Author's response to reviews

Title: Gender, socio-economic status and metabolic syndrome in middle-aged and old adults

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Author's response to reviews:

Referee 1:
Major revisions
1) We have rewritten the introduction and tried to clarify the specific research aim. We hope that this is now cleared.

2) In fact, the referee is right in pointing out that there has been a revision of the definition of the ATP III in 2005. However, we decided to use the original definition because it is well-established and most of the published evidence used the original ATP III, allowing the comparison between studies.

3) We have included a paragraph in the discussion section, where we tried to address more thoroughly the question on the higher frequency of metabolic syndrome in lower socioeconomic groups, as suggested by the referee.

4) Height was included in this study as a proxy measure of childhood living conditions. Previous studies have shown that height is positively associated with education, coronary heart disease risk, and several metabolic disorders, which may reflect the effect of material deprivation in childhood on these traits. Height is an indicator of early childhood environmental circumstances, in particular of poor infant nutrition, which is an important etiological factor in the development of type 2 diabetes and insulin resistance in later life and explain the well documented association between stature and diabetes (1-10). So, we also expected that this early life socioeconomic indicator would be associated with the metabolic syndrome.
5) We have followed the referee suggestion regarding the early development of metabolic syndrome and education level, and removed it from the limitations section.

6) We have included in the limitations section some discussion on the possible role of gender in differential misclassification error, especially regarding the socioeconomic status.

8) We have measured personal income as a categorical variable only for approximately 50% of our sample (n=983). Moreover, despite the popularity and predictive capacity of income based measures, the collection of income data is problematic. Specifically, income is a sensitive and private topic, and as a consequence, income questions asked in the context of survey research are susceptible to high rates of non-response. Furthermore, these non-response rates have been shown to be significantly higher among the elderly, in women, in persons of low socioeconomic position, the physically, cognitively and psychologically impaired, and usually in those reporting poorer health. Rather than being a random phenomenon therefore, the answer to personal income is often systematically related to a respondent’s socio demographic and health characteristics. For these reasons, we have decided to not to consider this variable in the analysis.

Regarding the geographic distribution of the participants, we did a preliminary analysis, in which we considered the place of residence, aggregated according to four major town suburbs, by geographical proximity and social characteristics used as an additional surrogate for socio-economic status. However, we did not find any difference in the metabolic syndrome prevalence according to the participant place of residence, both in males and in females. Additionally, we could not accurately establish the actual differences in socio-economic characteristics between the classified suburbs, so it was our decision to omit this indicator from the results.

Minor revisions:

1) We have tried to improve the quality of the writing, according to the referee suggestion.

2) Regarding the referee comments on table 2a and 2b, we do agree with him, and decided to omit the column regarding the OR adjusted for age and systolic blood pressure. Also, we apologized, but in fact the values for occupation in table 2 were wrong. Actually, the values for the housewives and unemployed were switched.

3) The label for the reference class in tables 2a and 2b was removed.

4) As suggested the word “thirds” was replaced by “tertiles.”

5) Following the referee suggestion the 4th sentence of the 2nd paragraph of the discussion was removed.
6) Indeed the figures in table 1 were n (%), in fact this was not clear. We have included n (%) in each column of table 1.

7) P-values in table 1 refer to the chi square test for comparing the proportions across the classes of the demographic and socio-economic variables.

8) In table 2a and 2b the p-values displayed on the tables refer to chi-square test performed for comparison of the proportions between the prevalence of metabolic syndrome according to independent variables. Regarding the calculated \( p \) for trend, they are in fact labeled, corresponding symbol §.

Referee 2:

Major revisions

1) The overall proportion of unemployed in this male sample is in fact 3.5%. In reality, this may seem lower than the European mean. However, European employment rates are calculated for the population between 15-64 years of age, and our sample is much older (\( \geq 40 \) years of age). In this age class most of the Portuguese men that do not work are retired (42.2%) and are not unemployed. Moreover, when we compare our estimated working male population (Active), we found that a proportion of 54.3%. This result is similar to the estimated European Union Employment rate of older workers \( \geq \) males, which is 52.8% (source: Eurostat [accessed in 28 August 2007] http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=STRIND_EMPLOI&root=STRIND_EMPLOI/emploi/em014).

Regarding the 25 males include in the class V of the social class variable, in fact they are not the same. Social class was estimated only for people that were engaged in an active paid occupation. Unemployed and retired participants, as well as housewives were considered as \( \geq \) Not employed\( \geq \) in this variable (table 2a and 2b).

2) As the referee pointed out, there could be lack of power due to the small number of individuals in some of the socioeconomic variables strata, especially regarding the male results. We do agree that this can be a limitation of our study, and we have included this discussion on the limitation section.

3) We need to thank the referee because there was in fact an omission in the last model. In the fully adjusted model, besides the adjustment for age, systolic blood pressure, total physical activity, alcohol consumption and cigarette smoking, also had body mass index included. We have chosen these two components of the metabolic syndrome basically because they remained significant in the final model and because they are the more frequent in our population.

4) Stroke is the leading cause of death in Portugal, accounting for about 20% of total mortality. Epidemiological observations showed that the high rates of cerebrovascular disease are accompanied by high levels of blood pressure. Previous published results from our sample showed that in individuals aged over
40 years the prevalence of hypertension was 58.9% (11). Also, in a national Portuguese sample, the prevalence of hypertension was 42.1% in the adult population aged 18-90 years. The age-specific prevalence of hypertension in the three age groups studied—younger than 35 years, 35-64 years old and older than 64 years—was 26.2, 54.7 and 79% in men and 12.4, 41.1 and 78.7% in women, respectively (12). Comparing with these results, we were expecting a higher prevalence of high blood pressure, as the threshold for defining high blood pressure is lower in our study (¿130/85 mm Hg). The reasons accounting for this high prevalence maybe multiple, but one might be the excessive salt consumption in our population. Findings from a Portuguese sample showed that Portugal in general had a high salt intake, reflected by high urinary sodium excretion that consistently correlated with high blood pressure levels (13).

Minor revisions:
- The numbers in the row referring to education in table 1 have been lined down, according to the referee suggestion.

References:
1. Riste L, Khan F, Cruickshank K. High prevalence of type 2 diabetes in all ethnic groups, including Europeans, in a British inner city: relative poverty, history, inactivity, or 21st century Europe? Diabetes Care 2001; 24:1377¿1383.


