Author's response to reviews

Title: Association of smoking, physical activity, and dietary habits with socioeconomic variables: a cross-sectional study in adults on both sides of the Hungarian-Romanian border

Authors:

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Edit Paulik (paulik.edit@med.u-szeged.hu)

Version: 4 Date: 3 December 2011

Author's response to reviews: see over
Dear Dr. Chaix,

Hereby I am sending the revised version of our manuscript entitled “Association of smoking, physical activity, and dietary habits with socioeconomic variables: a cross-sectional study in adults on both sides of the Hungarian-Romanian border” to BMC Public Health. We would like to thank you and the reviewers for your helpful comments, which have helped us to improve our manuscript.

Please, find enclosed the revised version of the manuscript. The revision has been done in accordance with your suggestions. To avoid confusion, the controversial parts were removed and replaced by new sections. All the changes are signed by red colour.

Please, find also attached our response to reviewers’ comments point-by-point (see below). The whole paper has been revised by a professional language expert with PhD degree.

We hope that we have addressed the reviewers’ comments adequately for our manuscript to be considered for publication in BMC Public Health.

Thank you very much for your consideration.

Yours sincerely,

Edit Paulik MD, PhD
Associate Professor
Responses to suggestions from Associate Editor

The authors thank the Associate Editor for comments and suggestions.

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| 1. | The Associate Editor wishes to pass on the following comments: We are provisionally accepting your manuscript and please remove the word "significantly" on page 14.  

*The term has been removed.* |
| 2. | After reading through your manuscript, we feel that the quality of written English needs to be improved before the manuscript can be considered further. We advise you to seek the assistance of a fluent English speaking colleague, or to have a professional editing service correct your language. Please ensure that particular attention is paid to the abstract.  

*The whole paper has been revised by a professional language expert with PhD degree.* |
Responses to suggestions from Reviewer 1: Rik Crutzen

The authors thank Reviewer 1 for his suggestions. The comments have been taken into consideration during the revision of the manuscript.

<table>
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<th>Major Compulsory Revisions</th>
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| 1. Please elaborate on why the border region is of importance (e.g., How distinctive this is from the rest of Hungary and Romania?; if not – why not; if so – what are the differences and why this region).

A more detailed explanation was added to the “Background”:

“The health state of the population of Hungary and Romania shows similar trends in mortality [20-24]. The general state of health of Hungarians and Romanians is worse than justified by the level of economic development. Life expectancy both in Hungary and in Romania is among the lowest in Europe [20,24,25]. Furthermore, large variations of life expectancy can be found in different parts of the countries. In case of Hungary, the life chances in the Eastern part of the country including the counties situated on the Hungarian–Romanian border are a great deal worse than that of the population in the Western part of Hungary [26]. There are also regional disparities within Romania as regards the health state of the population, e.g. the variation in life expectancy at the county level has shown differences in several areas: the highest is in the counties in the central part of the country, whereas the lower is in the counties in the northern and western parts including the counties on the Hungarian–Romanian border [22]. On the one hand, there are the similarities in health and geographic conditions and historic events in the neighbouring areas of Romania and Hungary on both sides of the border; on the other hand, there are no data on the similarities and differences in factors influencing health and their relationship with certain demographic and socioeconomic characteristics of the populations in question. During the economic transition from centrally planned to free market economy, health promotion programmes require information about the population’s current health situation. Additionally, today there is an exceptional opportunity for both parties (Hungary and Romania) to elaborate common research and project as members of the Danube–Kris–Mures–Tisa Euroregion, and to establish programs aiming at changing the lifestyle of the population in the region by developing cooperation between the universities of Arad and Szeged. These facts motivated us to perform the present study.”

2. Please elaborate WITHIN THE MANUSCRIPT why analyses were conducted separately for the Romanian and Hungarian sample? Given the aim mentioned in the reply (Our aim was to characterize the population at risk of chronic diseases in Hungarians and Romanians living on both sides of the border.), it would be more logical to include country of origin as a predictor.

Thank you for your suggestion, but taking into consideration the aim of our study such as to describe the characteristics of Hungarians and Romanians following unhealthy behaviours and to define the target populations of our
interventions to promote health, we think that the distinct analysis is in concordance with this aim. The original specification of the aim might be ambiguous, so in the current version, it has been specified in accordance with the applied analysis:

"Thus the aim of our research was to study the socioeconomic differences in health-related behaviours and in nutritional status of Hungarian and Romanian citizens living on both sides of the border. After describing and comparing the prevalence of health-related behaviours in the two countries, we wanted to differentiate between them according to the demographic and socioeconomic characteristics from the point of health-related behaviours. We wished to describe the characteristics of the Hungarians and Romanians following unhealthy behaviours. Based on these results we intended to define the target populations of our interventions to promote health among the people living in the two countries so as to support cooperation and development of cross-border community based health promotion programmes on both sides of the Hungarian-Romanian border."

3. Were the physical activity questions previously used/validated?

"Physical activity was measured in accordance with the recommendations of WHO and the EU, and questions were set according to the ones used in the Hungarian National Health Interview Survey [30-32]; the group of questions had already been used but had not been validated."

The crude assessment of leisure time physical activity by questions without previous validation with the risk of misclassification is a limitation of our study and now it is mentioned in the "Limitations to the study" section. "Our categories indexing the physical activity should be regarded as reflecting on common patterns of leisure time physical activity through one year, rather than precise measures of levels. They mainly inform us about the prevalence of physical inactivity, than the measure of the level of activity."

4. It seems as if SINGLE item measures were used primarily. This is a limitation of the study that needs to be addressed in the Discussion section, since the use of SIMPLE items is now discussed.

The use of the single/simple items have been discussed in a more detailed form in the Methods section and in the Discussion session as the limitations of the study.

5. Please classify effect sizes instead of only stating that associations are significant. How strong/weak were these associations? Adding a 95% CI does not tell anything about the strength/weakness of an association, only about its significance.

All expressions such as "significant associations" were removed from the second version. In the current version the sentences have been reworded to give an appropriate explanation about the size of the effects.
Responses to suggestions from Reviewer 2: Prof. Peter Balazs

Reviewer's report:

Authors revised the manuscript entirely. Among others, all my suggestions were accepted. Maybe, some corrections are needed for linguistic reasons that I am not competent to decide about.

The authors thank Reviewer 2 for the acceptance of the changes.

The whole paper has been revised by a professional language expert with PhD degree.
The authors are thankful to Reviewer 3 for her suggestions. The comments have been taken into consideration throughout the revision of the manuscript.

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<th>Major Compulsory Revisions</th>
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<tr>
<td>1. Methods: In the answer to my review authors explained that “Health-related behaviors were measured by single question: one part of these measures was used primarily, while the other part was based on previous studies”. Readers would be interested in knowing:</td>
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<td>- Who are the authors of these previous studies?</td>
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The authors think that these questions were partly answered in the second version. "Health-related behaviours were measured by simple questions” – it was written in the limitations section. The source of diet-related questions was mentioned in the Methods section: "Dietary habits were evaluated on the basis of three questions about the frequency of fresh fruit consumption, fresh vegetable consumption and the kind of the fat (vegetable or animal origin) used for cooking. ... These questions were also used as indicators of healthy diet in the Hungarian “National Health Interview Survey” in 2000.” [Széles Gy: Táplálkozás. (Nutrition.) (In: Országos Lakossági Egészségfelmérés OLEF2000. (National Health Interview Survey.) eds.: Boros, J., Németh, R. & Vitrai, J.) Országos Epidemiológiai Központ, Budapest, 2002. pp. 3-65–3-75.[www.oszmk.hu/dokumentum/OLEF_2000/kutatasi_jelentes.pdf]]

The questionnaire used in OLEF2000 was compiled by workers of the National Institute for Health Development according to the recommendations of the WHO and in accordance with the Hungarian Gallup Organization based on previous Hungarian findings.

Regarding the smoking-related question, the same question with similar options was used in several previous studies cited in our revised paper:

These references has been cited in the Methods of version 3.

The questions related to physical activity:
"Physical activity was measured in accordance with the recommendations of WHO and the EU, and questions were set according to the ones used in the Hungarian National Health Interview Survey [30-32]; the group of
questions had already been used but had not been validated.”

References:

The crude assessment of leisure time physical activity by questions without previous validation with the risk of misclassification is a limitation of our study and now it is mentioned in the limitations section. “Our categories indexing the physical activity should be regarded as reflecting on common patterns of leisure time physical activity through one year, rather than precise measures of levels. They mainly inform us about the prevalence of physical inactivity, than the measure of the level of activity.”

- Were these measures validated previously? Are these measures adequate to be used in epidemiological study of adult populations?

The questions concerning diet and smoking were used according to previous Hungarian and international research in population based epidemiological studies, thus, results can be compared with data published by other researchers and can also be generalized. In the case of measuring physical activity, however, we could not rely on other findings but on our own previous experience regarding the questions used in this study. Therefore, the comparability and generalization of these results are limited, and it has been described in the “Limitations of the study” section.

2. Methods, paragraph 7: “Smoking status of the respondents was described as never smokers, ex smokers or current smokers (smoking daily or occasionally) at the time of interview”.
It is confusing what does it mean “at the time of interview”? Please, clarify.

*The expression was replaced by “at the time they were interviewed”.*

3. Methods, paragraph 9: “Primarily, athletes were regarded as physically active persons.”
What definition of athletes was used? It is a person who practices competitive sports? Based on what question were respondents classified as athletes?
“People who did not pursue any sports were asked about....” It is not clear what kind of sports authors ask about? It is a kind of competitive sports or recreational sports?

*Athletes were those who participated in competitive sports. The sentence was reworded in accordance with this fact.*
*The question was „Do you participate regularly in competitive sports?“,*
without a more detailed explanation. If not, they were asked about their leisure time physical activity.

“How often did you do the following form of activity (running, swimming, gymnastics, using fitness machines, at least 20 minutes walking, bicycling and gardening) in the last year?” Please explain, why time 20 minutes, concerns only walking, bicycling and gardening?

It is still questionable if the subjects remember their leisure time physical activity after year (especially if it was irregular).

The duration of “at least 20 minutes” was chosen based on the current and previous recommendations of WHO and the EU: “Adults aged 18-64, and adults aged 65 years and above should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week”, according to which the minimum recommended physical activity is 5 times 30 minutes weekly for adults, i.e. 150 minutes per week, thus calculating the daily average that would make up approximately 20 minutes (21.4 minutes on average) of movement per day.

One year of duration was asked for as the OLEF2000 study, which we used as a reference study in elaborating our options for each question, has also used this interval.


4. Discussion, paragraph 15: As limitation of this study, I suggest adding, that validity of used measures of smoking status and physical inactivity in leisure time is unknown.

The questions concerning diet and smoking were used according to previous Hungarian and international research in population based epidemiological studies, thus, results can be compared with data published by other researchers and can also be generalized. In the case of measuring physical activity, however, we could not rely on other findings but on our own previous experience regarding the questions used in this study. Therefore, the comparability and generalization of these results are limited, and it has been described in the “Limitations of the study” section.

Minor Essential Revision

5. Results, the whole text: Please write: (ORHu=….., 95% CI:……...).

It has been changed.

6. Results, the whole text: Please use: leisure time physical activity if you write about this activity.

The whole text was revised and corrected according to this suggestion.
<table>
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<th>7.</th>
<th>Results, paragraph 3: “In the univariate analysis the risk of obesity was influenced by smoking status and physical activity in Hungarians: obesity was less common among current smokers………..” “In Romanians, unhealthy diet (OR…….) increased the risk of obesity (Table 3).” The results in Table 3 about the risks (not prevalence and not influence): I suggest to write something like that: In the univariate analysis conducted in Hungarians obese individuals compared to non obese were more likely to be non smokers and inactive in their leisure time (OR…….). Romanian subjects who practice unhealthy diet were more likely to be obese than those with healthy diet (OR………..) (Table 3). The authors must check the wording of the sentences throughout the manuscript, especially in the results and the discussion.</th>
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<tr>
<td>8.</td>
<td>Discussion, paragraph 3: “The association between smoking and educational level was supported by several other studies (28-30)”. Please, explain if the directions of these associations were similar to the authors` own study? Similar associations have been found by other studies such as the risk of smoking is higher in low educated and poorer people. It has been added to the paragraph.</td>
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<td>9.</td>
<td>Discussion, paragraph 3-4: The discussion is incoherent in this part. Paragraphs 3-4 have been changed.</td>
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<td>10.</td>
<td>Discussion, paragraph 5: Association between the first and the second sentence is lacking. Paragraph 5 has been changed.</td>
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<td>11.</td>
<td>Discussion, paragraph 6: ”Johansson et al. reported that social status is correlated to indicators of healthy diet (e.g. fruit and vegetable consumption) in men and women aged 16-79 years: those having at least 13 years of education…….” Please, explain how Johansson et al. measured social status. Social status is measured by education, and aggregates of SES (blue-collar and white-collar workers, income per year). It has been added to the paragraph.</td>
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<td>12.</td>
<td>Discussion, paragraph 7-8: Please, explain if Haeule et al. and Pitsavos et al. studied the total physical activity or leisure time physical activity? „Leisure time physical activity” has been investigated in both studies, the sentence has been completed by the missing information.</td>
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<td>13.</td>
<td>Discussion, paragraph 7, 8, 12: It seems necessary to add that comparison of the results from authors` own study with the findings of previous study is limited</td>
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because they use different measures of studied variables, especially measures of smoking, leisure time physical activity and socioeconomic status.

The following sentence was added: "The comparison of our results with the findings of previous studies is slightly limited because the measure of leisure time physical activity was not previously validated."

14. Discussion, paragraph 10: Could the authors explain the different directions of associations between inactivity in leisure time and obesity in Romanian and Hungarian subjects?

The following explanation was added: "The negative association between leisure time physical inactivity and obesity in Romanians was inconsistent with most of the previous results. The findings of a prospective cohort study suggests, however, that high BMI is a determinant of sedentary lifestyle, but it has failed to provide unambiguous evidence for an effect of sedentary lifestyle on weight gain [47]. This seemingly ambiguous result might be due to the fact that we examined only leisure time physical activity and did not cover activity during work. Those being engaged in strenuous physical activity during work are more probably inactive in their leisure time than those having a sedentary occupation. It should also be mentioned that the comparison of our physical activity related results with the findings of previous studies was slightly limited because the measurement for leisure time physical activity has not been previously validated."

15. Discussion, generally: Results of the present findings could be presented in the light of earlier study conducted among Hungarians and Romanians. Especially, information about inactivity in leisure time and its correlations in Hungarian and Romanian populations are lacking.

The results from previous Hungarian and Romanian studies, when they were available, have been involved in the Discussion.
Responses to suggestions from Reviewer 4: David Doku

The authors thank Reviewer 4 for his suggestions. The comments were helpful and have been taken into consideration throughout the revision of the manuscript.

<table>
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<th>Minor Essential Revisions</th>
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<tr>
<td><strong>1. Abstract:</strong> Method: A cross-sectional… (language)</td>
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<tr>
<td><em>Thank you, it has been corrected.</em></td>
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<td><strong>2. Methods:</strong> Page 6, was the initial sampling random or purposeful/convenient? Please clarify!</td>
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<tr>
<td><em>Selecting the settlements for the research was not performed randomly as we involved each settlement from the affected small area in Hungary. Considering the fact that in Romania there are no small areas but mainly larger counties with a higher number of population, we targeted on selecting certain Romanian settlements (matched the settlements) having similar characteristics to the Hungarian settlements involved into the research. Selection of participants in the given settlements, however, was performed randomly as it was described in the Methods section.</em></td>
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<td><strong>3. Page 7-8, It seems the word “answer” does not fit in here. Author could delete them or replace them with options where appropriate.</strong></td>
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<td><em>The „answer” was replaced with „options”.</em></td>
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<td><strong>4. Discussions:</strong> Page 12, “The variations in the association between socioeconomic status and smoking could be influenced by the actual stage of smoking epidemic in a given country [3,32]” Authors could espouse this a bit. At what stages of the smoking epidemic are these countries?</td>
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<tr>
<td><em>The requested information has been added. The studied countries are in stage 3 of the smoking epidemic.</em></td>
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<td><strong>5. Page 12, reference 33, this is a bit old. There current references out there.</strong></td>
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<td><em>Reference 33 was removed.</em></td>
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<td><strong>6. Page 13 line 1, “In our study physical inactivity was independent of demographic and socioeconomic factors in both countries”. This is a strange composition. Please reword.</strong></td>
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<tr>
<td><em>The sentence was changed: ”In our study, leisure time physical inactivity of the participants was independent of their demographic and socioeconomic data in both countries”</em></td>
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| 7. | Page 15, second paragraph, “The fact that the emerging health and health-related problems on both sides of the border and their social context have common characteristics”. Can we talk about “social context” here?  
"Social context” was replaced with “socioeconomic background”. |
| 8. | Page 15 line 3, I would use the word “interpretations” rather “judgement”.  
"Judgement” was replaced with “interpretations”. |
| 9. | Tables:  
Table 3, There were no statistically significant association between any of the background variables and physical inactivity (Table 2) so physical inactivity could be dropped from Table 3 (multivariate).  
Thank you for your suggestion, physical inactivity was dropped from Table 4 (Table 3 in the first version). |
| 10. | Table 5, Authors should provide foot notes explaining what was done in model 1 and model 2. This should be mentioned in the methods section (statistical analyses) too.  
The missing information has been added to Table 5 and the Methods section. |