Author's response to reviews

Title: Is WHO height reference relevant to Polish school-aged children and adolescents

Authors:

Zbigniew Kulaga ZK (z.kulaga@czd.pl)
Mieczysław Litwin ML (m.litwin@czd.pl)
Marcin Tkaczyk MT (mtkaczyk@uni.lodz.pl)
Agnieszka Różdżyńska AR (a.rozdzynska@czd.pl)
Katarzyna Barwicka KB (kbarwicka@gmail.com)
Aneta Grajda AG (a.grajda@czd.pl)
AnnaŚwiąder AS (a.swiader@czd.pl)
Beata Gurzkowska BG (b.gurzkowska@czd.pl)
Ewelina Napieralska EN (e.napieralska@czd.pl)
Huiqi Pan HP (h.pan@ich.ucl.ac.uk)

Version: 3 Date: 4 December 2009

Author's response to reviews: see over
Dear Editor-in-Chief,

On behalf of paper authors, I would like to thank Associate Editor and Reviewers of our article submitted in August 2009 for valuable comments.

We hereby submit revised article MS: 5835644182966668 for your kind consideration.

Following the suggestions and comments from Reviewers and Associate Editor we made substantial changes to the paper originally submitted. Specifically, we reformulated aim of the study and data on weight and BMI were included in addition to height data. Following these revisions we feel that title of the paper should also be amended, thus we propose title of the revised paper to be **The height-, weight-, and BMI-for-age of Polish school-aged children and adolescents relative to international and local growth references.**

We also provide point-by-point response to the concerns – see **Response to Reviewer’s report** in table below.

Yours faithfully,

Zbigniew Kulaga

<table>
<thead>
<tr>
<th>Comment / remark</th>
<th>Author’s response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Referee 1</strong></td>
<td></td>
</tr>
<tr>
<td>I believe that the main conclusions offered by the authors are flawed and should be revised</td>
<td>Accepted; conclusions were amended.</td>
</tr>
<tr>
<td>I think that statements such as &quot;the performance of local charts might be more useful than WHO and CDC reference&quot; (p. 12) or &quot;height-for-age charts should be based on countrywide population studies in order to establish clinical basis for diagnosis of growth retardation&quot; need to be revised.</td>
<td>Accepted; statement in question was revised.</td>
</tr>
<tr>
<td><strong>Referee 2</strong></td>
<td></td>
</tr>
<tr>
<td>The title however needs to be revised to reflect what the analyses presented actually attempted to do.</td>
<td>Accepted; the title was revised.</td>
</tr>
<tr>
<td>Abstract</td>
<td></td>
</tr>
<tr>
<td>Pg 4: &quot;Country specific growth charts are preferred to international ones in clinical applications where adequate diagnosis of illness, e.g. hypertension, is based on z-scores or centiles for height.</td>
<td>In Poland the Fourth Report tables of blood pressure centiles by age and sex are used to define hypertension in children and adolescents</td>
</tr>
</tbody>
</table>
COMMENT: The logic of each of the foregoing statements is not clear. What is the biological association between height per se and illness like hypertension that would predicate diagnosis of the latter on height centiles?

<table>
<thead>
<tr>
<th>Hypertension is defined as average SBP and/or diastolic BP (DBP) that is $\geq 95$th percentile for gender, age, and height on $\geq 3$ occasions. The tables provide value of 95 centile of BP according to height centiles: 5, 10, 25, 50, 75, 90, and 95 allowing for taller children to have higher normal BP. The statement in question was deleted.</th>
</tr>
</thead>
</table>

**Abstract**

Pg 4 “WHO growth charts still play an important role in an international use as measurement of nutritional status and stunting world-wide in population without their own specific charts.” If WHO growth charts are suitable only in countries that do not have their own charts, how can they be important for international use as measurement of nutritional status and stunting world-wide?

Accepted; abstract was changed accordingly.

**Background**

Pg 4-5: “Additionally, the blood pressures of Polish children and adolescents are compared to the Fourth Task Report reference data [7] in which Centers for Disease Control and Prevention (CDC) height-for-age reference values [8] (USCDC2000) are incorporated to indicate body size. Hence, the answer to the following question is vital: Is the CDC height-for-age reference suitable for Polish children and adolescents?”

COMMENT: If this is the vital question, the title of the paper should be changed, and a very different set of analyses would be necessary to respond to it. The analysis and results described in the manuscript are only a comparison of which of six sets of reference data best matches the OLAF study sample in height-for-age.

Agreed; background (including section of abstract) was revised accordingly; aim of the study was reformulated in accordance with the comment.

**Methods**

Pg 5: At the second stage, study participants were sampled from all pupils at school sampling frame.

COMMENT: What does this mean?

Accepted; second-stage sampling was described more precisely.

Pg 7: "It was assumed that the appropriate height reference for children and adolescents in Poland is the reference which gives the mean z-scores for height in the country representative sample (OLAF study) to be closest to zero.” Also Results pg 7: "Confidence interval of mean height z-scores included zero only in case of #ódz growth chart for boys and Warszawa growth chart for girls”

COMMENT: Based on the stated assumption, would the authors then recommend using the #ódz growth chart for the

Since aim of the study was reformulated the statement in question was deleted.
boys and the Warszawa growth chart for the girls in the OLAF sample?

Discussion
Pg 9: "Grow charts should allow precise diagnose of stunting, disturbances of weight to height proportion(s) (underweight and overweight) [15, 16] and blood pressure levels by age and height centile. Currently, the function of growth charts, with regard to disturbances of weight (e.g. monitoring of anthropometric indicators of obesity: Waist-to-Height Ratio and Body Mass Index for which height is basic component) and blood pressure assessments, is of increasing importance for public health. This is due to the rapidly rising prevalence and magnitude of childhood obesity which is linked to the incidence of metabolic syndrome [17]." ....
COMMENT: What is the relevance of this text in view of the analyses and results presented?

Pg 10: "Our findings demonstrate differences among Polish regional growth charts, international growth charts and North American growth charts. …"
COMMENT: It would be more correct to re-phrase the above statement to read, "….differences between Polish regional growth charts and charts based on United States samples…." since the sample used for the WHO 2007 reference, like the CDC 2000, is in fact a US sample.

Conclusions
Pg 12: "The results of the study suggest that height-for-age charts should be based on countrywide population studies in order to establish clinical basis for diagnosis of growth retardation."
COMMENT: The more correct interpretation is rather that a contemporary local chart (in no matter what country) describes the distribution of heights in a local sample better than does a chart based on a sample from a different country and time period. This is why it is not surprising that the OLAF sample resembles the Polish regional charts more than it does either the CDC 2000 or the WHO 2007 chart. The clinical diagnosis of stunting is a different issue. If what constitutes clinical stunting is country-specific, then indeed one might recommend national charts for the diagnosis of "Polish stunting", "American stunting" or "Peruvian stunting", etc. However, with the kind of analysis reported in the present manuscript, the most one can conclude is that Polish youths are on average taller than American youths by between 0.3 and 0.5 SD.

Tables
The headings for tables 4 and 5 should be edited as suggested below (text in CAPS added): Table 4 - Polish boys (OLAF study sample) 95% CIs of height mean z-

The relevance of including in the discussion weight disturbances and BMI is supported by inclusion of weight and BMI data in revised version of the paper.

Accepted; wording was edited

Agreed. Conclusion of the paper was revised.

Tables headings were edited according to suggestion.
Scores by age according to growth chart. Table 5 - Polish girls (OLAF study sample) 95% CIs of height mean z-scores by age according to growth chart.

<table>
<thead>
<tr>
<th>Associate Editor’s comments</th>
<th>Data on height, weight, and BMI by age and sex were included in revised version of the paper.</th>
</tr>
</thead>
<tbody>
<tr>
<td>It would also be useful to know how tall these children were ie in cms by age, as well as in terms of their standard deviation scores</td>
<td>Weight and BMI z-scores are presented in revised version of the paper.</td>
</tr>
<tr>
<td>It would add value to the paper if it presented the weight data as well as the height data for this study, as cross-sectional height is particularly difficult to judge in isolation when children are approaching and undergoing puberty</td>
<td></td>
</tr>
</tbody>
</table>