SOFTWARE AND EQUATION TO ESTIMATE WEIGHT IN CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY WHEN THEY CANNOT BE WEIGHT BY A DIRECT METHOD CASE

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INTRODUCTION

Weight is essential for growth assessment, but is difficult to measure in children with cerebral palsy (CP) because of their motor impairment, or because the lack scales for wheelchair available.

The aim of this study was to develop a preliminary equation and software to estimate weight using segmental measures for children with CP.

RESULTS

228 children and adolescents were included with decimal ages between 2,010-19,030 and diagnosed with CP. 61% of them (95%CI54.34-67.37%) were males. Their level of function was classified in walkers with level I-II (44,74%, 95% CI 38,17 - 51,44), and level IV-V (55,26%, 95%CI 48,55 - 61,83). In order to develop the weight predictive equation, it was analyzed the interaction between the weight other variables such us mid arm circumference (MAC), knee height (KH) function level, and age. The following preliminary equations were developed:

For children with GMFCS level I to III: Weight = MAC*2.43+age*0.59+KH*0.37-39.4

For GMFCS level IV & V: Weight=MAC*1.68+age*-0.15+KH*0.90-37.42

CONCLUSION

It is possible to predict weight in children with CP using segmental measures that are easy to obtain and combined with basic data of the child.

PATIENTS AND METHODS

Observational and cross-sectional study. Children and adolescents with CP of both gender from 2 to 19 years old from the City of Córdoba (Argentina) were included. Children with endocrine, metabolic and, genetic diseases or congenital abnormalities were excluded.

A multiple linear regression model was performed analyzing coefficients(r), adjusted R2 and RMSE. Bland-Altman plot was used to evaluated agreement. From the equation a software was developed.

Bland-Altman plots showed that equations can prove strong consistency between the observed and the estimated values for weight. Limits of agreement (Reference Range for difference) was -9.551 to 9.934. the Mean difference was 0.191 (CI -0.451 to 0.834) (Figure 1).

A prototype software was developed to estimate weight (Figure 2).