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Identification of Pediatric Sarcopenia in Oncology: A Comparative Analysis of Anthropometric, Functional, and Strength-Based Models

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***Introduction:** Pediatric sarcopenia is increasingly recognized in children and adolescents with cancer, as the disease and its treatments accelerate muscle mass and strength loss. Early detection is crucial to guide nutritional and functional care. Thus, the objective of this study was to compare two classification models of sarcopenia based on anthropometric indicators, muscle strength, and functional capacity in pediatric patients undergoing cancer treatment. **Methods:** A cross-sectional study was conducted at Joana de Gusmão Children's Hospital, Florianópolis, Brazil. The following measures were assessed: Body Mass Index (BMI), Mid-Upper Arm Muscle Circumference (MUAC), handgrip strength, and functional capacity (Timed Up and Go –TUG). Two classification models were analyzed: Model 1 (uniform scoring for all variables) and Model 2 (double weight for handgrip strength). The presence of three altered outcomes indicated sarcopenia. Comparisons between models used paired Wilcoxon, Stuart–Maxwell, weighted and simple Kappa coefficients, and McNemar test ($p < 0.05$). **Results:** The sample consisted of 12 participants (11.8 ± 2.1 years), with 58.3% male and 58.3% diagnosed with solid tumors. A significant difference was found between model medians ($V = 0$; $p = 0.003$), with Model 2 presenting higher scores. Agreement between models was good (Kappa = 0.71; $p < 0.001$), while dichotomous classification showed fair agreement (Kappa = 0.333; $p = 0.121$). Model 2 identified more cases of sarcopenia ($n = 6$) compared to Model 1 ($n = 2$), although no significant difference was observed in the McNemar test ($\chi^2 = 2.25$; $p = 0.134$). **Conclusion:** Both models demonstrated good agreement and are valid for pediatric sarcopenia screening. Model 2 showed greater sensitivity, especially due to the increased weight of handgrip strength, potentially favoring earlier detection of muscle deficits. Larger studies are needed to refine diagnostic criteria and support more accurate clinical decision-making.

Keywords

Sarcopenia; Childhood Cancer; Muscle Strength; Functional Residual Capacity

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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