


Nutritional assessment for the elderly: modern challenges



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Abstract

The majority of the public health problems in Brazil are related to nutritional status. Population aging is a reality and presents great challenges, especially for the health sector. Since nutrition plays a role in modulating the aging process, in the etiology of diseases and in the functional declines associated with aging, evaluation and nutritional monitoring of the elderly are necessary for proper care and planning of health promotion strategies. In this context, the present study aimed to reflect on the monitoring methods and proposed indicators of nutritional assessment of the elderly. It presents a summary of Ministry of Health recommendations which guide the care and nutritional assessment provided to the elderly by the National Health Service (SUS). The recommended procedures for the diagnosis and monitoring of the nutritional status of the elderly, though suggesting an increasing importance of monitoring food consumption indicators, end up emphasizing the use of anthropometric measures, especially the body mass index. The incorporation of other indicators in monitoring the elderly demonstrates progress in the recognition of the fundamental issues that need to be incorporated into professional practice and routine primary care. However, these indicators must be used by the professional as part of a critical, team-based approach, it being understood that no single indicator will meet the needs of all the elements of nutritional assessment, especially when it comes to the elderly.

Key words: Elderly;
Nutritional Assessment;
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INTRODUCTION

Currently, most of the major public health problems in Brazil are related to nutritional status. There is a growing demand for healthcare linked to the double burden of diseases: non-transmittable diseases such as obesity, diabetes and coronary diseases; hunger/malnutrition and anemia.¹ This disparate and complex situation has been correlated with the aging population.²

Population aging is currently an issue in all developed countries, generating great challenges for society, particularly the health sector.² In Brazil, this process is accelerated and unequal in the different regions of the country.³ Thus, the development of intersectoral care projects and the stimulation of the social inclusion of the elderly are essential to promote an active elderly population.⁴

Integral healthcare for the elderly is one of the main priorities of the Brazilian National Health Service, known as the *Sistema Único de Saúde* (SUS). It is also significant in the National Health Policy for the Elderly.⁴ In this context, assessments and monitoring plans related to the nourishment and nutritional conditions of the elderly are essential. Nutritional assessments for this age group should be reflective, critical and humanized. It is important to consider a complex network of direct and indirect determining factors that are inherent to the aging process, such as: social isolation; diseases; disabilities; physiological and biological abnormalities.⁵ In addition to these specificities, the methods of nutritional assessment and the context of modern life demand the adoption of a wider perspective.

Given the important role that nutrition plays in the modulation of the aging process, the etiology of age-related diseases, functional decline and the appearance of disabilities,⁵ nutritional assessments and monitoring plans for the elderly are essential to ensure adequate healthcare and the planning of health promotion projects.

Nutritional assessments involve the interpretation of socioeconomic, dietary, biochemical, anthropometric and clinical data. This data identifies individuals at risk, while facilitating a collective diagnosis, nutritional vigilance and the establishment and assessment of policies and programs.⁶

Brazil still faces significant challenges in relation to monitoring the nutritional status of its elderly population. Questions related to epidemiological profiles, the aging process, changing lifestyles, the worries of modern life (including the demand for a young and beautiful body) and symbolic values associated with food exemplify the complexity of the issue. Adjusting indicators of nutritional status to satisfy different healthcare modalities also requires attention, particularly given the fact that the central focus of these protocols is to promote the identification of risk and early intervention, in order to reduce the impact of a loss of functionality.

Therefore, the aim of the present study was to reflect on the methods and indicators that are currently proposed for nutritional assessments and monitoring plans for the elderly population. This research involved a synthesis of what has been proposed, addressing several of these proposals, as well as their capabilities and limitations. The present study used the current recommendations of the Ministry of Health, which provide advice on the healthcare and nutritional vigilance of elderly individuals within the SUS,⁷⁻¹⁰ as well as scientific references in this area.

NUTRITIONAL ASSESSMENT OF THE ELDERLY IN THE SUS

In 2006, the Ministry of Health launched the *Caderneta de Saúde da Pessoa Idosa* (“Health Handbook for the Elderly”) as a tool to monitor elderly individuals in the basic healthcare system.⁸ The primary function of this booklet was to enable periodical monitoring of certain

conditions among the elderly population, as well as to track other aspects that can affect their health and wellbeing. In terms of nutritional data, this version only contains a record of the weight, blood pressure and glycaemia levels of the individual.

The publication of the *Caderno de Atenção Básica nº.19 – Envelhecimento e Saúde da Pessoa Idosa* (“Primary Care Handbook No.19 - Aging and Health of the Elderly”) reinforced the importance of using this booklet and provided guidance for professionals related to assessment and integral healthcare for the elderly.⁹ This publication recommended the weekly recording of anthropometric measurements in the booklet and/or medical records, as well as the use of the Body Mass Index (BMI) as an indicator for nutritional diagnosis, with differentiated cut-off points.

Nutritional anthropometry has been widely used in clinical practice and epidemiology. This method is the most commonly used assessment of nutritional status due to its practicality, low cost, portable equipment and early identification

of nutritional abnormalities.⁶ Anthropometry has been prioritized in nutritional vigilance projects, although it is more closely associated with the growth of the child in the health monitoring network.

Among the adult population, the main aim of anthropometry is to assess body composition. However, difficulties arise when this method is applied to elderly individuals. Several physical and body composition abnormalities associated with the aging process affect the collection and analysis of anthropometric measurements, including: reductions in height; postural or mobility problems; the presence of edema or dehydration; reductions in muscle mass and bone density; the increase and redistribution of body fat; a loss of skin elasticity and compressibility.^{11,12}

Alterations are part of the physiological process of human aging. However, at a given time, and in accordance with the medical history of the individual, these alterations could be correlated with significant deteriorations in the health of the individual,^{11,12} as shown in Figure 1.

Figure 1. Alterations in body composition and diseases correlated with aging.

Alterations	Diseases
Reduction of muscle mass	Sarcopenia Reduction of functional capacity
Reduction of body water	Dehydration
Reduction of bone mineral mass	Osteoporosis
Increase and redistribution of body fat	Obesity, diabetes, dyslipidemia, cardiovascular diseases

Source: references.¹¹⁻¹²

The trend of increasing body weight with advancing age seems to peak at 65 years in men and at 75 years in women. After this point, weight tends to decrease due to a reduction in body water and muscle mass, which is greater among men.¹³

In this group, it is important to monitor the speed of weight loss, which is considered an indicator of nutritional risk, when correlated with a recent or involuntary change in weight.^{12,14} In clinical practice, a formula based on the percentage of weight loss over the total weight of

the individual, in relation to time, is usually used to classify the severity of the situation.¹²

Aging is correlated with a reduction in height due to the curvature of the spine, which in turn is caused by the flattening of the intervertebral discs and other alterations, including: osteoporosis; dorsal kyphosis; scoliosis; the loss of muscle tone; arching of the lower limbs and/or the flattening of the plantar arch.¹¹ There is currently no consensus concerning the reduction of height value with age, although it would seem to be 0.5 to 2 cm/decade after 60 years for men and women, which is accentuated at more advanced ages.¹³

In accentuated postural situations that hinder height measurements, or when it is impossible to record (bed-ridden individuals and wheelchair users) the height of an individual, the “knee height” measurement is recommended as a method of estimating this value.¹¹ If the individual cannot be weighed using scales, it is possible to estimate their body mass through other body measurements (calf perimeters, subcutaneous folds, knee height).^{11,12,15}

The BMI has been indicated as the best predictor of morbimortality¹³ and exhibits a strong correlation with body mass and body fat in individuals. According to the World Health Organization (WHO)¹⁶ and the Ministry of Health document entitled *Protocolos do Sistema de Vigilância Alimentar e Nutricional (SISVAN)*,⁷ (“Protocols of the Food and Nutrition Surveillance System”) BMI is recommended for the classification of the nutritional status of adults and the elderly. This protocol defines the following anthropometric parameters as a health risk during the screening and monitoring of elderly individuals: BMI ≥ 30 kg and unintentional weight loss ≥ 4.5 kg or 5% of body weight in the last year.

The SISVAN protocol recommends the use of the following specific BMI cut-off points for the elderly⁷: <22 kg/m² – underweight; ≥ 22 and <27 kg/m² – eutrophic; ≥ 27 kg/m² – overweight. These differ from the cut-off points used for adults, given the physical modifications and body composition alterations that occur during the aging process. However, the definition of the most adequate classification is controversial and different cut-off points have been cited in literature, as can be seen in Figure 2.

Figure 2. Nutritional classification of the elderly, based on BMI value, in accordance with different international references (1991 to 2005).

	BMI cut-off points (kg/m ²)			
	Underweight	Adequate	Excess of weight or overweight	Obese
CDC ¹⁷ (1991)			>27,3 (women) >27.8 (men)	
Lipchitz ¹⁴ (1994)	<22	≥ 22 and ≤ 27	>27	
WHO ¹⁶ (1998)	<18.5	≥ 18.5 and <25	≥ 25 and <30	≥ 30
OPAS ¹⁸ (2002)	≤ 23	>23 and <28	≥ 28 and <30	≥ 30
Harris and Haboubi ¹⁹ (2005)	<24	≥ 24 and <27	≥ 27	

Although BMI is easy to use in the routine of a health service and is an adequate health predictor, analyses of BMI results are limited for the elderly:²⁰

a) *Assessment of true excess of body fat* – the index does not differentiate fat mass from lean mass (muscles) and other tissues (such as bone). There are significant alterations in body composition after a person reaches 60 years and these occur at different rates as age advances;

b) *decrease in height* – BMI changes do not necessarily reflect a change in body mass, as is the case among adults, but may reflect a change in height;

c) *assessment of fat distribution* – a failure to estimate the real increase (or decrease) in body fat, especially central fat, among older individuals, may compromise the assessment of risk of many diseases.

Therefore, assessment of BMI should be complemented by monitoring other anthropometric measurements and data obtained using other methods.

Beginning in 2012, the *Caderneta de Saúde da Pessoa Idosa* has been submitted to updates and revision in order to train, expand, and equip basic healthcare teams for elderly individuals, given the need to improve the effectiveness of this strategy in the current context of the SUS.

The proposed new version of the *Caderneta de Saúde da Pessoa Idosa* underwent public consultation at the beginning of 2014 and is currently ready for printing and publication.¹⁰ This new version contains significant changes in relation to nutritional assessment, including the possibility of using tables and/or charts to record the following anthropometric indices: weight; height; BMI, with a nutritional classification for the elderly, as recommended by the SISVAN protocol; unintentional weight loss (4.5 kg in a year, 6 kg in six months and 3 kg in a month); the perimeter of the calf muscle, with cut-off points

of 34 and 31 cm, to assess the reduction of muscle mass and risk of sarcopenia. If implemented, this new booklet will represent an advance in the nutritional monitoring of the elderly population in primary healthcare.

As previously mentioned, weight loss is an important indicator in clinical practice. However, it can disguise significant changes in the nutritional status of the elderly. According to the WHO,¹³ the perimeter of the calf is indicated as an effective assessment for the elderly as it is considered more sensitive to alterations in muscle mass related to age, physical activity and mobility.

The booklet also addresses important indicators that deal with assessments of nutritional status, such as the monitoring of clinical and biochemical parameters, particularly glycaemia and blood pressure.¹⁰ The SISVAN protocol proposed the biochemical parameters of glycaemia (≥ 126 mg/dl); blood pressure (systolic and diastolic ≥ 120 mmHg and 80 mmHg, respectively); cholesterol (Low Density Lipoproteins – LDL ≥ 160 mg/dl) and other alterations in the lipidogram.⁷ All of these parameters should be assessed, although specific fields are only available for glycaemia and blood pressure.

Other points addressed by the booklet are essential to our understanding of the socio-economic, familiar and clinical-functional context of the elderly population.¹⁰ The following data is especially relevant when ascertaining their nourishment and nutritional situation: socio-demographic (education, marital status, origin, race/color, religion); socio-familiar (home life, social life, work situation and sources of income); health conditions; use of drugs (phytotherapeutic, supplements or vitamins); the Clinical and Functional Vulnerability Index for Primary Care (*IVCF-AB*), which uses age indicators, self-perceptions of health, activities of daily living, cognition and mood, mobility, communication and multiple comorbidities; lifestyle habits (smoking, drinking, physical activity and leisure); and an assessment by an oral health team.

Even recognizing the significance of the booklet, it is important to stress that a nutritional assessment for the elderly should encompass a range of factors in an integrated and multi-disciplinary manner, at different levels.

Concerning the issue of nourishment, both the *Caderno de Atenção Básica* and the SISVAN protocol highlight the need for professionals to address the following questions:^{7,9}

- a loss of independence, including financial independence, in relation to purchasing food;
- a loss of capacity/autonomy to prepare meals and feed oneself;
- a loss of appetite and decreased sensitivity to thirst and the temperature of meals;
- a partial or complete loss of vision, hindering the selection, preparation and consumption of food;
- a loss or reduction in olfactory ability, which affects the appetite;
- other factors that restrict certain types of food, such as diets, intentional weight loss, diabetes, hypertension, hypercholesterolemia;
- difficulty related to chewing as a result of an oral injury, the use of dental prosthetics or digestive problems.

At an individual level, the assessment of food consumption (food groups, types of meals, places and times of meals, types of preparation used) is most often conducted through the food frequency questionnaire, a food record or diary and 24-hour diet recall.^{6,21}

Given the impossibility of using more complete methods to analyze diet, indirect methods can be used to characterize consumption patterns. These include surveys that seek to identify dietary characteristics and/or eating behavior that are recognized as risk factors or protection factors for chronic diseases, as well

as aspects associated with greater longevity and quality of life. These items can be analyzed using isolated and/or combined questions and can be defined as indicators of food patterns.²² Examples include: the correlation between the consumption of fruit and vegetables and a favorable outcome;²³ and, conversely, the daily (or almost daily) consumption of sugary drinks, the frequent consumption of sources of saturated fats of animal origin and the abuse of alcoholic beverages, which were used as indicators of an unfavorable outcome.^{22,24}

The Telephone Survey Vigilance System for Risk Factors and Protection Factors of Non-transmittable Chronic Diseases (Vigitel) exemplifies the use of these indicators of nourishment patterns.²⁵ This monitoring system accompanies these conditions through continuous telephone interviews, using probabilistic samples of the adult populations of Brazilian state capitals. Several of these indicators have been incorporated into the consumption frequency assessment questionnaire proposed by the SISVAN protocol.⁷

When dealing with the elderly, the choice of food and drink consumption assessment methods needs to consider certain characteristics associated with the aging process, such as difficulties related to cognition, concentration, memory, vision or hearing. In this context, education, home life, access to food (food security or financial and operational autonomy in terms of the acquisition, transport and preparation of food) and the pleasure associated with food consumption also require attention.^{7,26}

It is important to stress that understanding nourishment practices goes beyond merely assessing consumption. Questions of a sociocultural nature, such as life history, preferences and aversions, culinary traditions, taboos and beliefs, the industrialization and marketing of processed foods (a more recent phenomenon), eating out, as well as the value given to functional foods, all represent new elements in this complex network. Analysis of this data strengthens the perception that nourishment and nutritional issues transcend biological needs and

represent a complex symbolic system of social, political, religious, ethical and esthetic factors.²⁷

Conversely, there exists a correlation with the body modifications caused by the aging process, which include changes in the quantity and distribution of adipose tissue and muscle mass. These can be analyzed quantitatively and qualitatively, using anthropometric methods and body image perceptions, respectively. The search for the perfect body and a sense of rejuvenation is associated with contemporary society and as such, the negation of body transformations associated with aging can contribute to a decline in wellbeing and a loss of identity. In this context, analysis of symbolic questions and body perceptions, which give a multidimensional sense of how the person feels about his or her own body, can be an important component of the personal identity of the elderly population of today.²⁸

The correlation between nutritional status and dissatisfaction with body image confirmed that individuals with a high BMI tend to be less satisfied with their body image.²⁸ This finding deserves greater analysis, as do the determinants and meanings of such dissatisfaction in the complex relationship that exists between the body, beauty, health and aging.

FINAL CONSIDERATIONS

Procedures related to the diagnosis and monitoring of the nutritional status of the

elderly are standardized in the *Sistema de Vigilância Alimentar e Nutricional*. Although these procedures indicate the importance of using food consumption indicators, they generally use anthropometric measurements, particularly body mass index. However, the new version of the *Caderneta de Saúde da Pessoa Idosa* can now be considered a useful measure, in that it incorporates other indicators to monitor a group that is not traditionally the target of such nutritional vigilance, despite placing some of the greatest demands on the health sector today. This demonstrates the progress that has been made in the fundamental recognition of issues that need to be incorporated into professional practice and routine primary care.

In order to do this in a critical manner, health professionals should be adequately trained and should operate as part of a team. They should also be aware that no single indicator will satisfy the needs of all of those involved in nutritional assessments, particularly when it comes to the elderly. In terms of individual healthcare, one must consider that it is a general, overall assessment of the elderly individual is not effective. Such persons should be examined individually, bearing in mind the heterogeneity of the aging process and the process of becoming ill in our unequal society. From a collective perspective, these parameters are important in the definition of policies and programs that promote healthcare.

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