Screening the risk of sarcopenia in adults aged 50 years or older hospitalized

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Abstract

Objective: To screen the risk of sarcopenia in hospitalized individuals using the SARC-F and SARC-Calf instruments and verify the association between the risk of sarcopenia with the sociodemographic and clinical variables and those that make up the sarcopenia phenotype. *Methods*: This is a cross-sectional study. Sociodemographic, clinical characteristics, and all variables (handgrip strength, muscle mass and gait speed) that construct the sarcopenia phenotype were investigated. For the screening and diagnosis of sarcopenia, the algorithm, and criteria proposed by the European Working Group on Sarcopenia in Older People (EWGSOP2). *Results*: A total of 90 individuals participated. Most were without risk of sarcopenia, both by SARC-F (58.9%) and by SARC-Calf (68.9%), with normal handgrip strength (HGS) (28.6±9.2; 26.7±10.6) and appendicular skeletal muscle mass index (ASMI) (9.3±1.78; 9.6±1.6) and with low gait speed (GS) (0.69±0.26; 0.68±0.4), respectively. SARC-F showed a significant association with the variables gender (p=0.032), HGS (p<0.001), GS (p=0.001) and sarcopenia (p<0.001). When adding the calf circumference (CC), an association was found with the variables age group (p=0.029), work activity (p=0.008), HGS (p<0.001), ASMI (p=0.033), GS (p=0.019) and the sarcopenia (p<0.001). *Conclusion*: The risk of sarcopenia was observed in approximately one-third of the evaluated patients. It is suggested the routine use in hospitals of the sarcopenia screening tool SARC-Calf, since it was associated with the three predictive factors of sarcopenia, in addition,it is an instrument of agile application, low cost and non-invasive. When a possible, investigation of the diagnosis of sarcopenia should be encouraged in clinical practice.

Keywords: Sarcopenia. Diagnostic Screening Programs. Muscle Mass.

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The authors declare that there is no conflict in the conception of this work.
There was no funding for this work.

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Received: January 28, 2021
Approved: June 18, 2021

http://dx.doi.org/10.1590/1981-22562021024.210016

INTRODUCTION

According to the *European Working Group on Sarcopenia in Older People* (EWGSOP2), sarcopenia is characterized by a reduction in muscle strength and a qualitative and/or quantitative reduction in muscle mass. Once sarcopenia is diagnosed, functionality/performance assessment is recommended to check the severity of sarcopenia muscle disease. Sarcopenic older people with low physical performance or low functional capacity are diagnosed with severe sarcopenia[1].

Screening for sarcopenia should be performed when the patient spontaneously reports signs and symptoms regarding the consequences of sarcopenia such as falling, feeling weak, slow gait, difficulty in sitting and/or getting up from a chair, or involuntary loss of weight/muscle mass , or should be performed in the form of population screening[1].

The EWGSOP2 proposed the use of the SARC-F (*Simple Questionnaire to Rapidly Diagnose Sarcopenia*) questionnaire for agile and initial screening. There are five elements that assess muscle strength and function (strength, ability to walk, getting up from a chair, climbing stairs and number of falls)[2,3].

This questionnaire was the first instrument used to screen for sarcopenia and is able to predict functional impairment, hospitalization, quality of life and early death[2,4,5], in addition to being considered an effective tool to predict results regarding the possible recovery from sarcopenia and to promote subsidies and information to contribute to early therapeutic actions[6]. Although it has high specificity, that is, it correctly diagnoses individuals without risk of sarcopenia, its sensitivity is low, and it may neglect the diagnosis of people with sarcopenia[7,8].

In order to obtain better results, Barbosa-Silva et al.[9] proposed to incorporate into the original questionnaire the measurement of calf circumference (CC), with the aim of providing a more thorough assessment of muscle function and loss of lean mass. SARC-Calf may be a more advisable tool for screening for sarcopenia[9]. The addition of CC in the SARC-F proved to be effective for the diagnosis of SARC-F, especially regarding the sensitivity and general diagnostic accuracy of this instrument[10]. CC can be a useful tool to measure muscle mass[1,11,12] and offers healthcare professionals alternatives to screen and diagnose sarcopenia in different hospital settings[1].

In Brazil, three studies were found[13–15] which addressed the use of these instruments and considered the sociodemographic and clinical characteristics and the sarcopenia phenotype of hospitalized patients, one of them with a sample of cancer patients[14]. However, studies that have conducted a comparison of scores of both instruments according to these characteristics were not observed.

Given the above, the objectives of this study were to track the risk of sarcopenia in hospitalized individuals using the SARC-F and SARC-Calf instruments and to verify the association between the risk of sarcopenia with sociodemographic and clinical variables and the variables that make up the sarcopenia phenotype.

METHODS

Cross-sectional study with a non-probabilistic sampling design of convenience sampling, carried out at a University Hospital in Brazil from April 2019 to March 2020.

This was a census of all eligible patients during the study period. A total of 122 patients, who met the eligibility criteria, were invited to participate in this study. The inclusion criteria were defined as: patients admitted to surgical and clinical inpatient units within the first 48 hours, of both genders, aged 50 years or over, able to answer the instruments and questionnaires. Patients able to perform the gait speed test and able to perform the anthropometric assessment were also included.

Patients in respiratory isolation by aerosols, with edema or restriction to assess the strength of the right hand, unable to walk, with cognitive deficit, neurodegenerative diseases or severe psychiatric disorders confirmed in medical records were excluded, as well as indigenous patients because it is a population that requires particular ethical procedures and in the hospital in question there is no distinction of beds for hospitalization of these individuals.

There were refusals due to dyspnea, abdominal discomfort, pain, anxiety and nervousness, weakness, drowsiness and being close to the medication time. Thus, the final sample consisted of 90 patients.

Sociodemographic variables (age, marital status, presence of work activity and economic class distributed in strata A, B, C and DE according to monthly household income estimates proposed by the Brazilian Economic Classification Criteria – ABEP)[16], were obtained through an interview and the clinical variables (related to the disease) were obtained by consulting the medical record. The age group was defined by adults and seniors (aged 60 years or older). As clinical variables, the presence of previous chronic diseases was considered, classified into three categories: none; 1 to 2; 3 or more.

For the anthropometric assessment, measurements of current weight (kg), height (cm) and calf circumference (CC) were included. Weight, height and LC were measured according to Lohman et al.[17].

The tracking of sarcopenia risk was obtained using the instruments SARC-F and SARC-Calf in their versions proposed in Portuguese by Barbosa e Silva et al.[9]. The SARC-F assesses five criteria: strength, assistance with walking, getting up from a chair, climbing stairs and falls, scored on a scale from 0 to 2 points. A score of ≥4 points (maximum of 10) indicates risk of sarcopenia[2,3]. SARC-Calf comprises the five items of SARC-F with the addition of CC. The CC receives a score of 0 if its value is greater than the cutoff point and a score of 10 if its value is equal to or less than the cutoff point. A score of ≥11 points (maximum of 20) is suggestive of sarcopenia[9].

To characterize sarcopenia, the algorithm suggested by *EWGSOP2*[1], including three parameters: muscle strength, muscle mass and physical performance.

Muscle strength was assessed using handgrip strength (HGS), through a manual hydraulic dynamometer. The test was performed only on the right hand with the individual seated, feet flat on the floor, with the arm close to the chest, elbow flexed at 90° without being supported. The measurement was taken in triplicate, with an interval of 1 (one) minute between measurements, and considered the measurement with the highest value for the result. The cutoff point adopted was the one proposed by the EWGSOP2 according to gender (men: <27kg/f; women: <16kg/f)[1].

Muscle mass was determined using the predictive equation of total body muscle mass (Equation 1) proposed by Lee et al.[18]. The appendicular skeletal muscle mass index (ASMI) was computed using the value obtained in Lee's equation for height squared and classified as low muscle mass individuals with <7.0 kg/m² for men and <5.5 kg/ m² for women.

$$ASM = (0.244 \times weight) + (7.8 \times height) - (0.098 \times age) + (6.6 \times sex) + (race - 3.3)$$

Predictive Lee's equation of total skeletal muscle mass (ASM: appendicular skeletal muscle mass)

Physical performance was assessed using the gait speed test (GS)[9,19,20]. The individual was asked to walk at their usual pace for a distance of four meters, previously marked with a black band of 4-meter inelastic fabric placed in a flat corridor, and then the time spent to complete the route, with the aid of a stopwatch. The cutoff point proposed by the EWGSOP2 was adopted, which considers a velocity ≤0.8 m/s as an indicator of severe sarcopenia[1,19,20].

This research followed the rules and guidelines of Good Clinical Practice in accordance with Resolution CNS 466/2012 and was approved by the Research Ethics Committee (CEP) for human beings under opinion number 4,078,472.

Descriptive statistics were performed, using mean and standard deviation for continuous variables, and percentages for categorical variables. To study the comparison of mean scores of SARC-F and SARC-Calf according to sociodemographic, clinical and sarcopenia phenotype variables, Analysis of Variance (ANOVA) was used. In view of the violation of the homoscedasticity assumption, *Welch*'s correction was used and the *Games-Howell* was used as a post-test. To compare the means of continuous variables between adults and older people, *Student*'s t test was used. The chi-square test (χ^2) was used for the associations of interest. Data analysis was performed using the IBM SPSS *Statistics* program (v.22, SPSS An IMB Company, Chicago, IL), with a significance level of 5% for all tests.

RESULTS

Ninety hospitalized individuals, adults and older people, with mean age equal to 55.0±3.2 and 69.9±7.9 years, respectively, participated in this study. There was a predominance of older people (70.0%), male individuals (56.7%), with no work activity (70.5%), married (68.9%), belonging to economic class C (72.2%), white race (62.2%) and hospitalized for surgical procedure (58.8%). Most patients had 1 to 2 previous chronic diseases (60.0%). Most individuals (57.8%) had normal HGS. On the other hand, low GS was predominant (80.2%). Most individuals had no sarcopenia (57.8%) (Table 1).

Table 1. Characterization of participants (N=90) and mean scores of the SARC-F and SARC-Calf instrument scores. Dourados, MS, 2020.

Variables	n (%)	SARC-F	*p* value#	SARC-Calf	*p* value#
Sociodemographic					
Gender			0.017*		0.931
Male	51 (56.7)	2.39±2.58		6.90±5.99	
Female	39 (43.3)	3.74±2.63		6.79±5.50	
Age group			0.114		0.033*
Adult	27 (30.0)	2.30±2.54		4.89±4.98	
Older person	63 (70.0)	3.27±2.70		7.70±5.89	
work activity			0.009*		0.001*
Absent	62 (70.5)	3.45±2.80		8.27±5.68	
Present	26 (29.5)	1.81±2.10		3.73±4.79	
Marital status			0.352		0.648
Single	8 (8.9)	3.25±2.81		8.25±6.71	
Married	62 (68.9)	2.66±2.84		6.35±5.71	
Widowed	12 (13.3)	4.08±2.23		8.25±5.71	
Separated/divorced	8 (8.9)	3.50±1.31		7.25±5.73	
Economic class**			0.021*		0.041*
Class A	3 (3.3)	0.33±0.58 [a, b]		0.33±0.58 [a]	
Class B	9 (10.0)	1.22±1.64 [a, b]		3.44±5.10 [a,b]	
Class C	65 (72.2)	3.11±2.73 [a, b]		7.40±5.54 [b]	
Classes D and E	13 (14.4)	4.15±2.44 [a, c]		8.00±6.48 [b]	
Race/Color			0.214		0.597
White	56 (62.2)	3.36±2.83		7.29±5.81	
Brown	32 (35.6)	2.31±2.32		6.03±5.77	
Black	2 (2.2)	3.00±2.83		8.00±4.24	
Clinics			0.056		0.248
Past chronic disease					
None	26 (28.9)	3.62±2.98		7.46±5.98	
1 to 2 chronic diseases	54 (60.0)	2.44±2.25		6.13±5.63	
3 or more chronic diseases	10 (11.1)	4.20±3.46		9.20±5.55	

to be continued

Continuation of Table 1

Variables	n (%)	SARC-F	*p* value[#]	SARC-Calf	*p* value[#]
Sarcopenia Phenotype					
Hand grip strength (HGS)			<0.001*		<0.001*
Normal	52 (57.8)	2.00±2.34		4.87±4.92	
Low muscle strength	37 (41.1)	4.41±2.52		9.81±5.64	
Appendicular Skeletal Muscle Mass Index (ASMI)			0.015		0.007
Normal	88 (97.8)	2.88±2.62		6.61±5.58	
Low muscle mass	2 (2.2)	7.50±0.71		17.50±0.71	
Gait speed (GS)			0.018*		0.002*
Normal	17 (19.8)	1.59±2.26		2.76±3.99	
Low gait speed	69 (80.2)	3.30±2.69		7.49±5.68	
Sarcopenia†			<0.001*		<0.001*
No sarcopenia	52 (57.8)	2.00±2.34 [a]		4.87±4.92 [a]	
Sarcopenia probable	35 (38.9)	4.23±2.47 [b]		9.37±5.48 [b]	
Confirmed sarcopenia	-	-		-	
Severe sarcopenia	2 (2.2)	7.50±0.71 [b]		17.50±0.71 [b]	

* Statistically significant difference (p<0.05); [a, b, c] equal letters indicate statistical similarity; ** Average household income: A = BRL 25,554.33; B = BRL 5,641.64 to 11,279.14; C = BRL 1,748.59 to 3,085.48; D and E= BRL 719.81; [†] For the determination of sarcopenia, all individuals were considered with clinical suspicion according to the EWGSOP2; [#] Analysis of Variance (ANOVA) with *Welch* correction.

Regarding the mean values of the instruments according to sociodemographic and clinical characteristics and sarcopenia phenotype, for the SARC-F, statistically significant differences were observed for gender (*p*=0.017) and work activity (*p*=0.009) and economic class (*p*=0.021). Statistically significant differences were noted for the variables HGS (*p*<0.001), ASMI (p=0.015), GS (*p*=0.018) and sarcopenia (*p*≤0.001). As for the SARC-Calf instrument, significant differences were observed for the variables age group (*p*=0.033), work activity (*p*=0.001) and economic class (*p*=0.041). Significant differences were also found between SARC-Calf and HGS (*p*<0.001), ASMI (*p*=0.007), GS (*p*=0.002) and sarcopenia (*p*<0.001) (Table 1).

Table 2 shows the means and standard deviations of the investigated variables according to the age group of participants. Significant differences were found in relation to current weight (*p*=0.039) and CC (*p*=0.019) and SARC-Calf score (*p*=0.033).

Table 3 shows that the risk of sarcopenia was observed in approximately one third of the patients evaluated, both by SARC-F (41.1%) and by SARC-Calf (31.1%). Statistical difference was found when comparing instruments (*p*=0.038).

Regarding the association between the instruments proposed for screening the risk of sarcopenia and the variables of interest in this study, SARC-F showed a significant association with the variables gender (*p*=0.032), HGS (*p*<0.001), GS (*p* =0.001) and sarcopenia (*p*<0.001). When adding CC, an association was found with the variables age group (*p*=0.029), work activity (*p*=0.008), HGS (*p*<0.001), ASMI (*p*=0.033), GS (*p*=0.019) and sarcopenia (*p*<0.001) (Table 4).

Table 2. Summary measures of the investigated variables according to the age group of the participants. Dourados, MS, 2020.

	Mean (SD)		
Variables	Adults (n=27)	Older people (n=63)	*p* value*
Current weight (kg)	77.12±18.29	69.13±15.76	0.039*
Height (m)	1.63±0.10	1.61±0.11	0.334
Body mass index (kg/m2)	28.86±6.30	26.76±6.16	0.146
Hand grip strength - right hand (kg)	25.73±10.98	23.07±10.53	0.289
Calf Circumference (cm)	36.65±4.64	34.25±4.26	0.019*
Gait speed (meters/seconds)	0.63±0.22	0.61±0.45	0.829
SARC-F Score	2.30±2.54	3.27±2.70	0.114
SARC-Calf Score	4.89±4.98	7.70±5.89	0.033*

* *t*-Test.

Table 3. Sarcopenia risk using the SARC-F and SARC-Calf instruments. Dourados, MS, 2020.

Sarcopenia risk screening	SARC-F n (%)	SARC-Calf n (%)	*p* value*
No signs suggestive of sarcopenia	53 (58.9)	62 (68.9)	0.038
Suggestive of sarcopenia	37 (41.1)	28 (31.1)	

* Chi-square test.

Table 4. Relationship between the SARC-F and SARC-Calf instruments and sociodemographic, clinical and sarcopenia phenotype variables. Dourados, MS, 2020.

	SARC-F			SARC-Calf		
Variables	No suggestive	Suggestive	p***	No suggestive	Suggestive	p***
Sociodemographic						
Gender			0.032*			0.603
Male	35 (68.6)	16 (31.4)		34 (66.7)	17 (33.3)	
Female	18 (46.2)	21 (53.8)		28 (71.8)	11 (28.2)	
Age group			0.147			0.029*
Adult	19 (70.4)	8 (29.6)		23 (85.2)	4 (14.8)	
Older person	34 (54.0)	29 (46.0)		39 (61.9)	24 (38.1)	
work activity			0.084			0.008*
Absent	33 (53.2)	29 (46.8)		37 (59.7)	25 (40.3)	
Present	19 (73.1)	7 (26.9)		23 (88.5)	3 (11.5)	
Marital status			0.226			0.404
Single	5 (62.5)	3 (37.5)		4 (50.0)	4 (50.0)	
Married	40 (64.5)	22 (35.5)		46 (74.2)	16 (25.8)	
Widowed	4 (33.3)	8 (66.7)		7 (58.3)	5 (41.7)	
Separated/divorced	4 (50.0)	4 (50.0)		5 (62.5)	3 (37.5)	

to be continued

Continuation of Table 4

Variables	SARC-F No suggestive	SARC-F Suggestive	p***	SARC-Calf No suggestive	SARC-Calf Suggestive	p***
Economic class**			0.129			0.309
Class A	3 (100.0)	-		3 (100.0)	-	
Class B	7 (77.8)	2 (22.2)		8 (88.9)	1 (11.1)	
Class C	38 (58.5)	27 (41.5)		43 (66.2)	22 (33.8)	
Classes D and E	5 (38.5)	8 (61.5)		8 (61.5)	5 (38.5)	
Race/Color			0.621			0.781
White	31 (55.4)	25 (44.6)		38 (67.9)	18 (32.1)	
Brown	21 (65.6)	11 (34.4)		23 (71.9)	9 (28.1)	
Black	1 (50.0)	1 (50.0)		1 (50.0)	1 (50.0)	
Clinics						
Past chronic disease			0.376			0.808
None	13 (50.0)	13 (50.0)		18 (69.2)	8 (30.8)	
1 to 2 chronic diseases	35 (64.8)	19 (35.2)		38 (70.4)	16 (29.6)	
3 or more chronic diseases	5 (50.0)	5 (50.0)		6 (60.0)	4 (40.0)	
Sarcopenia Phenotype						
Hand grip strength (HGS)			<0.001*			<0.001*
Normal	41 (78.8)	11 (21.2)		44 (84.6)	8 (15.4)	
Low muscle strength	11 (29.7)	26 (70.3)		17 (45.9)	20 (54.1)	
Appendicular Skeletal Muscle Mass Index (ASMI)			0.087			0.033*
Normal	53 (60.2)	35 (39.8)		62 (70.5)	26 (29.5)	
Low muscle mass	-	2 (100.0)		-	2 (100.0)	
Gait speed (GS)			0.001*			0.019*
Normal	16 (94.1)	1 (5.9)		16 (94.1)	1 (5.9)	
Low gait speed	35 (50.7)	34 (49.3)		45 (65.2)	24 (34.8)	
Sarcopenia†			<0.001*			<0.001*
No sarcopenia	41 (78.8)	11 (21.2)		44 (84.6)	8 (15.4)	
Sarcopenia probable	11 (31.4)	24 (68.6)		17 (48.6)	18 (51.4)	
Confirmed sarcopenia	-	-		-	-	
Severe sarcopenia	-	2 (100.0)		-	2 (100.0)	

* Statistically significant difference ($p<0.05$); ** Average household income: A = BRL 25,554.33; B = BRL 5,641.64 to 11,279.14; C = BRL 1,748.59 to 3,085.48; D and E = BRL 719.81;*** Teste qui-quadrado.

DISCUSSION

Approximately one third of individuals who were hospitalized for clinical or surgical care during the investigation period are at risk of sarcopenia, which is higher using the SARC-F instrument. It was expected to find greater risk by SARF-Calf, as this instrument is more sensitive[9]. However, most individuals in our sample had normal CC, which may have influenced our findings. Rolland et al.[11] found a correlation between CC and skeletal muscle mass, using a CC value < 31.0 cm. Also, the measures of HGS, GS and sarcopenia were associated with the two instruments. According to Malmstrom et al.[2], the association of SARC-F with muscle function is expected, being an adequate instrument to identify individuals with treatable muscle weakness.

On average, women had a higher score than men on the SARC-F, but when muscle mass was considered there was no difference between the scores. We found an increased risk of sarcopenia in the older people group when assessed by SARC-Calf. With aging, there is a significant reduction in the levels of testosterone and insulin-1-like growth factor, contributing to the decline in mass and probable sarcopenia in men[21]. Similarly, women experience a decline in mass and sarcopenia probable during the early stages of menopause due to a significant reduction in the hormone estrogen[22]. In addition, the decrease in anabolic acting androgens may explain the higher prevalence of women at risk for sarcopenia[23]. It should be considered that individuals aged 50 years and over were included in this study, which reinforces this result.

Individuals with no work activity, regardless of the addition of muscle mass loss to the SARC-F, presented with higher scores than individuals with work activity. According to Rom et al.[24], retired people are generally inactive and more sedentary, being one of the most important risk factors for decreased physical function in older people[25]. On the other hand, functional limitations interfere in the performance of work activities, and older individuals tend to have ceased their work activities due to retirement.

Regardless of the instrument used, mean scores were higher in individuals with low muscle strength, low muscle mass and low physical performance. It is noteworthy that these findings are important predictors of the occurrence of sarcopenia, and that at this point the two instruments were discriminating and obtained significant differences in the assessment of the risk of sarcopenia.

In the investigated population, women, individuals with low muscle strength and those with low physical performance had a higher risk of sarcopenia. These findings reaffirm the high specificity of the SARC-F, which only allows the assessment of muscle function (strength and physical performance)[9]. The findings reinforce the usefulness of the SARC-F for measuring muscle function and for screening for probable sarcopenia in hospitalized individuals. When CC was added to the instrument, work activity and ASMI were also significant variables. It can be speculated that in fact the increment of the instrument with CC enables us to assess function and loss of muscle mass[9]. According to Peixoto et al.[26], CC is positively associated with muscle mass, being an instrument capable of measuring muscle quantity.

In the present study, we were able to observe that, regardless of the instrument used, the highest mean scores were found in individuals belonging to the lowest economic class. Socioeconomic factors, such as lack of education, reflect on the functionality of older people, and they can be almost three times more dependent in daily life than literate individuals[27]. In addition, the unfavorable outcomes in older sarcopenic patients after hospital admission are well known. Hospitalization, due to a combination of acute inflammatory load and muscle disuse, leads to an acute decline in muscle mass and function, contributing to some individuals acutely meeting sarcopenia criteria[28].

The results of this study draw attention to the need to expand investigations in this area, especially with the older population, which must be carefully assisted during the hospitalization period. We encourage prospective studies to be carried out so that cause-and-effect relationships can be established. Furthermore, we suggest that future research be conducted with an expanded sample of clinical and surgical hospitalized individuals, to strengthen analysis and comparisons and allow for more robust results.

This work has the limitation of being a cross-sectional study, which limits the causal relationship. However, our findings may contribute to the clinical practice of nutritionists and other health professionals. It is known that magnetic resonance, *Dual-energy X-ray Absorptiometry* (DEXA) or bioelectrical impedance are considered more accurate methods for assessing skeletal muscle mass. However, the application of these methods can be costly or difficult to use in research with patients admitted to public hospitals, so we chose to use the predictive equation to estimate the ASMI. As this was a census with all eligible patients during the study period, a possible selection bias may have occurred, with an attempt to minimize them with good study conduct and data analysis.

CONCLUSION

The risk of sarcopenia was observed in approximately one third of the patients evaluated. The instruments SARC-F and SARC-Calf were associated with HGS and GS, in addition to the diagnosis of sarcopenia, and can be considered satisfactory for evaluating muscle function and strength in hospitalized adults aged ≥50 years. Female individuals, with no work activity and older people seem to be at greater risk of sarcopenia and, therefore, should receive greater attention during hospitalization.

There was a statistically significant difference between the instruments in tracking the risk of sarcopenia. Our findings suggest the use of SARC-Calf in clinical practice to screen the risk of sarcopenia in adults and older people, as it was associated with the ASMI, in addition to other predictive factors HGS and GS. This further reinforces the use of the CC measurement in this population. Finding possible cases of sarcopenia in public hospitals through a simple, quick, low-cost and non-invasive assessment can contribute to the minimization of negative outcomes during hospitalization, such as acute sarcopenia.

ACKNOWLEDGEMENTS

The authors thank the support of the Federal University of Grande Dourados (UFGD) and the permission of all participants.

Edited by: Maria Helena Rodrigues Galvão

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