

Quality of life and associated characteristics: application of WHOQOL-BREF in the context of Primary Health Care

Celline Cardoso Almeida-Brasil¹
Micheline Rosa Silveira¹
Kátia Rodrigues Silva¹
Marina Guimarães Lima¹
Christina Danielli Coelho de Morais Faria²
Claudia Lins Cardoso³
Hans-Joachim Karl Menzel⁴
Maria das Graças Braga Ceccato¹

Abstract *This study aimed to identify the characteristics associated to quality of life (QOL) in users of four Basic Health Units (Unidades Básicas de Saúde, UBS) in Belo Horizonte, Minas Gerais. We conducted a cross-sectional study with 930 adult users enrolled in the selected UBS, using a questionnaire containing the WHOQOL-bref instrument and questions about sociodemographic characteristics, lifestyle and health conditions. Following descriptive analysis, we performed simple and multiple linear regression to evaluate the association between the exposure variables and the QOL domains. The highest mean values of QOL were observed in the social relationships domain. The lowest means were observed in the environment domain, with a statistically significant difference between some of the UBS. The worst perceptions of QOL were related to worse health, housing, education and income conditions, as well as problems in social relationships and psychological conditions. Actions are needed to improve QOL in Primary Health Care users through actions promoted by both health professionals and public managers.*

Key words *Quality of life, Basic health units, Primary Health Care*

¹ Departamento de Farmácia Social. Faculdade de Farmácia. Universidade Federal de Minas Gerais (UFMG). Av Antônio Carlos 6627/1027, Pampulha. 31270-901 Belo Horizonte MG Brasil. celline.cardoso@gmail.com

² Departamento de Fisioterapia, Escola de Educação Física, Fisioterapia e Terapia Ocupacional, UFMG. Belo Horizonte MG Brasil.

³ Departamento de Psicologia, UFMG. Belo Horizonte MG Brasil.

⁴ Departamento de Esportes, Escola de Educação Física, Fisioterapia e Terapia Ocupacional, UFMG. Belo Horizonte MG Brasil.

Introduction

Quality of life (QOL) is a multidimensional construct proposed as a health indicator of the population and its evaluation is used to boost health promotion actions¹. QOL can be defined as “individual perception of one’s own stance in the context of the culture and value system in which one lives and in relation to one’s goals, expectations, standards and concerns”, involving physical, psychological, independence level, social relationships, environment and spiritual pattern domains².

Characteristics such as functional capacity, pain, general health, vitality, social and emotional aspects and mental health can be evaluated by instruments that measure QOL^{3,4}. The most used instruments are generic, that is, they evaluate several aspects of the impact resulting from a health condition, such as functional capacity, pain and general health. Among the generic instruments, the Medical Outcomes Studies 36-item Short-Form (MOS SF-36), Medical Outcomes Studies 12-item Short-Form (MOS SF-12), EuroQol (EQ-5D) and WHOQOL-100 are the widely used^{5,6}. The WHOQOL-bref is an abbreviated version of the WHOQOL-100 developed and recommended by the World Health Organization (WHO). It recognizes individual perception and can assess QOL in different groups and situations, regardless of educational level⁷. The instrument has satisfactory psychometric properties and requires little application time⁷. This instrument allows describing the subjective perception of individuals in relation to their physical and psychological health, social relationships and the environment in which they live⁸.

It is observed that several studies performed in Brazil evaluated the QOL of individuals in specific populations, such as the elderly and pregnant women,⁹⁻¹¹ or in those with different health problems¹²⁻¹⁴. On the other hand, few studies have evaluated the QOL of the general population, with different health profiles, such as those attended by the Primary Health Care (PHC)¹⁵. PHC is patients’ gateway to the Unified Health System (SUS), with a capacity to respond to 85% of health needs and problems of the general population, with preventive, curative and health promotion services, as well as integrate care and address the life context of individuals¹⁶.

Studies performed in the context of primary care observed a variability of QOL perception, pointing to the domain “social relationships” as the one with the greatest contribution to a good

QOL, and the “environment” domain with the lowest contribution^{9,11,12,15,17}. Diseases, low adherence to treatment and low educational level are factors associated with poorer perception of QOL in individuals serviced at PHC facilities^{18,19}.

The Health Work Education Program (*Programa de Educação pelo Trabalho em Saúde*, PET-Saúde) was established within the Ministries of Health and Education through Interministerial Ordinance N° 421, dated March 3, 2010.²⁰ In Belo Horizonte, PET-Saúde III was developed in partnership between the Federal University of Minas Gerais (*Universidade Federal de Minas Gerais*, UFMG) and the Municipal Health Secretariat²¹. The evaluation of QOL and knowledge of the health profile of individuals seeking PHC care may provide information to support public health policies, such as the identification of health problems’ risk situations, as well as knowledge of the characteristics of the population served and environmental and social characteristics of the territory of the Basic Health Units (*Unidades Básicas de Saúde*, UBS) involved in the program. Thus, this study aimed to evaluate the quality of life and to identify its associated factors in users of four UBS of Belo Horizonte participating in the PET-Saúde III.

Methodology

This study is part of the project “Quality of life and health profile of individuals serviced at four UBS in Belo Horizonte” – *Pró-Vida* Project, which aimed to meet a demand of PET-Saúde III, under the thematic line of “Health Promotion and Prevention of Chronic Problems and Diseases”. The *Pró-Vida* Project aimed mainly to characterize the health profile and evaluate the quality of life of the users served in the PHC. We selected four UBS where PET-Saúde research projects were developed, in order to give continuity to UFMG’s activities in these UBS.

Four UBS from the Central-South, Northeast, North and Venda Nova Health Districts participated in the study. According to data from the family register in the BH-Social Census system of the Belo Horizonte Municipality, in 2012, all UBS had more than 8,000 registered patients, of which 54% were women and 74% were adults. Regarding health resources, all UBS had at least three Family Health Teams.

Eligibility criteria included individuals aged 18 years or over, including pregnant women, registered and serviced by UBS who sought their

own care at the time of the interview, within the collection period of the study. Adult or child escorts were not included. The sample was estimated at 884 adult subjects, considering: (i) infinite population; (ii) *a priori* prevalence of 50%, due to the heterogeneity of the events evaluated; (iii) accuracy of 5%; (iv) 95% confidence interval; (v) drawing effect equal to 2; and (vi) 30% of possible refusals. We performed random sample selection and the approach was performed for every three individuals that visited the UBS, until achieving the minimum sample number estimated for each UBS (221 individuals). Individuals within the inclusion criteria were selected; they accepted to participate in the study and signed the Informed Consent Form (ICF).

Interviews were conducted by PET-Saúde academics previously trained with the procedures to be performed, from September 2013 to April 2014 in a reserved room within each UBS, through a semi-structured questionnaire, and all information obtained was self-reported. The database was created in EPI Info version 3.5.4 (Center for Disease Control and Prevention, Atlanta, USA) and data entry quality control was performed, with 10% replication of entry for each UBS. The reliability analysis among typists was performed using kappa statistics, with the mean kappa being $\kappa = 0.97$ for UBS Central-South, $\kappa = 1.00$ for UBS Northeast, $\kappa = 0.97$ for the UBS North and $\kappa = 0.99$ for UBS Venda Nova, indicating excellent agreement in all UBS. The reliability analysis of the questionnaire was performed by interview repeats in 10% of the sample, obtaining $\kappa = 1.00$.

The response variable was QOL. We used the WHOQOL-bref tool to assess QOL, consisting of 26 questions, two of which were overall quality of life (Overall QOL) and the others represented each of the 24 facets underlying the original instrument and are divided into four domains, namely: "Physical" (physical pain and discomfort, medication/treatment dependence, energy and fatigue, mobility, sleep and rest, daily life activities and ability to work); "psychological" (positive and negative feelings, spirituality/personal beliefs, learning/memory /concentration, acceptance of body image and looks and self-esteem); "social relationships" (personal relationships, sexual activity and assistance/social support); and "environment" (physical safety, physical environment, financial resources, new information/skills, recreation and leisure, home environment, health care and transportation). The WHOQOL-bref questions are formulated for responses

on Likert-type scales, including intensity ("not at all" to "extremely"), ability ("not at all" to "completely"), frequency ("never" to "always"), and evaluation ("very dissatisfied" to "very satisfied"; "very poor" to "very good"). Scores of each domain were transformed into a scale from 0 to 100 and expressed in terms of means, as recommended by the manual produced by the WHOQOL⁷ team, with higher means suggesting a better perception of QOL.

Explanatory variables were organized into: (i) sociodemographic characteristics (gender, skin color, age, living with partner, schooling, own income, occupation and number of people in the household); and (ii) lifestyle characteristics and health conditions (smoking habit, use of alcoholic beverages, chronic diseases, use of drugs in the last 15 days and self-reported health).

Regarding data descriptive analysis, the frequency of the explanatory variables and the mean and standard deviation (SD) for each QOL domain were determined. We used t-test and ANOVA, through Tukey tests (if equal variances assumed) or Games-Howell (if equal variances not assumed) to analyze associations between the explanatory variables and QOL domains. Variables that showed $p < 0.20$ in the univariate analysis were inserted into the multiple linear regression model, performed for each WHOQOL-bref domain. The analysis of residuals showed normal distribution and constant variance in the linear regression of each domain. We performed analyses in SPSS version 19.0 (SPSS Inc., Chicago, United States).

Both the Research Ethics Committee of the Municipal Health Secretariat of Belo Horizonte and the Research Ethics Committee of UFMG (COEP-UFMG) approved this study.

Results

A total of 930 patients from the four UBS under study were interviewed (Central-South: 193, Northeast: 226, North: 220, Venda Nova: 291). Losses and refusals accounted for less than 1%, with lack of time being the main reason reported.

Table 1 shows the sociodemographic, lifestyle and health conditions of the total population included and stratified by the source UBS. The sample was predominantly female (79.9%), with a mean age of 45 years ($SD = 16.4$), ranging from 18 to 90 years. Most individuals evidenced up to eight years schooling (64.7%), did not live with a partner (51.8%) and had their own income

(72.4%). Regarding lifestyle characteristics and health conditions, most of the sample were non-smokers (66.6%), did not use alcoholic beverages or used it on occasions (98.3%), had at least one chronic disease (64.4%), used a medication in the last 15 days (77.4%) and self-reported

Table 1. Characteristics of the total population (n = 930) and stratified by Basic Health Units (UBS) of four health districts of Belo Horizonte - MG, Brazil, 2014.

UBS district Variables	Central-South (n = 193)		Northeast (n = 226)		North (n = 220)		Venda Nova (n = 291)		Total (n = 930)	
	n*	%	n*	%	n*	%	n*	%	n*	%
Sociodemographic										
Gender										
Female	157	81.3	180	79.6	171	77.7	235	80.8	743	79.9
Male	36	18.7	46	20.4	49	22.3	56	19.2	187	20.1
Skin color										
White	14	7.3	51	23.3	44	20.1	56	19.3	165	17.9
Other	178	92.7	168	76.7	175	79.9	234	80.7	755	82.1
Age group										
18-39	100	51.8	79	34.9	75	34.1	129	44.3	383	41.2
40-59	65	33.7	84	37.2	92	41.8	106	36.4	347	37.3
≥ 60	28	14.5	63	27.9	53	24.1	56	19.3	200	21.5
Living with a partner										
Yes	87	45.1	99	43.8	100	45.7	161	55.5	448	48.2
No	106	54.9	127	53.2	119	54.3	129	44.5	482	51.8
Schooling										
Under 8 years of study	152	78.8	118	52.2	153	69.5	179	61.5	602	64.7
8+ years of study	41	21.2	108	47.8	67	30.5	112	38.5	328	35.3
Own income										
Yes	145	75.1	170	75.6	162	73.6	196	67.4	673	72.4
No	48	24.9	55	24.4	58	26.4	95	32.6	256	27.6
Occupation										
Yes	123	65.1	121	56.5	91	45.7	140	51.1	475	54.2
No	66	34.9	93	43.5	108	54.3	134	48.9	401	45.8
Living with how many people										
Living alone	6	3.1	12	5.3	4	1.8	12	4.1	34	3.7
Under 3 people	118	61.1	124	54.9	118	53.6	168	57.8	528	56.7
3+ people	69	35.8	90	39.8	98	44.6	111	38.1	368	39.6
Lifestyle and health conditions										
Smoker										
Yes	71	36.8	71	31.4	72	32.7	88	33.1	302	33.4
No	122	63.2	155	68.6	148	67.3	178	66.9	603	66.6
Use of alcoholic beverages										
Never or occasionally	156	96.3	221	98.7	207	98.6	277	98.9	861	98.3
Twice or more per week	6	3.7	3	1.3	3	1.4	3	1.1	15	1.7
Chronic disease**										
Yes	115	60.8	142	64.3	140	65.1	190	66.4	587	64.4
No	74	39.2	79	35.7	75	34.9	96	33.6	324	35.6
Use of drugs in the last 15 days										
Yes	147	76.2	171	75.7	176	81.1	232	80.0	717	77.4
No	46	23.8	55	24.3	41	18.9	58	20.0	209	22.6
Self-reported health										
Good - excellent	99	51.8	148	65.5	117	53.9	170	59.4	534	58.0
Average - bad	92	48.2	78	34.5	100	46.1	116	40.6	386	42.0

* Total varies due to missing data; ** Arthritis, asthma, bronchitis, depression, diabetes, chronic kidney failure and hypertension.

health as good or excellent (58.0%). The most frequent chronic diseases were hypertension (36.0%), depression (29.6%), diabetes (14.2%), arthritis, osteoarthritis or rheumatism (14.2%) and asthma (10.3%). In general, the characteristics of the participants showed the same pattern among the UBS, and the greatest differences were observed between the UBS of the Central-South and Northeast districts, mainly in the sociodemographic characteristics. Compared with other UBS, the lowest proportion of participants enrolled in UBS Central-South was white, and the highest proportion was young, with low schooling and worse self-reported health (Table 1).

QOL's mean values in the domains were different among the UBS of the study. In all domains the Northeast unit had a higher mean and the Central-South unit had a lower mean (Table 2). The highest means were observed for the social relationships domain, both in each UBS and in the total population of the four units, while the lowest means were observed for the environment domain. In this domain, the UBS of the Central-South district had a significantly lower QOL mean than the means of the Venda Nova and Northeast units. UBS North also had lower average than UBS Northeast in the environmental domain (Table 2).

In the univariate analysis shown in Table 3, overall QOL mean values were lower for individuals between 40 and 59 years ($p < 0.001$), with up to eight years schooling ($p < 0.001$), without own income ($p = 0.003$), unemployed ($p < 0.001$), smokers ($p = 0.015$), with some chronic disease ($p < 0.001$), using some medication ($p < 0.001$) and with fair or poor self-reported health ($p < 0.001$). For the physical, psychological and social relationships domains, the associated characteristics were similar to those of overall QOL, differing only in (i) the age for the physical do-

main, where the lowest mean was for individuals older than 60 years ($p < 0.001$); (ii) gender for the psychological domain, where women had lower mean ($p < 0.002$); and (iii) the number of people in the household for the domain of social relationships, where patients living alone showed lower mean ($p = 0.041$). In the environment domain, the lowest means were for females ($p = 0.007$), for patients aged between 40 and 59 years ($p < 0.001$), with up to eight years of study ($p < 0.001$), without own income ($p < 0.001$), smokers ($p = 0.011$), with chronic disease ($p = 0.004$) and who self-referred their health as fair or poor ($p < 0.001$).

The results of the multivariate regression analysis are shown in Table 4. After the adjusted analysis, self-reported income and self-reported health were the only variables that remained associated with overall QOL and QOL in all four domains. Individuals with own income scored 2.7 to 5.5 points higher in QOL means than those depending on the income of other people. Individuals who reported their own health as fair or poor decreased from 9.2 to 17.3 points in the mean of overall QOL and in the four domains, in relation to those who considered health as good or excellent. Individuals with less than eight years of schooling had a worse perception in the QOL the physical, psychological and environmental domains, compared to those with schooling above 8 years. Chronic diseases were negatively associated with overall QOL and in the physical and psychological domains. Drug use was associated only with overall QOL and in the physical domain. Individuals who reported using tobacco had lower means than nonsmokers in the psychological and social relationships domains. Living in places with more than three people in the household was negatively associated with the domain of social relationships, as well

Table 2. Distribution of mean quality of life (QOL) scores in each WHOQOL-bref domain for the total population (n = 930) and stratified by Basic Health Units (UBS) of four health districts of Belo Horizonte – MG, 2014.

Domains and Overall QOL	UBS (mean ± standard deviation)				
	All UBS	Central-South	Northeast	North	Venda Nova
Physical	63.0 ± 18.1	61.0 ± 18.4	64.7 ± 18.5	62.1 ± 17.6	63.8 ± 18.0
Psychological	66.5 ± 16.3	64.9 ± 17.7	68.2 ± 15.7	66.5 ± 16.7	66.2 ± 15.4
Social relationships	68.2 ± 20.4	67.2 ± 20.7	69.3 ± 20.7	68.0 ± 20.1	68.0 ± 20.3
Environment	52.4 ± 15.5	48.0 ± 16.2*	56.0 ± 16.0**	51.6 ± 15.6*	53.3 ± 13.7**
Overall QOL	65.2 ± 19.2	63.9 ± 18.8	68.2 ± 19.4	64.0 ± 20.0	64.6 ± 18.4

* Mean statistically lower than the mean of the UBS Northeast. ** Mean statistically higher than the mean of the Central-South UBS. Notes: Statistical test: ANOVA (Games-Howell).

Table 3. Univariate association between exposure variables and quality of life (QOL) in patients attended at Basic Health Units (UBS) of four health districts of Belo Horizonte – MG, Brazil, 2014.

Variables	WHOQOL-bref scores (Mean (SD))				
	Overall QOL	Physical	Psychological	Social relationships	Environment
Gender					
Female	65.0 (19.5)	62.7 (18.4)	65.6 (16.8)	67.7 (21.1)	51.7 (15.6)
Male	66.1 (17.8)	64.5 (17.0)	69.8 (13.4)	70.0 (17.0)	55.1 (14.6)
P value	0.450	0.230	0.002	0.195	0.007
Skin color					
White	64.4 (20.1)	61.7 (18.4)	67.7 (15.2)	69.1 (20.8)	54.2 (15.3)
Other	65.2 (18.9)	63.2 (18.0)	66.0 (16.5)	67.8 (20.3)	52.0 (15.3)
P value	0.622	0.280	0.244	0.467	0.095
Age group					
18-39	69.8 (18.1)	67.9 (16.5)	68.2 (15.6)	71.4 (19.8)	52.6 (15.1)
40-59	61.8 (19.5)	59.9 (18.4)	64.6 (17.1)	63.7 (21.4)	50.2 (15.9)
> 60	62.2 (18.8)	58.9 (18.1)	66.2 (15.7)	69.5 (18.2)	55.8 (14.7)
P value	< 0.001	< 0.001	0.014	< 0.001	< 0.001
Living with a partner					
Yes	66.0 (17.9)	63.1 (17.7)	67.1 (15.5)	69.5 (19.4)	51.9 (14.5)
No	64.4 (20.2)	62.9 (18.4)	65.8 (16.9)	66.9 (21.2)	52.8 (16.3)
P value	0.219	0.877	0.204	0.055	0.378
Schooling					
Under 8 years of study	62.9 (19.0)	60.2 (18.1)	64.3 (16.3)	66.3 (21.6)	50.4 (15.1)
8+ years of study	69.3 (18.7)	68.2 (16.9)	70.3 (15.4)	71.4 (19.5)	56.0 (15.3)
P value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Own income					
Yes	66.3 (18.5)	64.2 (17.3)	67.8 (15.6)	69.4 (19.9)	54.1 (15.2)
No	62.1 (20.4)	59.8 (19.6)	62.6 (17.3)	64.5 (21.2)	47.7 (14.8)
P value	0.003	0.001	< 0.001	0.001	< 0.001
Occupation					
Yes	67.2 (18.0)	66.2 (16.2)	68.0 (15.6)	69.2 (20.2)	52.4 (15.4)
No	62.2 (20.2)	59.2 (19.4)	64.4 (16.8)	66.4 (20.8)	62.3 (15.6)
P value	< 0.001	< 0.001	0.001	0.049	0.922
Living with how many people					
Living alone	65.4 (19.4)	60.1 (18.9)	67.1 (17.2)	64.0 (26.0)	57.3 (16.3)
Under 3 people	64.8 (19.4)	63.4 (17.6)	67.0 (16.1)	69.5 (20.0)	52.6 (15.9)
3+ people	65.6 (18.8)	62.7 (18.7)	65.5 (16.4)	66.4 (20.1)	51.6 (14.6)
P value	0.826	0.548	0.415	0.041	0.109
Smoker					
Yes	63.0 (19.7)	60.8 (18.5)	63.7 (16.9)	64.8 (20.5)	50.4 (14.8)
No	66.3 (18.9)	64.0 (17.8)	67.7 (15.8)	69.7 (19.9)	53.2 (15.6)
P value	0.015	0.014	0.001	0.001	0.011
Use of alcoholic beverages					
Never or occasionally	65.4 (18.9)	63.2 (17.9)	66.6 (16.1)	68.4 (20.4)	52.5 (15.2)
Twice or more per week	58.3 (26.1)	57.7 (23.1)	58.7 (22.7)	62.7 (19.3)	54.5 (18.1)
P value	0.151	0.238	0.063	0.286	0.612

it continues

as living without a partner. The gender variable only remained associated to the psychological domain, and women evidenced worse perception of QOL than men. There was a negative as-

sociation between QOL in the physical domain and individuals without occupation. Regarding age, considering as reference the age group 18-39 years, individuals between 40 and 59 years old

Table 3. continuation

Variables	WHOQOL-bref scores (Mean (SD))				
	Overall QOL	Physical	Psychological	Social relationships	Environment
Chronic disease					
Yes	60.9 (19.7)	58.7 (18.5)	63.9 (16.9)	65.6 (21.2)	51.2 (15.7)
No	72.8 (15.2)	70.8 (14.2)	71.0 (13.7)	72.4 (18.1)	54.3 (14.5)
P value	< 0.001	< 0.001	< 0.001	< 0.001	0.004
Use of drugs*					
Yes	63.0 (19.2)	60.6 (18.2)	65.4 (16.5)	67.1 (20.2)	51.9 (15.4)
No	72.3 (16.8)	71.2 (15.2)	69.9 (14.9)	71.5 (20.7)	54.0 (15.5)
P value	< 0.001	< 0.001	< 0.001	0.006	0.090
Self-reported health					
Good - excellent	73.5 (15.1)	70.8 (14.4)	71.3 (13.5)	72.6 (18.7)	56.5 (14.7)
Average - bad	53.7 (18.0)	52.3 (17.1)	59.6 (17.4)	62.0 (21.0)	46.7 (14.7)
P value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

* In the last 15 days; SD: Standard deviation.

Notes: Statistical tests: Student's t-test and ANOVA (Tukey for presumed equal variances and Games-Howell for equal non-presumed variances).

Table 4. Final multivariate model of the factors associated with mean quality of life (QOL) in patients attended at Basic Health Units (UBS) of four health districts of Belo Horizonte – MG, Brazil, 2014.

Variables Risk vs. reference	WHOQOL-bref scores				
	Overall QOL	Physical	Psychological	Social relationships	Environment
	Mean (CI95%)	Mean (CI95%)	Mean (CI95%)	Mean (CI95%)	Mean (CI95%)
Gender					
Woman vs. man	-----	-----	-3.3(-5.8;-0.8)**	-----	-----
Age group (years)					
40-59 vs. 18-39	-----	-----	-----	-5.5(-8.1;-2.9)***	-----
> 60 vs. 18-39	-----	-----	-----	-----	4.9(2.5;7.3)***
Living with a partner					
No vs. yes	-----	-----	-----	-2.7(-5.3;-0.2)*	-----
Schooling (years of study)					
< 8 vs. 8 or more	-----	-2.5(-4.7;-0.2)*	-3.0(-5.2;-0.9)**	-----	-3.1(-5.2;-1.0)**
Own income					
Yes vs. no	3.9(1.5;6.2)**	2.7(0.1;5.2)*	3.6(1.4;5.9)**	4.4(1.5;7.2)**	5.5(3.4;7.6)***
Occupation					
No vs. yes	-----	-2.9(-5.2;-0.6)*	-----	-----	-----
Nº of people in the household					
> 3 vs. less than 3	-----	-----	-----	-2.8(-5.4;-0.3)*	-----
Smoker					
Yes vs. no	-----	-----	-2.2(-4.3;-0.1)*	-2.8(-5.5;-0.1)*	-----
Chronic disease					
Yes vs. no	-6.0(-8.4;-3.7)***	-5.8(-8.1;-3.5)***	-3.9(-6.0;-1.7)***	-----	-----
Use of drugs					
Yes vs. no	-3.1(-5.7;-0.4)*	-4.6(-7.2;-2.1)***	-----	-----	-----
Self-reported health					
Fair or bad vs. good or excellent	-17.3(-19.6;-15.0)***	-15.1(-17.4;-12.9)***	-9.8(-11.9;-7.7)***	-9.8(-12.4;-7.2)***	-9.2(-11.1;-7.2)***
UBS					
Central-South vs. Northeast	-----	-----	-----	-----	-4.3(-6.6;-2.0)***

*p < 0.05; **p < 0.01; ***p < 0.001.

Notes: Statistical test: Linear regression.

showed worse perception of QOL in the social relationships domain and elderly showed a better perception in the environment domain. Finally, patients serviced at UBS Central-South had worse perception of QOL in the environmental domain than those seen at UBS Northeast.

Discussion

This study evaluated the QOL perceived by users who sought care at four UBS in the city of Belo Horizonte, in order to subsidize the diagnosis of the health situation of the population served in PHC services. The general characteristics of the population found in this study, such as the predominance of women and low schooling were similar to those observed in other studies performed with SUS users in Brazil^{22,23}. The same occurs with regard to the profile of chronic diseases, which was similar to that found in a study carried out in three UBS in Rio Grande do Sul, where the most prevalent diseases were circulatory diseases followed by mental, endocrine, musculoskeletal and respiratory diseases¹².

The mean QOL observed in the four domains and in the overall QOL were lower than those commonly reported by other authors. However, the QOL pattern in the domains was similar to that of other Brazilian studies, with the domain social relationships showing a better mean and the environment domain scoring a lower mean, usually because they are carried out in communities that are located in areas of greater social vulnerability^{12,15,17}.

Social vulnerability may be the reason for the difference in the environmental domain among UBS. In order to diagnose the health situation of the municipality of Belo Horizonte, which involves adverse environmental and social conditions, the Municipal Health Secretariat of Belo Horizonte periodically carries out the calculation of the Health Vulnerability Index (HVI) according to the distribution of the census tracts (CT)²⁴. According to the distribution of CTs of Belo Horizonte by category of HVI, in 2012, it was observed that UBS Central-South region was a high vulnerability risk location, with the highest HVI of all UBS included in the study, followed by UBS North, Venda Nova and Northeast, and the latter two were considered low risk²⁴. One study observed that the health conditions of Belo Horizonte's elderly varied according to the HVI, with the worst conditions associated with high risk areas²⁵. Podestá *et al.*¹⁵ also observed that the

location of UBS influenced patients' QOL, especially in the units located in peripheral regions. Since the lowest mean QOL was observed for the environmental domain, it is worth outlining the importance of investments and development and urban planning policies aiming to improve the QOL of populations living in vulnerable areas.

After multivariate analysis, age remained associated with QOL in the domains of social and environmental relationships. In the social relationships domain, subjects aged 40 to 59 years showed worse perception of QOL than did young adults. This can be justified by the conception that young adults are at the stage of life in which the functional peak of network of relationships is achieved, whereas entering the labor market, marriage and children take some time that was previously dedicated to friendships, where the leisure of older adults involves more family than friends²⁶. In the environment domain, elderly individuals evidenced a better perception of QOL than did young adults. This result was also observed by other studies^{18,27} and may be related to the provision of more adequate and safe environments for the elderly, such as long-term institutions, since adequate housing and physical environment have a positive influence on the elderly's QOL²⁸. In a study by Vitorino *et al.*²⁹, elderly individuals in the community had lower QOL in the environment domain compared to the elderly in long-term institutions.

Socioeconomic factors, such as income, schooling and occupation show the same pattern in relation to QOL, since low schooling is related to inequalities in income distribution and lower insertion in the labor market^{30,31}. In this study, having own income was associated with a better overall QOL and in all domains. Similar results were found by Azevedo *et al.*¹², who observed that lower social classes demonstrated worse QOL in all four domains. These results were also found in a study carried out with Iranian women, where being satisfied with their own income resulted in better QOL, also in the four domains³². Regarding individuals with low educational level, the association was stronger in the psychological and environmental domains and was not significant for the social relationships domain, and this result was also observed by other authors in a study with Brazilian elderly³³. Not being employed, in turn, was only associated with a worse perception of QOL in the physical domain, precisely the one that includes activities of daily life and work capacity, corroborating with the concept that work is also something that gives meaning

to life, elevates status and boosts human being's growth³⁴. Regarding gender, women evidenced worse perception of QOL than men in all domains, but only for the psychological domain the difference was statistically significant. The same result was observed by other authors^{19,27,35}, and the relationship between female gender and psychosocial factors is well reported in studies in the literature, where women reported having more negative feelings, low self-esteem and depression than men^{36,37}. Living without partners was associated with a lower perception of QOL in the social relationship domains, as observed by other authors^{12,19,38}. Individuals without partners tend to perform poorly on structural aspects of social support networks, such as less contact with family and friends and low frequency of assistance received and provided³⁹.

In this study, the number of people per residence ranged from zero to 15, with a mean of 3.27 people per household, very close to the mean observed for Brazil (3.3), according to data from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) of 2010⁴⁰. Data found in the four UBS evaluated showed that living with more than three people in the same household was associated with a worse perception of QOL in the social relationships domains. The United Nations Human Settlements Program (UN-HABITAT) considers the "sufficient area to live" as a domain to be evaluated for the monitoring of poor settlements, with a recommendation of no more than two people sharing the same dormitory, in order to create an adequate space for the development of human relationships and social interaction^{40,41}.

As for habits and lifestyle, being a smoker was associated with a worse QOL in the psychological and social relationships domains. In agreement, other studies have observed that smokers have lower QOL rates when compared to nonsmokers, mainly in the psychological and social relationships domains, and the greater the tobacco-dependence level, the greater the QOL loss⁴²⁻⁴⁴. In the psychological domain, this result can be justified by the fact that some psychiatric symptoms, such as anxiety and depression, are related to smoking and these could result in worse QOL⁴⁴⁻⁴⁷. In relation to the social relationships domain, smoking has changed from acceptable social behavior to a socially undesirable habit, and this has exerted a negative influence on social relationships⁴⁸.

Regarding health conditions, chronic diseases was associated with a worse overall QOL and in

the physical and psychological domains. Chronic diseases are more likely to limit daily activities due to physical symptoms such as pain and discomfort, which may decrease the functional capacity of individuals and negatively reflect their QOL, especially in the physical domain^{19,49-52}. Likewise, in the psychological domain, limitations imposed by chronic diseases' impact on mental health, perception about feelings and self-image, which can significantly decrease their QOL⁴⁹⁻⁵¹. As observed in this study, a negative association between pharmacological treatment and QOL has been demonstrated in the physical domain. A possible explanation would be that the use of medication is associated with a lower autonomy of the patient, which in turn reduces QOL⁵³⁻⁵⁵. It is important to emphasize that depending on drugs or treatments can be seen both as a QOL worsening factor by the decrease of autonomy, and of improvement by the beneficial effect that some medications and/or treatments provide⁵⁶.

Regarding self-reported health, fair or poor health was associated with poor quality of life in the overall QOL and in all WHOQOL-bref domains, and overall QOL, which corresponds to the "evaluation of the quality of life" and "satisfaction with health" was the one that was most strongly associated with this negative self-perception. Azevedo et al.⁵⁷ verified that individuals who perceive themselves as healthy show a better evaluation of overall QOL. Health self-perception is a good predictor of mortality and other health indicators, and reflects the individual's perception of own health and includes the biological and psychosocial domains⁵⁸. In comparison with the other domains, the physical domain had the greatest negative association between fair or poor self-perceived health and QOL. This may be related to chronic diseases or to lifestyle habits, such as smoking and sedentary lifestyle, which are associated with poor self-perception of individual health⁵⁹. Health can be determined and conditioned, in the perception of the individual, by a series of determinants of health, such as living and working conditions, psychosocial, economic, cultural factors and individual behaviors^{57,60}. These axes that integrate the determinants of health are embedded in the characteristics of the psychological, social and environmental domains, related to the findings of this study, where there was an association between fair or poor self-perceived health with worse QOL in these domains.

The results obtained in this study show significant differences in the evaluation of QOL be-

tween the individuals attended in four UBS of the city of Belo Horizonte regarding socioeconomic, clinical and life habits. These results should be interpreted with caution because of the difficulty in establishing a direct causal relationship, since this is a cross-sectional design study. The existence of acute diseases at the time of the interview was not investigated and it was not possible to evaluate their impact on the QOL. However, drug use and self-reported health may be indicative of disease or malaise, suggesting that acute illness at the time of the interview may have contributed to a worse perception of QOL. Another limitation refers to the very nature of questionnaires used, including the WHOQOL-bref, since they are self-reporting instruments subject to response bias, that is, tendencies to distort the response toward a favorable direction, thus denying socially undesirable traits and behaviors. However, WHOQOL-bref is a practical instrument with satisfactory psychometric properties and is the most widely used QOL assessment tool worldwide and recommended by WHO. It can be inferred, therefore, that worse QOL perceptions were related to worse health and housing conditions, low schooling and family income, prob-

lems in social relationships and psychological conditions, suggesting a lack of health resources, culture, education, leisure and sanitation, among others, that directly affect people's QOL.

Most QOL studies have been performed in specific populations, such as the elderly or individuals with a defined health profile, and few studies have been conducted on the general population served in PHC services. This study highlights the importance of actions to improve QOL in Primary Care users through actions promoted by both health professionals and public managers. These actions include: (i) educational campaigns, such as the preparation of booklets and the strengthening and dissemination of operational groups in the UBS; (ii) training of health professionals and expanded human resources in health services, such as psychologists, physiotherapists, pharmacists, among others; (iii) improvement of public policies regarding urban infrastructure, sanitation, social support and promotion. These measures can bring benefits and reflect positively on the quality of life of individuals and should be prioritized by the stakeholders involved in the setting of Primary Health Care.

Collaborations

CC Almeida-Brasil and KR Silva wrote the manuscript, performed data analysis and interpreted the results. MR Silveira participated in study design, interpretation of results and critically reviewed the article. MG Lima, CDCM Faria, CL Cardoso and HJK Menzel participated in study design and approved the final version of the article. MGB Ceccato participated in study design, interpretation of results, critically reviewed the article and supervised all study steps.

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