Sociodemographic characteristics, self-assessment of health and their relationships with body mass index in older women[1]

Características sociodemográficas, autoevaluación de la salud y su relación con el índice de masa corporal en mujeres adultas mayores

Características sociodemográficas, autoavaliação de saúde e suas relações com o índice de massa corporal em mulheres idosas

[Research Article]

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Summary

This research aims to correlate the Body Mass Index (BMI) variable with sociodemographic aspects and Self-Evaluation of Health (AS). It is a quantitative, descriptive, cross-sectional study with 31 older adults. Sociodemographic data were collected in the anamnesis. An anthropometric assessment was also conducted, and for the Self-Assessment of Health (SA), the Brazilian version of the SF-36 protocol was applied. It was observed that the average of the group was classified as overweight ($\bar{X}$= 28.12±4.97 kg/m ^{2}); regarding AS, it was satisfactory in the three dimensions: Physical Health ($\bar{X}$= 76±15 points), Mental Health ($\bar{X}$= 72±11) and AS Total ($\bar{X}$= 73±12). Observing correlations between BMI and total AS (r = 0.874, p <0.0001, high correlation) and also with different sociodemographic data. This outcome possibly occurred because the majority of participants are active, control stress and do not have harmful habits such as smoking and alcohol consumption.

Keywords: quality of life, elderly, body mass index, health profile, diagnostic self evaluation

Resumen

Esta investigación tiene como objetivo correlacionar las variables Índice de Masa Corporal (IMC) con las variables aspectos sociodemográficos y Autoevaluación de Salud (EA). Es un estudio cuantitativo, descriptivo, transversal, realizado con 31 mujeres adultas mayores. En la anamnesis se recogieron datos sociodemográficos. También se realizó evaluación antropométrica y para la Autoevaluación de Salud (EA) se aplicó la versión brasileña del protocolo SF-36. Se observó que el promedio del grupo se clasificó como sobrepeso (= 28.12±4.97 kg/m2), en cuanto a AS, fue satisfactorio en las tres dimensiones: Salud Física

(=76±15 puntos), Salud Mental (= 72± 11) y AS Total (=73±12). Observándose correlaciones entre el IMC y la EA total (r = 0.874, p <0.0001, correlación alta), y también con diversos datos sociodemográficos. Este resultado posiblemente se produjo porque la mayoría de los participantes son activos, controlan el estrés y no tienen hábitos nocivos como fumar y consumir alcohol.
Palabras clave: calidad de vida, adulto mayor, índice de masa corporal, perfil de salud, autoevaluación diagnóstica.

Resumo

Esta pesquisa tem como objetivo correlacionar as variáveis Índice de Massa Corporal (IMC) com as variáveis aspectos sociodemográficos e a Autoavaliação de Saúde (AS). É um estudo do tipo quantitativa, descritiva de corte transversal, realizada com 31 mulheres idosas. Os dados sociodemográficos foram coletados na anamnese. Realizou-se também a avaliação antropométrica e para Autoavaliação de Saúde (AS) aplicou-se a versão brasileira do protocolo SF-36. Observou-se que a média do grupo foi classificada com sobrepeso ($\bar{X}$ = 28.12±4.97 kg/m^2), quanto à AS, foi satisfatória nas três dimensões: Saúde Física ($\bar{X}$ = 76±15 pontos), Saúde Mental ($\bar{X}$ = 72±11) e AS Total ($\bar{X}$ = 73±12). Observando-se correlações entre o IMC e AS total (r = 0.874, p <0.0001, correlação alta), e também, com diversos dados sociodemográficos. Esse desfecho possivelmente ocorreu porque a maioria das participantes é ativa, controla o estresse e não possui hábitos prejudiciais como o tabagismo e consumo de álcool.

Palavras-chave: qualidade de vida, idoso, indice de massa corporal, perfil de saúde, autoavaliação diagnóstica.

Introduction

The elderly population is growing worldwide. In 2020, the number of older people over 60 already represented 13.5% of the global population. It is assumed that by 2050, it will reach almost 2.1 billion, in a ratio of 1 older person for every 5 people (Pan American Health Organization, 2022).

From this scenario, we can also highlight two aspects observed in almost all countries: a significant increase in the elderly population aged 80 years or more and the feminization of aging, since women live longer than men and estimates indicate that they constitute 55% of all older people, most of whom (58%) live in developing countries (Devi et al., 2022). In Brazil, among older adults, women represent 56% (Sesc, 2020).

In any case, aging involves molecular and cellular modifications that occur over the years, resulting in a gradual reduction in physical and mental capacity and also being able to be influenced by genetics, as well as biological, cultural, and social conditions (Perdomo & Cuervo, 2019). These increasing changes in organic functions can cause diseases and terminal stages, directly impairing the individual's adaptation to their environment and conceiving an impaired quality of life (QoL) (de Sousa et al., 2021). Knowing that understanding QoL is comprehensive and subjective involves not only issues about physical and psychological health but also socioeconomic issues and how the individual deals with situations experienced and the environment (Figueira et al., 2009).

However, behavioral and social aspects are hypothesized to favor premature death, which may be related to non-nutritive foods, high fasting glycemia, higher Body Mass Index (BMI), hypertension, cigarette use, and inactivity physics (Friedman, 2020). Unfortunately, when assessing the prevalence of physical inactivity in Latin American countries, Brazil stands out with 47% (Narváez, 2019).

In this sense, the regular practice of physical exercise is a substantial variable for healthy aging, decreased frailty, risk of falls, maintenance of body function, and reduction of early morbidity, in addition to the prevention and remission of chronic diseases such as diabetes, hypertension, obesity, depression, insomnia, and anxiety (Eckstrom et al., 2020).

In addition to this, in the search for healthy aging, it is also essential to understand the determinants of health. Therefore, how the elderly assess their health, whether positive or negative, is directly related to that individual's Self-Evaluation of Health (AS) (Antunes et al., 2019).

Health self-assessment is a universal indicator that judges the individual's health perspective from objective and subjective angles. Therefore, this form of evaluation offers several ramifications that allow a socioeconomic analysis, physical health conditions, access, and use of health services; that is, it promotes essential data to define the population's health status (Santos et al., 2022).

Another important variable that should be evaluated in older adults, especially in the community, is BMI, a measure of nutritional status widely used by health professionals in clinical practice despite its limitations (Gonçalves et al., 2019; Collazos et al., 2019).

Through BMI, it is possible to classify a population, for example, overweight and obese, with a high risk of chronic diseases (Nascimento et al., 2022).

Therefore, analyzing the SA and nutritional status of older adults can help predict their health, thus enabling better intervention strategies to promote the health of these individuals. Thus, the present study aims to correlate older women's BMI, sociodemographic aspects, and AS.

Method

This quantitative, descriptive, and cross-sectional research is carried out with elderly users of basic health units enrolled in the MASTERFIT physical exercise project.

The sample comprised 31 older women living in Aracaju, Sergipe, Brazil. Initially, visits were made to Basic Health Units (UBS) for an invitation to participate in the research. Interested women went to the Tiradentes University campus for a meeting and were referred for data collection according to the inclusion criteria.

The inclusion criteria applied were women over 60 years of age, with motor independence, and committed to participating in a physical exercise program by signing the Free and Informed Consent Term (TCLE) and with a level of mental acuity sufficient to fill in the questionnaires. The volunteers presented a medical certificate releasing them to practice physical exercises and a referral from the UBS to which they belong to the University's Human Motricity Biosciences Laboratory – LABIMH. All participants were informed about the objective, the research procedures, and the possibility of withdrawing from the study at any stage.

The research was preliminarily approved by the Ethics Committee in Research with Human Beings of the Tiradentes University on March 26, 2020, according to 2012 of the National Health Council (Brazil, 2012) and the Helsinki Resolution (World Medical Association, 2008). All participants were informed about the risks and benefits of the research and participated voluntarily by signing the TCLE.

Collections were carried out in the second half of 2022, between September and October, in the LABIMH laboratory. Professionals and academics of Physical Education and medical students collected data. All evaluators were previously trained.

To verify the sociodemographic data, general information was collected from the participants, such as age, ethnicity, marital status, education, family income, daily activity, history of illnesses, self-management of stress, and consumption of alcoholic beverages and cigarettes.

For nutritional status, an anthropometric assessment was performed, in which weight and height were checked on a Welmy mechanical anthropometric scale with a capacity of 150 kg, with INMETRO seal, with the volunteers barefoot, wearing light clothes, standing, with their heels together and the head positioned in the horizontal plane. The data were used to calculate BMI using the following formula: Body mass (kg)/height ^{2} (m). The cutoff points for classifying the nutritional status of older adults are ≤ 22 kg/m² - low weight; > 22 to < 27 kg/m² - adequate weight; and ≥ 27 kg/m² - overweight (Brazil, 2020).

The Brazilian version of the Short Form Health Survey (SF-36) protocol was applied for AS. The questionnaire refers to questions about the daily life of the research participants in the form of a self-assessment of health. The assessment consists of scoring these three variables: physical Health, mental Health, and total AS score (Ciconelli et al., 1999).

Statistical analysis was performed using the Biostat 5.1 software for Windows, accepting the significance level of $p<0.05$. Data normality was evaluated using the Shapiro-Wilk test, as the n-sample was less than 50. For the analysis of sociodemographic variables, a non-parametric chi-square test was used. The partial linear correlation was used for the multiple correlation analysis, which had BMI as a fixed variable.

Results

Table 1 shows the descriptive results for the sociodemographic variables of the presented study. Data show statistical differences for all variables.

Table 1. Results for sociodemographic variables

Sociodemographic data	n = 31	
Age Group	**No**	**%**
60 – 69 years old	20	64.51
70 – 79 years old	10	32.26

80 or older	1	3.23
Chi-Square Test	p-value	**<0.0001**
Ethnicity		
White	11	35.48
Black	4	12.90
Brown	16	51.62
Chi-Square Test	p-value	**<0.0001**
Marital Status		
Single	14	45.16
Married	10	32.26
Widow	7	22.58
Chi-Square Test	p-value	**0.021**
Education		
Never studied / Incomplete Elementary School	10	32.26
Complete primary education	7	22.58
Complete high school	11	35.48
Complete Higher Education	3	9.68
Chi-Square Test	p-value	**0.001**
Daily Activity		
Take care of the family	13	41.94
Work/Family	8	35.48
Retired	11	22.58
Chi-Square Test	p-value	0.054
Monthly Family Income		
Up to 2 wages	18	58.06
2 to 4	5	16.13
4 to 10	1	3.23
Prefer not to say	7	22.58
Chi-Square Test	p-value	**<0.0001**
History of Chronic Diseases in the Family		
Yes	24	77.42
No	7	22.58
Chi-Square Test	p-value	**<0.0001**
Pre-existing Chronic Diseases and use of Controlled Medicine		
Have illnesses or use controlled medicine	27	87.10
Does not have illnesses or use prescription drugs	4	12.90
Chi-Square Test	p-value	**<0.0001**
Stress Self-Control		
Terrible / Bad	6	19.35
Regular	14	45.17
Good / Excellent	11	35.48

Chi-Square Test	p-value	**0.006**
Smoker		
Do not smoke	29	93.55
Up to 10 cigarettes/day	two	6.45
Chi-Square Test	p-value	**<0.0001**
Drink drinks/week		
Do not drink	26	83.87
Up to 5 per week	5	16.13
From 5 to 9 per week	0	0.00
Chi-Square Test	p-value	**<0.0001**

Legend: N - number of participants; % - percentage. Bold numbers indicate a p-value <0.05.

As for BMI, calculated through body mass and height, it was possible to classify the nutritional status of the elderly participants in this study, demonstrating that 18 participants with an average of 31.15±3.95 kg/m 2 were overweight, 9 with an average of 25, 31±1.68 kg/m ^{2} with adequate weight and 4 with an average of 20.77±0.88 kg/m ^{2} with low weight. They were the average of the group of 28.12±4.97 kg/m ^{2}, classifying them as overweight.

To investigate the SA of these older women, the SF-36 questionnaire was applied, where the score of the answers varies from 0 to 100, considering that the higher the score, the better the self-rated health, the repercussions with the average score were satisfactory with 76± 15 points in the Physical Health dimension and 72±11 points in the Mental Health dimension. The values were also similar in the AS Total score, averaging 73±12 points.

Table 2 presents the multiple partial statistical correlation analysis results using BMI as a fixed variable, the SF-36 AS scores, and the sociodemographic variables. In this sense, it is shown that the better the BMI, the better the physical and mental Health and the general self-rated Health of the participants.

Table 2. Results for partial correlation with BMI as a fixed variable.

Health Self-Assessment Scores	r	Categorization	p-value	fixed variable
Physical health (score)	0.699	**high**	**<0.0001**	
Mental Health (score)	0.686	**average**	**<0.0001**	BMI
Total Score AS	0.874	**High**	**<0.0001**	
Sociodemographic Variables				
Ethnicity (points)	0.827		**0.001**	
Marital status (points)	0.815	**High**	**0.001**	BMI
Education (points)	0.926		**0.001**	

Daily Activities (points)	0.99		**0.001**
Family Income (points)	0.715	**high average**	**0.001**
Alcohol Consumption (points)	0.935	**High**	**0.001**
Cigarette Consumption (points)	0.992		**0.001**
Stress Management (points)	0.408	-	**0.025**
Chronic Diseases (points)	0.378	-	**0.038**

Legend: BMI- body mass index; AS – Self-rated Health. Numbers in bold indicate a p-value <0.05.

Discussion

The findings regarding sociodemographic variables were compatible with the national scenario, such as the majority being brown. Concerning schooling, the survey showed a higher prevalence of older people who never studied or had incomplete elementary school (32.26%). However, it is even worse throughout the Brazilian state, with 25 % of older people being illiterate and almost half (45%) not completing elementary school. When investigating the monthly family income, the survey data indicated that 58.06% of older people live with up to 2 (two) salaries while 1 (one) third of Brazilian older people live below the poverty line, and most (74 .8%) of this bracket receive retirement or pension benefits. In the indicators of unhealthy habits, smoking presented values close to the national panorama and chronic diseases (Pan American Health Organization, 2022).

Still in this direction, regarding the BMI classification, the result was similar to the elderly Brazilian population, with 51.4% overweight (Souza et al., 2023). In the study by Nascimento et al. (2022), the prevalence was even higher, with 71.3% of older adults being overweight. Therefore, this significant correlation between BMI and sociodemographic data of the study volunteers has a similar profile to the elderly Brazilian population. This relationship of BMI above with predominance in younger older people (60 to 69 years), low educational level, single or separated marital status, and low income are characteristics found in this study and in that of Jayanama et al. (2022).

When analyzing the nutritional status classification, overweight and underweight are so-called deficient classifications; therefore, in the present study, 58.06% of the participants were classified as overweight and 12.90% as underweight. If added, 60.96% of the sample had poor nutritional status. Moser et al. (2021) found this same reality and

identified 59.8% of older adults evaluated in the same light, worrying data since nutritional status directly interferes with other health variables. In the research by Nascimento et al. (2022), a low BMI value showed positive results, characterizing a possibility of increasing health-related QoL by up to 90.9%, while older women with high BMI scores were more likely to have a lower degree of QoL. This result was also found in the research by Araújo-Gomes and Borba-Pinheiro (2018), showing that the variables associated with increased BMI impair performance, health, and QoL in the elderly, which makes sense when analyzing the work of Jayanama et al. (2022) who found statistically significant levels of frailty in older people with high BMI, which were positively associated with the percentage of body fat. This increase in body fat, especially in the abdomen, leads to metabolic syndrome, insulin resistance, type 2 diabetes, hypertension, and altered lipid profiles. Data pertinent to this study since chronic diseases positively correlate with BMI.

As QoL is not only linked to weight, among many other factors, staying active and physically fit seems to be a good choice at any age, especially as one of the indispensable variables for healthy aging, since it is involved in motor independence, functional autonomy, and with that, freedom to carry out their domestic routines and social activities (Knapik et al., 2019). This reference possibly corresponds to the outcome of the volunteers in this study regarding the Physical Health Score ($r = 0.699; p<0.0001$), Mental Health ($r = 0.686; p<0.0001$), and total QoL ($r = 0.874; p<0.0001$), as all study participants practice physical exercises.

In the study by Nascimento et al. (2022), QoL also showed a favorable association with physical activity and physical function, indicating an increase of 91.8% and 60.0%, respectively. It also revealed that a better nutritional status was independently significantly associated with higher levels of physical activity, better QoL, and good quality sleep. A systematic review of QoL in the population of Iran showed the following physical determinants of QoL: Nutritional Status, excess weight, chronic diseases, and others (Poursadeqiyan et al., 2021).

The importance of physical exercise was again noted when applying the QoL Questionnaire to older women who practice physical activity and sedentary older women in the study by Zar et al. (2022), in which the physically active participants showed significantly higher results in QoL while the sedentary volunteers were considerably

unsatisfactory in the dimensions of physical pain, physical function, disturbances caused by emotional problems and mental health.

Another unanalyzed hypothesis that may be involved with the mental health score is the individual's subjective well-being, which involves positive and negative affect and satisfaction with life; having a cheerful and affectionate view of their lives, Has chances of reducing the risk of mental health problems, in addition to promoting healthy aging (Murniati et al., 2022). In the study by Bramhankar et al. (2023), quality of life and satisfaction with life also showed excellent results in a self-assessment of life satisfaction, and it correlates with physical, mental, and social health status among older people in India with a higher level of education, and more healthy habits such as not using cigarettes, drinking and practicing physical exercise.

Possibly, sociodemographic factors such as low socioeconomic conditions, being single, and probably living alone are aspects found in this study that can reduce the QoL of the elderly and promote health problems, as seen in the research by Devi et al. (2022) and Murniati et al. (2022).

Conclusion

This research found correlations between BMI and sociodemographic data such as ethnicity, education, family income, cigarette and alcohol consumption, stress control, and history of non-communicable chronic diseases.

The correlations between BMI and the variables related to QoL reveal expected aspects associated with functions and, consequently, physical health, physical pain, and vitality, adding an association with mental and social health issues that also match the correlations of sociodemographic data already mentioned.

These relationships may suggest that, although it is known that BMI worsens during aging due to the decrease in the entire metabolism process with a reduction in muscle mass and an increase in body fat, especially in women from perimenopause onwards. The modifiable factors observed in most participants, such as regular practice of physical exercise, average stress control, and avoiding harmful habits such as alcohol and smoking, are movements that possibly contributed to the satisfactory result in total QoL, even the participants presenting the average BMI above the normal range for your age group.

Therefore, the research reveals a possible correlation between BMI, sociodemographic variables, and Self-Assessed Health. However, despite being widely used to classify a population, I remember that BMI has limitations, not evaluating the distribution of lean mass and body fat. Therefore, I suggest new studies correlating these variables with body composition in older adults.

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