Author’s response to reviews

Title: Prevalence and pattern of cognitive impairment in rural and urban populations from Northern Portugal

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Version: 3 Date: 11 June 2010

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1. We have replaced “cognitive impairment without dementia” throughout the text by “cognitive impairment no
dementia”.

2. All the figures shown in the abstract were included in the text (see page 6), but not in tables. Table 1 was
modified and now shows in the rural and urban areas - population, No of cases, prevalence and prevalence ratios.
The conclusion was changed to follow directly from the results.

3. The estimate of prevalence used for determining the minimum sample size (mss) is now adequately stated in the
text - 16% includes CIND and dementia. The procedure to calculate sample sizes in the two communities was: To
estimate the mss in the rural population (n=710) and then to apply the urban/rural balance (38.4% and 61.6%)
giving n=450 in the urban population. What we were trying to say is that with n=450 in the urban population we
would have the same precision (2.5%) if the prevalence found was approximately 9%. We hope the text is now
more clear.

4. The reasoning for the age range choice was added and is shown in the last sentence of the background when it
is mentioned the objective of the study.

5. We tested whether after accounting for non-participation the distribution of the sample elements were not
significantly different from the Census population. If the sampling frame is adequate (health centres lists universal)
the conclusion is identical to that obtained when comparing participants with non-participants. We substituted this
comparison with that of participants and non-participants with respect to gender and age in the samples of each
community. The text was changed in the data analysis paragraph and we decided to add Figure 3 to show the
random sample and the participants within each community by gender and age. The comparison is more
straightforward - anyhow the conclusion is the same - in the urban environment women are overrepresented. This
is further discussed in the discussion.

6. The comparison of rural and urban samples regarding socio-demographic and clinical characteristics was
deleted.

7. Both Table 1 and Table 2 were changed to accommodate the number of cases. Table 2 shows the number of
cases of CIND and dementia in the total sample. Results on Table 1 represent the major objective of the study -
CIND+dementia - in rural and urban populations (see abstract). Table 2 shows the pattern of severity for the overall
sample and, given the results in Table 1, one might expect a similar rural/urban trend…. It would not be feasible to
show a table full of rather small numbers (and probably with a lot of zeros for dementia). The objective of Table 2 is
to show prevalence estimates that would be obtained in a Portuguese region resembling the rural/urban balance
found in the country.

8. In general the pattern of association between cognitive impairment and socio-demographic and clinical
characteristics is “identical” in both settings. Exceptions are represented in terms of prevalence ratios - the measure
used to comment upon differences in the prevalence in the two communities. We added some comments on the
specific population strata for which the measure deviates from the expected trend - a moderately higher prevalence
ratio.

9. In the paragraph “data analysis” it was stated that “the importance of the rural/urban environment was tested by
including interaction terms in the models using a stepwise procedure”. The text was modified to show that all
interaction terms with the rural/urban variable were candidates in the stepwise procedure, but the only significant
interaction was with age. Instead of a main effect of environment (rural always worst than urban), the synergy
between age and rural/urban setting indicates that the contrast between the rural and urban environments varies
with age, and the estimate of the relative risk attains the highest values in the oldest.
10. As mentioned previously we have added a comparison between participants and non-participants in terms of age and gender, the only information available in non-participants. The text has now a paragraph addressing a possible non-participating bias. But it is more likely that specially after 65 years of age, non-participants tend to be more cognitively impaired than participants. Anyhow as age is the more important predictor of cognitive impairment and the age distributions in both samples are not significantly from the Census population, the prevalence is more likely be underestimated instead of overestimated. But, as mentioned by Boersma F (International Journal of Epidemiology, 1997, vol 26:1055-62), with no “serious” bias the prevalence in the target population will be within the limits of the 95% confidence interval.