Quality of life in Brazil: normative values for the Whoqol-bref in a southern general population sample

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Abstract

Purpose Normative data for WHOQOL-bref are scarce in the literature and unavailable in Latin American countries. The main objective of this study was to provide normative scores of WHOQOL-bref in a general population sample in Brazil and to describe differences in mean scores according to some socio-demographic characteristics.

Methods WHOQOL-bref was applied to a randomly selected sample of the general population of Porto Alegre. Participants were literate people aged 20 to 64 years. The questionnaires were self-administered in the presence of an interviewer in the respondent's home.

Results The response rate was 68%, and the final sample contained 751 respondents (38% men, 62% women). Low quality of life was observed in the following subgroups: female gender, lower economic class, lower educational level, and the subgroup reporting a chronic medical condition. The mean scores of the WHOQOL-bref and percentiles of scores are reported as normative data for the general population.

Conclusion Our results can be useful to researchers using the WHOQOL-bref to compare their results with normative data from a randomly selected sample of general population. Additionally, the ability of WHOQOL-bref to discriminate different population subgroups makes it an important tool to identify vulnerable groups in epidemiological surveys.

Keywords Quality of life · WHOQOL-bref · Normative data · Brazil

Abbreviations

WHOQOL	World health organization quality of life instrument
QOL	Quality of life
GDP	Gross domestic product
IBGE	Brazilian institute of geography and statistics
SPSS	Statistical package for social sciences

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Introduction

The quality of life (QOL) measurement has been increasingly used as an outcome measure in clinical trials, in effectiveness studies, in health technology assessment, and in epidemiological surveys to assess the subjective health and well-being of the population [1].

In this context, the Quality of Life Group of the World Health Organization (WHOQOL group) has developed an instrument to assess QOL in a cross-cultural perspective for international use, the WHOQOL-100, composed by 100

questions [2–5]. However, the need for shorter instruments led the WHOQOL-group to develop an abridged version of WHOQOL-100, the WHOQOL-bref [3].

The increasing use of the WHOQOL-bref demands the need for normative data to be used as reference values for comparisons between groups. Normative scores from the general population provide a useful guide to interpret results in the lack of a "gold standard" in QOL measures [6].

Normative data for WHOQOL-bref are still scarce in the international literature [7, 8] and not available in Brazil. In order to fill this gap, the objectives of this study were (a) to provide WHOQOL-bref scores in a sample of a southern Brazilian general population and (b) to describe differences in mean scores according to socio-demographic characteristics of individuals.

Methodology

Sampling

The sample was planned aiming 800 individuals selected from the general population of Porto Alegre, a southern Brazilian city with 97% of the population living in urban areas, per capita GDP of approximately US$ 13,000.00 and a literacy rate of 96.7% [9].

A two-stage cluster random selection design was used. A random sample of 108 census sectors of the city was obtained, and seven households in each sector were systematically selected. All residents were invited to participate whether they met the following inclusion criteria: aged from 20 to 64 years; be literate; not having any physical or mental limitation that could prevent the reading and understanding of the instruments. The interviews were undertaken in the participants' homes.

Instruments

WHOQOL-bref is a generic QOL instrument composed by 26 questions, two of them measuring overall and general health. The other 24 questions are divided into 4 domains: physical, psychological, social relationships, and environment. Each item scores from 1 to 5 on a Likert scale. The scores are then transformed into a linear scale between 0 and 100, with 0 being the least favorable quality of life and 100 being the most favorable one [3]. The Brazilian version of the instrument demonstrated a good performance concerning internal consistency (Cronbach's coefficient 0.77 for domains and 0.91 for questions), discriminant validity, criterion validity, concurrent validity, and test–retest reliability (correlation coefficients ranged from 0.69 to 0.81) [5].

A questionnaire was used to obtain socioeconomic and demographic data and the presence of chronic diseases. The economic class was assessed by an index called Brazil Criterion (Critério Brasil) [10], which divides the population into economic classes. The classification and its equivalence concerning approximate mean family income in American dollars would be as follows: Class A1: Average family income of US$ 3,800; Class A2: US$ 2,300; Class B1: US$ 1,400; Class B2: US$ 800; Class C: US$ 460; Class D: US$212, and Class E: US$ 103.

Statistical analysis

Continuous data are expressed as means ± standard deviation and categorical in percentage. Comparisons of QOL mean scores among groups according to socio-demographic characteristics were performed by ANOVA, Brown-Fosythe or *t* test. ANOVA was used when there was homogeneity of variances and Brown-Fosythe when there was not, both of them for comparisons among two or more groups. Levene's test was used to perform tests of homogeneity of variances. Student–Newman–Keuls (SNK) or Tamhane multiple comparison tests were used when group means differed in ANOVA. SNK was used when there was homogeneity of variances and Tamhane when there was not. For all tests, a significance level < 0.05 was established. Data were analyzed using SPSS for Windows, version 13.0 (IBM company, Chicago) and Microsoft Office Excel 2003.

Results

Study population

From 1,119 eligible individuals, 758 participated in the project, achieving a response rate of 68%. Seven exclusions were necessary, 2 for error in recording the age and other 5 (0.7%) for having more than 20% of missing data in the WHOQOL-bref questions [11]. Of the 751 subjects with data available for analysis, 703 responded to the 26 items of the instrument, leading to a completeness rate of 93%. The mean of time spent to complete the WHOQOL-bref was 8 min.

Table 1 shows the distribution of the study population compared to the general population. The lower percentage of respondents in the D economy class and the absence of participants in the E class were an expected finding, since one of the exclusion criteria of the study was illiteracy, which is generally more prevalent in these population strata. The socio-demographic characteristics of the sample are presented in Table 2.

Table 1 Socio-demographic comparison between total sample and the general population of Porto Alegre

	Total sample (n = 751) n (%)	General population* (%)
Men		
20–29 years	102 (14)	15
30–44 years	74 (10)	16
45–64 years	112 (15)	15
Women		
20-29 years	97 (13)	15
30-44 years	138 (18)	19
45-64 years	228 (30)	20
Economic class**		
A1	9 (1)	1
A2	77 (10)	5
B1	116 (15)	7
B2	189 (25)	17
C	307 (41)	38
D	52 (7)	28
E		5

* IBGE: WWW.ibge.org.br

** Brazil Criterion: www.abep.org

Regarding self-reported illnesses, 368 (49%) reported having some physical and/or mental disease; 103 (14%) of the interviewed said they had depression and 156 (21%) anxiety.

Quality of life

The sample means in each domain are presented in Table 3. There was a difference in the mean scores of QOL for some subgroups. Male gender presented higher values in almost all domains when compared with female gender. Regarding to age variable, post hoc tests demonstrated a significant difference between the younger individuals, who presented higher QOL scores, and the middle-aged and the older group in psychological domain. In the social domain, younger subjects presented higher QOL means when compared with middle-aged group but not compared with the older participants. At the same way, significant differences were observed among groups' means from different economic classes. Individuals from lower classes (C and D) presented lower QOL scores when compared with individuals from A1 class. Related to years of study, the differences in means scores were observed between the lower (up to 4 years) and the higher (12 years or more) educational level groups in almost all domains. Individuals who reported to suffer from a chronic illness showed significantly lower scores than those who did not.

Table 4 shows the scores in each domain of the WHOQOL-bref in percentiles 5, 10, 25, 50, 75, 90, 95 for

Table 2 Socio-demographic characteristics of the study population

Variables	N (Total = 751)	%
Age (mean-SD)	41 (13)	
Gender		
Male	288	38
Female	463	62
Race		
White	606	81
Black	73	10
Brown	53	7
Others	19	2
Religion*		
Yes	402	54
No	348	46
Marital status		
Married	445	59
Not married	306	41
Years of study*		
Up to 4 years	46	6
5 to 8 years	167	22
9 to 11 years	257	34
12 years or more	227	37
Job status (%)		
Employed	378	50
Informal job	62	8
Unemployed	50	7
Housewife	115	15
Student	42	6
Retired	69	9
Other	35	5

* Variables with missing data

the total sample and for each group according to gender and age. Figure 1 shows curves for the percentiles 25, 50, and 75 of scores for men and women by age, in each domain of WHOQOL-bref.

Discussion

This study provides scores of QOL measured by the WHOQOL-bref based on a sample of the general population of a southern Brazilian city. These data can be used as reference for comparison of groups of individuals in different clinical situations, as recommended by the literature that normative values obtained in the general population serve as parameter [6, 12].

The observed difference in QOL scores according to demographic variables emphasizes the need for using the standards for each subgroup for comparison purposes. Women, as well as people from lower economic classes,

Table 3 Mean scores (SD) of WHOQOL-bref in the total population sample and subsamples stratified by gender, age, economic class, years of study, and presence of a chronic disease

	Physical		Psychological		Social		Environment	
	Mean (SD)	P	Mean (SD)	P	Mean (SD)	P	Mean (SD)	P
All subjects	58.9 (10.5)		65.9 (10.8)		76.2 (18.8)		59.9(14.9)	
Gender								
Men	60.3 (9.9)	0.001	65.9 (10.8)	<0.001	73.5 (18.4)	0.262	62.9 (13.8)	0.003
Women	57.8 (10.5)		62.2 (12.5)		71.9 (19.7)		59.7 (16.2)	
Age (years)								
20–29	58.9 (10.5)	0.360	65.9 (10.7)[b]	0.006	76.2 (18.8)[a]	0.001	59.9 (14.9)[a]	0.109
30–44	57.9 (10.5)		62.5 (12.4)[a]		68.9 (21.7)[b]		59.7 (15.1)[a]	
45–64	59.2 (10.2)		63.0 (12.3)[a]		72.7 (17.3)[ab]		62.2 (15.9)[a]	
Economic class*								
A1	64.7 (7.5)[a]	<0.001	71.3 (7.6)[a]	0.001	77.8 (9.32)[a]	0.045	76.4 (7.8)[a]	<0.001
A2	62.3 (9.4)[ab]		66.6 (11.5)[ab]		76.6 (17.5)[a]		72.9 (13.5)[a]	
B1	60.0 (9.9)[ab]		64.7 (11.4)[abc]		74.8 (17.5)[a]		67.9 (12.5)[a]	
B2	60.1 (9.5)[ab]		64.7 (10.5)[abc]		73.1 (17.5)[a]		60.9 (14.2)[b]	
C	56.9 (10.8)[b]		62.1 (13.0)[c]		70.5 (20.8)[a]		55.9 (14.6)[c]	
D	55.8 (10.8)[b]		61.4 (11.6)[bc]		70.9 (21.5)[a]		54.0 (16.5)[bc]	
Years of study								
Up to 4 years	55.1 (10.3)[a]	0.014	59.5 (13.0)[a]	0.002	73.2 (17.5)[a]	0.048	53.7 (16.0)[a]	0.000
5 to 8 years	57.8 (11.6)[b]		61.3 (12.9)[ab]		68.9 (22.7)[a]		56.7 (15.6)[a]	
9 to 11 years	58.8 (9.9)[b]		64.4 (12.4)[abc]		73.9 (17.9)[a]		57.8 (14.3)[a]	
12 years or more	59.9 (9.9)[b]		65.0 (10.6)[c]		73.4 (18.2)[a]		67.4 (13.9)[b]	
Self-reported anxiety								
Yes	54.5 (10.6)	<0.001	55.9 (14.0)	<0.001	63.0 (21.3)	<0.001	55.2 (16.2)	<0.001
No	59.9 (10.03)		65.7 (10.5)		75.0 (17.8)		62.4 (14.9)	
Self-reported depression								
Yes	51.9 (11.2)	<0.001	52.5 (13.7)	<0.001	58.01 (20.5)	<0.001	52.8 (17.0)	<0.001
No	59.9 (9.8)		65.4 (10.7)		74.8 (17.9)		62.2 (14.8)	
Self-reported chronic disease								
Yes	57.5 (11.1)	<0.001	61.4 (13.0)	<0.001	69.3 (20.5)	<0.001	59.3 (16.4)	0.004
No	60.2 (9.4)		65.9 (10.4)		75.8 (17.4)		62.5 (14.2)	

In a *column*, means followed by the *same letter* are not significantly different by Tamhane or SNK tests ($\alpha = 0.05$)

* $\alpha = 0.1$ due to few cases at class A1

had worse scores in nearly all domains, as observed previously by other authors [8, 11, 13, 14]. Concerning age, the age group of 30 to 44 years had lower score means compared with those of younger, but not compared with older individuals. This finding is controversial through studies, since some authors found a QOL decrease proportional to the increase in age [8], while others have also noticed a better QOL for people above 45 years [11].

Means scores of those reported with some disease were significantly lower than healthy participants in all domains, mainly between the groups with and without self-reported depression and anxiety. This ability of WHOQOL-bref to distinguish patients with and without

emotional distress had already been observed in groups of patients with chronic diseases in Brazil [15–18], and the present study highlights these findings adding information related to this property of the instrument also in the general population.

One of the caveats of this study is the fact that the sample had a subrepresentativity of the general population in relation to the lower socioeconomic classes. Some exclusion criteria such as illiteracy may have led to a smaller representation of D and E classes. Since the QOL scores decreased progressively in lower socioeconomic classes, one can infer that the classes D and E would score even lower.

Table 4 Percentiles of mean scores of WHOQOL-bref in the total sample and subgroups divided by sex and age

	Physical	Psychological	Social	Environment
All (n = 751)				
5	39	42	42	34
10	46	46	50	41
25	54	58	67	50
50	61	67	75	63
75	64	71	83	72
90	71	79	92	81
95	75	79	100	84
Males (n = 288)				
5	43	42	42	38
10	46	50	50	44
25	54	63	67	53
50	61	67	75	63
75	68	75	83	72
90	71	79	92	81
95	75	79	100	84
Females (n = 463)				
5	39	38	33	31
10	43	46	50	38
25	54	54	58	50
50	61	63	75	59
75	64	71	83	72
90	71	75	97	81
95	75	80	100	84
Males age 20 to 29 (n = 102)				
5	40	46	35	38
10	46	51	50	44
25	54	63	67	50
50	61	67	75	63
75	68	75	92	72
90	71	79	100	78
95	71	83	100	84
Males age 30 to 44 (n = 74)				
5	43	41	25	38
10	46	42	38	45
25	54	58	58	53
50	61	67	71	63
75	65	71	83	69
90	71	75	92	80
95	76	79	94	84
Males age 45 to 64 (n = 112)				
5	45	48	42	38
10	54	54	58	47
25	57	63	67	56
50	61	67	75	66
75	68	75	83	75
90	71	79	92	81
95	79	79	100	88

Table 4 continued

	Physical	Psychological	Social	Environment
Females age 20 to 29 (n = 97)				
5	39	46	42	31
10	46	53	48	38
25	50	58	67	47
50	61	67	75	59
75	66	71	92	69
90	71	79	100	79
95	75	83	100	83
Females age 30 to 44 (n = 138)				
5	37	38	25	31
10	41	42	42	38
25	50	54	58	47
50	59	63	75	59
75	64	71	83	72
90	71	75	100	81
95	75	83	100	84
Females age 45 to 64 (n = 228)				
5	39	38	42	33
10	43	44	50	41
25	54	50	58	50
50	61	63	75	63
75	64	71	83	72
90	71	75	92	82
95	75	79	100	88

The data here presented should be used with caution regarding the extrapolation of results for the country as a whole, because of heterogeneity of Brazilian population. Replication of this study in other regions could contribute to the achievement of national values.

One of the major strengths of this study for future research is to provide tables of the WHOQOL-bref scores to be used as a comparative standard for quality of life assessments in different populations. This research was undertaken according to international methodological recommendations for normatization of QOL instruments, using a random sample of the general population, describing QOL scores for different age and gender groups, and response rate over two-thirds [12].

The WHOQOL-bref proved to be a sensitive measure for socio-demographic variables, being a useful tool for identifying vulnerable groups and describing the profile of quality of life of the population.
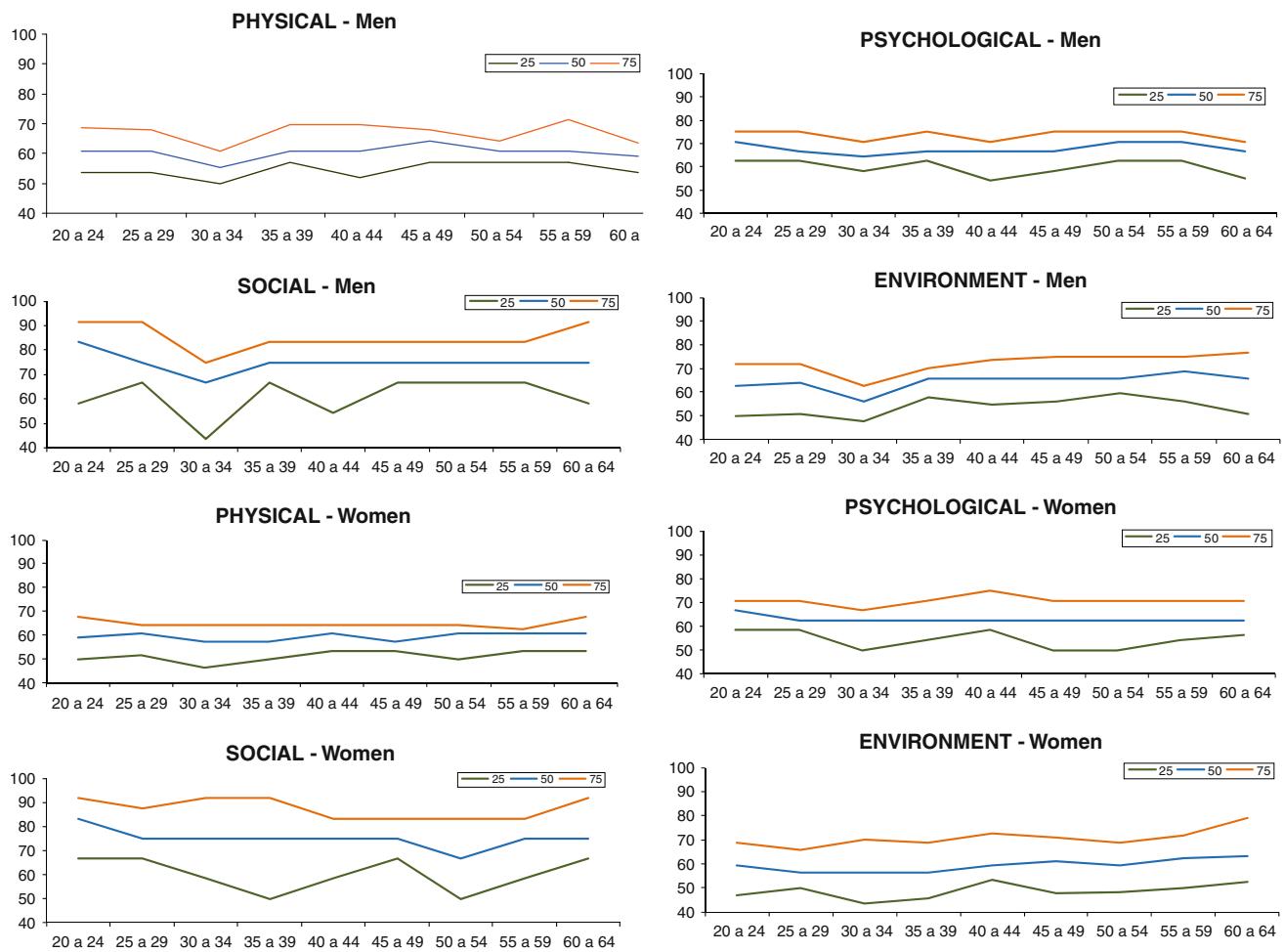
Fig. 1 Percentiles charts of the scores of each domain of WHOQOL-bref for men and women

Appendix 1: Domains and facets within domains of WHOQOL-bref

Domain 1 Physical health

1. Pain and discomfort
2. Energy and fatigue
3. Sleep and rest
9. Mobility
10. Activities of daily living
11. Dependence on medical substances and medical aids
12. Work capacity

Domain 2 Psychological

4. Positive feelings
5. Thinking, learning, memory and concentration

Appendix   continued

6. Self-esteem
7. Bodily image and appearance
8. Negative feelings
24. Spirituality/religion/personal beliefs

Domain 3 Social relationships

13. Personal relationships
14. Social support
15. Sexual activity

Domain 4 Environment

16. Freedom, physical safety and security
17. Home environment
18. Financial resources
19. Health and social care: accessibility and quality
20. Opportunities for acquiring new information and skills
21. Participation in and opportunities for recreation/leisure activity
22. Physical environment (pollution/noise/traffic/climate)
23. Transport

WHOQOL-group (3)

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