Score for the Assessment of Body Image and Health Diagnosis Based on Anthropometric and Biochemical Measures in the Elderly

ORIGINAL

Anna Cláudia Freire de Araújo Patrício[1], Iana Virginia Bezerra Félix[2], Thays Domingos de Brito Rodrigues[2], Brenda Feitosa Lopes Rodrigues[2], Ana Rebeca Soares de Medeiros[2], Milenna Azevedo Minhaqui Ferreira[2], Antônio Herculano de Araújo Neto[2], Maria Amanda Pereira Leite[2], Richardson Augusto Rosendo da Silva[3]

1 Enfermeira. Doutoranda pelo Programa de Pós-Graduação em Enfermagem. Universidade Federal do Rio Grande do Norte/UFRN. João Pessoa/PB, Brasil.
2 Graduanda em enfermagem. Centro Universitário de João Pessoa/UNIPÊ. Grupo de Estudos e Pesquisa sobre Envelhecimento e Representações Sociais.
3 Enfermeiro. Professor Doutor, do Curso de Graduação e do Programa de Pós-Graduação em Enfermagem (Mestrado Acadêmico e Doutorado). Universidade Federal do Rio Grande do Norte/UFRN. Natal/RN, Brasil.

Contact information:

Milenna Azevedo Minhaqui Ferreira.

Address: Rodovia BR-230, KM 22, s/n. Água Fria, João Pessoa-PB, 58053-000. **Tel:** 83-35766736.

✉ milenna_minhaqui@hotmail.com

Abstract

Objective: Identify a score for the diagnostic assessment of health and body image based on anthropometric and biochemical measures in the elderly.

Method: Transversal research exploratory and quantitative approach, developed in the South of the city of João Pessoa-PB with 21 elderly practitioners of physical exercises in sport aerobics in the period of May to June 2015. It was used a sociodemographic questionnaire and the International Physical Activity questionnaire, IPAQ. The research was authorized by the ethics on Research Committee of the University Center of João Pessoa/PB, CAAE 38840214.7.0000.5176.

Results: The study subjects had an average age of 65.9 and standard deviation 6.92 years. It was observed in table 2 the importance of body fat Mass and waist hip as the most influential in lifestyle, according to the non-parametric test of McNemar suitable for dichotomous dependent data. In table 3 the importance of all variables with exception of Edema as the most influential in body image, according to the non-parametric test of McNemar

Conclusion: It is observed that the elderly present composition of body fat mass and relative CK high, according to the measure of proximity of Jaccard, thus most of the elderly are in opposition to a healthy lifestyle. It is essential for the understanding of the characteristics and the transformations that the individuals with the advancement of age

which reinforces the need for more effective actions in the control and/or prevention of health-related factors in the elderly.

Introduction

The quality of life is considered to be the perception of the individual as your position in life, in the context of culture and value system, in which he lives in relation to your goals, expectations, standards and concerns [1].

Due to physiological decline during ageing existing muscle mass in humans and the force that reaches peak levels between the second and fourth decades of life suffers a drop in percentage, it is estimated that we lost about 1/2% of our muscle mass per year, this percentile increases between 1% and 2% annually after 50 years and then the 3% annually after the age of 60 [2].

To minimize such effects, it is necessary that the individual stop being sedentary, decreasing in 40 percent the risk of death from cardiovascular disease, when linked to a proper diet and physical activities, showing a change in behavior can lead to significant improvements in health and quality of life [3].

The elderly population presents high prevalence of overweight (58.4%) and obesity (19.4%). The physiological process of aging causes changes in body composition resulting from the increase in body fat over lean mass, related to the decline of physical activity and decrease in basal metabolism rate [4].

The risk factors for cardiovascular diseases (FRCV) can be classified into modifiable and nonmodifiable arguments. In the first, are smoking, the hypercholesterolemia (high LDL-c), melittus diabetes, obesity (body mass index [BMI] greater than 30 kg/m ^{2}), sedentariness, abdominal fat, a diet low in fruits and vegetables and the psychosocial stress. Among the not modifiable, are relevant to family history of premature cardiovascular disease, age (greater than 45 years male and female greater than 55 years) and sex [5].

In General, fat-free mass includes the mass of soft tissue and bone mineral content, gradually decreases during old age, along with an increase in body fat. Although BMI is widely used as a simple indicator to analyze body composition, isolated verification can mask age-related changes in fat-free mass and in lean soft tissue that occurs during aging. We can say that the loss of fat free mass is the key component of sarcopenia indicating loss of skeletal muscle mass, strength and function, leading to functional incapacity. Therefore, it is necessary to consider also the fat free mass, fat mass and skeletal muscle mass [6].

It is worth mentioning that d between all these aspects the way the elderly sees and accept your body are psychological and social aspects that may influence the promotion of disability and interfere negatively in the process of active and successful aging. The old guy, the body image can be distorted, due to the different aspects that encompass from physiological changes, socio-economic changes of family structures, demands for public policy and distribution of resources in society. Due to these changes, many elderly feel marginalized and end up rejecting his own aging, by virtue of the image that are of themselves, developing feelings of self-deprecation and low self-esteem [7].

However, the negative conception of aging, characterized by progressive decline and loss of abilities, has been deconstructed from evidence that the well-being and positive perception of this process are relevant protective factors against the effects of age on the functioning of the body [8].

Whereas the ageing population is a reality and brings great challenges, especially for the health sector. Seen nutrition's role in modulating the aging process, in the etiology of diseases and associated functional declines with age, the diagnostic assessment of health and body image based on anthropometric and biochemical measures of elderly are needed for adequate assistance and for planning health promotion actions, the relevance of the present study.

In this regard, studies on diagnostic assessment of health and body image based on anthropometric and biochemical measures of nutritional status appropriate to the different modalities of care are also aspects that deserve attention, especially because the central focus is to promote the identification of risk and early intervention to reduce the impact of the loss of functionality, demonstrating the relevance of the present study.

Thus, this study aimed to identify a score for the diagnostic assessment of health and body image based on anthropometric and biochemical measures in the elderly.

Method

This is an exploratory study, transversal and quantitative. Held in the city of João Pessoa/Paraíba, on the South side of that city. Were selected for the study 21 individuals, practitioners of physical exercises in sport aerobics, aged 60 years or more. As criteria for inclusion, should perform physical activity in water aerobics at least three months and not have the metallic structure in the body that prevent the measure through bioimpedance equipment octopolar InBody 720. It is worth mentioning that were considered in this study the elderly as elderly status regulated by Law 10,741/2003, those aged over 60 years, justifying the inclusion criterion [9].

The style of life, proteins, minerals, water, total body fat mass, waist, hip and edema were evaluated with use of bioimpedance octopolar InBody 720 (Biospace, Seoul, Korea), with patients in 2 to 3 hours fasting and without practicing physical exercise in the hours leading up to the test preparations defined in the literature [10]. The InBody 720 uses 8 electrodes, being 2:00 pm contact with the Palm (E1 and E3) and thumb (E2 and E4) of each hand and 2:00 pm contact with the front part (E5 and E7) and heel (E6 and E8) of each foot, allowing to evaluate 4 compartments of body mass (total body water, proteins, minerals and fat mass). Five segmental impedances (right arm, left arm, torso, right leg and left leg). Several studies documenting the accuracy of this equipment in the estimation of total and segmental body composition [11].

An instrument has been applied on body image nine original silhouettes, proposed by Stunkard scale, which represents a continuum from the thinness (1 silhouette) to severe obesity (9 silhouette). The elders chose the number of silhouette that they considered similar to his real body appearance and silhouette that matched their ideal body appearance. For the assessment of body satisfaction, removed themselves from the real body appearance ideal body appearance, and can range from minus 8 to 8. For variation equal to zero, the individual was classified as satisfied with their appearance and, for non-zero variance, was classified as dissatisfied. If the difference was positive, it was considered a dissatisfaction by excess weight and, when negative, a dissatisfaction by thinness.

The data observed in this research were transposed to a spreadsheet in EXCEL and then converted to a file compatible with the statistical package Statistical Package for the Social Sciences (SPSS) that has enabled the preparation of statistical analyses with the models and techniques employed for the construction and validation of the scoring. We performed a descriptive statistic, mean, standard deviation of average frequencies, proximity matrix Jaccard distance for dichotomous data. It was also the McNemar Test to evaluate the influence of variables on the lifestyle, whereas a significant $p < 0.05$.

From acceptance to participate in the study, each subject received two copies of the informed consent as established by resolution 466/12 [12] and the anthropometric measurements were collected individually. The collection occurred in the period of May to June 2015.

The study was approved by the ethics and Research Committee of the Centro Universitário de João Pessoa – UNIPÊ, CAEE/ZIP CODE: 38840214.7.0000.5176. all participants were asked to sign the informed consent (TFCC) in accordance with resolution 466/2012 National Health Council that governs the research between human beings [13].

Results

The study subjects had an average age of 65.9 and standard deviation 6.92 years. **Table 1** shows the matrix of Jaccard distance proximity to the variables of the study.

You can observe the values of this array that the variables: body fat mass and waist hip are those that are less in agreement with the lifestyle. In other words, the measure of proximity of Jaccard reports that these two variables are as opposed to a normal lifestyle as well as a body image satisfaction. It is observed that the closer to 1 greater proximity between the variables, say greater affinity or fillet.

Table 2 shows the influence of the variables under the lifestyle of the study subjects.

Table 1. Array of Jaccard distance proximity to dichotomous data. João Pessoa/PB. N = 21.

Variables	Array of proximity							
	Body image	Lifestyle	Protein	Minerals	Total Water	Mass of g. Corp.	CQ Relationship	Edema
Body image	1.000	0.438	0.412	0.333	0.421	0.125	0.250	0.313
Lifestyle	0.438	1.000	0.550	0.750	0.619	0.067	0.133	0.647
Protein	0.412	0.550	1.000	0.714	0.842	0.063	0.059	0.526
Minerals	0.333	0.750	0.714	1.000	0.857	0.050	0.100	0.650
Total water	0.421	0.619	0.842	0.857	1.000	0.053	0.105	0.600
Mass of Body Fat.	0.125	0.067	0.063	0.050	0.053	1.000	0.000	0.077
CQ Relationship	0.250	0.133	0.059	0.100	0.105	0.000	1.000	0.154
Edema	0.313	0.647	0.526	0.650	0.600	0.077	0.154	1.000

Table 2. Influence of variables on the lifestyle. João Pessoa/PB. N = 21.

Variables	Lifestyle		Risk	IC 95%	McNemar's Test
	Freak (n = 6)	Normal (n = 15)			
Protein	5	11	0.550	0.048 to 6.266	0.999
Minerals	5	15	4.000	the 8.545 1.872	0.063
Total water	6	13	1.462	the 1.984 1.077	0.289
Mass of Body Fat.	0	1	0.700	0.525 to 0.933	< 0.001 *
CQ Relationship	0	2	0.684	0.504 to 0.929	< 0.001 *
Edema	2	11	5.500	the 0.710 42.600	0.687

Table 3. Influence of variables on body image. João Pessoa/PB. N = 21.

Variables	Body image		Risk	IC 95%	McNemar's Test
	INSAT. (n = 13)	Satisfied. (n = 8)			
Protein (N)	9	7	3.111	0.281 to 34.419	0.021
Minerals (N)	13	7	2.857	1.572 to 5.192	0.002
Total water (N)	11	8	1.727	1.177 to 2.535	0.001
Mass of Corp. (N)	0	1	0.350	0.193 to 0.636	0.016
CQ Relationship (N)	0	2	0.316	0.163 to 0.612	0.031
Edema (N)	8	5	1.042	0.169 to 6.402	0.227

It can be observed in **Table 2** the importance of variables, body fat Mass and waist hip as the most influential in lifestyle, according to the non-parametric test of McNemar suitable for dichotomous dependent data. A similar conclusion is obtained with the risk showing these that only these two variables the values have their confidence intervals focused on values below 1 showing that these two variables contribute significantly to a normal lifestyle.

As the influence of the variables and body image **Table 3** demonstrates.

It can be observed in **Table 3** the importance of all variables with exception of Edema as the most influential in body image, according to the non-parametic test of McNemar suitable for dichotomous dependent data.

The conclusion from the risk shows that only two variables body mass and waist hip have their confidence intervals focused on values below 1 showing that these two variables contribute significantly to greater dissatisfaction. Dissatisfaction is likely to be affected by more factors. However, considering the proximity matrix and the risk there is more evidence that the same variables that affect the lifestyle are also influential in satisfaction of the individual with body image.

It is concluded that there are more influenced by measures that are noticeable to the eye than those who hide in the biochemical tests before the external perception of the body.

Discussion

Body composition indicators available in table 1 to evaluate the nutritional status in the elderly, which is an indicator of health and quality of life. As results of this survey the body fat mass and waist, hip are those that are less in agreement with the lifestyle, contributing to body image dissatisfaction. However, it also can be seen in this study that these two variables are directly related to the normal/healthy lifestyle.

It is remarkable that the composition of body fat mass and waist, hip are high, which corroborates with other studies and show that this finding is important, if it is taken into account that changes in body mass composition are frequent among elderly, moreover, the excess is considered a modulation factor and has been associated with a large number of diseases [14, 15, 16].

Research conducted in Natal/RN (2009) pointed out that the waist, hip relationship in elderly showed high for those who do not practice physical activity and also revealed a significant effect of style and life in body composition, corroborating the results of this study.

Data from different countries indicate that with increasing age occur changes in anthropometric characteristics, based on endogenous and environmental phenomena, socioeconomic, lifestyle [6, 17, 18].

The increase in the redistribution of body fat with increased accumulation in trunks, viscera, and reduction in members, is connected to major body modifications, such as a reduction in lean mass, par-

ticularly muscle mass and bone mineral density [18]. Aging is characterized by morphological changes, especially with accumulation of body fat and lean body mass reduction, a process known as sarcopenia [6, 19].

The assessment of abdominal fat is linked to several metabolic changes that include dyslipidemias, insulin resistance and hypertension and morbidities such as cardiovascular disease. These can infer the need of using medicines and are of equal magnitude for both genders [19, 20].

It was found that the waist circumference in elderly practitioners of water aerobics is the variable most important to determine the anthropometric silhouette real, a result that in line with the recommendation of the World Health Organization indicating that measure how relevant nutritional health parameter [21].

The self-perception that the elderly has in relation to your body is important because it impacts on body image [22]. In **Table 2** it is possible to infer that the variables of greater influence with regard to dissatisfaction in relation to body image are: body fat mass and the waist, hip relationship, because changes in these variables are visible to the naked eye and are usually associated with excess weight. The subject feels different not in stereotyped by society standards of beauty and may cause problems in the emotional aspect.

Study of active elderly practitioners of water aerobics picked up as well as on present research body image shows a statistically significant relationship with the abdominal circumference, and 25.8% who were satisfied with their body image, 1.6% dissatisfied for leanness and 72.6% dissatisfied by overweight [21].

The waist, hip relationship is an anthropometric index that indicates in simplified form, the distribution of body fat, whereas central and peripheral or abdominal fat [23].

Table 3 mentions that the study variables, except the edema interfere with body self-image that the

individual features. Being the waist, hip ratio as an indicator of body satisfaction research is necessary because ta variable is combined with the presence of cardiovascular risk, related to excess weight or some other reason for the aesthetic appearance [24].

The perception of body image and the feelings of dissatisfaction which can influence negatively the General life of the people, their professional performance and even the interpersonal relationship are associated with overweight and obesity situations [25].

As a strategy of change of body image for the practice of physical activity because it allows the elderly to live with peers who are going through similar changes, assisting in the process of acceptance of the body itself, rebuilding a more positive body image and self-esteem [26].

Some factors such as: positive perception of physical appearance and functional capacity, satisfaction about life and financial conditions, perception of happiness, acceptance/adjustment to age, relationship with the kids/family, desire to study and social contact, collaborate with the positive perception about self-image and self-esteem of seniors tickets in physical exercise programs [27].

Conclusion

On the above, it appears that the elderly present composition of body fat mass and high waist, hip ratio, according to the measure of proximity of Jaccard, thus most of the elderly are in opposition to a healthy lifestyle.

It is essential for the understanding of the characteristics and the transformations that the individuals with the advancement of age which reinforces the need for more effective actions in the control and/or prevention of health-related factors in the elderly.

It's worth pointing out that these factors are subject of interventions and may interfere directly or indirectly on the quality of life of the elderly, since

it improves the perception of body image of the elderly, being identified as a great ally in the physiological, psychological and social aspects.

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