

Predicted Resting Metabolic Rate and Chronic Energy Deficiency among the Birhors of Korba District, Chhattisgarh, India

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Abstract

Resting Metabolic Rate (RMR) contributes to almost 60-70% of an individual's total energy expenditure and energy requirement. A cross-sectional study was conducted to evaluate the prevalence of Chronic Energy Deficiency (CED) and predicted Resting Metabolic Rate (pRMR) among Birhors (≥ 7 years) in Korba district, Chhattisgarh, India. A total of 400 participants were selected. Data on anthropometric variables were taken following standard protocol. CED was assessed using standard protocol. RMR was predicted using the Harris-Benedict equation with a 5% reduction. The age and sex combined prevalence of CED was 57.7% (62% male and 53.4% female). Overall, 39.5% of Birhors were found to be in CED category I, followed by 11% and 7.2% in CED categories II and III, respectively. The age combined pRMR ($\bar{x} \pm \sigma$) of male and female Birhors was 1150.19 ± 188.16 (kcal) and 1114.58 ± 97.82 (kcal), respectively. The average pRMR was significantly greater in the normal category, followed by CED I, CED II, and CED III categories. It was observed that BMI had a medium positive correlation with pRMR ($r = 0.608$; $p < 0.01$), body fat percentage ($r = 0.517$; $p < 0.01$), and visceral fat ($r = 0.798$; $p < 0.01$). Similarly, pRMR was significantly associated with skeletal muscle [B (t) = 8.48 (5.75), $p < 0.05$], and body fat percentage [B (t) = 8.30 (8.51), $p < 0.05$], explaining 7.7% and 15.4% of the variability in pRMR. The study concludes that Birhors are experiencing critical nutritional stress. The lower pRMR values indicate a significant deficiency of energy among undernourished (CED's) Birhors. The study emphasizes the urgent need for the effective implementation of programs and policies to improve the overall energy levels among Birhors, which could lead to better health outcomes.

Keywords: Chronic Energy Deficiency; Resting Metabolic Rate; Body Mass Index; Hunger; Birhor; Particularly Vulnerable Tribal Group.