

Anthropometric evaluation of a cohort of school-aged children: the need for national growth references in Romania

Raluca Pop^{1,2}, Ionela Pașcanu³, M. Pop⁴

¹Endocrinology Outpatient Clinic, Emergency Mures County Hospital, ²Research Methodology Department, ³Endocrinology Department, ⁴Informatics and Biostatistics ²⁻⁴University of Medicine and Pharmacy Tirgu Mures

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INTRODUCTION

For children above 5 years of age no specific national growth charts are available in our country, the most widely used being the Swiss ones (Prader, 1989). Previous studies have shown significant differences between the various international standards available regarding the incidence of growth disorders.

OBJECTIVE AND HYPOTHESIS

Our aim was to compare the recommended growth reference with a new one based on a national representative sample. Our hypothesis was that the available growth references do not reflect the local reality regarding auxological data.

METHODS

Type of study: cross-sectional; target population: children 6-15 years of age. Sample: random stratified, composed of 1168 children selected from 4 rural and 4 urban areas of Mures county. Variables: age, sex, environment, height, weight, arm span, head circumference, waist. The evaluation was performed by 2 trained endocrinologists using verified instruments. Exclusion criteria: small for gestational age, cardiac or renal failure, malnutrition, rickets and refusal to participate. The study was approved by the local ethics committee and a written consent was obtained for every child. Statistical analysis used M.O. Excel and Graph Pad InStat with a level of significance 0.05. A mean and standard deviation score was computed for every year of age for both sexes.

RESULTS

General characteristics: environment ratio urban: rural was 1.07; sex ratio boys: girls was 1.01.

For every anthropometric parameter evaluated there are significant differences between the available Swiss references and the new computed means and standard deviations ($p < 0.001$), for each age and sex, regardless of other factors (Fig. 1-4). Moreover, using the new means resulted in a much smaller number of pathological results that needed further medical evaluation (2 vs. 18.9% respectively, fig. 5).

DISCUSSIONS

There is no consensus on which growth charts should one use for children above the age of 5 in countries which do not have national references [1]. This results in important differences in the incidence of growth disturbances[2,3]. By computing new means and SD scores, we proved that for our region the growth charts recommended by our national protocol do not seem to reflect reality.

CONCLUSIONS

We consider that our study proves the need for constructing national growth charts. This may well demonstrate a much lower incidence of growth disturbances.

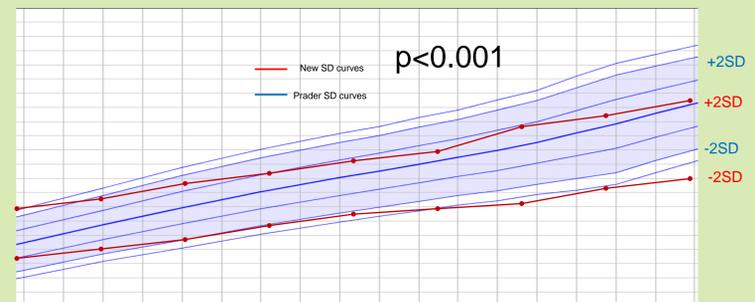


Fig. 1 – Comparison of Prader and new height reference intervals for boys

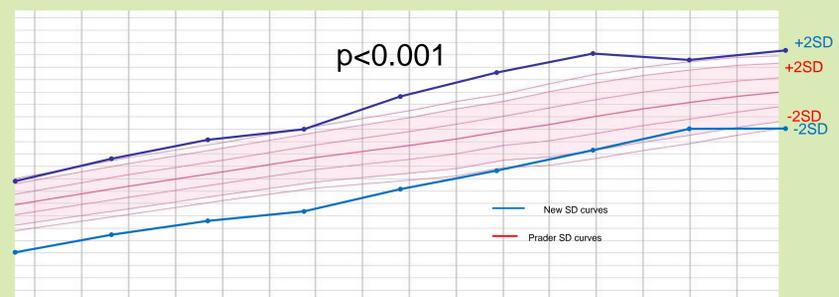


Fig. 2 – Comparison of Prader and new height reference intervals for girls

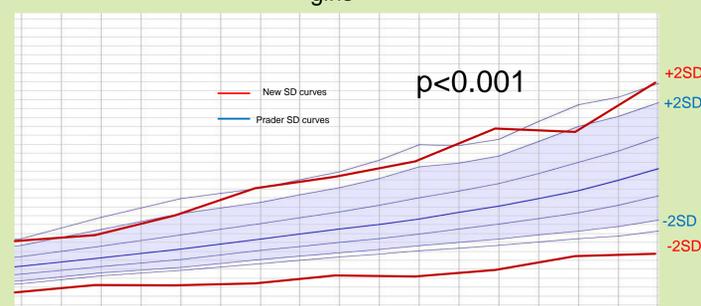


Fig. 3 – Comparison of Prader and new weight reference intervals for boys

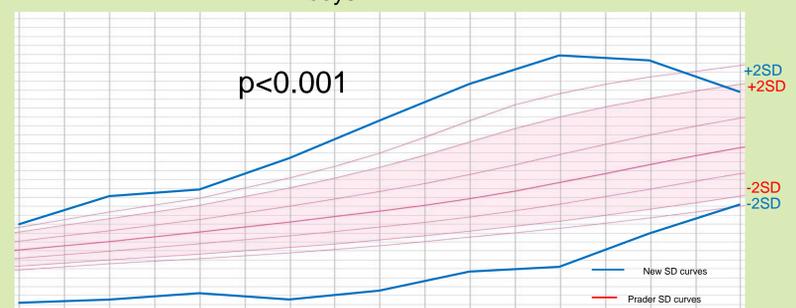


Fig. 4 – Comparison of Prader and new weight reference intervals for girls

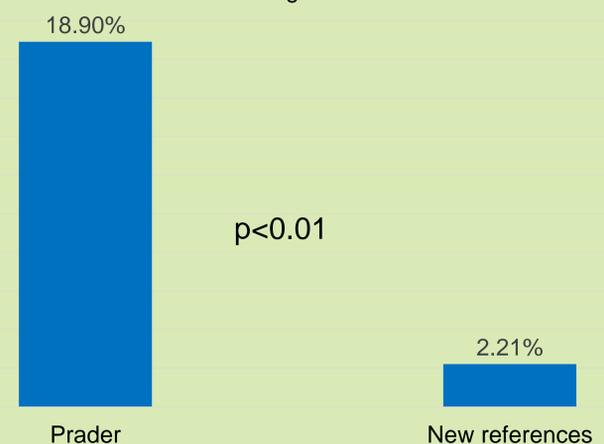


Fig. 5 - Short stature incidence using two growth charts

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