Reviewer's report

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

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Reviewer: Adelheid Werimo Onyango

Reviewer's report:

OVERALL

The analysis and results are clearly presented and are interesting for a discussion on what makes for a suitable reference. The title however needs to be revised to reflect what the analyses presented actually attempted to do.

SPECIFIC PAGE-BY-PAGE COMMENTS

Abstract

Pg 4: "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. 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."

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?

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?

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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.
Methods

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

COMMENT: What does this mean?

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 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.

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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-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.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I am part of the team that developed the WHO 2007 reference but this did not influence my review of the manuscript.