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The European Portuguese WHOQOL-OLD module and the new facet Family/Family life: reliability and validity studies

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Abstract

Purpose The aim of this study was to examine the psychometric properties of the European Portuguese version of the *World Health Organization Quality of Life-Older Adults Module* (WHOQOL-OLD). The European Portuguese WHOQOL-OLD includes a new identified facet, *Family/Family life.*

Methods A convenience sample of older adults was recruited ($N = 921$). The assessment protocol included demographics, self-perceived health, depressive symptoms (GDS-30), cognitive function (ACE-R), daily life activities (IAFAI), health status (SF-12) and QoL (WHOQOL-Bref, EUROHIS-QOL-8 and WHOQOL-OLD).

Results The internal consistency was excellent for the total 24-item WHOQOL-OLD original version and also for the final 28-item European Portuguese WHOQOL-OLD version. The test–retest reliability for total scores was good. The construct validity of the European Portuguese WHOQOL-OLD was supported in the correlation matrix analysis. The results indicated good convergent/divergent validity. The WHOQOL-OLD scores differentiated groups of older adults who were healthy/unhealthy and without/mild/severe depressive symptoms. The new facet, *Family/Family life*, presented evidence of good reliability and validity parameters.

Conclusion Comparatively to international studies, the European Portuguese WHOQOL-OLD version showed similar and/or better psychometric properties. The new facet, *Family/Family life*, introduces cross-cultural specificity to the study of QoL of older adults and generally improves the psychometric robustness of the WHOQOL-OLD.

Keywords WHOQOL-OLD · Psychometric properties · Quality of life · *Family/Family life* facet

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Introduction

The progressive aging of the population is a global phenomenon, and Portugal is the sixth-oldest country in the world. In this context, relevance is given to active aging and quality of life (QoL) in older people [1, 2]. The WHOQOL Group defined QoL as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" [3, p. 1405]. Considering the specificity of QoL and the inadequacy of using instruments not validated in the elderly [4], the WHOQOL-OLD Group developed an add-on module for older persons: the WHOQOL-OLD, which includes aspects of QoL not considered in the generic WHOQOL instruments. The WHOQOL-OLD includes 24 items categorized

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into six facets (four items each): *Sensory abilities* (SAB), *Autonomy* (AUT), *Past, present and future activities* (PPF), *Social participation* (SOP), *Death and dying* (DAD) and *Intimacy* (INT) [5]. Studies from various countries reported acceptable psychometric characteristics (Brazil [6], Australia [7], Norway [8], Turkey [9], Spain [10], France [11], China [12] and Germany [13]).

Following the cross-cultural methodology, WHOQOL-OLD validation for the Portuguese population is also underway [14, 15]. The results sustained the QoL model, the multidimensional nature of QoL and the content validity of the European Portuguese WHOQOL-OLD. Suggestions from older adults, caregivers and professionals focus groups settled the possibility to develop a facet culturally relevant, *Family/Family life* (FAM), in order to extended *Social relationships* domain, considering the specifics of older adults' QoL [14]. The Rasch analysis sustained the selection of the four items of FAM that assesses satisfaction with family support, time contact, relationships and the sense of worth within the family. The results showed strong unidimensionality when each facet was separately considered (using a principal components analysis of the residuals) and adequate fit of the items and persons to the model (Vilar, Prieto, Sousa and Simões, submitted). Thus, the European Portuguese WHOQOL-OLD module consists of 28 items categorized into seven facets.

The aim of the current study was to examine the psychometric properties of the European Portuguese version of the WHOQOL-OLD, including the new facet, FAM.
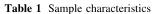
Methods

Participants, instruments and procedures

A convenience sample was recruited from the community, day care centers and residences in Portugal. Inclusion criteria were: age 60 years and older and absence of significant cognitive impairment, functional incapacity and terminal or mental disease. The WHOQOL-OLD was applied to 921 participants (Table 1). Subsamples were used for specific analysis.

The guidelines from the original project were followed [5]. All measures were obtained in an interview process of administration due to the low education level of the Portuguese sample. For the test–retest reliability, a 2-week interval was considered.

The assessment protocol included WHOQOL-OLD, WHOQOL-Bref, EUROHIS-QOL-8, SF-12, ACE-R, GDS-30, IAFAI [16–21] and *Socio-demographic Data Questionnaire*.

Table 1 Sample characteristics

Total	(*N*) 921	%
Age (group)		
60–64	148	16.1
65–69	168	18.2
70–74	170	18.5
75–79	164	17.8
80–84	150	16.3
≥85	121	13.1
M ± SD (range)	74.05 ± 8.73 [60–101]	
Gender		
Male	302	32.8
Female	619	67.2
Education (years)		
0–2	277	30.1
3–4	326	35.4
5–9	132	14.3
10–12	129	14.0
+12	57	6.2
Marital status		
Single	93	10.1
Married	418	45.4
Divorced	178	19.3
Widower	232	25.2
Geographic area		
Urban	724	78.6
Moderately urban	81	8.8
Rural	116	12.6
Geographic region		
Coast	760	82.5
Countryside	161	17.5
Perceived health		
Healthy	540	58.6
Unhealthy	381	41.4
Life condition		
Community	712	77.3
Institution	209	22.7
Retirement		
Yes	824	89.5
No	97	10.5

M mean, *SD* standard deviation

Analysis

All statistics were performed with the *Statistical Package for Social Sciences* (SPSS-20.0). Analyses of acceptability, reliability and validity were assessed using standard psychometric methods for research purposes.

Concerning reliability results, for internal consistence, values ≥.70 of Cronbach's alpha indicated a reliable set of items and correlations values ≥.60 indicated adequate test–retest results. For correlations analysis, the Pearson R was used. In contrasting group differences, Student's t test and ANOVA (post hoc Scheffe Test) were used. A p value <.05 was regarded as statistically significant. The results of the total 24-item (six facets) and the total 28-item (seven facets) versions were presented separately to allow further cross-cultural comparison and a cultural specificity analysis.

Results

Acceptability

The skew and kurtosis criteria were both fulfilled. There were no floor/ceiling effects for any of the WHOQOL-OLD scores, neither missing data.

Reliability

The internal consistency was excellent for overall scores: .90 (total 24 items) and .91 (total 28 items). The Cronbach's alphas for the facets were adequate to excellent, ranging from .72 (PPF) to .94 (INT), with .86 for FAM. The test–retest values ($p < .05$) were good for overall results (.79 and .80 for total 24 items and 28 items, respectively) and for facets were mostly adequate, ranging from inadequate value .47 (DAD) to excellent .83 (FAM).

Construct validity

The intercorrelation matrix between facets and total scores indicated significant results, ranging from $r = .276$ to $r = .789$ (correlation between total 24 items and DAD and SOP, respectively) and from $r = .247$ to $r = .791$ (correlation between total 28 items and DAD and PPF, respectively). The intercorrelations between the facets presented mostly significant results, ranging from $r = .108$ (DAD and SAB) to $r = .701$ (SOP and PPF). Concerning item–facet correlations, the items revealed higher correlations with the respective facet score.

Convergent/divergent validity

The WHOQOL-OLD total scores displayed large correlations with all WHOQOL-Bref indicators, EUROHIS-QOL-8, SF-12 Mental component and GDS-30 and medium correlations with MMSE (items included in ACE-R). For IAFAI and both WHOQOL-OLD total scores, associations were small, with more evidence for an association with IADL-Household (Table 2).

Discriminant validity

Both WHOQOL-OLD total and facets scores significantly differentiated the GDS-30 groups (*without/mild/severe* depressive symptoms groups). The post hoc analysis showed differences between all groups, except for DAD and FAM facets (with no difference for *mild* and *severe* symptoms groups).

For the perceived health, all WHOQOL-OLD scores significantly differentiated the two groups (excepting DAD). Participants who perceived themselves as healthy reported better QoL (Table 3).

Discussion

The aim of this paper was to examine the psychometric properties of the European Portuguese WHOQOL-OLD module, including FAM facet.

Compared with other studies (Global study [5], Brazil [6], Australia [7], Norway [8], Turkey [9], Spain [10], France [11] and China [12]), the lack of missing data in the current study seems to be due to the interview mode administration. There were no floor/ceiling effects for any of the WHOQOL-OLD parameters, meaning that items can detect small differences in change over time.

The Cronbach's alpha of the European Portuguese WHOQOL-OLD total 24 items was excellent and larger than the alpha of the Global (.89), Norway (.89), France (.82) and China (.89) studies. The total 28 items also displayed excellent internal consistency. Similar to some studies (Global, Brazil, France, China and Germany), the alpha was adequate for all Portuguese facets. Thus, the European Portuguese version presents excellent internal reliability, including the FAM facet.

Concerning test–retest reliability, the result for the European Portuguese WHOQOL-OLD total 24 items was good but smaller than that reported for Brazil (.82), Australia (.91) and China (.88). For the total 28-item version, the result was excellent. The FAM facet had the highest value. Similar to the Australian study, the DAD Portuguese facet displayed the worst performance.

The construct validity of the European Portuguese WHOQOL-OLD was supported in the correlation matrix analysis. The high significant association of facets with total results indicated an overall dimension of QoL. Similar to other WHOQOL-OLD studies [5–11], DAD presented a small correlation with total scores and small/not significant associations with other facets. The intercorrelations between the facets were higher for SOP and PPF in the Portuguese study, as in several previous studies (range from .63 in the Turkish study to .98 in the French study).

Table 2 Correlations of the WHOQOL-OLD with other measures (WHOQOL-Bref, EUROHIS-QOL-8, SF-12, GDS-30, ACE-R and IAFAI)

	SAB	AUT	PPF	SOP	DAD	INT	FAM	Total (24 items)	Total (28 items)
WHOQOL-OLD									
WHOQOL-Bref (*N* = 209)									
Total	.494**	.584**	.645**	.679**	.047	.533**	.194**	.795**	.778**
Overall QoL/health	.436**	.551**	.634**	.549**	.016	.415**	.128	.687**	.663**
Physical	.523**	.509**	.496**	.570**	.054	.412**	.134	.685**	.662**
Psychological	.387**	.547**	.526**	.592**	.044	.465**	.230**	.682**	.682**
Social	.221**	.387**	.539**	.436**	.043	.516**	.144*	.549**	.539**
Environment	.410**	.473**	.605**	.650**	.066	.481**	.172*	.718**	.701**
EUROHIS-QOL-8 (*N* = 274)									
Total	.529**	.529**	.638**	.532**	.123*	.319**	.319**	.679**	.677**
SF-12 (*N* = 274)									
Physical	.464**	.411**	.460**	.434**	.154*	.210**	.137*	.548**	.518**
Mental	.487**	.423**	.537**	.445**	.171**	.295**	.288**	.606**	.604**
GDS-30 (*N* = 371)									
Total	−.496**	−.449**	−.566**	−.525**	−.291**	−.313**	−.329**	−.663**	−.653**
ACE-R (*N* = 373)									
Total	.375**	.197**	.185**	.275**	.081	.143**	.064	.316**	.291**
Attention/orientation	.202**	.102	.095	.195**	.028	.108*	.017	.182**	.164**
Memory	.341**	.213**	.213**	.284**	.066	.153**	.090	.316**	.297**
Fluency	.301**	.118*	.140**	.186**	.057	.113*	.043	.232**	.213**
Language	.343**	.158**	.104*	.206**	.082	.063	.008	.244**	.215**
Visuospatial	.324**	.184**	.186**	.248**	.098	.161**	.092	.304**	.286**
ACE-R-MMSE	.417**	.456**	.357**	.466**	.081*	.484**	.218**	.519**	.503**
IAFAI (*N* = 246)									
Total	−.323**	−.214**	−.128*	−.287**	.032	−.156*	−.037	−.276**	−.249**
BADL	−.270**	−.165**	−.055	−.186**	.017	−.027	.038	−.177**	−.146*
IADL-H	−.243**	−.237**	−.165**	−.276**	.040	−.247**	−.092	−.285**	−.269**
IADL-A	−.271**	−.131*	−.116	−.261**	.044	−.166**	−.069	−.233**	−.218**

SAB sensory abilities, *AUT* autonomy, *PPF* past, present and future activities, *SOP* social participation, *DAD* death and dying, *INT* intimacy, *FAM* Family/Family life, *WHOQOL-OLD* World Health Organization Quality of Life-Older Adults Module, *WHOQOL-Bref* World Health Organization Quality of Life-Bref, *EUROHIS-QOL-8* European Project for Developing Common Instruments for Health Surveys/Quality of Life-8 Items, *SF-12* Short-Form Health Survey-12 Items, *GDS-30* Geriatric Depression Scale-30 Items, *ACE-R* Addenbrooke's Cognitive Examination Revised, *MMSE* Mini-Mental State Examination, *IAFAI* Adults and Older Adults Functional Assessment Inventory, *BADL* Basic Activities of Daily Living, *IADL-H* Instrumental Activities of Daily Living-Household, *IADL-A* Instrumental Activities of Daily Living-Advanced

* $p < .05$; ** $p < .01$

Concerning item–facet correlations, items correlated higher with their respective facet.

Considering the significant positive correlation of the WHOQOL-OLD total scores with all WHOQOL-Bref indicators and the SF-12 components, the convergent validity was also supported. Similar evidence was found in previous studies [5, 8–11, 13]. In this research, the significant large positive correlation of the WHOQOL-OLD total scores with total EUROHIS-QOL-8 (not analyzed in previous studies) sustained the possibility of using this shortened instrument in the assessment of older adults' QoL.

Evidence of divergent validity was sustained by correlations with GDS-30, MMSE and IAFAI. The relevance of cognitive function and functional capacity for QoL is commonly referred [22, 23]. Nevertheless, QoL is a broader construct that is not reduced to the previously referred constructs. The identified pattern of associations of the WHOQOL-OLD with measures of depressive symptoms was also found in previous studies [5–10, 13]. The impact of depression, subclinical depression and depressive symptoms on older adults' QoL (measured with WHOQOL instruments) is well documented [24, 25].

Table 3 Discriminant validity of the WHOQOL-OLD according to depressive symptoms and perceived health

	GDS-30 (N = 371)			F	p	Post hoc	Perceived health (N = 921)		t	p
	1. Without (n = 234) M (SD)	2. Mild (n = 97)	3. Severe (n = 40)				Healthy (n = 540) M (SD)	Unhealthy (n = 381)		
SAB	17.04 (2.77)	15.00 (3.30)	12.48 (4.08)	44.73	.000	1 > 2 > 3	16.12 (3.27)	12.70 (3.79)	14.61	.000
AUT	15.09 (2.27)	13.20 (2.68)	11.95 (2.81)	40.82	.000	1 > 2 > 3	14.07 (2.76)	11.62 (3.20)	12.41	.000
PPF	14.79 (2.09)	12.25 (2.69)	10.83 (2.90)	73.29	.000	1 > 2 > 3	13.61 (2.70)	11.29 (2.68)	12.89	.000
SOP	16.32 (2.10)	14.13 (2.71)	11.75 (3.58)	72.24	.000	1 > 2 > 3	14.42 (3.22)	11.30 (3.53)	13.88	.000
DAD	12.67 (4.16)	10.35 (3.79)	11.00 (3.83)	12.38	.000	1 > 2 = 3	12.27 (4.19)	12.03 (3.72)	.919	.358
INT	15.80 (3.10)	14.41 (3.43)	12.48 (3.91)	20.31	.000	1 > 2 > 3	13.65 (4.61)	9.65 (5.27)	12.21	.000
FAM	16.46 (2.47)	14.78 (3.43)	14.03 (3.34)	20.19	.000	1 > 2 = 3	15.56 (3.21)	14.24 (3.24)	6.13	.000
Total (24 items)	91.71 (9.17)	79.34 (10.45)	70.48 (12.61)	109.44	.000	1 > 2 > 3	84.14 (13.30)	68.60 (12.85)	17.72	.000
Total (28 items)	108.18 (10.34)	94.12 (12.51)	84.50 (13.91)	105.37	.000	1 > 2 > 3	99.70 (15.07)	82.83 (14.58)	16.96	.000

SAB sensory abilities, *AUT* autonomy, *PPF* past, present and future activities, *SOP* social participation, *DAD* death and dying, *INT* intimacy, *FAM* Family/Family life, *M* mean, *SD* standard deviation, *GDS-30* Geriatric Depression Scale-30 Items; perceived health/subjective perception of health (with participants answering the following question: in general, do you consider yourself to be currently healthy or unhealthy?)

Concerning to discriminant validity, the results demonstrated that participants who subjectively perceived themselves as healthy and those without depressive symptoms reported better QoL. Similar findings were reported in previous studies [5, 6, 9, 10, 12, 26].

Conclusion

The European Portuguese WHOQOL-OLD module showed good psychometric properties. The results were similar or slightly superior to the values of studies in other countries. The FAM facet generally improves the psychometric robustness of the WHOQOL-OLD and is an important dimension for understanding Portuguese older adults' QoL. This new facet improves the coverage of QoL items/domains and extends the construct of QoL measured by the WHOQOL-OLD and introduces cultural specificity to the study of QoL of the older persons and innovation to the WHOQOL-OLD studies. Thus, the WHOQOL-OLD can be an important tool in cross-cultural research and in the assessment of European Portuguese older people's QoL. Validation is a continuous process. Future studies will be conducted to increase the validity of the instrument: confirmatory factorial analysis and the influence of socio-demographic variables analysis, including effect size and the normative study.

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