

# Reported morbidities and quality of life: population-based study

*Morbidades referidas e qualidade de vida: estudo de base populacional*

*Morbilidades referidas y calidad de vida: estudio de base poblacional*

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**ABSTRACT** | The purpose was to verify the level of health-related quality of life in a population-based sample of adults aged 20 years or more living in the city of Bauru, São Paulo, Brazil, and its association with the amount of reported morbidities. A population survey was conducted through a complex sampling in two stages, totaling 600 participants in the urban area of Bauru, São Paulo. To collect data, the following instruments were used: 1. Characterization of participants (demographic and socio-economic aspects, physical activity level and smoking habit); 2. reported morbidity through the following question: "Last year, did you receive a diagnosis of any illness from a doctor?"; 3. Quality of Life, using the *Medical Outcomes Study 36 - Item Short-Form Health Survey* (SF-36) questionnaire. Descriptive and bivariate analyses were carried out using the Student's t-test and ANOVA. It was noted that 70.5% had at least one disease, and the most common morbidities reported were hypertension, osteoarthritis, depression, and diabetes. The association between the number of diseases, those who reported three or more diseases, and older age had worse HRQOL scores in all physical domains and limitations by social and emotional aspects. A greater number of comorbidities was associated with the lower scores of health-related quality of life.

**Keywords** | Morbidity; Quality of Life; Questionnaires.

**RESUMO** | O objetivo deste trabalho foi verificar o nível de qualidade de vida relacionada à saúde (QVRS) em

uma amostra de base populacional de adultos de 20 anos ou mais, residentes na cidade de Bauru, São Paulo, e sua associação com a quantidade de morbididades referidas. Foi realizado um inquérito populacional, por meio de uma amostragem complexa em dois estágios, totalizando 600 participantes da zona urbana de Bauru. Para a coleta de dados foram utilizados os seguintes instrumentos: 1. caracterização dos participantes (aspectos demográficos, socioeconômicos, nível de atividade física e hábito de fumar); 2. morbidade (referida por meio da pergunta: "No último ano, o (a) sr. (a) recebeu diagnóstico médico de alguma doença?"); 3. qualidade de vida (utilizando o questionário *Medical Outcomes Study 36 - Item Short-Form Health Survey - SF-36*). Foram realizadas análises descritiva e bivariada, por meio do teste t de Student e ANOVA. Observou-se que 70,5% apresentaram pelo menos uma doença, e as principais referidas foram a hipertensão, as artroses, a depressão e o diabetes. Quanto à associação entre os números de doenças, as pessoas mais idosas e as que referiram três ou mais doenças apresentaram piores escores de QVRS em todos os domínios físicos e nas limitações por aspectos sociais e emocionais. O maior número de morbididades associou-se aos menores escores de qualidade de vida relacionada à saúde.

**Descritores** | Morbidade; Qualidade de Vida; Questionários.

**RESUMEN** | El objetivo de este estudio fue verificar el nivel de calidad de vida relacionada a la salud (QVRS) en una muestra de base poblacional de adultos de 20 años o

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más, residentes de la ciudad de Bauru, São Paulo, y su asociación con la cantidad de morbilidades referidas. Se realizó una encuesta poblacional mediante una muestra compleja en dos estadios, con un total de 600 participantes de la zona urbana de Bauru. Para la recolección de datos se utilizó los siguientes instrumentos: 1. caracterización de los participantes (aspectos demográficos, socioeconómicos, nivel de actividad física y hábito de fumar); 2. morbilidades (referida mediante la pregunta: "En el último año, usted ha recibido el diagnóstico médico de alguna enfermedad?"); 3. calidad de vida (utilizando el cuestionario Medical Outcomes Study 36 - Item Short-Form Health Survey

- SF-36). Se realizó análisis descriptivos y bivariados, mediante la prueba T de Student y Anova. Se observó que 70,5% presentaron por lo menos una enfermedad, y las principales referidas fueron la hipertensión, la artrosis, la depresión y la diabetes. En relación a la asociación entre los números de enfermedades, las personas mayores y las que refirieron tres o más enfermedades presentaron peores scores de QVRS en todos los dominios físicos y en las limitaciones por aspectos sociales y emocionales. El mayor número de morbilidades se asoció a los menores scores de calidad de vida relacionada a la salud.

**Palabras clave** | Morbilidad; Calidad de Vida; Cuestionarios.

## INTRODUCTION

Health-related quality of life (HRQOL) is a terminology often used in the literature and has been used with objectives similar to the most general concept of quality of life (QOL), characterized by the person's perception of their state of health and the impacts on the social, psychological, physical, and environmental aspects. This perception includes not only the relation of the health-related factors, but also the more general aspects, such as income, freedom and quality of the environment<sup>1,2</sup>.

Some studies show that certain factors can contribute to reduce HRQOL domain scores, including largest age group, decrease of functional capacity, low education level, physical inactivity and largest number of morbidities<sup>3,4,5,6,7</sup>.

Concerning the morbidities, it is evident that individuals with greater number of diseases have worse HRQOL in all physical and mental domains such as in Uberaba<sup>8</sup>, Thailand<sup>9</sup>, southern Italy<sup>10</sup>, and Greece<sup>11</sup>. In Lebanon<sup>12</sup>, low scores are related to mental (vitality, mental health and limitations by social aspects) and physical (functional capacity and limitations by physical aspects) facets. Taking into account that physiotherapy aims to study the human movement in all its forms of expression and capabilities, to the area, the importance of obtaining data on the number of morbidities and quality of life is due to the fact that this information can be used to monitor its treatment process, compare different stages of a disease and facilitate the clinical decision making and health care. In addition, this kind of study contributes to include physiotherapy in the basic actions focused on the confrontation of functional disabilities, which is consistent with

the physiotherapist's operating model aimed at the individual's function. Recalling also that the human functionality is influenced directly both by the presence of morbidities, especially aggravations and chronic degenerative diseases, and by the presence of negative contextual factors, namely, environmental barriers of different genres, such as physical, geographical, cultural, technological, legal, among others<sup>13,14,15</sup>.

Taking this account, our objective was to verify the level of HRQOL in a population-based sample of adults aged 20 years or more, living in the city of Bauru, São Paulo, and its association with the number of reported morbidities.

## MATERIALS AND METHODS

The study was cross-sectional, based on a population survey, conducted in the year of 2012, and approved by the Ethics Committee (No. 251/97).

For this study, age and sex groups (called sample domains) were defined, for which minimum numbers in the sample were guaranteed, thus enabling further analysis. The sample dominions were: men and women aged 20 to 35 years; men and women aged 36 to 59 years; men and women aged 60 years or more.

The calculation was based on the estimated proportion in population subgroups of 50% ( $p=0.50$ ), for being the maximum variability that leads to obtaining conservative sample sizes; the confidence coefficient of 95% ( $z=1.96$ ) in the determination of confidence intervals of estimates; the sampling error of 10%, indicating that the amplitude between the sample estimate and the population parameter should not exceed this value ( $d=0.1$ ); and the design effect (deff) equal to 2.

With this, group sample size was of at least 200 individuals (100 men and 100 women), totaling 600 participants. The selection of the calculated sample was by two-stage cluster sampling. The census sectors were the primary sampling units (PSUS), while households were the secondary units. The PSUS with probability proportional to its size were selected by systematic sampling and the households with probability proportional to the size of the PSUS, indicated for population research<sup>16</sup>.

The interviews were carried out by participants of the research group, after face-to-face theoretical-practical training in a standardized format, and all residents aged 20 years or more living in the households were selected. People with disabilities to answer the questionnaire as mentally disabled people and people who have had a stroke were excluded. Older adults were submitted to the mini-mental state examination at the beginning of the questionnaire to assess their cognitive status and thus check the reliability of the answers. When the score was not achieved, it was deleted<sup>17</sup>.

The information was collected through a pre-coded questionnaire with closed questions, encoded after the interviews, reviewed by the researcher in charge. Quality control consisted of questionnaires with few questions applied to 10% of respondents.

The form was composed of items relating to 1) demographics: sex, age, marital status and skin color; 2) socio-economic aspects: schooling and income.

Individuals who reported smoking daily (at least 1 cigarette per day) or occasionally (less than 1 cigarette per day) were considered as smokers, and former smokers those who had stopped smoking for at least 6 months<sup>18</sup>. To analyze the level of physical activity, we used the short version of the International Physical Activity Questionnaire (IPAQ)<sup>19</sup>.

The reported morbidity was collected through the interview, in which the individual answered the question: among the alternatives below (hypertension, osteoporosis, diabetes, osteoarthritis, skin, gastrointestinal, respiratory, pancreatic or liver, genital and urinary system diseases), the one that matches the diagnosis (diagnoses) you have received from any doctor, in the last 12 months.

In the assessment of quality of life, we used the Medical Outcomes Study 36 – Item Short-Form Health Survey (SF-36) questionnaire, including scales that measure 8 domains: functional capacity –FC; limitations by physical aspects – LPA; pain; general health condition – GHC; vitality – VIT; limitations by

social aspects – LSA; limitations by emotional aspects – LEA; mental health – MH. Each of these dimensions, analyzed individually, received a score of 0 to 100, of which, 0 indicated the worst possible HRQOL level and 100 the best condition. The instrument was chosen since it was already validated for the Brazilian culture, with simple interpretation, direct questions, not being specific to a particular age, illness or treatment group<sup>20</sup>.

The raw data of the responses to the items related to the SF-36 were entered in a spreadsheet and the score calculations of 8 domains were conducted in accordance with the parameters set out in the publication guiding the Portuguese language translation and validation of the questionnaire, with data weighting and calculation phases of the Raw Scale, in which the value of the questions are transformed into scores of 8 domains ranging from 0 (zero) to 100 (one hundred), being 0 the worst state and 100 the best, for each domain. It is called Raw Scale because the final value has no unit of measure. The formula for the calculation of each domain was:

$$\text{Domain} = \frac{\text{Value obtained in the related questions} - \text{Lower limit}}{\text{Score range}} * 100$$

and the lower limit values and score range fixed and stipulated by the authors.

The normality of the SF-36 scores was checked and all were satisfactory (distortion of the values less than 1). The analysis was performed using a descriptive approach and other analytical approach. Absolute and relative frequency distributions for categorical variables were made in the descriptive approach, and the bivariate analysis, by means of the Student's t-test and ANOVA, at the significance level of 5% was made in the analytical approach<sup>21</sup>. The Student's t-test was used to compare each domain in relation to the number of reported diseases (up to two and three or more), by sex and age group, i.e. comparisons in rows. ANOVA was used to indicate the comparisons for each domain, between the number of reported diseases, by sex and age group, i.e., comparisons in columns.

## RESULTS

In the households selected, 641 eligible subjects were found, being effectively interviewed 600 individuals. The main reasons for losses (n=41) were: “no one was home” and “failed to attend the scheduled interview” and the main reasons for refusal were: “I don't respond to interview questions” and “very long interview and no time to respond”.

Out of the total of 600 individuals, 200 in the age groups of 20-30 years, 36-59 years and 60 years or more and, in each one of them with 100 men and 100 women, respectively.

Table 1 shows the sociodemographic characteristics, level of physical activity and smoking of the sample of individuals aged 20 years or more living in the city of Bauru, São Paulo, Brazil.

Table 1. Frequency distribution of socio-demographic characteristics, level of physical activity and smoking of the sample of individuals aged 20 years or more living in the city of Bauru, São Paulo, Brazil, according to sex

Factors	Sex			
	Male		Female	
	n	% (95%CI)	n	% (95%CI)
Schooling Years				
0-4 years	52	17.3 (13.4-22.0)	70	23.3 (18.9-28.4)
5-8 years	65	21.7 (17.3-26.6)	64	21.3 (17.0-26.3)
9-11 years	126	42.0 (36.5-47.6)	118	39.3 (33.9-44.9)
12 years or older	57	19.0 (14.9-23.8)	48	16.0 (12.2-20.5)
Skin color				
White	237	79.0 (74.0-83.2)	243	81.0 (76.1-85.0)
Black	17	5.7 (3.5-8.8)	21	7.0 (4.6-10.4)
Pardo	46	15.3 (11.7-19.8)	36	12.0 (8.8-16.1)
Marital Status				
Married	180	60.0 (54.3-65.3)	165	55.0 (49.3-60.5)
Single	85	28.3 (23.5-33.6)	65	21.7 (17.3-26.6)
Widower/separated	35	11.7 (8.5-15.7)	70	23.3 (18.9-28.4)
Income				
Low	189	63.0 (57.4-68.2)	200	66.7 (61.1-71.7)
Medium	72	24.0 (19.5-29.1)	68	22.7 (18.2-27.7)
High	39	13.0 (9.6-17.2)	32	10.7 (7.6-14.6)
Smoking				
Non-Smoker	160	53.3 (47.6-58.9)	203	67.7 (62.1-72.7)
Former Smoker	74	24.7 (20.1-29.8)	54	18.0 (14.0-22.7)
Smoker	66	22.0 (17.6-27.0)	43	14.3 (10.8-18.7)
Level of Physical Activity				
Active	99	33.0 (27.9-38.5)	111	37.0 (31.7-42.6)
Inactive	201	67.0 (61.4-72.0)	189	63.0 (57.4-68.2)

\* 100 men aged 20 to 35 years; 100 aged 36 to 59 years and 100 men aged 60 years or more  
 \*\* 100 women aged 20 to 35 years; 100 aged 36 to 59 years and 100 women aged 60 years or more

The main diseases were hypertension (33.0%), osteoarthritis (26.0%), depression (13.3%), and diabetes (11.6%), and we observed that 29.5% reported no disease, 23.0% only one disease, 17.8% two, and 29.7% three or more.

In relation to domains of HRQOL (Table 2), we found that women have average scores lower than men.

We observed that individuals with three or more diseases and older adults had worse HRQOL scores in all domains, regardless of sex, with statistically significant difference (Table 3).

Table 2. Means and standard deviations of the domains of the SF-36, regarding sex, of the population of Bauru, São Paulo, Brazil 2012

Domains	Male	Female	
	Average ± SD	Average ± SD	
Physical Domains	Functional Capacity	86.3±22.6	77.4±27.5
	Limitation by Physical Aspects	84.5±32.7	78.6±37.9
	Pain	79.2±25.3	71.0±27.0
	General Health Status	71.7±15.5	71.2±18.0
Mental Domains	Vitality	66.7±10.4	63.1±13.9
	Limitation by Social Aspects	93.0±17.7	89.1±21.5
	Limitation by Emotional Aspects	91.8±24.4	81.1±36.6
	Mental Health	83.4±15.2	72.5±21.3

Table 3. Means and standard deviations of the associations between the physical domain scores of the SF-36 and the number of reported diseases of the population of Bauru, São Paulo, Brazil, 2012, in relation to sex and age group

Domain	Sex	Age Group in years	Number of reported diseases	
			Up to two	Three or more
Functional Capacity	Male	60 or +	81.2±22.3 <sup>Aa**</sup>	67.7±28.1 <sup>Ba</sup>
		36 to 59	88.2±23.5 <sup>Aa</sup>	71.4±22.0 <sup>Ba</sup>
		20 to 35	99.0±4.5 <sup>Ab</sup>	96.4±3.8 <sup>Ab</sup>
	Female	60 or +	75.8±27.8 <sup>Aa</sup>	52.9±29.5 <sup>Ba</sup>
		36 to 59	84.4±23.1 <sup>Aa</sup>	68.9±26.8 <sup>Ba</sup>
		20 to 35	91.1±17.4 <sup>Ab</sup>	89.6±15.0 <sup>Ab</sup>
Limitation by Physical Aspects	Male	60 or +	90.4±26.9 <sup>Aa</sup>	53.8±43.2 <sup>Bb</sup>
		36 to 59	85.6±32.6 <sup>Aab</sup>	65.2±41.2 <sup>Ba</sup>
		20 to 35	98.3±10.9 <sup>Ab</sup>	85.7±28.3 <sup>Ba</sup>
	Female	60 or +	79.06±37.37 <sup>Aa</sup>	54.82±54.8 <sup>Bb</sup>
		36 to 59	90.07±28.58 <sup>Aab</sup>	57.43±43.24 <sup>Ba</sup>
		20 to 35	95.34±18.59 <sup>Ab</sup>	76.78±38.56 <sup>Ba</sup>
General Health Status	Male	60 or +	70.09±12.74 <sup>Aa</sup>	64.22±21.45 <sup>Bb</sup>
		36 to 59	72.80±13.24 <sup>Aa</sup>	66.11±21.52 <sup>Ba</sup>
		20 to 35	73.65±12.44 <sup>Aa</sup>	68.57±24.78 <sup>Ba</sup>
	Female	60 or +	73.95±15.37 <sup>Aa</sup>	60.96±22.04 <sup>Ba</sup>
		36 to 59	76.03±15.32 <sup>Aa</sup>	71.48±19.10 <sup>Ab</sup>
		20 to 35	72.84±15.61 <sup>Aa</sup>	71.78±16.47 <sup>Ab</sup>
Pain	Male	60 or +	78.25±23.78 <sup>Aa</sup>	60.33±32.02 <sup>Ba</sup>
		36 to 59	82.29±22.62 <sup>Aa</sup>	53.16±27.01 <sup>Ba</sup>
		20 to 35	91.93±13.00 <sup>Ab</sup>	73.28±22.08 <sup>Ba</sup>
	Female	60 or +	79.95±23.91 <sup>Aa</sup>	56.87±24.79 <sup>Bb</sup>
		36 to 59	79.6±25.34 <sup>Aa</sup>	59.29±30.37 <sup>Ba</sup>
		20 to 35	75.80±23.87 <sup>Aa</sup>	65.14±30.95 <sup>Ba</sup>

\* Capital letters are comparisons in the row between the conditions of each variable, by sex and age group (Student's t-test)

\*\* Lowercase letters are comparisons in the column between the conditions of each variable, by sex and age group (ANOVA). For the interpretation of the results is considered that two medium-sized with a letter of the same species did not differ (p >0.05) factor levels into account

As shown in Table 4, we observed that individuals with three or more diseases and older adults, in both sexes, had low scores of HRQOL in the LSA and LEA domains.

Table 4. Means and standard deviations of the associations between the mental domain scores of the SF-36, and the number of reported diseases in the population of Bauru, São Paulo, Brazil, 2012, in relation to sex and age group

Domain	Sex	Age Group in years	Number of reported diseases	
			Up to two	Three or more
Vitality	Male	60 or +	69.54±8.06 <sup>Aa**</sup>	65.22±12.79 <sup>ab</sup>
		36 to 59	66.15±11.50 <sup>Aa</sup>	59.44±12.93 <sup>Aa</sup>
		20 to 35	67.74±8.02 <sup>Aa</sup>	66.42±11.44 <sup>Aa</sup>
	Female	60 or +	67.55±12.55 <sup>Aa</sup>	63.24±12.83 <sup>Aa</sup>
		36 to 59	62.46±15.36 <sup>Aa</sup>	60.27±15.89 <sup>Aab</sup>
		20 to 35	64.18±12.64 <sup>Aa</sup>	52.50±12.04 <sup>Ab</sup>
Limitation by Social Aspects	Male	60 or +	95.22±13.92 <sup>Aa</sup>	85.27±27.60 <sup>Ba</sup>
		36 to 59	94.05±17.48 <sup>Aa</sup>	81.25±22.38 <sup>Ba</sup>
		20 to 35	97.04±9.10 <sup>Aa</sup>	91.07±18.70 <sup>Ab</sup>
	Female	60 or +	89.82±18.94 <sup>Aa</sup>	81.35±29.32 <sup>Ba</sup>
		36 to 59	94.24±14.69 <sup>Aa</sup>	82.09±26.11 <sup>Ba</sup>
		20 to 35	92.15±17.99 <sup>Aa</sup>	95.53±13.52 <sup>Ab</sup>
Limitation by Emotional Aspects	Male	60 or +	95.15±18.61 <sup>Aa</sup>	79.26±35.02 <sup>Ba</sup>
		36 to 59	92.68±26.20 <sup>Aa</sup>	83.33±32.83 <sup>Aa</sup>
		20 to 35	96.41±15.12 <sup>Aa</sup>	100.00±0.00 <sup>Ab</sup>
	Female	60 or +	86.82±32.64 <sup>Aa</sup>	78.42±43.38 <sup>Bb</sup>
		36 to 59	89.41±30.42 <sup>Aa</sup>	76.57±37.57 <sup>Ba</sup>
		20 to 35	83.72±34.95 <sup>Aa</sup>	73.81±41.71 <sup>Ba</sup>
Mental Health	Male	60 or +	84.29±13.63 <sup>Aa</sup>	78.31±20.20 <sup>Ab</sup>
		36 to 59	86.43±13.10 <sup>Aa</sup>	73.77±12.73 <sup>Aa</sup>
		20 to 35	85.07±12.63 <sup>Aa</sup>	76.00±31.83 <sup>Aa</sup>
	Female	60 or +	75.81±24.68 <sup>Aa</sup>	67.92±22.34 <sup>Aa</sup>
		36 to 59	77.52±17.61 <sup>Aa</sup>	70.48±22.98 <sup>Aa</sup>
		20 to 35	74.04±18.29 <sup>Aa</sup>	74.28±24.54 <sup>Aa</sup>

\* Capital letters are comparisons in the row between the conditions of each variable, by sex and age group (Student's t-test)

\*\* Lowercase letters are comparisons in the column between the conditions of each variable, by sex and age group (ANOVA). For interpretation of the results is considered that two averages with a same letter of the same species do not differ ( $p>0.05$ ) as to the related factor levels

## DISCUSSION

The results found showed that, in general, the average scores of eight domains were similar to the study of southern Brazil and to the research “Social Dimensions of Inequality” in Brazilian households, being higher only for the “limitations by social aspects” and “limitations by emotional aspects” domains<sup>2,22</sup>.

There is a pattern of similarity to almost all domains in comparison to the results of other countries, except

for the general health status of Iran<sup>23</sup> and Thailand<sup>9</sup>, which had smaller scores; in the vitality domain, which was above the average scores of American<sup>24</sup>, British<sup>25</sup>, Canadians<sup>26</sup> Dutch<sup>27</sup> and Thai<sup>9</sup> individuals; on the scales of mental health and emotional aspects, whose scores were higher than the Chinese<sup>28</sup>. In relation to Greece<sup>11</sup> and Lebanon<sup>12</sup>, the pattern of scores from all domains was lower than those of Bauru. As for the differences observed between the countries listed and the current research, we believe that there are cultural aspects that can influence the evaluation of QOL, positively or negatively, the socio-demographic characteristics (age, sex and schooling), the perception of people's health and quality of health systems<sup>24</sup>.

Analyzing the HRQOL according to sex, women had lower average scores than men in all domains. Similar data were observed in Brazil<sup>29</sup>, China<sup>30</sup>, Tanzania<sup>3</sup>, and Itay<sup>31</sup>.

Some elements explain these differences in perception of the HRQOL by women. First, the traditional role of the woman in charge, most of the time, of children's health and even husbands' and other family members, often to the detriment of her own health. The most sensitive perception of serious events is also added to this phenomenon<sup>5,31</sup>.

The results showed that 70.5% of individuals had at least one morbidity, the main morbidities were hypertension (33.0%), osteoarthritis (26.0%), depression (13.3%), and diabetes (11.6%). According to data from the National Health Research 2013, non-communicable diseases (NCDs) are health problems of relevant magnitude and account for over 70% of the causes of deaths in Brazil. In the population aged 18 or more, hypertension (21.4%), chronic back problems (18.5%), depression (7.6%), diabetes (6.2%), asthma or asthmatic bronchitis (4.4%), heart diseases (4.2%), and cerebrovascular accident (1.5%) were the most prevalent disease<sup>32</sup>. In a study conducted in the state of Minas Gerais, Brazil, 98.3% of older adults who had morbidities reported vision problems (78.1%), back aches (63.3%), hypertension (60.9%), and varicose veins (53.1%)<sup>6</sup>. In Italy, 38.8% of the respondents did not have any chronic disease, 32.6% had one, 18.4% had two, and 10.2% had three or more<sup>10</sup>. In the United States, it was observed that that 19% of individuals reported having none of the 24 chronic health conditions asked, while 20% reported a situation and 61% reported having two or more<sup>20</sup>.

The largest number of morbidities was associated with lower QOL scores in the physical domains and in

the facets “limitations by social and emotional aspects”. In Uberaba<sup>6</sup>, Thailand<sup>9</sup>, southern Italy and Greece<sup>12</sup>, significantly lower averages for physical and mental domains were observed. In Lebanon, the number of morbidities had significant influence on reduction of facets HRQOL in the VIT, MH, FC, and LPA<sup>12</sup>.

The association between a greater number of morbidities and low scores in the physical domains of HRQOL can be related to pain, discomfort, dependency on medication use and need to treat the disease in health services<sup>33-35</sup>. These domains have been more sensitive to the impact of chronic disease in other studies using the SF-36, and deserve special attention in the evaluation of individuals, especially with advancing of age<sup>36</sup>.

The relation between the highest number of diseases and low scores on facet LSA lies in the fact that the comorbidities contribute to the limitations in their daily lives negatively influencing the capacity to work, daily activities, and their socializing, resulting in change of internal standards and values. So, it is necessary to include the individuals in family and community activities according to their interests and possibilities. The association between psychological aspects of the person's well-being (LEA) and the largest number of morbidities may be related to the advent of negative feelings about their body image and self-esteem. In order that the individuals feel supported and face the hardships related to their disease, they must be supported so that they can enhance their skills and feelings to reverse this situation<sup>5,6,9,12</sup>.

We point out, as limitation of this study, the fact that the self-reported health conditions of individuals does not reflect exactly the “medical diagnosis”. Diseases having similar symptoms can be confused with each other by individuals and some people may also be unable to remember all their diseases. However, this method of data collection does not represent a problem, because self-reporting is the only way to collect subjective information on various domains of perceived health status<sup>12</sup>. Another limitation refers to the order of the causal chain, because, for being a cross-sectional study, it is not possible to identify whether the QOL is reduced in those with chronic diseases, or if chronic diseases appear in people who have already had QOL.

Considering that there was an internal validity through an appropriate methodology to calculate the sample size taking into account the variation of the scores obtained in the pilot study, in addition to the selection of households with probability proportional

to the size of PSUs, method suitable for population surveys<sup>33</sup>. The use of structured methods for data collection and interpretation of data contributed to the internal validity of our conclusions. The possibility of reproducing this study and the use of statistical analysis brought greater credibility to the study, which allows us to make inferences. The socio-demographic characteristics of participants were consistent with those reported in the literature, ensuring the external validity of the study. However, further studies are suggested with different population groups.

## CONCLUSION

In the population of Bauru, São Paulo, Brazil, we observed that 70.5% had at least one disease. The association between the number of diseases, those who reported three or more diseases and older adults had worse HRQOL scores in all physical domains and limitations by social and emotional aspects. The knowledge of the factors that interfere in the QOL of people makes it possible to plan and develop efficient actions to act directly on these factors, optimizing the practice of public policies for health promotion, to meet the population's needs.

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