

CALF CIRCUMFERENCE AS A SCREENING TOOL FOR LOW MUSCLE MASS: A COMPARATIVE STUDY WITH ACCESSIBLE METHODS

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RESUMO

Muscle mass (MM) is recognized as an important biomarker associated with relevant clinical outcomes, including functionality, morbidity, and mortality. Despite its importance, MM assessment in clinical practice is still limited by the low availability of gold-standard methods, such as dual-energy X-ray absorptiometry (DXA), computed tomography, and magnetic resonance imaging, especially in resource-constrained settings. In this scenario, more accessible methods, such as anthropometric measurements and predictive equations, have been widely used due to their low cost, ease of execution, and good clinical applicability. This study aimed to compare the classification of muscle mass obtained through calf circumference (CC), arm circumference (AC), and a predictive equation in adults and older adults. This is a cross-sectional study conducted using an anonymized database, previously approved by the Ethics Committee of the University of Marília (Opinion nº 7.929.131). Individuals of both sexes aged 45 years or older were included, considering the age limits of the evaluation techniques employed. CC was classified into percentiles (P) according to reference values stratified by sex and age, considering low MM when $P < 50$ and adequate when $P \geq 50$. AC was classified according to specific cut-off points, with low MM considered when < 25 cm in women and < 28 cm in men. Muscle mass was estimated (in kg) using a predictive equation, with the value adjusted by height to calculate the muscle mass index (MMI) $[MM \text{ (kg)}/\text{height (m)}^2]$, classified as reduced when $< 7 \text{ kg/m}^2$ for men and $< 5.5 \text{ kg/m}^2$ for women. The sample consisted of 169 individuals (80% female), with a mean age of $63,1 \pm 10,7$ years. Adequate MM classification was observed in 85% ($n=144$) of individuals when assessed by CC, 96% ($n=162$) by AC, and 100% by MMI. In the comparative analysis, a statistically significant difference was observed between the classification obtained by CC and MMI ($p < 0.0001$), while there was no significant difference between AC and MMI ($p = 0.0606$). Considering the importance of early identification of MM impairment, these data suggest that CC identified a higher proportion of individuals with reduced muscle mass compared to the other methods, indicating potential utility as a screening tool in clinical contexts. Additional studies are needed to evaluate its diagnostic accuracy.

Palavras-chave: Muscle Mass; Anthropometry; Calf Circumference; Arm Circumference; Nutritional Assessment.