Rev Saúde Pública 2014;48(1):63-67

DOI:10.1590/S0034-8910.2014048004783

Paula Costa Castro[I]

Patrícia Driusso[II]

Jorge Oishi[III]

Convergent validity between SF-36 and WHOQOL-BREF in older adults

Validade convergente entre o SF-36 e o WHOQOL-BREF em idosos

ABSTRACT

OBJECTIVE: To compare the reliability and convergent validity of instruments assessing quality of life in Brazilian older adults.

METHODS: Cross-sectional study of 278 literate, community-dwelling older adults attending a municipal university for the elderly in Sao Carlos, SP, Southeastern Brazil between 2006 and 2008. The Brazilian versions of the SF-36 and WHOQOL-BREF instruments to assess quality of life were compared. Cronbach's alpha coefficient was used to estimate reliability and Pearson's correlation for comparison between the two scales.

RESULTS: Most of participants were women (87.8%) with a mean age of 63.83±7.22 years. Both scales showed an acceptable internal consistency – WHOQOL-BREF Cronbach's alpha was 0.832 and SF-36 was 0.868. There was a weak ($r \leq 0.6$) correlation between the related fields in the two questionnaires.

CONCLUSIONS: The SF-36 and WHOQOL-BREF are reliable instruments for clinical and research uses in Brazilian older women. To select one, researchers should consider which aspects of quality of life they aim to capture because of weak convergent validity signs. This study's results indicate that WHOQOL-BREF may be more relevant to evaluate changes in the quality of life of older women because it prioritizes responses to the aging process and avoids focusing on impairment.

DESCRIPTORS: Aging. Quality of Life. Reproducibility of Results. Validity of Tests. Evaluation of Research Programs and Tools. Evaluation Studies as Topics.

[I] Departamento de Gerontologia. Centro de Ciências Biológicas e da Saúde. Universidade Federal de São Carlos. São Carlos, SP, Brasil

[II] Departamento de Fisioterapia. Centro de Ciências Biológicas e da Saúde. Universidade Federal de São Carlos. São Carlos, SP, Brasil

[III] Departamento de Estatística. Centro de Ciências Exatas e Tecnológicas. Universidade Federal de São Carlos. São Carlos, SP, Brasil

Correspondence:
Paula Costa Castro
Departamento de Gerontologia – UFSCar
Rod. Washington Luis, km 235
Caixa Postal 676
13565-905 São Carlos, SP, Brasil
E-mail: castro@ufscar.br

Received: 2/15/2013
Approved: 9/4/2013

Article available from: www.scielo.br/rsp

RESUMO

OBJETIVO: Comparar a confiabilidade e validade convergente de instrumentos de qualidade de vida em idosos brasileiros.

MÉTODOS: Estudo transversal com 278 idosos, alfabetizados e frequentadores de universidade de terceira idadeno município de São Carlos, SP, entre 2006 e 2008. Foram comparadas as versões brasileiras dos instrumentos *36-item form constructed to survey health status* (SF-36) e *World Health Organization quality of life assessment instrument* (WHOQOL-BREF). O coeficiente alfa de Cronbach foi usado para estimar a confiabilidade e a correlação de Pearson para a comparação entre as duas escalas.

RESULTADOS: A maioria dos participantes eram mulheres (87,8%) com média de idade de 63,83 anos (DP = 7,22). Ambas as escalas mostraram consistência interna aceitável: os coeficientes alfa de Cronbach do WHOQOL-BREF e do SF-36 foram, respectivamente, 0,832 e 0,868. Houve correlação ($r \leq 0,6$) pobre entre os campos relacionados dos dois questionários.

CONCLUSÕES: SF-36 e WHOQOL-BREF são instrumentos confiáveis para usos clínicos e de pesquisa entre mulheres idosas brasileiras. Para selecionar um deles, é preciso considerar quais aspectos de qualidade de vida são de interesse em razão dos indicativos de fraca validade convergente. O WHOQOL-BREF pode ser mais relevante para avaliar as mudanças na qualidade de vida de mulheres idosas saudáveis porque prioriza as respostas ao processo de envelhecimento e evita foco em sua incapacidade.

DESCRITORES: Envelhecimento. Qualidade de Vida. Reprodutibilidade dos Testes. Validade dos Testes. Avaliação de Programas e Instrumentos de Pesquisa. Estudos de Avaliação como Assunto.

INTRODUCTION

The 36-item form constructed to survey health status (SF-36) and the World Health Organization quality of life assessment instrument (WHOQOL-BREF) are widely used to evaluate quality of life in old age. A pilot study involving a longitudinal follow-up of middle-aged and older people showed differences in scores of these two instruments.[3] However, only one study included participants over 60 years old and examined psychometric properties of these two instruments.[12] Therefore, questions about their reliability and validity in healthy older populations remain unanswered. Indeed, some studies have shown conflicting results between these instruments in healthy adults and in patients with coronary disease.[7,9] Other studies reported similarities between the two instruments for groups of patients with specific clinical conditions.[6,8] Few studies have compared these two instruments in Brazilians. Indeed, a preliminary study of a young population showed weak convergent validity for Brazilian individuals.[11] Given this scenario of scarce knowledge, it is important to understand the psychometric properties of quality of life instruments to evaluate and to follow-up Brazilian older adults.

Therefore the aim of this study was to compare the reliability and convergent validity of life quality instruments in the older population.

METHODS

This was a cross-sectional study with 278 volunteer participants of at least 60 years of age from University of the Third Age of Sao Carlos, SP, Southeastern Brazil, in 2006-2008. The sociodemographic characteristics of the university population is similar to those of this study participants, with an average age of less than 65 years and both education and social class of great variability.[a]

[a] Castro PC, Aciole G, Driusso P, Oishi J. Papel do fisioterapeuta na Universidade Aberta da Terceira Idade de São Carlos. Estud Interdiscip Envelhec. 2014. In press.

All participants were literate and clinically assessed as being in good health by a physician.

The instruments used were the Brazilian versions of WHOQOL-BREF[5] and SF-36.[4] Both questionnaires were answered by the participants in a single meeting, first the WHOQOL-BREF and next the SF-36. When asked to help, the researcher was limited to re-reading the questions slowly. Whenever a participant had difficulty in reading or understanding the questions, the assessment was conducted by interview.

WHOQOL-BREF consists of: first, 26 questions of which 24 are divided into four domains: physical health, psychological, social relationships and environment. Second, overall quality of life score formed by question one: "How would you rate your quality of life?" and question two: "How satisfied are you with your health?". The score for each domain varies from zero to 20, zero being considered the worst and 20 the best quality of life.[5] For questions one and two the maximum score is 25 points.

SF-36[4] is a multicultural questionnaire comprised of 36 items measuring eight subscales/domains, including physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health. Subscale scores range from 0 to 100, with higher scores representing better health.

The validation methods of these two instruments were complex and broad and this paper aims only to understand a convergent validity between them.

Cronbach's alpha coefficient was used to estimate reliability and Pearson's correlation for comparison between the two scales. Coefficients *r* from 0.21 to 0.60 were considered weak correlations magnitudes, according to Rodrigues.[b]

The study was approved by the Ethics in Human Research Committee of the Federal University of Sao Carlos (Process 116/2006).

RESULTS

The 276 participants completed both questionnaires. Women represented 87.8% of the enrolled participants. The mean age was 63.83 (SD = 7.22); the maximum age was 91 years and the minimum 60 years. Score distributions of the WHOQOL-BREF and the SF-36 are summarized in Table 1. Of all the domains, social functioning achieved the highest value for SF-36 and psychological for WHOQOL-BREF. The lowest was vitality for SF-36 and physical health for WHOQOL-BREF. In most domains, the median was higher than the mean – negatively skewed – revealing distributions with more participants scoring among the more favorable states.

WHOQOL-BREF Cronbach's alpha was 0.832 and SF-36 was 0.868, representing acceptable reliability.

Pearson's correlation results are displayed in Table 2. There were weak correlations magnitudes between the two questionnaires in the following fields: i) WHOQOL-BREF social relationships domain and SF-36 social functioning, ii) WHOQOL-BREF physical health domain and SF-36 role limitations due to physical health problems, iii) WHOQOL-BREF physical domain and SF-36 physical functioning, and iv) WHOQOL-BREF psychological domain and SF-36 role limitations due to emotional problems. Also, the WHOQOL-BREF Question 2 (on general health) showed a weak correlation with SF-36 general health perceptions and role limitations due to physical health problems. WHOQOL-BREF overall score also showed a weak correlation with all SF-36 parameters.

DISCUSSION

The study participants were mostly women, probably because most of the Universities of the Third Age have more participants of this gender.[1,2,c] Therefore, the findings of this study will be discussed taking this female population perspective into consideration.

Both scales showed acceptable reliability in this study. Despite the subjectivity of health-related quality of life and self-reported quality of life, this good reliability means that WHOQOL-BREF and SF-36 can be used to evaluate and propose strategies and policies aimed at aging. Other studies performed with different populations also observed similar results concerning reliability.[6-9,11,12] However, it is important to be cautious in generalizing the results when applying these measures to evaluate one particular patient, since the statistical analyses of these studies are based on large samples and do not consider individual differences.

Our results suggest that the questionnaires' related domains do not provide similar measures in evaluating Brazilian older women. This result is consistent with the findings of Huang et al,[7] who observed a weak correlation or an absence of correlation between these areas. Higher correlation results were found by Nedjat et al[10] for a population of young Iranians. The divergences

[b] Rodrigues WC. Estatística aplicada [apostila]. 6.ed. rev. ampl. 2008 [cited 2014 Jan 9]. Available from: http://www.ebras.bio.br/autor/aulas/estat_ambiental_2008.pdf

[c] Machado OG. Proposta de implantação de universidade aberta para terceira idade em Joinville [tese de doutorado]. Florianópolis (SC): Universidade Federal de Santa Catarina; 2003.

Table 1. Score distributions of the instruments WHOQOL-BREF and SF-36. Municipality of Sao Carlos, Southeastern Brazil, 2006-2008.

Variable	Mean	SD	Median	Minimum	Maximum	Lower quartile	Upper quartile
SF-36							
PF	77.68	18.5	83.50	13.50	98.50	68.50	93.50
RP	68.79	17.9	80.00	30.00	80.00	55.00	80.00
BP	66.60	23.1	70.80	8.80	98.80	49.80	82.80
GH	71.06	19.3	75.75	15.75	98.75	55.75	85.75
VT	65.27	18.1	63.80	13.80	98.80	53.80	78.80
SF	79.52	20.7	86.25	11.25	98.75	61.25	98.75
RE	65.33	24.3	80.00	13.33	80.00	46.67	80.00
MH	68.92	18.0	70.80	18.80	98.80	58.80	82.80
WHOQOL-BREF							
Physical	12.95	2.2	13.14	6.29	17.14	11.43	14.86
Psychological	14.94	2.4	15.33	4.00	19.33	13.33	16.67
Social	13.68	2.3	13.33	4.00	20.00	12.00	14.67
Environmental	14.21	2.4	14.50	6.50	20.00	12.50	16.00
Overall	15.26	2.8	16.00	4.00	20.00	14.00	16.00

PF: physical functioning; RP: role limitations due to physical health problems; BP: bodily pain; GH: general health perceptions; VT: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health

between these results may be due to differences in the participants' age or the discrepancy between the Brazilian and the Iranian versions of the instruments. This study's results also differ from studies on patients with specific clinical conditions.[6,8] The literature indicates that these instruments have a weak convergent validity for healthy populations,[7,11] and high magnitude correlation for studies with patient groups.[6,8]

The observed divergences may be a consequence of differences in the goals adopted by developers of the instruments. SF-36 measures aspects that are linked to health and functional performance of patients, whereas WHOQOL instruments attempt to measure a broad range of factors concerning the organism, task and environment.[4,5] Nevertheless, it is likely that SF-36 is a more objective measure, because its questions are about capability and disability, whereas WHOQOL-BREF focuses on individual opinions about quality of life.

According to Huang et al,[7] SF-36 allows a better discrimination between health-related known-groups

Table 2. *r* values according to Pearson's correlation between WHOQOL-BREF and SF-36. Municipality of Sao Carlos, Southeastern Brazil, 2006-2008.

	WHOQOL-BREF						
Variable	Q1	Q2	Physical	Psycol	Social	Environ	Overall
SF-36							
PF	0.21[a]	0.33[a]	0.58[a,b]	0.35[a]	-0.10	0.32[a]	0.32[a,b]
RP	0.27[a]	0.31[a,b]	0.48[a,b]	0.22[a]	-0.12[a]	0.27[a]	0.34[a,b]
BP	0.23[a]	0.34[a]	0.51[a]	0.22[a]	-0.19[a]	0.26[a]	0.34[a,b]
GH	0.31[a]	0.41[a,b]	0.55[a]	0.29[a]	-0.15[a]	0.29[a]	0.42[a,b]
VT	0.40[a]	0.48[a]	0.64[a]	0.45[a]	-0.03	0.36[a]	0.51[a,b]
SF	0.29[a]	0.31[a]	0.44[a]	0.43[a]	0.17[a,b]	0.31[a]	0.35[a,b]
RE	0.16[a]	0.23[a]	0.33[a]	0.23[a,b]	0.01	0.22[a]	0.23[a,b]
MH	0.46[a]	0.41[a]	0.55[a]	0.54a	0.12	0.39[a]	0.50[a,b]

Physical: physical health; Q1: question 1; Q2: question 2; Psycol: psychological; Social: social relationships; Environ: environmental; PF: physical functioning; RP: role limitations due to physical health problems; BP: bodily pain; GH: general health perceptions; VT: vitality; SF: social functioning; RE: role limitations due to emotional problems; MH: mental health

[a] $p \leq 0,05$ according to Pearson's correlation.

[b] discussed comparisons.

whereas WHOQOL-BREF seems to be a better choice for an overall assessment of quality of life in a population of young individuals. Because this study results observed a weak convergent validity as before,[7] the differences between the characteristics of the instruments appointed can also hold true for an adult population.

Although age-related changes can interfere in quality of life, the presented results indicate that older individuals' opinion about themselves is more important than health-related quality of life. That is because a person can adapt and develop strategies to handle morbidity or functional decline in aging process, resulting in a happier late life. Therefore, it is considered that WHOQOL-BREF provides a relevant output on changes in older women's quality of life after an intervention program, because it prioritizes responses to the aging process, without focusing on their impairment.

We studied a convenience sample containing a predominance of women and therefore no comparison with health-related known-groups was performed. Thus, caution is needed when generalizing the results beyond this study group. Further studies are necessary to fully understand the convergent validity for senescent men and patient groups.

This study data suggest that SF-36 and WHOQOL-BREF are reliable for clinical and research uses. Nevertheless, to select one of them, researchers should consider which aspects of quality of life they aim to capture because of the observed weak convergent validity signs. The WHOQOL-BREF can be considered more suitable for this study population because it valued older individuals' personal opinions.

REFERENCES

1. Alfageme A. The clients and functions of Spanish university programmes for older people: a sociological analysis. *Ageing Soc*. 2007;27(3):343-61.
2. Barreto KML, Carvalho EMF, Falcão IV, Lessa FJD, Leite VMM. Perfil sócio-epidemiológico demográfico das mulheres idosas da Universidade Aberta à Terceira Idade no estado de Pernambuco. *Rev Bras Saude Mater Infant*. 2003;3(3):339-54. DOI:10.1590/S1519-38292003000300013
3. Castro PC, Tahara N, Rebelatto JR, Driusso P, Aveiro MC, Oishi J. Influence of the Open University for the Third Age (UATI) and the Revitalization Program (REVT) on quality of life in middle-aged and elderly adults. *Rev Bras Fisioter*. 2007;11(6):461-7. DOI:10.1590/S1413-35552007000600007
4. Ciconelli RM, Ferraz MB, Santos W, Meirão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36). *Rev Bras Reumatol*. 1999;39(3):143-50.
5. Fleck MPA, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. Aplicação da versão em português do instrumento abreviado de avaliação da qualidade de vida "WHOQOL-bref". *Rev Saude Publica*. 2000;34(2):178-83. DOI:10.1590/S0034-89102000000200012
6. Hsiung PC, Fang CT, Chang YY, Chen MY, Wang JD. Comparison of WHOQOL-bREF and SF-36 in patients with HIV infection. *Qual Life Res*. 2005;14(1):141-50. DOI:10.1007/s11136-004-6252-z
7. Huang IC, Wu AW, Frangakis C. Do the SF-36 and WHOQOL-BREF measure the same constructs? Evidence from the Taiwan population. *Qual Life Res*. 2006;15(1):15-24. DOI:10.1007/s11136-005-8486-9
8. Lin MR, Hwang HF, Chen CY, Chiu WT. Comparisons of the brief form of the World Health Organization Quality of Life and Short Form-36 for persons with spinal cord injuries. *Am J Phys Med Rehabil*. 2007;86(2):104-13. DOI:10.1097/01.phm.0000247780.64373.0e
9. Najafi M, Sheikhvatan M, Montazeri A, Abbasi SH, Sheikhfatollahi M. Quality of Life in Coronary Artery Disease: SF-36 Compared to WHOQOL-BREF. *J Tehran Univ Heart Cent*. 2008;3(2):101-6.
10. Nedjat S, Montazeri A, Holakouie K, Mohammad K, Majdzadeh R. Psychometric properties of the Iranian interview-administered version of the World Health Organization's Quality of Life Questionnaire (WHOQOL-BREF): a population-based study. *BMC Health Serv Res*. 2008;8:58-61. DOI:10.1186/1472-6963-8-61
11. Padrão MB, Sens YAS. Quality of life of living kidney donors in Brazil: an evaluation by the Short Form-36 and the WHOQOL-BREF questionnaires. *Clin Transplant*. 2009;23(5):621-7. DOI:10.1111/j.1399-0012.2009.01048.x
12. Unalan D, Soyuer F, Ozturk A, Mistik S. Comparison of SF-36 and WHOQOL-100 in patients with stroke. *Neurol India*. 2008;56(4):426-32. DOI:10.4103/0028-3886.44573

This study was supported by the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* and the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (Capes/CNPq – doctoral grant).
Article based on the doctoral thesis of Castro PC, entitled: "Efeitos da fisioterapia nos programas de atenção no processo de envelhecimento sobre qualidade de vida e parâmetros físicos", presented to the *Programa de Pós-Graduação em Fisioterapia* of the *Universidade Federal de São Carlos*, in 2011.
The authors declare that there are no conflicts of interest.Validez convergente entre el SF-36 y el WHOQOL-BREF en ancianos