

# IMPACT OF OBESITY ON QUALITY OF LIFE IN THE ELDERLY

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## Abstract

**Objective:** The main purpose of this study was to analyze the effect of obesity on Quality of Life (QOL) in the elderly of Rio de Janeiro, Brazil.

**Material and methods:** **Setting:** participants of the Health Leisure and Social Integration Project (AHLISIP) at the Miécimo da Silva Sport Center in Campo Grande, Rio de Janeiro, Brazil. **Design:** This research is qualitative - quantitative. **Participants:** Volunteers (144) with a mean age of  $68.03 \pm 2.29$ , physically active and of both genders, participants of the Health Leisure and Social Integration Project (AHLISIP) at the Miécimo da Silva Sport Center in Campo Grande, Rio de Janeiro. **Measurements:** In the assessment of body composition, the variables used as determinants of overweight/obesity and cardiovascular risk were body mass index (BMI), waist-hip ratio (WHR) and waist circumference (WC), using the protocol and the WHO reference for the elderly (WHO, 2004). And in the assessment of QOL it was used the WHOQOL-OLD.

**Results:** We observed a significant association between Waist-Hip Ratio (WHR) and the QOL Total Score ( $P < 0.05$ ), showing that individuals with low WHR values had the highest levels of physical activity. We also observed a significant association ( $P < 0.05$ ) between Body Mass Index (BMI) and facet 1 from QOL ( $P = 0.01$ ).

**Conclusion:** The variables BMI and WHR used in the assessment of body composition as indicators of obesity and risk of body fat distribution have an influence on QOL of aged individuals.

**Keywords:** obesity, elderly, quality of life (QOL), BMI, WHR, WHOQOL-OLD

## Introduction

The overweight and obese are growing in prevalence among the elderly, and the relation between body composition and geriatric syndromes is attracting the attention of researchers, due to its overhead expense in human and material resources [1, 2].

Elderly with high BMI are at an increased risk of hospitalization [3]. An association between weight gain and risk of mortality has been reported. Individuals with a weight increase of three kilograms or more in one year have a four times higher probability of dying in six years. A hospitalization that does not end in death can have a significant impact on the quality of life (QOL) of older people [4].

Overweight, as a chronic pathological condition that significantly affects a portion of the population, is a risk factor related directly or indirectly to some pathologies of co morbidity, such as cardiovascular diseases, musculoskeletal and neoplastic disorders, diabetes, hypertension, hypercholesterolemia, myocardial infarction, coronary heart disease, arthritis, osteoarthritis, kidney disease, sleep disorders, respiratory problems, and cancers of the endometrium,

breast, prostate and colon [4, 5]. Further, all of these conditions are associated with loss of QOL.

There is a tendency towards an increase in the overweight among the elderly, which is worrying particularly in countries with great socioeconomic disparities such as Brazil, due to the implications on the QOL of this population.

This study aims to analyze the influence of obesity on QOL of elderly people in Rio de Janeiro, Brazil.

## Material and Methods

It was evaluated 144 physically active volunteers, with a mean age of  $68.03 \pm 2.29$ , of both genders: 127 women (88,2%) and 17 men (11,8%), who were participants of the Health Leisure and Social Integration Project (AHLISIP) at the Miécimo da Silva Sport Center in Campo Grande, Rio de Janeiro.

It was excluded from the study older people who belong to particular groups: asylum seekers, inhabitants of rural areas, those who participate in genetic studies, those who had morbid obesity and recent surgery, or preventative, drug therapies that could interfere directly or indirectly with the results and those

that were classified as insufficiently active by the International Physical Activity Questionnaire (IPAQ).

The utilized protocol for the assessment of QOL was the WHOQOL-OLD questionnaire, developed by the WHO in search of an evaluation instrument for QOL in the elderly. The WHOQOL-OLD is a WHOQOL adaptation to the elderly in a trans-cultural approach [6].

The test was developed and validated by a team coordinated by Mick Power and Silke Schmidt [7], translated and adapted to the Portuguese with authorization by the authors, and performed under supervision by Eduardo Chachamovich and Marcelo Pio de Almeida Fleck in Porto Alegre. The internal consistency of the WHOQOL-OLD was assessed through Cronbach's alpha coefficient. The facets were individually analyzed and a reliability coefficient was also determined for the set of 24 items. Cronbach's alpha coefficients were suitable when assessed by facet or by the set of items, ranging from 0.710 (autonomy) to 0.885 (overall). Among the six facets of the OLD module, however, four were statistically significant (using  $\leq 0.1$ , a less strict value, since it is an exploratory analysis) [8].

The final version of WHOQOL-OLD contains six facets of four items each, verified by a Likert scale (1 to 5 points):

Facet I: "Sensory Functioning"

Facet II: "Autonomy"

Facet III: "Future, Present and Past Activities"

Facet IV: "Social Participation"

Facet V: "Death and Dying"

Facet VI: "Intimacy"

Since each of the six facets includes four items, which are evaluated on a scale from 1 to 5, the outcome of the facet scores can vary from 4 to 20. The verified result consists of a set of facet scores plus a gross total score (TS) and a transformed percentile score. The test is administered to each individual independently and each subject is asked to keep in mind their own values, hopes, pleasures and concerns, based on the 2 weeks prior to their answering of the questionnaire [9].

In the assessment of body composition, the variables used as determinants of overweight / obesity and cardiovascular risk were body mass index (BMI),

waist-hip ratio (WHR) and waist circumference (WC), using the protocol and the WHO reference for the elderly [10].

This assay conforms to the Ethical Guidelines for Biomedical Research Involving Human Subjects that comply with the principles laid down in the Helsinki Declaration (1996). Its research project has been approved in Rio de Janeiro, Brazil, by the Research Ethics Committee of FIOCRUZ Public Health National School under the protocol number 169/2007.

Data collection was performed in a room reserved near the site of activities using a cross. In the first stage the research objectives were presented and explained. It was also requested to meet individually to obtain consent for participation in the survey, and for the administration of the questionnaire WHOQOL-OLD (being asked to individuals who in replying were to keep in mind their own values, aspirations, joys and concerns, based on the last two weeks) and the IPAQ.

After the completion of the selected items, individuals were referred to the second stage of data collection, which consisted of the assessment of body composition.

The statistical analysis of the data was done following the protocols for evaluation of the normality (Komogorov-Smirnov) of variables and their potency with reference to sample size. At a second moment the inference of the study was dealt with through Pearson's chi-square test to check the associations between qualitative variables ( $P < 0.05$ ).

The Cluster method was chosen for variables that followed normal curve distribution and continuous parametric content. To understand and calculate the sample size we observed a significance equal to 0.025 bicaudal ( $2 \times 0.025 = 5\%$ ) and an error equal to 0.03 (3%).

## Results

As can be seen, it was decided to use the average as a measure of central tendency, because the coefficient of variance (CV) was less than 25%, denoting a homogeneous sample [11].

The table 2 presents the WHOQOL-OLD's descriptive statistic data on each six facets and total score. The

Table 1. *Description of the anthropometric variables measured in this study*

|                              | Weight<br>(Kg) | Stature<br>(m) | BMI<br>(kg/m <sup>2</sup> ) | WHR<br>(wc/hc) | WC<br>(cm) |
|------------------------------|----------------|----------------|-----------------------------|----------------|------------|
| Mean                         | 67,55          | 1,58           | 27,03                       | 0,89           | 90,06      |
| Standard deviation           | 0,86           | 0,00           | 0,33                        | 0,00           | 0,89       |
| Minimum                      | 43             | 1,40           | 17,44                       | 0,68           | 60         |
| Maximum                      | 102            | 1,83           | 39,82                       | 1,09           | 124        |
| Standard Error               | 10,37          | 0,07           | 3,98                        | 0,08           | 10,72      |
| Coefficient of variation (%) | 15             | 5              | 15                          | 9              | 12         |

Table 2. WHOQOL-OLD's descriptive statistic

| Statistic          | facet I | facet II | facet III | facet IV | facet V | facet VI | total score (TS) |
|--------------------|---------|----------|-----------|----------|---------|----------|------------------|
| Mean               | 9.94    | 13.75    | 14.95     | 15.11    | 10.49   | 14.75    | 13.17            |
| Standard Deviation | 4.19    | 4.21     | 3.32      | 3.50     | 3.98    | 3.70     | 2.29             |

facets 2, 3, 4 and 6 present an averaged value that was related to autonomy, future, present and past activities, social participation and intimacy. The facet 1 and 5 present a lower score that was related to sensory functioning and expectations about death and dying. The total score of QOL is very close to the values present by stratified groups on figure 1.

In the analysis of QOL, the values for groups stratified by cluster show that group 2 was more prevalent than the other groups, but the total score of QOL is considered average ( $13.60 \pm 0.11$ ). Group 1 had the highest QOL score ( $16.56 \pm 0.23$ ), but it was the group with the lowest number of elderly. Group three was the one that had the lowest score ( $10.69 \pm 0.13$ ) and comprised 34% of the sample.

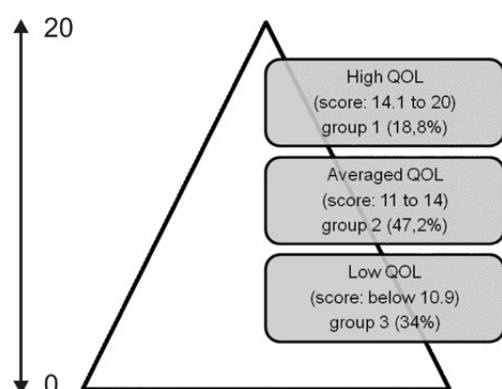


Figure 1. QOL score

Furthermore, the Pearson's chi-square test was used to check the associations between the qualitative variables determinants of overweight/obesity (BMI) and cardiovascular risk (WHR) to QOL. There was a significant association between WHR and total QOL score ( $P = 0.05$ ), indicating that individuals with lower values of WHR have higher levels of physical activity and better QOL. And there was also a significant association between BMI and facet I of QOL ( $P = 0.01$ ), which assesses the functioning and impact of the loss of sensory abilities on the activities of daily living, and the relationship between the capacity for interaction with other people and the QOL in the elderly.

## Discussion

There are several shortcomings in the use of BMI as a determinant of obesity [12], but despite this fact,

the BMI is the most widely used tool in the diagnosis of obesity [13].

Older women in Verona used the variables weight, height, BMI, and DXA in correlation with functional limitations. This author noted that 40% of elderly people with sarcopenia and with high percentage of body fat present with functional limitations [14]. The present study shows an association between BMI and facet I of QOL that was related to loss of sensory abilities on their activities of daily living.

A population of 870 women and 1098 men with a mean age of 68.6 years in Mexico, observed by BMI and circumferential measures that 62.3% of the population was overweight, and 73.6 % of women and 16.5% of men had high body fat distributions [15]. The sample analyzed in this study with the same age ( $68.03 \pm 2.29$ ) presented obesity in aging ( $BMI = 27.03 \pm 0.33$ ).

In a survey conducted with 7,669 individuals in Canada, noted that men with low education, low levels of health and older individuals tend towards overweight / obesity [16].

In a evaluation of 840 elderly in New York and noted that chronic pain is common in the elderly population and affects more women than men, as well as being highly associated with obesity. Elderly obese are two times more likely to have chronic pain in the head, neck and shoulders, back, legs and feet, and abdomen and pelvis than elderly non-obese [17]. The elderly sample analyzed in the present study was active and the physical activity constituted a routine in their life's that minimized (in this sample) the diagnose of chronic pain.

The impact of obesity on morbidity and on physical and mental disability is greater than the impact on mortality, therefore obesity is becoming very expensive to society, and effective strategies for prevention become an emergency in today's health care system [18].

Numerous studies have shown that obese people experience significant losses in QOL, according to the complications resulting from excess body weight [19]. In this study elderly with lower values of BMI and WHR have higher levels of QOL.

The determinants of good QOL in old age vary among subjects [20]. Elderly obese have sarcopenia and tend to have some difficulty in physical functions such as climbing and descending stairs (21). Overweight and sedentary lifestyles are associated

with comorbidities and contribute to lower QOL in the elderly [22].

We can therefore conclude that the obesity influence on the functioning and impact of the loss of sensory abilities on the activities of daily living, and the relationship between the capacities for interaction with other people that is one of the facets of the QOL in the elderly. This research could be used to a cross-cultural comparison using the WHOQOL-OLD scores reference data in different populations to evaluate de quality of life of elderly people.

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