Trends
in Psychiatry and Psychotherapy

Original Article

General aspects of quality of life in heterogeneous populations: notes on Flanagan's Quality of Life Scale (QoLS)

Aspectos gerais da qualidade de vida em populações heterogêneas: notas sobre a Escala de Qualidade de Vida de Flanagan

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Abstract

Introduction: Instruments aimed to investigate general aspects of quality of life are scarce in the literature. Flanagan's Quality of Life Scale (QoLS) is an alternative instrument which provides a more comprehensive evaluation of quality of life in different contexts.
Objective: To investigate some psychometric properties of the QoLS and discuss the measurement of quality of life using this scale in heterogeneous and large populations.
Methods: The QoLS comprises 16 items divided into five dimensions. Responses were measured using a 7-point rating scale. Data were collected from a stratified sample of primary health care users in the municipality of Ribeirão Preto, state of São Paulo, Brazil. Polychoric correlation matrix and exploratory and confirmatory factor analyses were performed.
Results: A total of 1,054 primary health care users in 12 health care facilities were interviewed: 79.7% female; mean age = 36.97 years (standard deviation = 15.1). Moderate to low correlation coefficients were observed between almost all pairs of QoLS items. Items 7 and 9 as well as items 14 and 15 were the pairs presenting the highest correlation coefficient. The original structure of the QoLS, with five dimensions, showed adequate psychometric properties regarding the data collected. The inclusion of a single item on life satisfaction was proposed.
Conclusion: The original structure of the QoLS was validated and found to be reliable when applied to primary health care users. A new general item was suggested for future studies to improve the interpretations and associations regarding general aspects of quality of life in large and heterogeneous populations.
Keywords: Quality of life, evaluation, scales, validity.

Resumo

Introdução: Instrumentos destinados a investigar aspectos gerais da qualidade de vida são escassos na literatura. A Escala de Qualidade de Vida de Flanagan (Flanagan's Quality of Life Scale – QoLS) é um instrumento alternativo que fornece uma avaliação mais abrangente da qualidade de vida em diferentes contextos.
Objetivo: Investigar propriedades psicométricas da QoLS e discutir a mensuração da qualidade de vida utilizando essa escala em populações amplas e heterogêneas.
Métodos: A QoLS é composta de 16 itens divididos em cinco dimensões, cujas categorias de resposta variam em uma escala de 7 pontos. Os dados foram coletados em uma amostra estratificada de usuários da atenção primária do município de Ribeirão Preto, SP. Matriz de correlação policórica e análise fatorial exploratória e confirmatória foram realizadas.
Resultados: Foram entrevistados 1.054 usuários da atenção primária em 12 unidades de saúde: 79,7% mulheres; idade média = 36,97 anos (desvio padrão = 15,1). Coeficientes de correlação moderados a baixos foram observados entre quase todos os pares de itens da escala. Os pares de itens 7 e 9, e 14 e 15 foram os que apresentaram o maior coeficiente de correlação. A estrutura original da QoLS, com cinco dimensões, apresentou propriedades psicométricas adequadas em relação aos dados coletados. A inclusão de um item único sobre satisfação com a vida foi proposto.
Conclusão: A estrutura original da QoLS foi considerada válida e confiável quando aplicada a usuários da atenção primária. Um novo item geral foi sugerido para estudos futuros, a fim de melhorar as interpretações e associações sobre aspectos gerais da qualidade de vida em populações amplas e heterogêneas.
Descritores: Qualidade de vida, avaliação, escalas, validade.

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Submitted Sep 12 2018, accepted for publication Jan 17 2019.
Suggested citation: Zucoloto ML, Martinez EZ. General aspects of quality of life in heterogeneous populations: notes on Flanagan's Quality of Life Scale (QoLS). Trends Psychiatry Psychother. 2019;41(3):268-275. http://dx.doi.org/10.1590/2237-6089-2018-0077

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Introduction

In the last decades, quality of life (QoL) has been defined as a multidimensional construct which can be assessed based on general and specific concepts, which may be measured using several approaches.[1-3] According to the World Health Organization (WHO), QoL is described as the individual's perception of their life positions under the perspective of the culture and value system in which they are inserted, including individual goals, expectations, standards and priorities. In addition, some factors are mentioned as modulators of the concepts of QoL, such as physical health, level of independence, social relationships, psychological status, personal beliefs and environmental characteristics.[4]

In other words, despite the continuing theoretical debate in the literature on the meanings and ways to measure overall QoL, a possible way to understand this is to consider instruments under the individual's perspective by measuring and contextualizing their personal well-being and satisfaction with life. According to Revicki et al.,[5] the most complex measurement of QoL can be made through subjective experiences, states and perceptions. These constructs are considered as "a broad range of human experiences related to one's overall well-being" based on subjective functioning in comparison with personal expectations, transcending the meaning of health.

Several instruments aiming to measure QoL have been proposed for different study objectives, such as the World Health Organization Quality of Life Assessment (WHOQoL) and the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36).[6-8] However, these and similar instruments mostly assess QoL based solely on health and wellness aspects, in which dimensions such as limitations, functionality, symptoms, diseases and treatment outcomes are considered.[3,9,10] Although health-related aspects are extremely important in the assessment of QoL, some authors point to the lack of studies and instruments taking general dimensions into consideration,[9,10] also affirming that health is only one determinant among the many aspects that should be evaluated by studies on QoL and its implications.

An alternative instrument aimed at assessing QoL more comprehensively was proposed by Flanagan.[11] Flanagan's Quality of Life Scale (QoLS) is composed of 15 items distributed into five dimensions, namely: physical and material well-being; relations with other people; social, community and civic activities; personal development and fulfillment; and recreation. The aim is to assess QoL based on the individual's perception of these aspects of life.[12,13] Unlike most of the scales available for QoL assessment, the advantage of using the QoLS is based on its theoretical framework, which seeks to provide a more complete measurement of QoL and can therefore be more suitable for application in studies involving the general population.

The original version of the QoLS was proposed for use in a North American population. Since then, it has been translated into more than 16 languages,[13] with the Brazilian Portuguese version being proposed by Hashimoto et al.[14]

Despite its original proposal aimed to assess QoL in a general population, the QoLS has been more frequently applied in specific contexts involving individuals with chronic conditions,[12] institutionalized elderly[15] and cardiac patients.[13] In fact, no studies have been conducted with general populations. This lack of studies is due to the difficulty associated with evaluating overall QoL in heterogeneous populations, since different interpretations may be made and influenced by sociodemographic and behavioral variables.[9] In addition, few studies validating the adaptations of the QoLS are available in the literature.

Thus, given the low availability of instruments and the scarcity of studies considering general and comprehensive aspects of QoL, the objective of the present study was to investigate some psychometric properties of the QoLS and discuss QoL measurement in heterogeneous and general populations.

Methods

Instrument, sampling design and data collection

The Brazilian Portuguese version of the QoLS applied in this study consisted of 15 items from the original one,[11] plus 1 item on independence, as proposed by Burckhardt et al.[12] This modified version has been widely used in the literature, and the Portuguese version was studied by Dantas et al.[13] As mentioned earlier, the factorial structure of the original QoLS consists of five dimensions (physical and material well-being; relations with other people; social, community and civic activities; personal development and fulfillment; and recreation), all aiming to assess QoL based on the individual's degree of satisfaction with these aspects of life. The response categories of the QoLS are distributed on a rating scale from 1 to 7 (i.e., 1 = extremely dissatisfied; 7 = extremely satisfied).[16]

Data on primary health care users aged 18 years or older were collected from 12 health care facilities in Ribeirão Preto, state of São Paulo, Brazil. Ribeirão Preto is a medium-sized city divided into five health care districts and comprising a total of 41 health care facilities in operation since 2016. In the present

sampling design, each health care facility was classified according to its location and to the state's classification of social vulnerability (Índice Paulista de Vulnerabilidade Social [IPVS]).[17] The IPVS classifies the geographical areas into six groups; the higher the IPVS index, the greater the vulnerability of the region. Thus, all health care facilities were grouped into 12 strata, and the data collection sites (12 in total) were randomly selected within each stratum. The sample size considered stratified sampling at 95% confidence interval, with an estimated number of interviews of 1,054. The following inclusion criteria were considered: being a primary healthcare user, being aged 18 years or older; living in Ribeirão Preto, being able and having the availability to fully respond to the instrument.

Data collection was performed from September 2015 to May 2016 through face-to-face interviews, while the participants were waiting for medical appointments. The questionnaire consisted of the QoLS and some sociodemographic items on gender, age, socioeconomic status, educational level, marital status, medical insurance and self-perception of health (i.e. good, regular or poor) for sample characterization. Socioeconomic status and educational level were evaluated according to the Brazilian Economic Classification Criteria proposed by the Brazilian Association of Research Companies (Associação Brasileira de Empresas de Pesquisa – ABEP).[18]

Evaluation of psychometric properties

The factorial validity of the QoLS was assessed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), with the former being performed with polychoric correlation methods implemented in the SAS software and the latter with correlation matrix based on weighted least squares means and variance adjusted (WLSMV). Goodness-of-fit indices relied on the ratio of the chi-square to its degrees of freedom (χ^2/df), including the comparative fit index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA). The fit of the model was considered adequate when $\chi^2/df \leq 2.0$, CFI and TLI ≥ 0.90, and RMSEA < 0.10.

In order to evaluate the stability of the factorial structure of the QoLS, factorial invariance was estimated by using multi-group analysis ($\Delta\chi^2$). The sample was randomly divided into two sub-samples called "test" (60% of the total sample) and "validation" (40% of the total sample). Metric invariance (equivalence of factorial weights [λ]), scalar invariance (equivalence of factorial weights and intercepts [Int]) and strict invariance (equivalence of factorial weights, intercepts and variance/covariance residues [Cov]) were assessed.[19] The internal consistency of the QoLS was validated by using Cronbach's alpha coefficient (α).

Means (minimum = 1; maximum = 7), standard deviations (SD) and ceiling/floor effects were calculated for each dimension of the QoLS. Ceiling and floor effects are represented by the percentage of participants presenting the lowest and highest possible scores in each dimension. As for the QoLS, in which the score of each dimension was calculated by using the mean obtained from the answers, the lowest and highest possible scores were, respectively, equal to 1 and 7 for all dimensions. The maximum score was denoted by k (k = 7). Ceiling and floor effects were considered relevant when they exceeded 1/k, i.e., above 14% in the case of the QoLS.[20]

Compliance with ethical standards

This study was approved by the research ethics committee (CAAE 38148814.2.0000.5440), including data collection, which was authorized by the Municipal Health Department of Ribeirão Preto (number 4443/14-GS; process: 022014037904 1). A signed informed consent form was obtained from all the participants.

Results

A total of 1,054 primary health care users agreed to participate in the study and fully answered the questionnaire (80.7% of the total invited). The mean age was 36.97 years (SD = 15.1). Of the participants, 22.0% reported to have arterial hypertension and 8.0% diabetes mellitus. The characterization of the sample is presented in Table 1, and the distribution of the participants in Table 2. Figure 1 shows the polychoric correlation matrix for the 16 items of the QoLS.

Moderate to low correlation coefficients were observed between almost all pairs of QoLS items. Items 7 (helping others) and 9 (intellectual development), and items 14 (passive recreation) and 15 (active recreation) were the pairs of items showing the highest correlation coefficients, respectively 0.52 and 0.51.

Since the factorial structure of the QoLS was never tested in primary health care users, we decided to perform an EFA aiming to group the items according to QoL dimensions. In our sample, the results of the EFA showed that the QoLS items could be distributed into only two dimensions, with the first comprising items 1, 2, 3, 4, 5 and 11, and the second comprising items 6, 7, 8, 9, 10, 12, 13, 14, 15 and 16. This factorial structure was tested with CFA as well.

Despite the adequate overall fit of the QoLS two-dimensional structure as demonstrated by CFA ($\chi^2/$

df = 7.10; CFI = 0.94; TLI = 0.93; RMSEA = 0.08), item 8 presented a low factor weight (λ = 0.37), which impaired the local fit of this structure.

The structure with five dimensions as proposed in the original theoretical framework of the QoLS was also tested with CFA, presenting adequate fit to the data (χ^2/df = 7.04; CFI = 0.94; TLI = 0.93; RMSEA = 0.08). In addition, all items presented adequate factorial weights (λ > 0.40). The original structural model of the QoLS as well as the results of the CFA are presented in Figure 2.

In addition to its adequate fit, the structure with five dimensions of the QoLS was strongly stable in randomly selected sub-samples (i.e. test and validation samples), presenting metric invariance (λ: χ^2 = 4.43; p = 0.92), scalar invariance (Int: χ^2 = 77.78; p = 0.55) and strict invariance (Cov: χ^2 = 77.35; p = 0.26). Therefore, the original structure seems to be more adequate to our data than the structure with two dimensions.

The internal consistency of the QoLS was high considering all the 16 items (α = 0.84). Considering

Table 1 - Characterization of the sample of primary health care users (n=1,055), Ribeirão Preto, state of São Paulo, Brazil, 2016

Sociodemographic variables	n (%)
Sex	
Female	841 (79.7)
Male	214 (20.3)
Age group (years)	
18-25	188 (17.8)
26-30	132 (12.5)
31-40	250 (23.7)
41-50	173 (16.4)
51-60	164 (15.6)
> 60	148 (14.0)
Socioeconomic level*	
A/B1 (R$ 15,071.00 or USD 4,739.00)	65 (6.1)
B2 (R$ 4,852.00 or USD 1,526.00)	290 (27.5)
C1 (R$ 2,705.00 or USD 851.00)	368 (34.9)
C2 (R$ 1,625.00 or USD 511.00)	235 (22.3)
D or E (R$ 728.00 or USD 229.00)	97 (9.2)
Educational level	
Illiterate or < 4 years of education	130 (12.3)
Elementary school (preschool to 4th grade)	61 (5.8)
Middle school (5th to 8th grade)	221 (21.0)
High school (secondary education)	517 (49.0)
Higher education	126 (11.9)
Marital status	
Married or living together	648 (61.4)
Divorced	107 (10.1)
Single	247 (23.4)
Widowed	53 (5.0)
Medical insurance	
Yes	154 (14.6)
No	901 (85.4)
Self-perception of health	
Good	735 (69.7)
Regular	280 (26.5)
Poor	40 (3.8)

* Economic class = familiar monthly income.

the factors separately, internal consistency results were 0.51 for physical and material well-being, 0.60 for relations with people, 0.60 for social, community and civic activities, 0.69 for personal development and fulfillment, and 0.59 for recreation.

Table 3 briefly shows the measurements (i.e. mean, SD, minimum and maximum values) and the ceiling/floor effects considering the five dimensions of the QoLS.

The mean scores for the QoLS were similar in all dimensions of QoL evaluated in our sample. No substantial ceiling/floor effects were observed.

Discussion

The results here reported confirmed the validity and reliability of the original QoLS in the assessment of QoL in a representative sample of primary health care users. However, some points should be discussed with regard to the psychometric properties of the QoLS, mainly for large and heterogeneous samples, as was the case in the present study.

According to the polychoric correlation matrix, the items of the QoLS presented low to moderate correlation. The maximum coefficients of correlation observed were

Table 2 - Distribution of the answers given by primary health care users to the QoLS, Ribeirão Preto, state of São Paulo, Brazil, 2016

QoLS	Terrible	Unhappy	Mostly dissatisfied	Mixed	Mostly satisfied	Pleased	Delighted
Satisfaction in relation to...							
1. Material well-being	16 (1.5)	16 (1.5)	102 (9.7)	166 (15.7)	546 (51.8)	123 (11.7)	85 (8.2)
2. Health	20 (1.9)	19 (1.8)	112 (10.6)	143 (13.6)	461 (43.7)	136 (12.9)	163 (15.5)
3. Relationship with relatives	10 (0.9)	8 (0.8)	50 (4.7)	76 (7.2)	353 (33.5)	204 (19.3)	353 (33.6)
4. Having and raising children	7 (0.7)	2 (0.2)	14 (1.3)	176 (16.7)	262 (24.8)	135 (12.8)	458 (43.5)
5. Relationship with spouse or significant other	20 (1.9)	5 (0.5)	40 (3.8)	231 (21.9)	284 (26.9)	165 (15.6)	309 (29.4)
6. Having close friends	4 (0.4)	6 (0.6)	16 (1.5)	86 (8.2)	393 (37.3)	218 (20.7)	331 (31.5)
7. Helping others	1 (0.1)	2 (0.2)	10 (0.9)	52 (4.9)	371 (35.2)	217 (20.6)	401 (38.1)
8. Civic activities	10 (0.9)	9 (0.9)	67 (6.4)	458 (43.4)	288 (27.3)	100 (9.5)	122 (11.7)
9. Intellectual development	1 (0.1)	5 (0.5)	51 (4.8)	98 (9.3)	425 (40.3)	194 (18.4)	280 (26.6)
10. Understanding of self	1 (0.1)	4 (0.4)	30 (2.8)	92 (8.7)	422 (40.0)	238 (22.6)	267 (25.4)
11. Occupational role	11 (1.0)	10 (0.9)	72 (6.8)	109 (10.3)	412 (39.1)	203 (19.2)	237 (22.6)
12. Creativity/personal expression	4 (0.4)	9 (0.9)	34 (3.2)	94 (8.9)	406 (38.5)	243 (23.0)	264 (25.1)
13. Socializing	20 (1.9)	25 (2.4)	155 (14.7)	390 (37.0)	251 (23.8)	109 (10.3)	104 (10.0)
14. Passive recreation	4 (0.4)	7 (0.7)	24 (2.3)	78 (7.4)	340 (32.2)	241 (22.8)	360 (34.2)
15. Active recreation	7 (0.7)	6 (0.6)	58 (5.5)	126 (11.9)	356 (33.7)	217 (20.6)	284 (27.0)
16. Independence	4 (0.4)	4 (0.4)	31 (2.9)	37 (3.5)	285 (27.0)	254 (24.1)	439 (41.7)

Data presented as n (%).
QoLS = Quality of Life Scale.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	0.380														
3	0.330	0.319													
4	0.109	0.174	0.371												
5	0.221	0.280	0.352	0.299											
6	0.224	0.246	0.402	0.225	0.296										
7	0.211	0.248	0.342	0.374	0.271	0.425									
8	0.023	0.011	0.097	0.129	0.097	0.211	0.448								
9	0.179	0.283	0.305	0.268	0.241	0.267	0.517	0.304							
10	0.249	0.375	0.354	0.280	0.301	0.339	0.458	0.232	0.493						
11	0.311	0.311	0.359	0.300	0.292	0.334	0.407	0.130	0.360	0.449					
12	0.156	0.202	0.308	0.268	0.211	0.441	0.429	0.222	0.358	0.476	0.402				
13	0.120	0.191	0.169	0.075	0.148	0.200	0.257	0.298	0.293	0.233	0.266	0.280			
14	0.162	0.282	0.250	0.232	0.167	0.333	0.442	0.192	0.402	0.422	0.329	0.410	0.296		
15	0.158	0.173	0.295	0.222	0.226	0.432	0.447	0.286	0.385	0.378	0.279	0.383	0.301	0.508	
16	0.184	0.297	0.368	0.332	0.263	0.292	0.406	0.185	0.395	0.481	0.407	0.416	0.252	0.464	0.438

0.50 | - 0.60
0.40 | - 0.50
0.30 | - 0.40
0.20 | - 0.30
0.01 | - 0.20

Figure 1 - Polychoric correlation matrix for the Portuguese version of the Quality of Life Scale (QoLS). Darker colors corresponded to higher correlation coefficients.

approximately 0.50. Two pairs of items (7 and 9; 14 and 15) presented higher coefficients of correlation. Items 14 and 15 are both related to recreational activities, such as satisfaction in listening to music, watching TV or going to the movies (item 14) and satisfaction in meeting other people and doing things together (item 15). However, items 7 and 9 are related to different contexts, such as satisfaction in helping and supporting other people and satisfaction in learning to increase one's general knowledge, respectively. We understand that both feelings of satisfaction can be common characteristics among participants with similar perspectives. Therefore, these items are not components of the same dimension of the QoLS.

Following the same reasoning, although the results of the EFA suggested a distribution of the QoLS items in two dimensions, we believe that the instrument's theoretical framework would fail in this case. Moreover, the CFA showed that the two-dimensional structure had some problems regarding the local fit. For these reasons, the use of the two-factor structure was discarded in this study.

The fit of the QoLS with five-dimension structure was adequate for our data, which provides evidence that this instrument can also be suitable to assess general aspects of QoL in large and heterogeneous populations. However, although we still believe that the QoLS is a generic instrument aimed to measure general aspects of QoL, it does not take into consideration the fact that QoL may have different meanings in different contexts of evaluation.[21] Koohi et al.[1] assessed QoL in general populations from different countries for 10 years and found some association between levels of QoL and the human development index (HDI). According to those authors, some factors can affect the individual's concepts of QoL, such as physical health, psychological status, level of independence, social relationships, personal beliefs and environmental characteristics. Therefore, it is necessary to emphasize that although people instinctively understand the meaning of QoL, the concept is not the same for different contexts, and this aspect should be considered in its assessment. For this

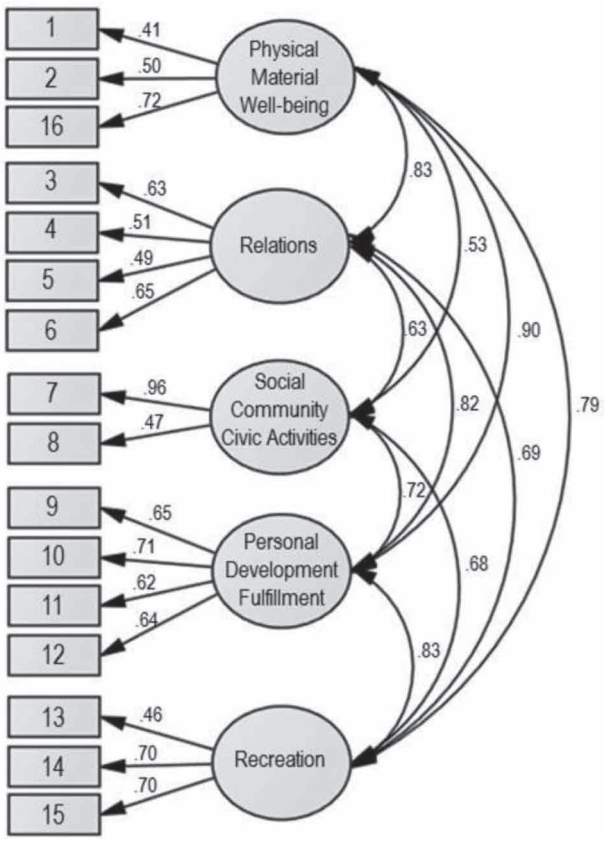

Figure 2 - Structural model for the Quality of Life Scale (QoLS) and results obtained with confirmatory factor analysis of the sample of primary health care users (n=1.055), Ribeirão Preto, state of São Paulo, Brazil, 2016

Table 3 - Summary measurements (mean, SD, minimum, maximum) and ceiling and floor effects for each dimension of the QoLS applied to the sample of primary health care users (n=1,055), Ribeirão Preto, state of São Paulo, Brazil, 2016

	QoLS dimensions				
Estimative	**Physical/material well-being**	**Relations**	**Social/ community/ civic activities**	**Personal development/ fulfillment**	**Recreation**
Mean	5.25	5.62	5.30	5.49	5.24
SD	0.85	0.85	0.92	0.84	0.91
Minimum	1.67	2.00	1.00	2.25	2.00
Maximum	7.00	7.00	7.00	7.00	7.00
Ceiling effect	3.13	9.95	10.62	5.12	5.21
Floor effect	-	-	0.09	-	-

QoLS = Quality of Life Scale; SD = standard deviation.

reason, the inclusion of a general item in the QoLS to guide analysis, interpretation and comparison of the results could be a relevant strategy for the use of this tool in general populations in different contexts.

In this sense, we suggest the inclusion of a general item on "satisfaction with life" in the beginning of the instrument. This item might read, for instance, "In general, how satisfied are you with your life?," and the answer categories could be the same as in the 7-point scale proposed for the QoLS (1 to 7). This item would not be part of any dimension of the QoLS, but it could be used to detect relevant aspects of QoL in a given sample/individual. The answers given to this item could be correlated with answers given to other items, in order to better understand some contradictions and improve the interpretation of results and associations. For example, if an individual answers that he or she is extremely satisfied with his/her own life in general, but dissatisfied with some specific dimension/item of the QoLS, one can interpret that this latter dimension/item does not play an important role in the QoL construct for that individual. Thus, we strongly suggest the application of the QoLS for studying the general aspects of QoL and the inclusion of the general item in future studies, mainly in general populations.

The lack of studies investigating the psychometric properties of the QoLS in primary health care users does not allow the direct comparison of our results with the literature. In addition, although the heterogeneous characteristic of the sample of primary health care users has contributed to our discussion regarding the instrument and its application, we consider the high proportion of females in our sample as a study limitation. The rate of females seeking health care services in Brazil is higher than that of males, but in our study this rate was slightly higher than expected. Another limitation is the impossibility to generalize our results, as our sample was not representative of the entire population of primary health care users in Brazil, but rather specifically of the users in the municipality of Ribeirão Preto.

Conclusion

The original QoLS with the five-dimension structure was validated and found to be reliable when applied to primary health care users. A new general item is suggested for future studies to improve the interpretations and associations regarding the general aspects of QoL in large and heterogeneous populations.

Acknowledgements

The present study received financial support from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP; grant 2014/14020-6) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (grant 001).

Disclosure

No conflicts of interest declared concerning the publication of this article.

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