50 - USE OF INDICATORS ANTHROPOMETRIC REFERENCE IN ELDERLY IN ASSESSMENT OF LEVELS OF HEALTH

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1 INTRODUCTION

The measurement of the degree of health in the elderly can no longer be measured by the presence or absence of disease as recommended by the World Health Organization (WHO), the preservation of functional capacity and control should be used, taking into account risk factors and indicators health that can build health indices confident that measures are guided by multidimensional, incorporating in a single figure or indicators associated with different aspects. And mainly reflecting the true characteristics of the health and social and economic situation which is that population.

Collectively the studies indicate that anthropometry is universally considered, taking into account its applicability, the cheapest and noninvasive method available to assess the proportions, size and composition of the human body (BOTELHO et al., 2010). Describing the performance, health and survival. For these reasons, it is used to select individuals and populations, where anthropometric values are compared against a set of benchmarks that are used as a standard, which includes the idea of a norm or desirable target, a level that should be fulfilled. But the same surveys underline the existence of some general issues that need to be considered when reference values are used as default.

In a study (DE ONIS; HABICHT, 1996) the World Health Organization (WHO) reviewed the use of anthropometry at different ages to assess the health, nutrition and social welfare. Including identification data reference to the anthropometric indicators, providing guidance on how such data should be used. It was observed that there were few demographics for the elderly, especially for those older than 80 years. The article also identified that after review of available reference values and recognizing the limitations and numerous shortcomings in the use and interpretation of anthropometric variables in elderly, results do not recommend the use of universal reference data, but the construction of data describe the local levels and patterns specific to each population.

The objective of this study was to conduct a systematic review of the literature on the application of anthropometric indicators as a reference in evaluating the health of elderly populations.

2 ANTHROPOMETRY IN THE ELDERLY

Anthropometry has been used by practitioners and researchers, through the possible use of skinfold thickness and body girth, especially the simplicity, low operating cost, and reliability, applicability and validity of the measures. It can be defined as a non-invasive technique used to measure the size, proportions and composition of the human body (JR SILVA, 2006).

Manteiro is Fernandes Filho (2004) in a review article on methods of body composition analysis, credit the wide acceptance of the doubly indirect methods on the part of health professionals, the ease in obtaining the data and the lower cost of equipment, and conceptualize anthropometry as the science that studies and evaluates measures of size, weight and proportions of the human body. Citing measurements of weight and height, bone diameters and lengths, thicknesses of skinfolds (DOC) and circumferences as anthropometric indicators. And the body mass index (BMI) or Quetelet, the conicity index (CI) and the index of waist and hip (IRCQ) as health indices for assessing the risk of developing diseases. Concluding that each method has advantages and disadvantages that must be taken into account the population being evaluated and the intended goals.

Surveys to collect anthropometric data in elderly populations, associated with monitoring the functional health status of this population segment, showed the need for special attention to the selection criteria in the choice of population-based samples, taking into account the heterogeneity of elderly and the high prevalence of chronic conditions that can affect health status.

Studies (NAVARRO, MARCHINI, 2000; MENEZES, MARUCCI, 2005) that examined the variables in body fat and muscle mass in the elderly. Where they found were: triceps skinfold, arm fat area, arm circumference, arm muscle circumference, arm muscle area and arm muscle area corrected. Demonstrated that the standard anthropometric and body composition of the elderly follows the trend of other studies, where the average value of the variables studied are higher in older women than in males. Collectively, these studies indicate that the information collected is used as a benchmark for this specific population of elderly study area as recommended by WHO, choices and gender stratified sample (DE ONIS; HABICHT, 1996).

Still, in an attempt to draw a profile and provide information anthropometric and body composition of elderly living in geriatric institutions, study (SANTOS; SILVA, 2010) were evaluated in 305 elderly of both sexes, living in six geriatric institutions in Brazil and, besides using anthropometric mass index (BMI) calculated from equation that uses weight and height, concluded that age proved to be an important factor in decreasing the values of some variables, which implies the need for benchmarks specific to the elderly, and the trend of decreasing anthropometric follows the same from other studies with the elderly population, however the values differ.

In surveys that supported the database that article using the body mass index, limitations and applications in the assessment of nutritional status of the elderly while health index requires further reflection. There is a consensus among researchers that an increase in body weight in older individuals is advisable, changing the cutoff points used until then. Currently recommended cutoff points to define underweight (body mass index 27 kg / m²) that differ from those recommended for adults and frequently used for seniors. This proposal takes into account changes in body composition that occur with aging. Although not representing the body composition of individuals, the ease of obtaining data on weight and height, as well as its good correlation with morbidity and mortality justified the use of body mass index in epidemiological studies and in clinical use since it specific cutoff points for age, especially if associated with other anthropometric measurements that express the composition and body fat distribution.

Studies that examined the elderly, the use of BMI and the difficulties presented due to the decrease in stature, fat accumulation, reduced lean body mass and decrease the amount of water in the body (BEDOGNI et al., 2001; GALLAGHER, et al., 1996), concluded that the use of BMI in the elderly is not indicated by the frequent presence of diseases and the absence of specific cutoff points for this age group. So much has been discussed the use of BMI and normal limits adopted for analysis of

overweight and obesity in the elderly.

A significant relationship was found in a study that aimed to compare BMI with measures of adiposity in the elderly, and considered the centralization of body fat as a better indication of complications in the elderly. Reported that the changes related to the accumulation of visceral or subcutaneous fat associated with aging can be affected both by the initial amount of adipose tissue as the increase in body mass (SANTOS; SICHIERIB, 2005).

In the study, Zamboni et al., (1997) analyzing the distribution of fat in women of different age groups using computed tomography showed that aging leads to internalization and redistribution of abdominal fat, particularly among women. Featuring progressive reduction of arm muscle area with age and increased centralization of fat in this population. The progressive increase in body fat, reduced lean body mass, as well as changes in the amount and proportion of mineral water between intracellular and extracellular follow a typical pattern, ie greater increase in fat deposits central in relation to the peripheral following the android model.

Researching the comparison of body fat in elderly women according to: anthropometry, bioelectrical impedance (BIA) and dual beam radioabsorciometria (DEXA), Salmi (2003) concluded that although the methods and / or equations used in this study are validated to estimate body fat elderly women, no problem as the best method. Despite all the equations and/or methods provided different estimates of body fat, not saying what the best due to the inconsistency of data to choose the best equation BIA and skinfolds and limitations of DEXA for not allowing their choice as standard reference.

The bioelectric impedance analysis is the method of assessing body composition, which is quick and easy to apply, allowing the determination of fat-free mass, body cell mass and total body water, intracellular and extra. Several techniques are described in the literature, with different methods of impedance analysis. It is often used in clinical practice in various situations especially in healthy individuals.

The results obtained in research (RECH, et al., 2010) put the needs analysis should be adjusted according to race, ethnicity, age, gender and changes in fat-free mass and body fat. In the case of the elderly population, there are few studies about its applicability in older women, despite being an easy to apply method to assess body composition, and demand equations adjusted for the target population.

The origin of bioelectrical impedance analysis is justified by the electrical properties of tissues that are related to their content of water and electrolytes, components modified with aging. Although bioelectrical impedance be a promising method in the assessment of body composition, it is necessary studies to obtain more accurate and validated and more comparisons with other anthropometric indicators (RECH, et al., 2010).

Studying the impact of aging on anthropometric, metabolic and neuromotor fitness, Matsud, Matsud and Barros Neto (2000) showed the correlation between anthropometric indicators and fat distribution in older women, where the combination of BMI and waist circumference (WC), the prevalence was 90% of the women classified with a health risk. Concluding that BMI and WC in older women can be used in the diagnosis of excess body fat, since both show good correlation in the analysis of the percentage of total fat and trunk fat percentage. BMI and WC together, and conicity proved as the best anthropometric indices for the diagnosis of health risk by the percentage of total fat above recommended, but none in isolation can effectively determine such risk related to increased body fat in elderly women.

Studies have demonstrated the need to monitor changes in the aging recurring body components, so that the strategies for health promotion are appropriate to the population under study. And the development of anthropometric indicators valid for the estimation of body composition in the elderly population, which are applicable in surveys of population data and to monitor the changes resulting from advancing age (PERISSINOTO, 2002).

The relationship of physical activity with the use of anthropometric indicators has also been studied in order to compare changes and changes in body composition of the elderly, and especially its influence on the construction of health indices specific to this population. In article Gubiani et al., (2001) studied the effects of the practice of gymnastics in anthropometric indicators of a sample of 62 women aged between 60 and 80 years, divided into two groups underwent pre-and post-tests, in which were Anthropometric measurements and body composition.

The experimental group performed two weekly sessions of aerobics, lasting 45 minutes / session, for 32 weeks. After analyzing the results after intervention, concluded that the experimental group achieved significant reductions in the variables of body mass and waist circumference, hip, thigh and calf. Proving to be effective in reducing body fat sample. Still researching the relationship physical activity and anthropometric indicators Mota et al. (2006) compared the anthropometric and DEXA to assess body composition before and after an exercise program on a cycle ergometer three times per week (60 minutes) every other day for six months with prescribed intensity on the heart rate of the ventilatory threshold 1 (LV- 1). Besides the assessment of body composition, the volunteers underwent indirect calorimetry, blood analysis and cardiopulmonary exercise test. After the study period, found a significant decrease in thyroid hormones and changes in basal metabolism in both groups, but no changes in body composition. However, the experimental group showed a significant increase in peak oxygen consumption and workload related to the intensity of Ventilatory Threshold - 1 (VL-1).

The data suggest that a program of aerobic exercise intensity on the LV-1 is not enough to alter the basal metabolism and body composition in the elderly, although to cardiovascular benefits. Also demonstrating the use of anthropometric indicators as a screening tool for health risk factors as researched by Pitanga and Lessa (2005), on the high coronary risk (HCR) in adults in Salvador Bahia. Where compared different anthropometric indicators of obesity to identify which one discriminates the high coronary risk in a sample of 968 adults 30-74 years of age, and to verify the sensitivity and specificity to identify and compare the best cutoff point between the various indicators obesity to discriminate HCR.

The study researched the conicity index (C), body mass index (BMI), waist-hip ratio (WHR) and waist circumference (WC), concluding that the C index and WHR are the best indicators of obesity to discriminate HCR. The CC has intermediate discriminatory power and BMI was the index of obesity less suitable to discriminate HCR. Suggesting the best indicators of abdominal obesity to discriminate HCR that indicators of general obesity. Confirming the findings of other studies on the need for specificity in the use of these indicators as a tool for identification of risk factors.

Another study (LIN; LEE; CHEN, 2002) as the same objective of evaluating the risk for cardiovascular disease, and this article in particular in women with rheumatic diseases, the risk for cardiovascular disease assessed from the waist-hip ratio (WHR) and waist circumference alone (CC). We evaluated 43 women, including 11 adults and 32 elderly.

The cardiovascular risk was observed in 48.84% of women, according to a review by WHR. The evaluation showed that the isolated CC 83.72% of women were at risk. It was concluded that the prevalence of cardiovascular risk in this population is worrying, not only because of the associated complications, but the further increase in the quality of life for these patients and that indicators of obesity using the abdominal region had higher precision.

The relationship of anthropometric indicators as risk markers for metabolic abnormalities are also described by the literature review, as discussed in item (SANTOS; Sichieri, 2005) aimed to assess which anthropometric indicator had a greater

relationship with metabolic abnormalities in a sample comprised 273 adults and seniors over the age of 40 years as the Body Mass Index (BMI), waist circumference (WC),% body fat (BF) and% muscle mass (% MM). Sample was collected to measure fasting blood total cholesterol and fractions, glucose and triacylglycerol. When evaluating the metabolic abnormalities as dependent variables and BMI, CC, GT, MM% as independent variables, observed that the CC was the index that was most associated with all metabolic abnormalities followed by MM%. It is concluded that the metabolic abnormalities associated with obesity commonly present as main risk marker anthropometric DC and not the IMC. Given the same amount of CC, overweight and obese adolescents had health risks comparable to normal individuals.

3 CONCLUSION

Although the relationship between health indices and various chronic degenerative disorders has been discussed in the literature, there are few studies that have actually tried to establish the relationship of body composition with anthropometric indicators in the elderly. There is a need to understand this relationship in order to predict the risk factors associated so early in this specific population, characterizing the need to develop new equations respecting anthropometric factors such as age, sex, comorbidities, and population characteristics.

It can be concluded that the combined use of anthropometric indicators such as excellent indicator of health risk, mainly because it is easy to apply and have low cost, but not in isolation, but rather, by conducting further studies relating to development and validation of the equations used. Suggesting larger studies to verify these associations and to identify the prevalence of risk factors. Identifying the importance of relating the anthropometric indicators with other indicators of health risk as biochemical markers in the construction of health indices precise on your goals and incorporating into a single figure, different aspects associated printing confidence in diagnosis and prognosis framework health outlined.

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USE OF INDICATORS ANTHROPOMETRIC REFERENCE IN ELDERLY IN ASSESSMENT OF LEVELS OF HEALTH
ABSTRACT

A significant number of studies have been carried out considering the use of anthropometry in assessing the health status of the elderly population. Where recent developments show the importance of anthropometry throughout the life cycle, not just for individual assessments, but also to reflect the state of health and social and economic situation of the population. This study aimed to perform a systematic review on the application of anthropometric indicators as a reference in evaluating the health of elderly populations. The search was performed in the databases Pubmed, Scielo and Bireme. The selection was made by inclusion criteria, which are: original articles published in English or Portuguese. And the descriptors used in the identification of the articles were: "anthropometric indicators and the elderly." Recent studies indicate that the elderly represent the fastest-growing populations in the world, with the particularity of being a heterogeneous group, prompting the need for further research where the concept functional or biological age should gain more attention in the elderly. Within a single population, individual variation is enhanced because of varying rates of aging from person to person and the physiological system. The use of reference values of anthropometric indicators needs a little revision due to existence of normative data for older people in developing countries like Brazil, recognizing the limitations and the numerous gaps when using the interpretation of anthropometric data in elderly generally, without taking into account the existing pathophysiological changes in the aging process.

KEYWORDS: Anthropometry. Seniors. Health indicators.

UTILISATION DE RÉFÉRENCE INDICATEURS ANTHROPOMETRIQUES CHEZ LES PERSONNES AGEES DANS L'ÉVALUATION DES NIVEAUX DE SANTE
RÉSUMÉ

Un nombre important d'études ont été réalisées en considérant l'utilisation de l'anthropométrie pour évaluer l'état de santé de la population âgée. Lorsque les développements récents montrent l'importance de l'anthropométrie tout au long du cycle de vie, pas seulement pour les évaluations individuelles, mais aussi pour refléter l'état de santé et la situation sociale et économique de la population. Cette étude visait à effectuer une revue systématique sur l'application des indicateurs anthropométriques comme une référence dans l'évaluation de la santé des populations âgées. La recherche a été effectuée dans PubMed bases de données, SciELO et Bireme. La sélection a été faite selon les critères d'inclusion, qui sont: articles originaux publiés en anglais ou en portugais. Et les descripteurs utilisés dans l'identification des articles étaient: «les indicateurs anthropométriques et les personnes âgées." Des études récentes indiquent que les personnes âgées représentent les populations les plus dynamiques dans le monde, avec la particularité d'être un groupe hétérogène, indiquant la nécessité de poursuivre les recherches où l'âge notion fonctionnelle ou biologique devrait gagner plus d'attention chez les personnes âgées. Au sein d'une même population, la variation individuelle est renforcée en raison des différents taux de vieillissement de personne à personne et le système physiologique. L'utilisation de valeurs de référence des indicateurs anthropométriques a besoin d'un peu de révision en raison de l'existence de données normatives pour les personnes âgées dans les pays en développement comme le Brésil, tout en reconnaissant les limites et les lacunes de nombreux cas d'utilisation de l'interprétation des données anthropométriques chez les personnes âgées en général, sans tenir compte des modifications physiopathologiques existants dans le processus de vieillissement.

MOTS-CLÉS: Anthropométrie. Personnes âgées. Indicateurs de santé.

USO DE INDICADORES ANTROPOMÉTRICOS DE REFERENCIA EN ANCIANOS EN LA EVALUACIÓN DE LOS NIVELES DE SALUD
RESUMEN

Un gran número de estudios se han llevado a cabo teniendo en cuenta el uso de la antropometría para evaluar el estado de salud de la población anciana. Cuando los acontecimientos recientes demuestran la importancia de la antropometría durante todo el ciclo de vida, no sólo para las evaluaciones individuales, pero también para reflejar el estado de salud y la situación social y económica de la población. Este estudio tuvo como objetivo realizar una revisión sistemática sobre la aplicación de los indicadores antropométricos como referencia en la evaluación de la salud de la población de edad avanzada. La búsqueda se realizó en las bases de datos Pubmed, Scielo y Bireme. La selección se realizó según los criterios de inclusión, que son: artículos originales publicados en Inglés o Portugués. Y los descriptores utilizados en la identificación de los artículos fueron: "Los indicadores antropométricos y los ancianos." Estudios recientes indican que los ancianos representan las poblaciones de más rápido crecimiento en el mundo, con la particularidad de ser un grupo heterogéneo, lo que provocó la necesidad de seguir investigando en donde la edad concepto funcional o biológica debe tener más atención en las personas mayores. Dentro de una sola población, la variación individual se mejora debido a las diferentes tasas de envejecimiento de persona a persona y el sistema fisiológico. El uso de valores de referencia de los indicadores antropométricos necesita una revisión debido a la existencia de datos normativos para las personas mayores en los países en desarrollo como Brasil, reconociendo las limitaciones y las numerosas lagunas cuando se utiliza la interpretación de los datos antropométricos en los ancianos en general, sin tener en cuenta los cambios fisiopatológicos existentes en el proceso de envejecimiento.

PALABRAS CLAVE: Antropometría. Ancianos. Indicadores de salud.

UTILIZAÇÃO DE INDICADORES ANTROPOMÉTRICOS DE REFERÊNCIA EM IDOSOS NA AVALIAÇÃO DOS NÍVEIS DE SAÚDE
RESUMO

Um número significante de estudos tem sido realizado, considerando a utilização da antropometria na avaliação das condições de saúde da população idosa. Onde avanços recentes mostram a importância da antropometria ao longo do ciclo de vida, não apenas para as avaliações individuais, mas também para refletir o estado de saúde e situação social e econômica das populações. O presente estudo objetivou realizar uma revisão sistemática sobre a aplicação de indicadores antropométricos como referência na avaliação de saúde de populações idosas. A busca dos trabalhos foi realizada nas bases de dados Pubmed, Bireme e Scielo. A seleção foi realizada por critérios de inclusão, sendo estes: artigos originais publicados em inglês ou português. E os descritores utilizados na identificação dos artigos foram: “indicadores antropométricos e idosos”. Estudos recentes indicam que os idosos representam o segmento de mais rápido crescimento das populações em todo o mundo, com a particularidade de ser um grupo heterogêneo, levando a necessidade de maiores pesquisas onde o conceito funcional ou idade biológica deve ganhar mais atenção nas pessoas idosas. Dentro de uma única população, a variação individual é aumentada por causa de taxas variáveis de envelhecimento de pessoa para pessoa e do sistema fisiológico. A utilização de valores de referências dos indicadores antropométricos necessita de uma revisão devido a pouca existência de dados normativos para pessoas idosas em países em desenvolvimento como o Brasil, reconhecendo assim as limitações e as inúmeras lacunas quando se utiliza a interpretação de dados antropométricos em idosos de forma generalizada, sem levar em consideração as mudanças fisiopatológicas existentes no processo do envelhecimento.

PALAVRAS-CHAVES: Antropometria. Idosos. Indicadores de saúde.