 3). Also is it possible for the authors to expand this table to indicate the main features of the other estimates presented (e.g. whether covariates included, whether a population-based sample, what population was studied)? The interest of the paper could be enhanced considerably by expanding slightly on this review aspect.

Minor comments

3. Background: Surely there is pretty well a consensus now that many genes with small effect must be involved in cardiovascular traits.

4. Materials and Methods: Were the subjects really all recruited within a period of just 2 months? Why were only 81 of the 119 families analysed?
5. Statistical analysis: It is stated that a covariate with a p-value<0.05 was considered significant. Does this mean that the covariates listed were only included in the model if the p-value was <0.05 (which seems unwise)? Otherwise in what sense was the statistical significance of the covariates used? Also the tdist procedure within SOLAR is mentioned in the Results but not in the Methods, and it should be briefly described here.

6. The definition of heritability on page 7 does not seem right. Surely heritability is the particular component of variance due to polygenes, not for example the proportion of variance due to measured environmental covariates (although these components all feature in the heritability analysis).

7. Results: it is stated that Hypertension was prevalent among men, but from the table it was more common in women.

8. Discussion: Could the authors expand please on why they see the admixture of the Brazilian population as being advantageous for this study?

9. Use of English:

The paper needs to be read through and the language corrected throughout. In many places the use of English is incorrect and in a few places this interferes with understanding. Examples of the former are the sentence beginning Was considered sedentary. Genetic factors should presumably be genetic factors? The term rural city in abstract and elsewhere seems contradictory!

The main places where I was not sure of the intended meaning were:

Censitary (Materials and Methods). Do the authors mean census?

Altered values (Results) do the authors mean elevated values or something like this?

10. Presentation

There should be consistency in the use of decimal places (dp) and I would suggest sticking to one dp. So 15% (Abstract) should be changed to 15.0% and the figures in the final paragraph of the Results should be changed from 2dp to 1dp.

Definitions should be given for abbreviations before they are used (e.g. TC in the Abstract).

Table 1: please show standard deviation in brackets (rather than using the plus/minus sign). Also it would be useful to show the number as well as percentage (n (%)) for dichotomized traits.

The text is repetitive in places: e.g. in the Abstract it is not necessary to list the covariates (sex, age, etc.) twice. In the Background it is stated twice that many studies have been conducted in different populations to estimate heritability.

In the Heritability estimates section, by age and sex within the first bracket the authors appear to mean age and sex interaction.
What next?: Accept after minor essential revisions

Level of interest: An article of limited interest

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

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

Declaration of competing interests:

I declare that I have no competing interests