Reviewer's report

Title: Nutrition transition among adolescents of a south-Mediterranean country: dietary patterns, association with socioeconomic factors, overweight and blood pressure. A cross-sectional study in Tunisia.

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Reviewer: Federico J Perez-Cueto

Reviewer's report:

The article entitled "Nutrition transition among adolescents of a south-Mediterranean country: dietary patterns, association with socioeconomic factors, overweight and blood pressure. A cross-sectional study in Tunisia." presents the results of a three regions representative nutrition study of Tunisian adolescents. As it is, it is a pertinent contribution to the nutritional knowledge; the work is original and performed in a sufficiently large sample. It has identified two major dietary patterns of Tunisian adolescents that are relevant for public health nutrition purposes. Methodologically, it is innovative in the use of MCA for the identification of dietary patterns.

I have however some comments to the document.

Major Compulsory Revisions

1. Authors should better justify why they have not used the IOTF BMI-for-age cut-off points (Cole et al 2000). Although they mentioned a short communication by Must & Anderson, 2006, there is room for proper discussion on the use of such references, their bias and how to draw conclusions from national references. As example, the article by Baya Nutr Hosp. 2010;25(3):428-436 presents a recent discussion on the issue; authors may want also to refer e.g. to one of the first papers on the matter such as Wang & Wang 2002 (EJCN 56:973–982) or the series of papers by the group of Neovius (e.g. Obes. Rev. 2004;5:105–114).

2. How was post stratification weighting performed? How did authors calculate weighting factors? Could the lower response rate in males be a source of bias in the results? Please address the latter in the discussion section.

3. Food Frequency Questionnaire: The advantages and limitations of FFQ are well known. Therefore, and to enhance the paper, authors should describe better the instrument (Page 4, lines 19-31). How long was the recall period? Was it over the past week, month or year? This has furthermore implications, particularly for the estimation of nutrients. Probably at population level individual variation might be mitigated (particularly by the large sample size), but results although well presented (Pages 7-8) should be properly discussed (lines 13-18, page 16) against the particular limitations of the instrument.
Minor Essential Revisions

In the introduction, authors may want to add the paper by Al Sabbah (Public Health Nutrition 2007;10(7):739-746) to the evidence of previous works done in adolescents of the Arab world. Furthermore, it would be helpful to know the proportion of the Tunisian population that is in the age of adolescence. I think it will make the study even more relevant.

Proxy-indicators of socio-economic status should be better elaborated. Although self reference is made to previously published papers, it would be adequate if authors could mention other groups (or statistical offices) that use such measurements. Furthermore, experience has shown that Education is one of the best proxy-indicators of SES (as suggested e.g. by Liberatos et al 1998, Epidemiol. Rev. 10, 87–121), so why not to focus on this indicator alone?

Present the sample characteristics (sociodemographics) in one table. It will enhance the overall picture portrayed by this study. Table 3 is quite large, and though it contains the sample composition, it would be better to have it in one table apart and at the beginning of results section.

In Table 2, authors present unadjusted values for nutrient intake. Since Energy is one of the major sources of bias, it would be adequate to present energy-adjusted values.

Table 3 should be amended accordingly if authors would include the suggested table with sample characteristics.

Discretionary Revisions:
1. Authors may want to enhance their literature review and place it in a more global context of nutrition transition. What is the weight of out of home eating in Tunisia?
2. Authors may want to elaborate on what they mean by "trained personnel" for the anthropometric measurements.
3. Page 16, line 1: Sentence not clear, to many 'with' (probably a typing mistake).

Language:
The text should be revised to improve clarity. Punctuation should also be revised throughout the text.

Single example
Page 12, lines 12-14: For the meat-fish diet score, although before adjustment for energy intake and BMI and WC, there was an increase in diastolic blood pressure no major associations were observed either.

Here a comma is missing after ‘associations’ while the one after WC isn’t needed.
Although an association with increased DBP was observed before adjustment for energy intake, BMI and WC, no associations with dietary patterns remained significant after controlling for their effect.

**Level of interest:** An article of outstanding merit and interest in its field

**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