Author's response to reviews

Title: Frequency of sarcopenia and associated factors among hospitalized elderly

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Author's response to reviews: see over
Author’s response to review 1

Title: Frequency of sarcopenia and associated factors among hospitalized elderly

Date: 01/03/2015

Reviewer: Tiago Alexandre

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1 – Why the authors choose to include in the study only elderly able to walk without assistance, not using vasoactive and inotropic drugs, without pain, dyspnea or some cardiopulmonar changes that limit the physical performance tests? This can reduce the hospital prevalence of sarcopenia and introduce a selection bias in the sample? How this sample was selected?

Response = The sample was not of convenience. We included only elderly who were ambulant without the use of assisted device or external assistance, no dyspnea or any cardiopulmonary changes that prevented the achievement of physical tests. The objective was to reduce selection bias with elderly who need some external device. However, we report this limitation in the discussion: “those with inability to perform physical tests and/or who used a device or external assistance were excluded”.

2 – On page 2 and 4, lines 44 and 150, the authors use term “moderate sarcopenia type”. The EWGSOP recommend three categories to define sarcopenia: no sarcopenia, sarcopenia and severe sarcopenia. So it is important to explain which means “moderate sarcopenia”. Furthermore, since the prevalence of sarcopenia was presented into two categories how was created the dependent variable? Severe sarcopenia and sarcopenia were grouped? The authors should to be explicit in the text about it.

Response = In line 44 and 150 has been removed moderate sarcopenia term. The dependent variable sarcopenia comprised the elderly with severe sarcopenia and sarcopenia. Therefore, there was no influence in both categories created (sarcopenia and no sarcopenia). Changed to “being 10.0% the severe sarcopenia type” in abstract and “41.7% had severe sarcopenia” in results.

3 – In page 2, lines 44 and 45, there is term “clinical profile”. What it means specifically? There are some explanations throughout the text, which also need to be improved, but in the abstract this information must be clear.
Response = Performed description of the types of considered clinical profile in paper (clinical and surgical) and changed in lines 38, 44, 45 and 142. Changed to: “admission profile (clinical and surgical)” and “such as heart disease (20.0%), pneumonia (13.6%) and skin infections (9.1%)” in abstract.

4 - Page 2, lines 62 and 63, the authors state: “Older people are highly susceptible to sarcopenia, which is associated with increased muscle weakness...” This information is ok, but it is important to explain that the researches have been shown that weakness is not attributed only to sarcopenia.

Response = Changed to: “which may be associated with increased muscle weakness [4], falls / fractures [5], limitations in activities [6,7], and increased risk of death [8,9,10]. However, the weakness can have other causes related to neural and muscle factors, beyond the mass reduction only [3,11].”

5 – There are Brazilian studies analyzing sarcopenia according EWGSOP as a risk factor for disability and mortality. Maybe it would be interesting to cite such papers.

Response = Added references 7 and 10.

6 – The cut off points to IMM were defined according the Brazilian population using the lowest quintile in reference 13. So such values cannot be assigned to Newman and Delmonico. Therefore it should not be cited as a limitation of the study on page 6, line 242.

Response = Removed this affirmation on line 242. Changed to: “20% lowest percentile distribution reported Alexandre et al. [13], following the studies by Newman et al. [16] and Delmonico et al. [17].”

7 – Half the sample had overweight or obesity (50.9%). The Lee equation is not recommended to estimate muscle mass in this population. How to reduce this bias?

Response = Of these 50.9% (56 elderly), only 12 were BMI ≥30 kg/m². We added the formula for the elderly with a BMI ≥30, however none of these elderly had sarcopenia. Added “For elderly with BMI ≥30 kg/m² was used the specific anthropometric equation [17]: \{\text{altura} \times (0.007444 \times \text{CAG}^2 + 0.00088 \times \text{CTG}^2 + 0.00441 \times \text{CCG}^2) + 2.4 \times \text{gender} - 0.048 \times \text{age} + \text{race} + 7.8\}. The measurements of skinfold thickness (S) were performed by trained evaluators in the arm, thigh and medial part of the calf; and the circumferences of the limbs (Climb) were also measured in the midupper arm, midthigh and midcalf, to the nearest 1 mm, according for the standardization anthropometric measures [19]. We used the Lange caliper for measure the skinfold thickness. Three measurements were performed, and obtained the mean of the measurements for analysis. To remove the fat component was obtained the corrected value of the circumference \(C_{\text{m}}: \text{Climb} - \pi \times S\) [17].”

We added the limitation of the use of this equation in the elderly with BMI ≥30 in the discussion “In addition, anthropometric equation applied in the twelve elderly with BMI ≥30 a higher risk of bias in the measurement of skeletal muscle mass, which can not notify elderly sarcopenic obesity.”
The undernutrition and risk for undernutrition are important factors associated with sarcopenia, especially in hospitalized patients. As height and weight are used in Lee equation and to calculate the BMI would not be better to have chosen another measure to analyze such situations? This issue becomes more relevant when we check the high correlation between BMI and MMI.

Response = Added `` Another limitation was the failure to use a special tool to evaluate the nutritional aspect, in addition to BMI.``

In reference 13 the prevalence of sarcopenia is 15.4% and not 15.2% and the authors didn’t present the confidence interval. The percentages of hypertension, heart disease, and osteoarthritis are not also the same as given in reference 13. How the authors obtained these values?

Response = Changed the values according to reference 16.

In discussion section, page 6, line 222, the authors explain the association between smoking habit and sarcopenia through the inflammatory activity. I believe that there are other explanations that could be exploited.

Response = Added ``This can be explained by the possible increase in the inflammatory response triggered by smoking [37], and other causes such as impairment of energy supply and oxygen to the muscle and metabolic pathways, promoted by reduced blood [16,38,39].``

I recommend reviewing the statement between lines 228 and 230. This point of view is no able to explain this relationship.

Response = Removed ``The use of BMI and IMM may have limitations in clinical practice, considering that body weight measurements are affected by varying percentages of body fat and this cannot be measured adequately with anthropometric equations.``

Why the authors didn’t use income or schooling as independent variables; didn’t control the multivariable analyses with MMSE and the Charlson index instead to use the admission profile? Is it a statistical decision, given the backward model adopted? I have doubts about what the variable admission profile is able to measure and how it can modify the final model avoiding other important associations.

Response = Because of the small sample size, we didn’t include other relevant variables in the backward analysis. Only six variables with greater significance in the univariate analysis were included in the logistic regression.

On table 3 I recommend to show the OR for each category of age and insert 1.00 in the reference category. I recommend the same for all table 3.

Response: Realized change. We keep only two tables to facilitate understanding. Table 1 with the descriptive data in categories with and without sarcopenia and table 2 by univariate and multivariate analysis.
14 – The tables 2 and 3 can be unified. Therefore the table 2 should show the OR.

Response: Realized change. Added the description of OR.

15 – Table 4: What means ‘`Tabagismo`’?

Response = Changed to ‘`smoking`’.

16 – Please cite table 4 in the text.
Response = Response in Table 2.

**Author’s response to review 2**

**Title:** Frequency of sarcopenia and associated factors among hospitalized elderly

**Date:** 01/03/2015

**Reviewer:** Tahir Masud

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1- Perhaps in the discussion the authors can mention what the patients identified as sarcopenic shold have done eg referral to strength and balances exercises etc.

Response= Added in line 213: ‘`The elderly included in the study were not submitted to specific training force or balance before the measurement of the present study.`’

2- The article has many english gramar mistakes and i would suggest that the authors get the manuscript checked and amended using english proof read specialists or experienced writers in english line 85 ‘`internment`’.

Response= Changed to: ‘`fifth day of hospitalization`’

3- is not an appropriate word for patients –should use eg. ‘`admission`’. Another example is line 27 where ‘`have`’ should be replaced by ‘`has`’.

Response= Changed to: ‘`affects mainly elderly and has negative consequences`’.