**ORIGINAL ARTICLE**

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# QUALITY OF LIFE AMONG OVERWEIGHT WOMEN WITH CHRONIC NON-COMMUNICABLE DISEASES

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## ABSTRACT

This study aimed to identify quality of life and its associated factors within women who are overweight and have non-communicable diseases. It was a cross sectional study with a convenience sample of 50 adult and elderly women enrolled in an "Academia da Cidade" in Belo Horizonte, MG, Brazil. For quality of life assessment, the WHOQOL-bref was used. A descriptive analysis in addition to uni and multivariate linear regression were conducted. "Social relations" was the domain which most have contributed to quality of life, followed by "physical" domain. Worse quality of life was associated with self-reported presence of gastritis/ulcer (ß=-11.980, p=0.011), medication use (ß=-7.730, p=0.035), high per capita consumption of sugar (ß=-0.092, 0.045), elevated body mass index (ß=-1.218, p=0.048) and high carbohydrate intake (ß=-0.382, p=0.042). Many factors are associated to quality of life, that should be considered in health programs.

**Descriptors**: Food consumption. Chronic disease. Obesity. Overweight. Quality of life.

## RESUMO

*O estudo objetivou identificar a qualidade de vida e os fatores a ela associados entre mulheres com excesso de peso e doenças crônicas não transmissíveis. Tratou-se de estudo transversal com uma amostra de conveniência formada por 50 usuárias adultas e idosas de uma academia da cidade de Belo Horizonte(MG), Brasil. Para a avaliação da qualidade de vida, utilizou-se instrumento WHOQOL-bref. Realizou-se análise descritiva e regressão linear uni e multivariada. "Relações sociais" foi o domínio que mais contribuiu para a qualidade de vida, seguido do domínio "físico". Associaram-se a pior qualidade de vida a presença autorreferida de gastrite/úlcera (β=-11,890; p=0,011), uso de medicamentos (β=-7,730, p=0,035), maior consumo per capita de açúcar (β=-0,092; p=0,045), valores elevados de índice de massa corporal (β=-1,218; p=0,048) e maior consumo de carboidratos (β=-0,382; p=0,042). Concluiu-se que muitos são os fatores relacionados à qualidade de vida, que devem ser considerados nos programas de saúde.*

**Descritores:** *Consumo de alimentos. Doença crônica. Obesidade. Sobrepeso. Qualidade de vida.*
**Título:** *Qualidade de vida entre mulheres com excesso de peso e doenças crônicas não transmissíveis*

## RESUMEN

*El estudio objetivó identificar la calidad de vida y los factores asociados en mujeres con sobrepeso y enfermedades crónicas no transmisibles. Se realizó un estudio transversal con una muestra de conveniencia de 50 mujeres adultas y ancianas de una un gimnasio de la ciudad de Belo Horizonte, MG, Brasil. Para evaluación de la calidad de vida se utilizó el WHOQOL-bref. Se realizaron análisis descriptivos y regresión lineal univariante y multivariante. "Relaciones sociales" fue el dominio que más ha contribuido para la calidad de vida, seguido del dominio "física". Se asociaron a la peor calidad de vida la presencia de gastritis/úlcera (β=-11.890, p=0,011), uso de medicamentos (β=-7,730, p=0,035), consumo excesivo per capita de azúcar (β=-0.092, p=0.045), elevados valores de índice de masa corporal (β=-1,218, p=0,048) y la alta ingesta de hidratos de carbono (β=-0,382, p=0,042). Se concluyó que muchos factores se relacionan con la calidad de vida, que deben ser considerados en los programas de salud.*

**Descriptores:** *Consumo de alimentos. Enfermedad crónica. Obesidad. Sobrepeso. Calidad de vida.*
**Título:** *Calidad de vida en mujeres con sobrepeso y enfermedades crónicas no transmisibles.*

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## INTRODUCTION

Excess weight is one of the leading risk factors of chronic non-communicable diseases (CNCD), currently one of the main causes of death in most countries. Of the estimated 57 million deaths that occurred worldwide in 2008, 36 million (63%) were caused by CNCD[1].

In addition to the high population mortality rate, CNCDs are responsible for around 66.5% of years lived with disabilities and impairments in developing countries[1], with negative repercussions on the quality of life (QOL) of individuals[2].

The term QOL was initially proposed as a quantitative concept related to the available material resources for a given individual or society. However, the term evolved to a broader and integrating definition that also considers the basic needs of humans toward subjective and social well-being. Consequently, good QOL is presumed to offer minimal conditions for individuals to develop their maximum potential[3].

Based on this definition, literature shows a lower QOL among overweight individuals with CNCD considering that these complications can increase the limitations of individual daily activities, reduced vision, limb amputation, headache, anxiety, sleep disorders, joint pain, difficulty breathing, muscle and bone problems and low self-esteem[4].

In view of the importance of knowing the determining factors of QOL, especially within the context of its reduction, the aim of this study was to identify factors associated to QOL in overweight women with CNCD.

## METHOD

This was a cross-sectional study with overweight women who were attended to an Academy of the City of Belo Horizonte, MG, Brazil between January and June 2009 (n=50). The city academies are public healthcare promotion service centres created by the City Council of Belo Horizonte where users get free physical evaluations, nutritional supervision and guided practice for physical exercise.

The study included users that were overweight according to body mass index (BMI) values equal or higher than 25.0 kg/m² for adults[5] and 27.0 kg/m² for elderly users[6]. This BMI classification according to age range was considered in view of physi-ological alterations of body composition caused by aging and recommendations of the Nutritional and Food Inspection System[7]. Users who were taking weight loss medication and those who had undergone bariatric surgery were excluded from the study. The sample was formed independently, through user familiarity and personal interaction, by all the users who accepted to participate in the study and who attended the interviews at the City Academy.

Data were collected as users entered the City Academy by means of a pre-tested questionnaire[8] that was applied person-to-person by nutrition students of the Federal University of Minas Gerais. Social, demographic and economic conditions, morbidity, use of medication and food consumption were investigated.

For the food consumption evaluation, the 24-hour Food Recall (R24h) was applied with the help of a home measurement kit, which allowed the investigation of calorie and macronutrient intake. The R24h is considered a quick and inexpensive method that can be applied to individuals with low education levels. During this questionnaire, the individual must recall all food consumed in the last 24 hours, defining and quantifying the intake of food and drink, cooking methods, product brand names and the use of supplements. Other information related to food includes individual consumption of salt, sugar and oil, number of daily meals and daily water intake.

Data collection also observed, according to protocols of the World Health Organization (WHO)[5], weight and height that allowed calculation of the BMI and waist circumference (CC). Body composition was evaluated by means of electrical bio impedance (EBI), using a Biodynamics® monitor (model 450), according to protocol guidelines proposed in literature[9].

To evaluate QOL, a validated and adapted Portuguese version[10] of the self-applied abbreviated WHOQOL-bref [11,12] was used. This instrument considers individual perception of the last two weeks in relation to general health. In all, the instrument comprises 26 questions, of which two are related to overall QOL and the remaining questions are related to the 24 facets that comprise the original instrument (WHOQOL-100). The facets are divided into the domains "physical", "psychological", "social relations" and, "environment"[10].

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Instrument scores were evaluated according to the SPSS syntax of the WHOQOL-bref[12]. In this syntax, results are presented in a scale from 0 to 100 for each domain and the score of each domain is obtained on a positive scale, that is, the higher the score, the better the QOL of that given domain.

Data were subjected to descriptive analysis and application of the Kolmogorov-Smirnov test to determine distribution of quantitative variables. Categorical variables were presented in the form of frequency; numerical variables in the form of average ± standard deviation and median (minimum value; maximum value).

Transformation in logarithmic basis of variables that did not adhere to normal distribution was adopted for statistical inference analyses. Variables related to the profile of health, food intake, anthropometry and body composition were associated to QOL using the Pearson correlation and simple Student's t tests. Predictor variables with associations with p-value below 0.20 were inserted in the multiple linear regression, using the forward method. Analyses were adjusted according to age. SPSS software version 15.0 was used, at a 5% significance level.

This study was approved by the Ethics Committee of the UFMG (103/07) and the City Council of Belo Horizonte (087/2007). Participants signed a consent form as stipulated in Resolution 196/96.

## RESULTS

Women were 51.7±11.8 years old, and 62% were "housewives". Individuals had an income of BRL 400.00 (100.00; 1,500.00), they lived in households with 3.5±1.5 residents and had received 7.3±3.5 years of school education. In relation to the occurrence of CNCD, 44.0% claimed to suffer from systemic arterial hypertension (SAH); 35.1% of dyslipidemia; 22.0% of intestinal constipation; 14.0% of gastritis/ulcer and 12.2% of diabetes mellitus (DM).

Total average WHOQOL-bref score was 89.5±12.3 points and the domain of "social relations" had the highest average score (69.2±17.4), followed by "physical" (63.4±17.6), "psychological" (60.1±16.1) and "environment" (56.5±12.6). In relation to the facets, "personal relationships" and "mobility" contributed most to the higher average score in the domains "social relationships" and "physical", respectively. In the domain "psychological", the facet of "positive feelings" had the highest score, as did "financial resources" in the domain "environment" (Table 1).

Relationships identified in univariable analyses between the profile of health, food consumption, anthropometry and body composition with the total WHOQOL-bref score and its domains are described in tables 2 and 3.

Multivariable analyses showed an independent relationship of carbohydrate intake, use of medication and BMI with the domain "physical". For the domain "psychological", associated factors were: self-referred presence of gastritis/ulcer, use of medication and BMI. These first two factors were also related to the domain "social relationships". Finally, variables related to food consumption and health profile explained 23.8% of variability of the total WHOQOL-bref score (table 4).

## DISCUSSION

The study presented QOL and associated factors in a population of overweight women with CNCD. Among the domains of WHOQOL-bref, "social relationships" presented the highest scores and the domain "environment" showed the lowest scores. There was an independent relationship of the use of medication, the presence of gastritis/ulcer, BMI and sugar and carbohydrate intake and components of QOL and total WHOQOL-bref score.

Considering the components of QOL evaluation instrument, the high contribution of the domain "social relationships" for the total QOL index score corroborates a study conducted with CNCD patients of a Primary Care Unit[13]. Participation in collective educational activities usually provided at this care level is believed to contribute to greater satisfaction in relation to the social relationships of these individuals. Furthermore, in the City Academy, users receive social support related to preventive information and stimulus for socialization, which can improve self-esteem and self-efficiency with consequent positive interference in health-related behaviour[14].

The domain "environment" presented the lowest average values in the sample, which could be related to social vulnerability in the region where the study was conducted, with unfavourable condi-

**Table 1** – Distribution of average scores of facets and domains of the WHOQOL-bref. Belo Horizonte, MG, 2009.

| Domains/Facets | Average score [*] | SD[†] |
|---|---|---|
| **Domain "Social Relationships"** | | |
| Personal Relationships | 4.10 | 0.89 |
| Sexual Activity | 3.59 | 0.94 |
| Support, social | 3.65 | 0.90 |
| **Domain "Physical"** | | |
| Pain and discomfort | 3.56 | 1.22 |
| Medical treatment | 3.30 | 1.13 |
| Energy and fatigue | 3.49 | 0.86 |
| Mobility | 3.89 | 0.88 |
| Sleep and rest | 3.54 | 0.95 |
| Activities of daily living | 3.70 | 0.93 |
| Work capacity | 3.54 | 1.04 |
| **Domain "Psychological"** | | |
| Positive feelings | 3.06 | 0.88 |
| Spirituality, religion, personal beliefs | 4.05 | 0.75 |
| Think, learn, memory and concentration | 3.22 | 0.81 |
| Body image and appearance | 3.22 | 1.25 |
| Self-esteem | 3.44 | 1.10 |
| Negative feelings | 3.59 | 1.06 |
| **Domain "Environment"** | | |
| Physical safety and protection | 3.43 | 0.76 |
| Physical environment | 3.25 | 0.97 |
| Financial resources | 2.67 | 0.82 |
| Opportunities to acquire new information and skills | 3.35 | 0.88 |
| Participation in recreational opportunities/Leisure | 3.06 | 0.91 |
| Home environment | 3.84 | 0.99 |
| Health and social care: availability and quality | 3.13 | 1.26 |
| Transport | 3.37 | 0.96 |

*Values vary from 1 to 5. [†] SD: standard deviation.
Source: research data.

tions of health, habitation, culture, education, work, income and supply.

Also in relation to this domain, the facet "participation in recreational and leisure activities" had the highest influence on this result. Regular physical exercise is believed to create psychological well-being, which, in turn, can promote healthy behaviour. A study showed significant differences in the WHOQOL-bref score between women (n=370) of 45-65 years of age, which was lower (p<0.01) among sedentary women in relation to moderately active and very active women[15].

In all multiple linear regression models, the use of medication was related to a lower QOL. De Oliveira et al.[16] also observed a lower QOL with the use of medication in 339 elderly individuals in Rio Grande do Sul. The use of medication is believed to be a factor that is associated to lesser

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**Table 2** – Correlation between total score and domains of WHOQOL-bref and numerical predictor variables. Belo Horizonte, MG, 2009.

| Variables | r | p-value* |
|---|---|---|
| **Domain "Physical"** | | |
| Age | -0.291 | 0.040 |
| Individual sugar intake | -0.297 | 0.037 |
| Body Mass Index | -0.207 | 0.149 |
| Body fat percentage | -0.324 | 0.025 |
| Carbohydrate intake | -0.446 | 0.001 |
| Fat intake | -0.336 | 0.017 |
| Monounsaturated fatty acid intake | 0.343 | 0.150 |
| **Domain "Psychological"** | | |
| Years of schooling | -0.215 | 0.134 |
| Body Mass Index | -0.317 | 0.025 |
| Body fat percentage | -0.207 | 0.157 |
| Polyunsaturated fatty acid intake | 0.201 | 0.162 |
| **Domain "Social Relationships"** | | |
| Water intake | 0.206 | 0.155 |
| **Domain "Environment"** | | |
| Age | 0.218 | 0.128 |
| Individual income | 0.214 | 0.140 |
| Years of schooling | -0.203 | 0.158 |
| Individual vegetable oil intake | -0.252 | 0.077 |
| Individual salt intake | -0.207 | 0.149 |
| Individual sugar intake | -0.218 | 0.129 |
| Protein intake | -0.206 | 0.151 |
| Saturated fatty acid intake | 0.185 | 0.198 |
| **Total score** | | |
| Individual sugar intake | -0.230 | 0.108 |
| Body Mass Index | -0.212 | 0.140 |
| Carbohydrate intake | -0.289 | 0.042 |
| Fat intake | 0.238 | 0.096 |
| Monounsaturated fatty acid intake | 0.212 | 0.139 |

*Tables only show correlations where p-value was under 0.20.
Source: research data.

autonomy, which can reduce QOL[16]. Moreover, the use of medication creates a thin line between risk and benefit, considering side effects, medical interaction and serious complications that result from incorrect use of medication.

The presence of gastritis/ulcer characterized an independent factor for the low scores of WHOQOL-bref and domains "psychological" and "social relationships". A study conducted with 1157 women residing in São Paulo revealed the occurrence of 24.6% of duodenitis and gastritis, which were also some of the main complaints of chronic diseases in the sample[17]. In literature, there is a scarcity of studies on

**Table 3** – Comparison of averages between total score and domains of the WHOQOL-bref and categorical predictor variables. Belo Horizonte, MG, 2009.

| Variables | Categories | Average | SD[*] | p-value[†] |
|---|---|---|---|---|
| **Domain "Physical"** | | | | |
| Self-referred presence of hypertriglyceridemia | Yes | 56.4 | 8.9 | 0.181 |
| | No | 63.5 | 18.3 | |
| Self-referred presence of arterial hypertension | Yes | 58.4 | 15.0 | 0.081 |
| | No | 67.2 | 18.8 | |
| Self-referred presence of gastritis/ulcer | Yes | 51.0 | 10.5 | 0.045 |
| | No | 65.4 | 17.8 | |
| Self-referred presence of constipation | Yes | 53.6 | 12.4 | 0.036 |
| | No | 66.1 | 18.0 | |
| Use of medication | Yes | 58.7 | 16.7 | 0.005 |
| | No | 73.2 | 15.8 | |
| **Domain "Psychological"** | | | | |
| Self-referred presence of gastritis/ulcer | Yes | 47.0 | 9.5 | 0.019 |
| | No | 62.2 | 15.9 | |
| Self-referred presence of constipation | Yes | 50.4 | 19.8 | 0.022 |
| | No | 62.8 | 13.9 | |
| Use of medication | Yes | 57.4 | 17.0 | 0.080 |
| | No | 65.9 | 12.4 | |
| **Domain "Social Relationships"** | | | | |
| Self-referred presence of gastritis/ulcer | Yes | 52.4 | 19.1 | 0.005 |
| | No | 71.9 | 15.8 | |
| Use of medication | Yes | 65.4 | 16.0 | 0.026 |
| | No | 77.1 | 18.1 | |
| **Domain "Environment"** | | | | |
| Self-referred presence of arterial hypertension | Yes | 59.7 | 14.1 | 0.116 |
| | No | 54.0 | 10.8 | |
| **Total score** | | | | |
| Self-referred presence of gastritis/ulcer | Yes | 79.4 | 7.1 | 0.018 |
| | No | 91.1 | 12.8 | |
| Self-referred presence of constipation | Yes | 84.6 | 13.2 | 0.131 |
| | No | 90.9 | 11.8 | |
| Use of medication | Yes | 87.0 | 12.0 | 0.034 |
| | No | 94.8 | 11.3 | |

*SD: standard deviation. †Tables only show average comparisons where p-values were under 0.20.
Source: research data.

QOL with the occurrence of gastritis/ulcer. The relationship identified in the present investigation is probably due to the fact that these complications cause pain and discomfort and may contribute to a lesser interest in participating in social activities.

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**Table 4** – Multiple linear regression between total score the domains of WHOQOL-bref and predictor variables. Belo Horizonte, MG, 2009.

| Dependant *vs.* independent variables | Adjusted ß* | CI† 95% | p-value |
|---|---|---|---|
| **Domain "Physical" (adjusted R²‡=0.342)** | | | |
| Carbohydrate intake | -0.127 | -0.201; -0.054 | 0.001 |
| Use of medication | -1.786 | -3.302; -0.269 | 0.022 |
| Body Mass Index | -0.316 | -0.574; -0.058 | 0.017 |
| **Domain "Psychological" (adjusted R²=0.238)** | | | |
| Self-referred presence of gastritis/ulcer | -15.573 | -27.300; 03.850 | 0.010 |
| Body Mass Index | -2.087 | -3.663; -0.510 | 0.011 |
| Use of medication | -9.481 | -18.830; -0.129 | 0.047 |
| **Domain "Social relationships" (adjusted R²=0.218)** | | | |
| Use of medication | -12.845 | -23.106; -2.584 | 0.015 |
| Self-referred presence of gastritis/ulcer | -18.244 | -31.075; -5.414 | 0.006 |
| **Total score (adjusted R²=0.238)** | | | |
| Self-referred presence of gastritis/ulcer | -11.890 | -20.870; -2.920 | 0.011 |
| Use of medication | -7.730 | -14.880; -0.580 | 0.035 |
| Individual sugar intake | -0.092 | -0.182; -0.002 | 0.045 |
| Body Mass Index | -1.218 | -0.162; -0.411 | 0.048 |
| Carbohydrate intake | -0.382 | -0.749; -0.015 | 0.042 |

*Value of estimate or angle coefficient on the regression straight line, †Confidence interval, ‡Coefficient of determination.
Note: analyses were adjusted by age. The domain "environment" was not statistically significant in the multiple linear regression model.
Source: research data.

Furthermore, there was an inverse association of BMI and QOL and the domains "physical" and "psychological". These findings corroborate literature that indicates that QOL is frequently compromised in overweight individuals due to impaired physical, psychological and social health. It was observed that an increase in anthropometric variables favours the occurrence of low self-esteem, depression and dissatisfaction with physical appearance, which negatively interferes with QOL[18].

A longitudinal study conducted with 5985 Australian adults revealed a connection between higher BMI at the baseline with a lower QOL in the following five years. Moreover, the QOL domains related to mental health and physical condition were inversely associated to BMI, indicating that a higher excess weight level is related to a worsening of these parameters[19].

In addition to anthropometry, food consumption was related to QOL. Increased carbohydrate intake negatively affected QOL and the domain "physical", probably due to the direct association of this macronutrient with the occurrence of cardiovascular diseases, DM and obesity, especially in the case of simple carbohydrates. A study revealed a strong association between sugary drink intake and the development and complications of DM and metabolic syndrome, also possibly contributing to a lower QOL of patients. Sources of carbohydrates can have high calorie content, which contributes to excess weight gain and a lower QOL[20]. Consequently, it is essential to encourage better eating habits, chiefly in relation to nutritional advice by means of individual assistance and educational and awareness group activities at the City Academy.

In terms of study limitations, the cross-sectional study design does not allow an understanding of causal relationships. Also, the occurrence of CNCD was estimated from reports of the actual users, without the support of diagnostic criteria based on clinical or biochemical parameters. The sample size is reduced, but includes all the women that meet the

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study inclusion criteria. A food intake evaluation for only one food day was also a study limitation.

In spite of these limitations, this study was innovative in identifying factors associated to QOL of overweight women with a high occurrence of CNCD in the scope of a real healthcare service. This type of research, despite all the challenges in terms of human resources for data collection, a routine of numerous activities and intense rotation of users, contributes to the field of health according to needs of the national healthcare service. In this way, the QOL measurement of this research *locus* can contribute to decision-making in relation to intervention, conception, management and allocation of healthcare resources.

## CONCLUSION

This study revealed the influence of several factors on QOL of overweight women with CNCD attended at a healthcare promotion service. These factors are related to health conditions and the nutritional profile of these users and reinforce the existence of an intrinsic network of determining factors in the perception of health of these individuals. With this information, it is possible to develop healthcare programmes in populations suffering from CNCD that do not merely focus on the prevention and control of these diseases, but also on the improvement of QOL. We suggest increased access of individuals to healthcare services and health education programmes that encourage the adoption of a healthy lifestyle and improve motivation for a change of habits.

In the scope of science, there is a need for population-based studies that investigate the relationship between CNCDs and QOL, especially by means of greater methodological rigor, such as cohort studies. The use of more than one food intake evaluation day and a clinical diagnosis of the CNCDs may lead to more robust results on this topic.

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