Author's response to reviews

Title: Association between fruit and vegetable intake and frequency of breakfast and snacks consumption: cross-sectional study

Authors:

Giacomo Lazzeri (lazzeri@unisi.it)
Andrea Pammolli (pammolli2@unisi.it)
Elena Azzolini (elenazzolini@hotmail.com)
Rita Simi (simir@unisi.it)
Veronica Meoni (asianica2003@yahoo.it)
Daniel R de Wet (profgia@hotmail.it)
Mariano V Giacchi (giacchi@unisi.it)

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Author's response to reviews: see over
Reviewer's report

Title: Association between fruit and vegetable intake and frequency of breakfast and snacks consumption: cross-sectional study

Version: 1 Date: 3 May 2013
Reviewer: Lieke Raaijmakers

Reviewer’s report:

General comments

You conducted a study on an interesting topic. I recognize the importance of conducting studies into the prevalence of certain risk behaviors and associations between these behaviors in specific populations.

Strength of your study is the large sample. The methods lack a clear description of your statistical analyses. The content of your results section is not well structured and the description of the results needs some revisions. In your discussion section you elaborate on the findings of your study, which is interesting, but try to compare your findings with previous studies or refer to comparable studies more often.

Major compulsory revisions

In general the paper needs editing on English spelling and grammar, since I notice quite some spelling errors, errors in the formulation of the sentences and sloppiness in general.

Done

I still notice several grammar errors and unclear sentences in your paper

We made a “Substantive editing” through a specialized company

Introduction

- I miss information on the prevalence of the dietary behaviors among the research population of your study or more general in your country/worldwide.

We added this sentence: Another study on 9-year-olds children, carried out by Lazzeri et al. (2006) in our Region showed that the frequency of breakfast decreased with increase the mother’s BMI classes and their education level.

I think it is useful that you included this reference. However, the place of the information in the introduction is not logical to my opinion. Moreover, this does fully cover my comment since I was interested in previous studies reporting on the prevalence of the dietary behaviors. Please add additional literature on the prevalence.

We added this sentence: In Italy, the main national-level study that investigated fruit and vegetable intake of adolescents is the Italian HBSC survey [10]. The daily fruit consumption prevalence was found to be 45.5% for 11-year-olds, 39.9% for 13-year-olds and 38.4% for 15-year-olds, while the daily vegetable consumption prevalence was 21.1%, 19.6%, 20.2% respectively [11].

-I think it is valuable to make clear in the introduction that no previous studies were conducted in your country and that there is lack of consistent evidence on the topic based on international studies.
We added this sentence: No earlier study on this subject has been conducted in Italy and there is a lack of consistent evidence even in international studies.

I cannot find where you added this sentence in your manuscript.
Sorry, You are right, I was sure I had already add the sentence, however we have now inserted it at the end of introduction

Methods

- I prefer to report the response and demographic characteristics in the results section
  Done

- In the paragraph on independent variables you refer to study number 34, when stating that there are no clear guidelines defining regular meal intake (page 6). What is the point of your statement? I would either write that there are no clear recommendations available in Italy or refer to an international recommendation. Now, you refer to recommendations for Nordic countries and I am missing the direct relevance of this reference. Moreover, dietary habits and recommendations appear to differ between countries. You continue with explaining the definition of regular meal intake, which is confusing. Please reconsider relevant studies and rewrite this part of your methods section.

  I’m sorry for the mistake, we agree with observation. We changed the sentence and refer 34: When breakfast was consumed on “3 weekdays or less” and not having snacks both “midmorning” and “afternoon”, we considered as irregular behaviour, even if the Italian guidelines for a healthy diet advice to have breakfast and two snacks every day [34].

- The structure of the description of the covariates is missing. Please restructure the paragraph and describe the measures in the same sequences as you mention the covariates in your first sentence.
  Done

- In the paragraph on statistical analyses I miss information concerning the use of the statistical program and descriptive statistics.
  Done

- The description of the different logistic regression analyses is confusing, please explain your analyses in more detail and rewrite this part, cause I am not sure what exactly you did in the analyses.
  Done

The explanation is still confusing.

All the analyses were carried out using SPSS 20.0 (SPSS Inc., Chicago, IL, USA) statistical software package.

All the categorical variables are expressed with number of cases (%), and the continuous variables with mean (sd). In the descriptive analysis, we tested sex and age differences by Chi-square test and used Cochran’s test to test for trend.

Multivariate logistic regression analyses were used to study the association between meal intake (breakfast and snacks) and fruit and vegetable consumption. Initially, we analyzed the entire sample implementing two models: one taking into account the consumption of fruit as the dependent variable and the other taking into account the consumption of vegetables, always as the dependent
variable. The covariates included in both models were breakfast and snack consumption. The models were adjusted for age, sex, socioeconomic status, family type, body perception, weight status and intended weight loss. Next, we introduced the variable sex as an interaction term with snack and breakfast consumption to test whether gender could be considered as a moderator for low fruit and vegetable consumption. This step was performed again separately by gender. In the last phase of the analysis, we have included age as an interaction term with breakfast and snacks consumption. A separate analysis was conducted by gender to assess whether and to what extent age could be considered as a moderator. Throughout the paper, statistical significance has been defined by conventional levels of $p<0.05$.

Results

- Please rewrite the results on page 8 from ‘The ratio of boys….’ onwards, since it is quite unstructured and described and in general a repetition of numbers from the tables. I think it would be more interesting to interpret the OR and report the results in terms of low level of….was associated with…like you did in the abstract of the manuscript. This comment also applies for parts of the results description on page 9

**Done**

I still miss an interpretation of the ORs you report in the results section. Summing up those values without including any interpretation such as ‘low level of….was associated with…’ I has no surplus value in my opinion.

We gave the interpretation of the ORs as required

- Furthermore, you only report the p-values of the Chi$^2$ test, while I would report the test value as well.

You can also choose to include an extra table with the results of the univariate analyses.

We put in the text the values of chi square

- I cannot trace the reported OR’s on page 8 of your results. Are they included in table 2 and 3? If not, I would add another table to structure the section.

They are not included. They are described on the text specifying that the data are not reported in any table

Discussion

- Your paragraph on strengths and limitations is quite extensive, try and be more concise if possible

**Done**

I do not see substantial changes in this part of the discussion.

We removed some parts

- You mention that only weekdays were considered in the measure of frequency of breakfast. However the measure for fruit and vegetables is measured for every day of the week. I am wondering whether this leads to a bias in your results. Did you correct for this difference in assessment?

Since the analysis is based on the dichotomy of the variables mentioned this does not involve any distortion in the estimates (breakfast consumption $>3$ days). This cut-point was chosen in order to analyze high-risk breakfast habits
You do not describe any interventions focusing on irregular intake, are they already available. It could be interested to mention.

There are interventions at the local level but not based on evidence-based. Maybe worth mentioning or you could refer to interventions used internationally.

The majority of teenager meals is consumed in family and school environments. To ameliorate eating and nutritional habits in the family environment, it is suggested to involve the parents of school-aged children in health-promotion interventions. This emphasizes the value of healthy eating habits and gives parents the tools to establish a healthy eating routine [9,16,34,42,53].

In the school environment, the promotion of healthy eating habits should aim at increasing the quality and availability of meals in schools. Knowledge and skill training are needed to improve food consumption patterns. Furthermore, promoting healthy eating habits and increasing the amount of fruits and vegetables consumed by children is not an objective in itself; studies have demonstrated that breakfast and lunch programmes in schools lead to secondary health benefits as a result of higher fruit and vegetable consumption [40,54].

Factors that may motivate young people to consume more fruits and vegetables include a change in the environment by, for example, increasing the availability of fruits and vegetables at home and promoting parental consumption [55], providing fruits and vegetables in schools [56] and implementing a schoolyard garden with appropriate educational activities [57]. Teachers and health professionals can also help through targeted school interventions, which have consistently been shown to increase intake [55].

Our study provides current and detailed information regarding fruit, vegetable, breakfast and snack consumption habits and compliance with the IGHD recommendations, which can inform policymakers and health promoters about the need for intervention to improve alimentary behaviour. Despite the possible increase in overall breakfast frequency, health promotion efforts should still aim at stimulating daily breakfast consumption among specific subgroups identified in our study.

Minor essential revisions

Abstract

Conclusion:

- you do not mention recommendations related to the differences in age and gender.

Done

Could you please indicate what recommendations you added?

We changed the last sentence in: This study also confirmed that health-promotion campaigns that aim to promote regular meal consumption and consumption of fruits and vegetables need to take into account gender and age differences in designing promotional strategies. Future research should identify evidence-based interventions to facilitate the achievement of the Italian guidelines for a healthy diet for fruits, vegetables and meals intake.

Background

- The reference numbering is not in consecutive order

Done

- A reference for your second reason for the importance of fruit and vegetable consumption in childhood and adolescence is missing in the first paragraph

Sorry for the mistake- Done
- The last sentence of the first paragraph is unclear to me.

*We changed the sentence in: Such age brackets are therefore a more fertile ground for promote the fruit and vegetable consumption. I still think this sentence is not clear in relation to the previous sentences. We decided to remove this sentence because it did not give necessary additional information.*

- Please add the age of your target population in the aim of your study.

Done

Methods

- The sentence ‘The institutional review board.....was not returned’ is confusing and includes spellings errors

*We changed the sentence in: The Ethics Committee of the National Institute of Health, which approved the protocol, agreed to the use of an opt-out consent form, in which parents were asked to explicitly refuse participation and the lack of a returned form was taken to imply consent to their child’s participation.*

- Does the HBSC use one or multiple questionnaires? In the sentence ‘The HBSC study.....distributed in schools’ you mention questionnaires, but in the following sentences you write about ‘the questionnaire’. Please check for inconsistencies.

You are right there is only one questionnaire.

-Please remove the limitation of self reported weight and height to the discussion section. It is not common to already mention limitations in your methods section.

Done

- I would prefer to remove the reference to table 1 to the results section

Done

- The structure of the paragraph on statistics is not clear. Transpose the final sentence of the paragraph on statistics to the beginning. Furthermore I advise to describe the descriptive statistics before multivariate statistical analyses.

*Done
The sentence on the use of SPPS is still mentioned at the end of the paragraph.*

Done

Results

- Please refer to table 1 in the first paragraph of your results section

Done

- Please rewrite the second sentence on low fruit consumption on page 8

Done