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ORIGINAL ARTICLE

ESTIMATION OF STATURE USING HAND AND FOOT ANTHROPOMETRY AMONG 2-5 YEARS AGE CHILDREN OF JALPAIGURI, WEST BENGAL, INDIA

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ABSTRACT

Early childhood anthropometry is essential for assessing growth and estimating stature, especially when direct height measurement is not feasible. Hand and foot dimensions are practical alternatives and hold significant relevance in pediatrics and forensic identification. The objectives of the study were to analyze hand and foot anthropometric measurements among Indian children aged 2–5 years and to develop reliable sex-specific and combined regression models for stature estimation.

This cross-sectional study was conducted among 541 children (280 boys, 261 girls) from 25 ICDS centres of Jalpaiguri, West Bengal, India. Hand length, hand breadth, foot length, and foot breadth were measured bilaterally using sliding calipers; stature was measured using a standard anthropometric rod. Descriptive statistics, t-tests, ANOVA, and linear regression analyses were performed. In the present study, the boys showed significantly larger mean values than girls for all measurements ($p<0.05$). All anthropometric variables exhibited significant age-related increases ($p<0.001$). Bilateral differences were negligible. Foot length demonstrated the strongest correlation with stature in boys ($R^2 = 0.891$), girls ($R^2 = 0.868$), and combined samples ($R^2 = 0.880$), with the lowest SEE (3.212–3.440 cm).

The outcome of the study elicited that, hand and foot dimensions, especially the foot length, are reliable predictors of stature in preschool children. These findings have important implications in pediatric assessment, ergonomic design, and forensic identification in mass casualty scenarios.

Keywords: Anthropometry, stature estimation, foot length, hand length, foot breadth, hand breadth, preschool children.