Reviewer's report

Title: High blood pressure prevalence and associated factors in a North African adolescent population. A national cross-sectional study in Tunisia

Version: 1 Date: 17 September 2011

Reviewer: Pascal Bovet

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Major revisions

1) The definition of categories of elevated blood pressure should be properly referenced. Reference 15 is not presenting the age-sex-height specific reference values but only using them. A reference should be given on the original paper presenting the reference (likely 2004 National High Blood Pressure Education Program Working Group guidelines). There is a need to mention in the text whether BP categories were based on sex, age and height specific cut offs?

2) The categories of elevated BP should be referred exactly as they appear in the original reference. It is misleading to refer to "high BP" for values including the category "pre-hypertension". At best a category including prehypertension and hypertension could be labeled as "elevated BP", but it would be best to refer to prevalence of "pre-hypertension" and to prevalence of "hypertension" separately.

3) This reference 15 underlies an important issue that the authors should discuss in their paper, which is that the actual status of elevated BP categories should be based on BP based on BP readings on several occasions. Reference 15 well shows that prevalence of elevated BP largely decreases when BP is measured several times. Another similar study is "Chiolero A et al. Prevalence of hypertension in schoolchildren based on repeated measurements and association with overweight. J Hypertension 2007;25:2209-17". The authors of the Tunisia paper likely don’t have readings on several occasions, but they should at least acknowledge this important caveat (which tends to largely overestimate the actual prevalence of hypertension in their study. This should be explicitly recognized in the text and in the abstract 8as the actual prevalence of elevated hypertension is likely much lower than that presented based on only 2 readings in only 1 visit).

4) The choice of the covariates (for the analysis of BP with various characteristics) should be based on current knowledge, or if some new variable is presented, on some hypothesis. I don’t see any rationale from the literature (or stated hypothesis in the paper) to select “eating daily meals” or “regular snacking” with regards to BP. These variables are very un-specific, prone to recall bias and other biases (SES; etc), likely very imprecise, and not closely related to variables of real interest (sodium, potassium, fibers, chocolate, nuts, etc) that are known to relate with BP. I would advise to drop these variables for
the analyses as they do not add meaningful information to the complex issue of nutrition and BP.

5) Emphasis on results should be based on sex specific multivariate analysis. Univariate results have little interest as they are prone to biases by other covariates. Tables on univariate results could be maintained (or dropped) but there is no need to have a detailed description of these univariate results (as is the case now). Multivariate results (which are indeed a main result in the paper) largely show no substantial association with BP except for BMI. The few other associations are very close to statistical non significance, and would become statistically not significant (except for BMI) if adjustment was made for multi testing (Bonferoni). Furthermore the few barely statistically significant results are not consistent (systolic/diastolic, BP continuous/hypertension category, boys/girls) which further limits their interest. Also it seems that these associations were not pre-specified and results then seem to relate more to some “fishing” than clearly stated hypotheses. Hence the emphasis in the association results should be on BMI and make little case of the other associations, with emphasis on this association (BMI) in discussion and not much focus on the other weak or non coherent findings with other variables. More comments could be made on the role of BMI (a risk factor of BP but also a discrepancy in many countries between decreasing BP (in adults and in children) and increasing BMI, e.g. your reference 53, but several other similar papers.

6) More details should be given to methods: how the students were selected, what was the number of eligible participants, what is the proportion of refusal/non participation (it seems that there were only 2873 participants 6580 households?).

7) I don’t understand what is “correspondence analysis” used for SES scale. Could the authors be more explicit on how they derived their SES score (which variable brought how many points for which response?). Could they use some straightforward score having points added (explicitly) in relation to some wealth attributes in household (non cable TV, cable TV, video, running water, etc) and make clear how many points are attributed to these various items, range of SES score, etc?

8) For education and job, how was categories estimated? Which category if mother is low education and father high education (or reverse)?

9) How were categories of overweight / obesity calculated from the WHO reference data? (one by one? using some “do file” etc. Same question for BP categories.

10) It is stated (line 7, background page) that there are few studies on prevalence of elevated BP in developing countries. There are several dozens of them, and it would useful to provide here references for a few (e.g. your referecne 53 but many others as well).

11) There is a need of a major revision of the text in relation to English (“tensional”, “corpulence”, etc are not words commonly used in English in this
field, and there are many orthographic mistakes).

12) For tables and graphs, as stated above, make sure to use proper words for "pre-hypertension" and "hypertension", and refer in text to the fact that these estimates are based BP measured on only one visit (hence overestimation of "hypertension" as compared to estimates based on several visits, as usually recommended)

**Level of interest:** An article of importance in its field

**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