

Author's response to reviews

Title: Diagnostic criteria patterns of U.S. children with Metabolic Syndrome: NHANES 1999-2002

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Author's response to reviews: see over



Dr Nehme Gebayel

Editor-in-chief, *Nutrition Journal*

August 21, 2007

Dear Dr. Gebayel,

We are re-submitting our manuscript MS: 5138177491481318 entitled **Diagnostic criteria patterns of U.S. children with Metabolic Syndrome: NHANES 1999-2002** for consideration in the "Research" section of the Nutrition Journal. All reviewer's comments are addressed below:

3rd revision:

We fixed the sentence on page 7.

2nd revision:

Reviewer 1

1) The data has missing segments and the presentation is confusing.

We included a clarifying statement on the development of the subgroups of the study populations, which was based on the unfortunate fact that fasting blood glucose data were not collected in the NHANES data set in children under 12 years old (and only in a subsample of 12-18 year olds). We hope that with this clarification, the interpretation of the data presented in the tables will be less confusing.

Reviewer 2

1) The sentence starting with "Dyslipidemia (concurrent high total triglyceride levels and HDL levels) was changed to "high total triglyceride levels and low HDL levels).

2) We reworded the last sentence of this paragraph according to the reviewer's suggestion.

3) Page 3 line 8, we changed the wording of the sentence according to the reviewer's suggestion.

4) Page 4 line 7, we deleted the redundancy of "later on"

5) The sections in italics were the material edited or added in response to the previous reviewer's comments.

6) We added the reference for Cook et al. to the Methods section

7) page 6 line 16, we reworded the sentence to delete the repeated word.

8) page 6 line 17, we reworded this sentence according to the reviewer's suggestion to "levels were considered indicative of hyperglycemia".

9) We edited the text of the entire manuscript and corrected a number of awkward sentence structures.

Editor's comments: We reformatted the entire manuscript using the template provided on the internet.

1st revision:

We appreciate the reviewer's comments and have included a point-by-point response in this document and made the corresponding changes in the text.

Reviewer 1

1) Children were included if they had non-missing values for at least 3 of the 5 variables. Detail should be supplied regarding how data was imputed if they had 2 or 1 missing value. *We did not impute any values but dropped children with missing data on two or more of the criteria from all analysis in this study.*

2) The IOTF criteria was used to categorize children by weight status. Briefly describe what that criteria is, and how it was developed. *We added several sentences to explain the development of the standard.*

3) What are the demographic characteristics of the overall sample and the two sub-samples. Since only 1/3 of participants had fasting glucose levels, this sample may not be representative of the overall population or even match the larger sample. In particular, the paragraph labeled “sample subpopulation” states that the first sub-sample includes only 12-18 year old children who have fasting glucose levels available, highlighting what appears to be an intentional change in the age range, combined with a possible sampling bias based on children from whom a blood glucose value was available. *The NHANES only provides fasting glucose levels for individuals 12 years and older. Thus, this reviewer is correct in that the inclusion of the “fasting glucose level” criteria leads to stratification by age. However, this is a nationally representative data set and the use of complex survey design routines in STATA ensue the maintenance of this nationally representative character of the data.*

4) In the same paragraph, then next statement describes the use of IOTF criteria, and the resulting proportion who met the criteria for obesity. This must be the proportion from the original sample, not the aforementioned sub-sample, but this paragraph is a bit unclear. *We changed the wording of the paragraph to add clarity.*

5) The second paragraph beginning, “Across all five diagnostic...” in the results section, under the title labeled “Prevalence of Metabolic Syndrome” uses the work “increases”, which indicates change, where is greater than or is lower than, which indicates cross sectional differences would be more appropriate. *We agree and changed the wording.*

6) The last sentence, “More than 50% of the children...” is confusing with regard to the proportion being discussed. An alternative might be “Of the children who met the criteria for MS, more than 50% were not hyperglycemic, while only 17% were not abdominally obese.” if this is the correct interpretation. *We changed the wording according to this reviewer’s suggestion.*

Minor Essential Revisions:

7) In the abstract, methods section, “fasting blood serum data” are likely referring to fasting blood glucose data. Throughout the paper (method section, page 4) “blood serum glucose” is used, but blood glucose or serum glucose would be more appropriate (I assume blood glucose). *We agree and replaced the statements.*

8) Because the overall age range is very large, some breakdown of MS risk by age group might be appropriate. In addition, the subgroup comparisons of risk are really only appropriate adjusted for age and other characteristics that may differ between samples.

Please see the response to point 3. Due to the data collection strategies, the subsample providing blood glucose is limited to adolescents, however, as our paper shows even younger children and even disregarding the fasting blood glucose criteria, there is still a high prevalence of children meeting the other diagnostic criteria for MS. Since the data are nationally representative and we describe the proportion of children with each pattern, the adjustment for SES variables is not necessary.

9) In the pattern analysis, it would be preferable to use the term “met the criteria for” rather than “diagnose”, which sounds like a clinical encounter rather than post hoc data analysis. *We agree and replaced the statements.*

Discretionary Revisions:

10) The second to last paragraph of the introduction on page 4, “several lifestyle factors...” refers to diet as an area of possible intervention, but seems out of place as diet is not assessed and interventions not considered. This paper is purely observation of prevalence of MS.

We deleted this statement from the introduction.

Reviewer 2

Major points:

1. The major problem of this study is that children with 1 or 2 missing values were included. This procedure made this work ambiguous and the reader cannot figure out the whole feature of Metabolic syndrome in US children. This fact is suggested by the different prevalence of risk

factors in three subgroups. The author should add data in children with all five variables for Metabolic syndrome (data from children without missing values).

Children with missing data for one or two of the criteria were NOT included but dropped from all analysis. We disagree that this makes this study ambiguous. Since the MS is only diagnosed if three or more criteria are met, it is would be incorrect to include children who are by default classified as not having MS. In order to provide accurate estimates, one needs to show the proportion of children with MS of those who could potentially be diagnosed with the disease (see table of proportion of children by the number of criteria met below). We changed our tables and now the proportion of children meeting all possible four or five criteria (children missing blood glucose values and children providing data on that criterion) is clearly visible. To clarify the sample sizes, we rewrote the method section.

Number of criteria met	Percent of population (n=7,546)
0	41.3
1	17.9
2	6.6
3	2.3
4	0.4
5	0.1
Missing data	31.5

2. The reader may be confused by table 2. This table indicates that the prevalence of pattern (11100) was much higher than other patterns in US children. However, this result may be happen if many of these children had no data of glucose and blood pressure. The author should indicate the data availability of each criterion.

We agree with this comment and generated another table. Now, we show three subpopulations (2-18 year olds with data on at least three criteria without fasting glucose, 12-18 year olds with data on at least three criteria and fasting glucose, and 12-18 year olds with data on at least three criteria, and fasting glucose who are also classified as overweight or obese).

Sincerely,
Sibylle Kranz, PhD, RD