

Availability and use of dual energy X-ray absorptiometry (DXA) and bio-impedance analysis (BIA) for the evaluation of sarcopenia by Belgian and Latin American geriatricians

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Received: 22 November 2013 / Accepted: 4 December 2013
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Dear Editor,

Sarcopenia is the age-associated progressive loss of skeletal muscle mass and function, with higher risk of adverse outcomes [1, 2]. The cause of sarcopenia is still unclear, but the determinants are likely to be a combination of genetic and environmental factors [2–4]. Computed tomography and magnetic resonance imaging are considered the gold standard to estimate muscle mass. However, their high cost and limited availability preclude their routine use in clinical settings [5, 6]. Dual energy X-ray absorptiometry (DXA) and bio-impedance analysis (BIA) are alternative methods for research and clinical use to measure skeletal muscle mass [7]. In the last years, BIA and DXA have been used frequently in the field of research, but it is not known to what extent the recommendations for screening and diagnosis are followed nor to what

extent the suggested techniques are available in clinical practice [8]. Therefore, the aim of this study was to evaluate the availability and use of these techniques in clinical practice of Belgian and Latin American geriatricians.

Geriatricians were asked four questions by a web-based survey system in order to determine availability and use of both techniques. The questions were: “Does your hospital have a BIA system?” and “Does your hospital have a DXA scanner for measuring muscle mass?” If one or both of the questions were affirmative, it was asked whether they had used the respective technique during the last month.

As shown in Fig. 1 in the group of Latin Americans, 170 geriatricians were contacted of whom 94 (55.0 %) responded (Mexico, Brazil, and Costa Rica responded most frequent). In Belgium, 133 geriatricians were contacted and 50 (37.6 %) responded. The Latin American geriatricians had greater availability of both techniques (BIA and DXA) than their Belgian counterparts (22 vs 35 and 35 vs 30 %, respectively). In Latin American, BIA was more available than DXA (35 vs 30 %). In Belgium, BIA was less available than DXA (22 vs 34 %). The overall use of these techniques for measuring muscle mass was 10.0 % for DXA and 4.0 % for BIA among Belgian geriatricians. In Latin America, the reported use of both techniques was higher than in Belgium, specifically for DXA (12 vs 10 %; $p < 0.0001$). For BIA, the difference was less pronounced (17 vs 4 %; $p = 0.18$). Centers that had DXA were more likely to also have BIA available ($p < 0.001$); this was true in Belgium as well as in Latin America (see Table 1).

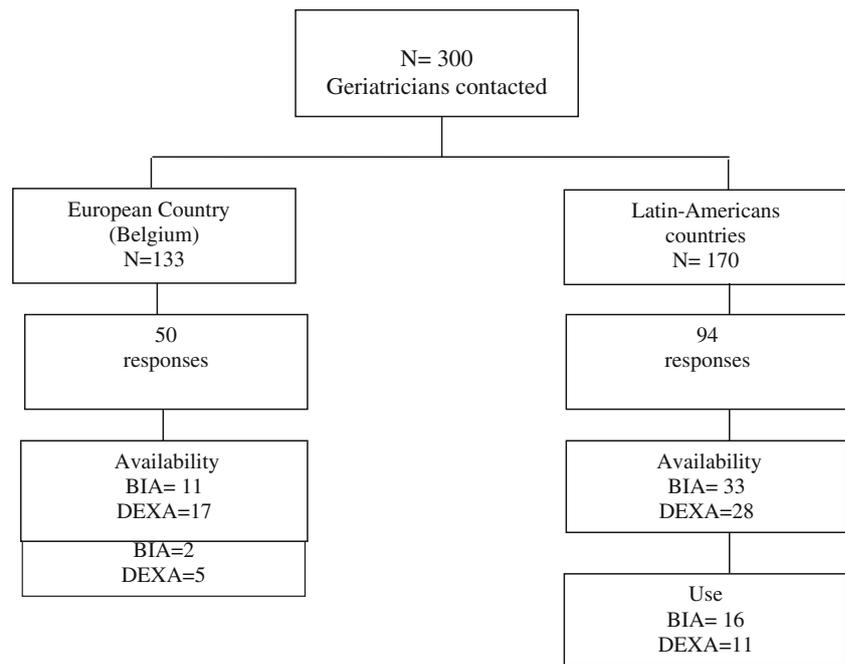
Availability of the techniques recommended for the measurement of muscle mass is not very broad. In Belgium,

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Fig. 1 Flowchart of the study

excluding university hospitals, general hospitals use only 28 % for DXA and even less for BIA (10 %). The overall availability in Latin America is comparable with the situation in Belgium with a reversed preponderance of BIA over DXA availability. Regardless from the availability, the actual use of these studies was lower for DXA with only about 10 % in both regions. In Belgium, the use of BIA in the screening for sarcopenia was negligible. Nevertheless, interpretation should be careful. Sarcopenia remains still a relatively new concept, and it can be expected that in the years to come, the knowledge of this condition will improve along with the detection of this condition. In addition, search for inexpensive and readily available detection tools should continue in fields such as anthropometry (calf circumference). Easy and available clinical indicators could provide valuable information on muscle-related disability and physical function and have a preponderant role in screening, leaving BIA and DXA for intervention decisions and follow-up.

Table 1 Comparison of availability and use of DXA/BIA between Belgium and Latin American countries

| | Belgium (N=50) | Latin American countries (N=94) | <i>p</i> values |
|------------------------|-------------------|------------------------------------|-----------------|
| Availability of DXA, % | 34 | 30 | <0.0001 |
| Use of DXA, % | 10 | 12 | <0.0001 |
| Availability of BIA, % | 22 | 35 | 0.020 |
| Use of BIA, % | 4 | 17 | 0.18 |

DXA dual energy X-ray absorptiometry, BIA bio-impedance analysis

Acknowledgments The authors wish to thank Dr. Ruben Fossion for his kind translation of the questions to Spanish. The authors certify that they comply with the ethical guidelines for authorship and publishing of the *Journal of Cachexia, Sarcopenia and Muscle* (von Haehling S, Morley JE, Coats AJS, Anker SD. Ethical guidelines for authorship and publishing in the *Journal of Cachexia, Sarcopenia and Muscle*. J Cachexia Sarcopenia Muscle. 2010;1:7–8.).

Conflict of interest E. Treviño-Aguirre, T. López-Teros, L. Gutiérrez-Robledo, M. Vandewoude, and M. Pérez-Zepeda declare that they have no conflict of interest.

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