PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (see an example) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

This paper was submitted to the JECH but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open where it was re-reviewed and accepted.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Socioeconomic inequalities in youth smoking in Brazil
AUTHORS	Barreto, Sandhi Maria; Figueiredo, Roberta; Giatti, Luana

VERSION 1 - REVIEW

REVIEWER	Figueiredo, Valeska Public Health Studies Institute, Epidemiology
REVIEW RETURNED	21-Apr-2013

GENERAL COMMENTS	Using data from three national surveys conducted jointly in 2008 - Global Tobacco Survey (GATS), National Health Survey (NHS) and the National Household Sample Survey (PNAD) - the authors presented an excellent overview of the close relationship between smoking and low socio-economic situation and social disadvantage among young people in Brazil. This information is important and can be used to reinforce the need to have new approaches on tobacco control actions in order to better achieve low-income population. This is a well written manuscript and the following comments are designed to improve its quality. GENERAL • I suggest the authors make explicit that the data is coming from GATS which is a globally known survey aligned with tobacco control strategies worldwide and in Brazil. • Although it is implied, the authors should explain (at introduction or methods section) why they used violence and physical activity variables in the analysis. INTRODUCTION • Page 1 (lines numbered 5-7) – It is not recommended to directly compare smoking prevalence using the National Health and Nutrition Survey from 1989 which was a household survey representative of the entire Brazilian population, including urban and rural areas, with data from VIGITEL 2010 which is a telephone survey held only in capitals. A better reference for the decline in smoking prevalence in the population 18 years or more can be the Global Adult Tobacco Survey – Brazil Report available on http://www.who.int/tobacco/surveillance/en_tfi_gats_2010_brazil.pdf. METHODS Variables

| | • I suggest the authors transcribe smoking and violence questions just as they are in the surveys (similar to what they did with physical activity questions).

• Page 8 (numbered lines 14 and 21) - Information about use of Stata 11.0 for data analysis was redundant.

RESULTS
• Page 9 (numbered lines 11, 12, 13). In respect to the following text "Regarding the socio-demographic characteristics, male sex, older age, living in a rural dwelling ...... associated with higher prevalence" the authors intended to say urban area.

• Table 1 page 15 – Once the variable "household per capita income" was grouped in quintiles, why the distribution of the study population between these categories is unequal and not 20%?

• What does it mean "inadequate level of education" in Table 1? Is it the same as age-level schooling gap in Table 4?

• To column 1 of Table 1, I suggest that was adopted the same pattern used in column 1 of Tables 4 (use "Characteristics" on top of the table and subtitles "socio-demographic characteristics" and "household context" to separate two groups of variables)

DISCUSSION
• The authors must raise hypotheses to explain the results obtained after adjustment which are against the most common findings in Brazilian and worldwide literature: the increase in smoking prevalence with the increase in household per capita income and the association of smoking prevalence and living in urban areas.

• Page 14 (numbered lines 19) – Regarding the state "In this survey, interview could be answered by a proxy informant." In reality, information on smoking (GATS) could only be given by the individual selected in the sample. Only questions about sociodemographic characteristics and on health which came from the National Household Sample Survey and the National Health Survey, respectively, could be answered by proxy informant. |

- The manuscript received two reviews at The JECH but the other reviewers have declined to make the reviews public. Please contact BMJ Open editorial office for any further information.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Thank you for your careful review and thoughtful comments. Please, find our answers to your queries and suggestions below after each point that you made.

Comments to the Author

Using data from three national surveys conducted jointly in 2008 - Global Tobacco Survey (GATS), National Health Survey (NHS) and the National Household Sample Survey (PNAD) - the authors presented an overview of the close relationship between smoking and low socio-economic situation and social disadvantage among young people in Brazil. This information is important and can be used to reinforce the need to have new approaches on tobacco control actions in order to better achieve low-income population.

<u>Response:</u> Thank you very much for your opinion.

GENERAL
• *I suggest the authors make explicit that the data is coming from GATS which is a globally known survey aligned with tobacco control strategies worldwide and in Brazil.*

<u>Response:</u> We have made this clearly in the first and second paragraphs of the Methods section. At the end of the second paragraph we stated: "Bearing in mind our objectives, we studied all adolescents aged 15 to 19 years who participated in GATS Brazil, totalling 3,464 individuals."

• *Although it is implied, the authors should explain (at introduction or methods section) why they used violence and physical activity variables in the analysis.*

<u>Response:</u> We agree that there was not a clear rational for including these variables in the analysis and, for this reason, we excluded them and rerun the analysis.

INTRODUCTION
• *Page 1 (lines numbered 5-7) – It is not recommended to directly compare smoking prevalence using the National Health and Nutrition Survey from 1989 which was a household survey representative of the entire Brazilian population, including urban and rural areas, with data from VIGITEL 2010 which is a telephone survey held only in capitals. A better reference for the decline in smoking prevalence in the population 18 years or more can be the Global Adult Tobacco Survey – Brazil Report available on http://www.who.int/tobacco/surveillance/en_tfi_gats_2010_brazil.pdf.*

<u>Response:</u> We have included the quoted reference as the main reference in the introduction.

METHODS

Variables
• *I suggest the authors transcribe smoking and violence questions just as they are in the surveys (similar to what they did with physical activity questions).*
<u>Response:</u> As explained earlier we excluded these variables from the analysis.

- *Page 8 (numbered lines 14 and 21) - Information about use of Stata 11.0 for data analysis was redundant.*

Response: Thank you. We corrected this redundancy.

RESULTS

- *Page 9 (numbered lines 11, 12, 13). In respect to the following text "Regarding the socio-demographic characteristics, male sex, older age, living in a rural dwelling ...... associated with higher prevalence" the authors intended to say urban area.*

Response: Thank you for picking up this mistake. We have corrected it.

- *Table 1 page 15 – Once the variable "household per capita income" was grouped in quintiles, why the distribution of the study population between these categories is unequal and not 20%?*

Response: The categories do not fell into 20% each because there are too many individuals falling in the same income per capita defined by the quintile cut-offs.

- *What does it mean "inadequate level of education" in Table 1? Is it the same as age-level schooling gap in Table 4?*

Response: Yes, we have changed the variable name to "School delay (in years)".

- *To column 1 of Table 1, I suggest that was adopted the same pattern used in column 1 of Tables 4 (use "Characteristics" on top of the table and subtitles "socio-demographic characteristics" and "household context" to separate two groups of variables)*

Response: We did as suggested, using the subtitles "adolescent characteristics" and "household characteristics" to separate the two groups. We did not use socio-demographic characteristics because it includes other variables beyond the traditional ones (sex, age, race, schooling, etc.).

DISCUSSION

- *The authors must raise hypotheses to explain the results obtained after adjustment which are against the most common findings in Brazilian and worldwide literature: the increase in smoking prevalence with the increase in household per capita income and the association of smoking prevalence and living in urban areas.*

Response: we rerun the analysis and being in the fourth quintile of per capita income distribution was statistically associated with youth smoking in the univariable analysis, but not in the multivariable analysis. Thus, income distribution did not remain in the final model.

• *Page 14 (numbered lines 19) – Regarding the state "In this survey, interview could be answered by a proxy informant." In reality, information on smoking (GATS) could only be given by the individual selected in the sample. Only questions about sociodemographic characteristics and on health which came from the National Household Sample Survey and the National Health Survey, respectively, could be answered by proxy informant.*

Response: You are correct. We excluded the above mentioned text from the analysis.

VERSION 2 – REVIEW

REVIEWER	Pam Groenewald Scientist, Burden of Disease Research Unit, South African Medical Research Council
REVIEW RETURNED	30-Aug-2013

THE STUDY	The Methods section is confusing as various surveys are mentioned as sources of data but it is not clear if or how these surveys were related e.g. Was the GATS survey conducted as part of the NHS or the PNAD? Which variables were collected by the GATS and which by the other surveys and how were these measured? The statistical analysis needs review by a statistician to establish whether the complex sampling strategy was taken into account in the analysis and whether the approach used in the regression analysis was appropriate. Define what is meant by "dropping out of school" and how you measured this. Stick to the same term to describe "school delay" throughout the paper from abstract right through, to avoid confusion. The last sentence of the Results section of the Abstract needs to be rewritten - as it is this sentence does not make sense.
RESULTS & CONCLUSIONS	RESULTS Suggest that you group the results in Table 1 and 2 using the same headings as used in Table 3. The description of the quintiles in Tables 1 and 2 are different with 1st quintile being lowest in Table 1 and 5th quintile being the lowest in Table 2? ? It is difficult to understand the results with regard to household per capita income in the current version of the manuscript. The language used in the results section could be simplified for example: "The odds ratio for regular smoking increased significantly with increasing numbers of smokers in the household (p<0.001). The full stop after (p<0.001). is missing. The results state that "….exposure to tobacco smoking remained significantly higher amongst adolescents living in households WITH smoking restrictions." Surely you meant WITHOUT smoking restrictions? It is not clear how you measured "dropping out of school"? DISCUSSION On pg 12 2nd para, I am not sure what is meant by "dismay" in the last sentence. It is not clear how your results provide evidence that home smoking restrictions protect non-smokers from second hand smoke and

| | influence the smoking behaviour of adult smokers, or how parental smoking interacts with home smoking restrictions? In the limitations you specifically mention that you lacked information about peers or parent behaviours?

COMMENTS AND LIMITATIONS
It is not clear what is meant by the following statement: "Despite being a cross sectional study, it is quite unlikely that youth smoking produces disadvantages at the household level?
The content of the last paragraph is fine but could be better phrased. |
|---|---|
| **GENERAL COMMENTS** | This papers stated aim is to investigate the social determinants of current smoking in adolescents in Brazil, in particular, whether early markers of socioeconomic disadvantage, namely school delay and dropping out of school, are independently associated with smoking amongst teenagers. This information is important as it identifies groups where current tobacco control measures are not having the desired effect. However, it requires some minor revisions as set out above before it should be published. |

VERSION 2 – AUTHOR RESPONSE

Review
"The Methods section is confusing as various surveys are mentioned as sources of data but it is not clear if or how these surveys were related e.g. Was the GATS survey conducted as part of the NHS or the PNAD?"
ANSWER: The GATS survey was carried out in a random subsample of the PNAD survey. NHS and PAND are the same survey, referring the first one to the health questionnaires and PNAD to the sociodemographic and household characteristics. This information was clarified in the methods section and marked in red.
"Which variables were collected by the GATS and which by the other surveys and how were these measured?"
ANSWER: We clarified this information in the methods section as shown below.
"PNAD questionnaires provided socioeconomic information about households and selected individual characteristics and health related factors, and the GATS questionnaire provided detailed information on tobacco use and exposure".
"The statistical analysis needs review by a statistician to establish whether the complex sampling strategy was taken into account in the analysis and whether the approach used in the regression analysis was appropriate."
ANSWER: A statistician revised the statistical analysis. The survey commands used dealt appropriately with the complex sampling design.
"Define what is meant by "dropping out of school" and how you measured this."
ANSWER: "Dropping out school" means not attending school, as all participants are at school age. It was measured by two questions: whether the individual was attending school at the time of interview. In order to avoid confusion we changed the term to "school abandonment".
"Stick to the same term to describe "school delay" throughout the paper from abstract right through, to avoid confusion."
ANSWER: It has been revised, as suggested.
"The last sentence of the Results section of the Abstract needs to be rewritten - as it is this sentence does not make sense."
ANSWER: We rewrote the sentence.
RESULTS

"Suggest that you group the results in Table 1 and 2 using the same headings as used in Table 3."
ANSWER: Suggestion accepted and tables revised accordingly.
"The description of the quintiles in Tables 1 and 2 are different with 1st quintile being lowest in Table 1 and 5th quintile being the lowest in Table 2? ? It is difficult to understand the results with regard to household per capita income in the current version of the manuscript."
ANSWER: Thanks! The mistake has been corrected.
"The language used in the results section could be simplified for example: "The odds ratio for regular smoking increased significantly with increasing numbers of smokers in the household (p<0.001)."
"The full stop after (p<0.001). is missing."
ANSWER: Text revised accordingly.
"The results state that "….exposure to tobacco smoking remained significantly higher amongst adolescents living in households WITH smoking restrictions." Surely you meant WITHOUT smoking restrictions?"
ANSWER: Yes! Thank you again. The mistake has been corrected.
"It is not clear how you measured "dropping out of school"?"
ANSWER: "Dropping out school" means not attending school, as all participants are at school age. It was measured by two questions: whether the individual was attending school at the time of interview. In order to avoid confusion we changed the term to "school abandonment".
DISCUSSION
"On pg 12 2nd para, I am not sure what is meant by "dismay" in the last sentence."
ANSWER: We changed the word to "disillusion".
"It is not clear how your results provide evidence that home smoking restrictions protect non-smokers from second hand smoke and influence the smoking behaviour of adult smokers, or how parental smoking interacts with home smoking restrictions? In the limitations you specifically mention that you lacked information about peers or parent behaviours?"
ANSWER: We revised the and rewrote the sentence as "…our results corroborate the growing and consistent evidence that home smoking restrictions protect non-smokers from second-hand smoke as it reduces smoking exposure at the household level. These results also suggest that home smoking restrictions contribute to reduce youth smoking behaviour".
COMMENTS AND LIMITATIONS
"It is not clear what is meant by the following statement: "Despite being a cross sectional study, it is quite unlikely that youth smoking produces disadvantages at the household level?"
ANSWER: We meant to say that youth smoking are unlikely to explain household social disadvantages, i.e., reverse causality is very unlikely.
" The content of the last paragraph is fine but could be better phrased."
ANSWER: Thanks for the suggestion.
"This papers stated aim is to investigate the social determinants of current smoking in adolescents in Brazil, in particular, whether early markers of socioeconomic disadvantage, namely school delay and dropping out of school, are independently associated with smoking amongst teenagers. This information is important as it identifies groups where current tobacco control measures are not having the desired effect. However, it requires some minor revisions as set out above before it should be published."
ANSWER: Thank you!