Author's response to reviews

Title: Smoking, alcohol and dietary choices: evidences from the Portuguese national health survey

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Version: 3 Date: 11 October 2006

Author's response to reviews: see over
1. Reviewer: Jean-Bernard Ruidavets

Methodology section

Major revisions

We developed more the methodology section, according to reviewer suggestion. The study sample included all subjects living during October 1998 and September 1999 in individual housing (collective housing such as prisons or hospitals were excluded). The final sample was considered representative of the main regions of continental Portugal (namely Norte, Centro, Lisboa e Vale do Tejo, Alentejo and Algarve, figure 1).

The sample unit was the house, and the basic structure to organize data collection was derived from the population and housing census of 1991. Two strata were defined: the freguesias (corresponding to counties), and within freguesias, geographically defined units of approximately 300 lodgings. All subjects living in the sampling unit (house)
were surveyed. Data were collected by trained staff according to a standardized protocol [1] and a quality control was conducted by re-applying (by a different interviewer) the same questionnaire to 10% of the initial sample [2]. Participation rate was 82% and 21808 sampling units were surveyed, corresponding to a total of 48606 subjects. Our study sample included all subjects older than 19 years (20302 women and 17923 men). The cut-off points used to establish educational levels (< 4; 4; 5-11 and ≥ 12 years) were chosen because Portugal is the country with the higher percentage of individuals with low level of education in all the European Union [3]. The census of 1991 revealed that 15.3% of the Portuguese were illiterate and that of 2000 showed that, despite the improvements and changes in the education of adults, 7% can still not read or write. The great proportion of women (46.5%) has 4 or less years of education as is it shown in Table 1. Only a low proportion of Portuguese adults (around 7%) have more than 12 years of education (went to the college), however we considered important to analyse if that group (more educated one) had different eating choices.

No nutritional method was used. The examination of food groups and not nutrients, relates to the methodology applied in the Portuguese National Health Survey. The data were collected by interviewers within the framework of an epidemiological study that was not specifically designed to assess quantitative aspects of nutritional and food intake; the dietary assessment method employed generic classifications of food groups, rather than specific brands, varieties or species (fish rather than fatty fish or salmon, etc.). Consumption of these food items was determined by asking “For each of the listed food items please indicate those consumed: during the day before the interview” (vegetable soup, meat, fish, vegetables, fruit, bread, and starchy foods - pasta, rice and potatoes); “during the week before interview” (beer, spirits, and Port Wine); and “daily consumed” (milk and wine).

In relation to the method validity no published studies are available although the results showed good consistency and reliability (data not published).

Although we cannot estimate the specific composition of food recorded neither the quantity, a study with such large number of individuals is expected to reflect the individual’s intake. It should be kept in mind that food choice is a form of behaviour. Behaviour can be described by terms such as amount of energy ingested, structure of dietary pattern, or macronutrient profile. But all of these terms are the consequences of behaviour. Therefore a study like ours should concentrate on food that was chosen mentioned to be eaten on the previous day (food choice) [4].
Of course the absence of food quantification is a limitation of the study, but we found very interesting results regarding qualitative aspects of dietary behaviours, as like the central food groups recorded as its association with smoking habits.

**Results section**

**Major revisions**

Regarding missing subjects in the education variable, we emphasised and discussed that limitation, as suggested by the reviewer.

In table 4 all the ORs for heavy smokers were lower than the reference group. Conversely, the consumption of wine and beer were higher in heavy smokers. We also believe that the consumption of non-recorded food could be potentially higher in non-smokers as other authors have described [5-13]. We don’t know if the total energy intake was lower or higher in smokers comparatively to non-smokers, because no food quantities were recorded. However

**Minor revisions**

As mentioned, multiple regression indicated that there was no association between the amount of milk consumed per day and the smoking status when adjusting for age and education.

The results were not significantly different when occasionally smokers were included in smokers or in non-smokers category.

**Discussion section**

**Minor revisions**

This large representative sample of the Portuguese population showed that smoking is associated with less healthy dietary choices because, after adjusting for age and education, vegetable soup, vegetables, fruit and bread consumption, food items important for a good health, were less frequent in heavy smokers.

Regarding the suggestion to restrict the title, we think that “Smoking, alcohol and dietary choices”, can quite good exhibits what was studied. We agreed with the reviewer and substituted the expression “dietary behaviours” by “dietary choices”.
2. Reviewer: Aage Tverdal

We emphasised the limitation of the low response rate concerning to education, according to reviewer’s suggestion.

The study sample included all subjects living during October 1998 and September 1999 in individual housing (collective housing such as prisons or hospitals were excluded). The sample unit was the house, and the basic structure to organize data collection was derived from the population and housing census of 1991. All subjects living in the sampling unit (house) were surveyed. We discussed the dependency within the household, as suggested by the reviewer.

Regarding the question whether it was the same group of heavy smokers who both drink a lot of beer and a lot of wine, we found that heavy smokers in the last quartile of wine consumption were distributed uniformly by every quartiles of beer consumption. Regarding food items, the group of heavy smoker’s soup eaters was also almost the same of vegetable and fruit eater’s groups. In other words heavy smokers who choose to eat vegetable soup also tend to choose vegetables and fruit. Regarding fish, the distribution was not exactly the same. Only about a half of heavy smokers fish eaters have also chosen vegetable soup, fruit and vegetables.

Data collection took place between October 1998 and September 1999 to reduce potential seasonal bias. Besides that the pattern of alcohol consumption in Portugal is not a seasonal one. People use to drink daily or regularly, all the year, and not in special occasions like festivals [14].

Although some paragraphs of the discussion may appear to be irrelevant, we think it is quite important to focus the relation between vegetables and fruit (rich in antioxidants) and the damages caused by tobacco smoke in order to emphasise that smokers probably have increased requirements of antioxidant micronutrients and though should choose more fruit and vegetables (and we found the opposite).

On page 9, as suggested by the reviewer we substituted “residual confounding”, for “misclassification”.
As suggested by reviewer we corrected the sentence “Chronic disease prevalence is increasing…” by “Chronic disease mortality…”.

As suggested by the reviewer we substituted the reference made to “Oshaug et al” for the reference number.

References

