

# Validation study of the Multicultural Quality of Life Index (MQLI) in a Peruvian sample

## Estudo de validação do Índice de Qualidade Multicultural (IQVM) em uma amostra peruana

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### Abstract

**Objective:** The Multicultural Quality of Life Index is a concise instrument for comprehensive, culture-informed, and self-rated assessment of health-related quality of life. It is composed of 10 items (from physical well-being to global perception of quality of life). Each item is rated on a 10-point scale. The objective was to evaluate the reliability (test-retest), internal structure, discriminant validity, and feasibility of the Multicultural Quality of Life Index in Lima, Peru. **Method:** The reliability was studied in general medical patients ( $n = 30$ ) hospitalized in a general medical ward. The Multicultural Quality of Life Index was administered in two occasions and the correlation coefficients ("r") between both interviews were calculated. Its discriminant validity was studied statistically comparing the average score in a group of patients with AIDS (with presumed lower quality of life,  $n = 50$ ) and the average score in a group of dentistry students and professionals (with presumed higher quality of life,  $n = 50$ ). Data on its applicability and internal structure were compiled from the 130 subjects. **Results:** A high reliability correlation coefficient ( $r = 0.94$ ) was found for the total score. The discriminant validity study found a significant difference between mean total score in the samples of presumed higher (7.66) and lower (5.32) quality of life. The average time to complete the Multicultural Quality of Life Index was less than 4 minutes and was reported by the majority of subjects as easily applicable. A high Cronbach's  $\alpha$  (0.88) was also documented. **Conclusions:** The results reported that the Multicultural Quality of Life Index is reliable, has a high internal consistency, is capable of discriminating groups of presumed different quality of life levels, is quite efficient, and easy to use.

**Keywords:** Quality of life; Acquired Immunodeficiency Syndrome; HIV; Validity; Reproducibility of results

### Resumo

**Objetivo:** O Índice Multicultural de Qualidade de Vida é um instrumento conciso para a avaliação ampla, culturalmente informada e auto-aplicável da qualidade de vida relativa à saúde. É composto de 10 itens (do bem-estar físico à percepção global da qualidade de vida). Cada item é classificado de acordo com uma escala de 10 pontos. O objetivo foi o de avaliar a confiabilidade (teste-reteste), estrutura interna, validade discriminante e a viabilidade do Índice Multicultural de Qualidade de Vida em Lima, Peru. **Método:** A confiabilidade foi estudada em pacientes da clínica geral ( $n = 30$ ) hospitalizados em uma enfermaria clínica geral. O Índice Multicultural de Qualidade de Vida foi ministrado em duas ocasiões e os coeficientes de correlação ("r") entre ambas as entrevistas foram calculados. Sua validade discriminante foi estudada comparando estatisticamente o escore médio em um grupo de pacientes com AIDS (com presumida menor qualidade de vida,  $n = 50$ ) e o escore médio em um grupo de estudantes e profissionais de odontologia (com presumida maior qualidade de vida,  $n = 50$ ). Os dados sobre sua aplicabilidade e estrutura interna foram compilados a partir de 130 indivíduos. **Resultados:** Achou-se um alto coeficiente de correlação de confiabilidade no escore total ( $r = 0,94$ ). O estudo de validade discriminante encontrou diferença significativa entre o escore médio total nas amostras de qualidade de vida presumida mais alta (7,66) e mais baixa (5,32). O tempo médio para completar o Índice Multicultural de Qualidade de Vida foi de menos de 4 minutos e foi relatado pela maioria dos indivíduos como facilmente aplicável. Foi também documentado um alto alfa de Cronbach (0,88). **Conclusões:** Os resultados relatam que o Índice Multicultural de Qualidade de Vida é confiável, possui uma alta consistência interna, é capaz de discriminar grupos de diferentes níveis de qualidade de vida presumidos, é muito eficiente e é de fácil utilização.

**Descritores:** Qualidade de vida; Síndrome de Imunodeficiência Adquirida; HIV; Validade; Reprodutibilidade de resultados

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## Introduction

The term quality of life (QOL) is frequently used in the current daily medical vocabulary, but it is within health research in which attempts to standardize the concept and to give it a sense that a greater utility have been accomplished. The concept is also of interest to politics, sociology, psychology, economics, geography, and social history.

Measurement and evaluation of health-related QOL provides valuable and relevant data for patients, clinicians, educators, and researchers; as well as for political decision-making in health-related issues. The health-related QOL can be used to monitor a population's health, with a particular connection to the emerging concept of positive health; to evaluate the effects of social- and health-related policies, for the distribution of resources according to necessity, for the diagnosis of the nature, severity, and prognosis of a disease, and for the evaluation of treatment outcomes.<sup>1</sup>

The Multicultural Quality of Life Index (MQLI) developed by Mezzich et al., is a self-reporting questionnaire. Its purpose is to measure health-related QOL and it includes the following 10 items or domains: physical well-being, psychological/emotional well-being, self-care and independent functioning, occupational functioning, interpersonal functioning, social-emotional support, community and services support, personal fulfillment, spiritual fulfillment, and overall QOL.<sup>2</sup> The Spanish version of the MQLI (MQLI-Sp) has been studied previously in Latino Spanish-speaking population in New York City comparing samples of psychiatric patients and health professionals. Its highly significant discriminant validity, its reproducibility, and its easy application according to the study subjects and interviewers were demonstrated.<sup>3</sup> Another study with the MQLI conducted in Spain also showed its brevity, easy application, internal consistency, and substantial reliability.<sup>4</sup>

The objective of the present study was to validate the MQLI in Lima, Peru, considering the following aspects: to determine the discriminant validity of the Spanish version of the MQLI; to determine its reliability in terms of its reproducibility across time; to determine its internal structure; and to determine its applicability, related to the degree of difficulty and the time required for its administration in a Peruvian sample composed of patients and health professionals.

## Method

### 1. General methodology

The design of the study to validate the MQLI in Lima, Peru, included the empirical evaluation of the reliability, discriminant validity, internal structure, and applicability of the instrument. The methodology and the samples used for each of the aspects evaluated are described below.

### 2. Test-retest reliability study of the MQLI

The instrument was applied to 30 patients hospitalized in the Internal Medicine Service at Cayetano Heredia National Hospital (CHNH,  $n = 5$ ) and Arzobispo Loayza Hospital (ALH,  $n = 25$ ). Each subject responded to the MQLI in two different occasions (A and B), 1 to 2 days apart. The Reliability Index was assessed in terms of the Pearson Correlation Coefficients ( $r$ ) computed for each individual item and for the total score, between the 1-10 ratings of the initial and the later administration of the index.

In this sample, the female group represented the majority (77%) and the mean age was 34.9 years. Regarding marital status, the married/living together group was the largest (63%) one. There were no illiterate subjects and the prominent level of education was the group with complete High-School (46.7%). Regarding occupation, the major group was represented by housewives (40%). See Table 1.

### 3. Discriminant validity study of the MQLI

Two samples were used, a group of patients with AIDS (presumed 'lower' quality of life,  $n = 50$ ) and a group of students and professionals of the School of Dentistry of the Universidad Peruana Cayetano Heredia (UPCH) (presumed 'higher' quality of life,  $n = 50$ ). The difference between the mean total scores for both samples as well as for each one of the 10 items was determined. The demographic data of both sub-samples of patients and dentistry professionals are shown in Table 1.

### 4. Internal structure study of the MQLI

The internal consistency was analyzed in the total sample of 130 subjects, in terms of the Cronbach's  $\alpha$  for the 10 items of the MQLI. Additionally, a factorial analysis of the 10 items

**Table 1 – Demographic characteristics of samples studied with the Multicultural Quality of Life Index**

Demographic characteristics		Dentistry students and professionals	AIDS patients	Internal medicine patients
		n (%)	n (%)	n (%)
<b>Gender</b>	Female	20 (40)	20 (40)	23 (76.7)
	Male	30 (60)	30 (60)	7 (23.3)
<b>Marital Status</b>	Single	38 (76)	23 (46)	10 (33.3)
	Married/Living together	11 (22)	19 (38)	19 (63)
	Widow	1 (2)	6 (12)	0
	Divorced/Separated	0	2 (4)	0
<b>Schooling</b>	Some Elementary School	0	0	2 (6.7)
	Elementary School	0	5 (10)	2 (6.7)
	Some High School	0	10 (20)	5 (16.7)
	High-School	0	19 (38)	14 (46.7)
	Technical School	0	3 (6)	3 (10)
	College	50 (100)	13 (26)	4 (13.3)
<b>Occupation</b>	Professional/Executive	33 (66)	3 (6)	1 (3.3)
	Employee/Technician/Worker	0	5 (10)	4 (13.3)
	Student	17 (34)	1 (2)	3 (10)
	Housewife	0	16 (32)	12 (40)
	Unemployed	0	9 (18)	4 (13)
	Other	0	16 (32)	6 (20)
<b>Total</b>		<b>n = 50 (100%)</b>	<b>n = 50 (100%)</b>	<b>n = 30 (100%)</b>

was performed using the principal components analysis, as extraction method, and Varimax with Kaiser Normalization, as the rotation method.

### 5. Applicability study of MQLI

Data on the applicability of MQLI was compiled in the total of 130 patients interviewed. The mean time required to complete the MQLI was calculated and the degree of difficulty, according to the subjects and the interviewer's impression was also documented.

### 6. Subjects and data collection

The subjects were recruited in the following settings in the city of Lima: the 'Alexander von Humboldt' Tropical Medicine Institute ('AvH' TMI, n = 9), the CHNH (n = 8), the ALH (n = 29), the Sexually-transmitted Diseases and AIDS Control Program of the ALH (PROCETSS-ALH, n = 19), the 'Vía Libre' Association (VLA, n = 11), the Infectious Diseases Service of the Children's Health Institute (CHI, n = 4) and the School of Dentistry of the CHPU (n = 50). In the case of the patients, the initial contact was performed through the clinicians in charge of the cases, who after giving a brief explanation about the study proceeded to introduce the selected patients to the interviewers. The interviewers explained the purpose of the study and patients gave their informed consent. The interviewers were two recently graduated students from the School of Medicine. The interviewers read the instrument and marked the scales as indicated by the subjects in the cases of individuals with any visual impairment or problems in their hands (by effect of disease and/or treatment) which would interfere with the adequate reading and/or marking of the scale. Each sample studied included subjects between 18 and 65 years of age, of both genders, capable to communicate in Spanish, without evidence of alteration of their mental state, and who wished to participate in the study. In the case of the patients with the diagnosis of AIDS, they should be aware of their diagnosis and have clinical evidence of AIDS (history of opportunistic infections or neoplasms related to the terminal stage of the HIV infection). Subjects whose extreme physical or mental conditions would have prevented them from answering the questionnaire were excluded.

### 7. Instruments

The instruments for data collection included a form for demographic data, the Spanish version of MQLI, and a form for the evaluation of the applicability of the MQLI. The MQLI is composed of 10 items; each one is followed by a brief description and a scale ranging from 1 to 10, divided by four equidistant points ('poor', 'fair', 'good', and 'excellent').

**Table 2 – Test-retest reliability study of the multicultural quality of life index: correlation coefficients ('r') for each item and for the total score (n = 30)**

Item	r
1. Physical well-being	0.58
2. Psychological/emotional well-being	0.76
3. Self-care and independent functioning	0.53
4. Occupational functioning	0.75
5. Interpersonal functioning	0.85
6. Social-emotional support	0.82
7. Community and services support	0.80
8. Personal fulfillment	0.62
9. Spiritual fulfillment	0.80
10. Overall quality of life	0.69
<b>Total Score</b>	<b>0.94</b>

## Results

### 1. Test-retest reliability of the MQLI

The time interval between the interviews A and B was 1 to 2 days with a mean time of 1.17 days. A high correlation between both interviews was found for the total score ( $r = 0.94$ ). Table 2 shows the correlation coefficients ('r') between interviews A and B for the total score and for individual items.

### 2. Discriminant validity of the MQLI

There were no differences regarding gender (60% men in each group) or age ( $p = 0.184$ ) between both samples. The difference between group means for the total scores, groups with presumed higher and lower QOL, was highly significant ( $p < 0.001$ ). Additionally, a highly significant difference between means of individual items was found, with the exception of item 9 ( $p = 0.06$ ). The discriminant validity results are provided in Table 3.

### 3. Internal structure of the MQLI

*Internal consistency:* A high Cronbach's  $\alpha = 0.88$  was found, showing a high interrelation between the items of the MQLI.

*Factorial analysis:* The factorial analysis of the 10 items of the MQLI (principal components analysis) showed two feasible solutions, one with one factor and the other with two factors, as shown in Table 4. The first solution, with only one factor, showed that the factor accounts for 49% of the total variance and has a significant association with the 10 items of the MQLI. The two factors solution showed that the proportion of the accounted variance increased to 60%. The first factor included significant associations with five items (Physical well-being, self-care and independent functioning, occupational

**Table 3 – Discriminant validity study of the Multicultural Quality of life Index (MQLI): statistical difference between group means for each item and the total score of the MQLI obtained from the dentistry students and professionals sample (n = 50) vs. AIDS patients sample (n = 50)**

Item	Dentistry students and professionals (n = 50)	AIDS patients (n = 50)	p
1. Physical well-being	7.08	4.26	< 0.001
2. Psychological/emotional well-being	7.86	4.9	< 0.001
3. Self-care and independent functioning	8.08	6.28	< 0.001
4. Occupational functioning	8.14	5.36	< 0.001
5. Interpersonal functioning	8	6.26	< 0.001
6. Social-emotional support	7.42	5.94	0.003
7. Community and services support	7	4.1	< 0.001
8. Personal fulfillment	7.82	4.52	< 0.001
9. Spiritual fulfillment	7.16	6.26	0.062
10. Overall quality of life	8.04	5.24	< 0.001
<b>Average Total Score</b>	<b>7.66</b>	<b>5.32</b>	<b>&lt; 0.001</b>

**Table 4 - Factorial analysis of the 10 items of the Multicultural Quality of Life Index and factor loadings for the one-factor and two-factor solutions**

Items	Analysis with 1 component <sup>A</sup>		Analysis with 2 components <sup>B</sup>	
	Factor 1		Factor 1	Factor 2
1. Physical well-being	0.679		0.795	
2. Psychological/emotional well-being	0.830		0.593	0.582
3. Self-care and independent functioning	0.604		0.522	0.322
4. Occupational functioning	0.663		0.797	
5. Interpersonal functioning	0.676		0.432	0.533
6. Social-emotional support	0.603			0.687
7. Community and services support	0.733		0.686	0.330
8. Personal fulfillment	0.824		0.677	0.478
9. Spiritual fulfillment	0.573			0.813
10. Overall quality of life	0.787		0.423	0.710
Percentage of the variance explained by the factors	<b>49.313%</b>		<b>49.313%</b>	<b>10.760%</b>
			Accumulated = 60.074%	

KMO Method of sampling sufficiency: 0.878. Bartlett's Test of Sphericity: Sig. < 0.001

<sup>A</sup> Extraction Method: Principal components analysis, limited to one component.

<sup>B</sup> Extraction Method: Principal components analysis. Rotation Method: Varimax with Kaiser Normalization  
Values  $\leq 0.2$  were eliminated from the Table.

functioning, community and services support, and personal fulfillment), and the second factor with three items (social-emotional support, spiritual fulfillment, and overall QOL). Two items (psychological/emotional well-being, and interpersonal functioning) showed a significant representation in both factors.

#### 4. Applicability of the MQLI

The mean time required to complete the questionnaire was 3 minutes and 25 seconds for the total population, 1 minute and 31 seconds for the group of presumed 'higher' QOL, 3 minutes and 55 seconds for the group of presumed 'lower' QOL and, 5 minutes and 43 seconds for the patients hospitalized in the internal medicine service.

Data on the degree of difficulty reported by the subjects and the interviewers are shown in Table 5, which documents that the majority of cases perceived the MQLI as 'very easy' or 'somewhat easy' to use.

#### Discussion

One of the objectives set out by the authors of the MQLI was to develop an instrument in different languages, useful for different ethnic groups, to facilitate culture-informed and self-rated assessment. Different language versions are being studied in New York City, NY, United States of America.<sup>5-7</sup> Data of the Spanish version, also in New York City, documenting its brief and easy application, discriminant validity and reliability have been published earlier.<sup>3</sup>

To study the discriminant validity in Peru a group of patients with HIV/AIDS (with evidence of symptoms suggestive of Stage IV) composed the sample of subjects with presumed 'lower' QOL,

as it can be assumed that their QOL is significantly compromised.<sup>8-10</sup> The validation study in these samples demonstrates that the MQLI is able to discriminate a population of presumed 'high' QOL from another population of presumed 'low' QOL, being the results similar to the above-mentioned study conducted in New York, which compared patients and health professionals.<sup>3</sup>

Regarding its reliability, the study demonstrates a high correlation for each item, particularly for the total score ( $r = 0.94$ ). This reliability coefficient is similar to that obtained by the validation study in New York which reported  $r = 0.89$  for the total score<sup>3</sup> and to the results obtained from a community sample in Spain which reported  $r = 0.66$ , but with a much longer test-retest time interval.<sup>4</sup>

The internal structure of the MQLI documented a high Cronbach's  $\alpha$  (0.88) demonstrating its coherence around the QOL concept. Significant results were also found in previous studies using the Spanish and other language versions.<sup>3,5-7</sup> The factorial analysis (principal components) of the 10 items of the MQLI resulted in two feasible solutions. The first one, with only one factor, is similar to previous reports.<sup>3</sup> The second solution, with two factors, added a few more to the explained variance, but not all the items were represented in any of the two factors.

In general, the instrument was reported as easily used, as reported by both subjects and the interviewers, and the mean time to complete the instrument was less than 4 minutes. The literature reports other instruments for the assessment of QOL in Latinos; however, they are more extensive and take much longer time to be completed.<sup>11-12</sup>

**Table 5 - Study on the applicability of the Multicultural Quality of Life Index (MQLI): degree of difficulty using the MQLI according to the subjects and interviewers**

	Degree of difficulty	Dentistry students and professionals	AIDS patients	Internal medicine patients	Total sample
Subjects	Very easy	32%	12%	3.3%	17.7%
	Somewhat easy	64%	70%	73.4%	68.5%
	Somewhat difficult	4%	18%	20%	13%
	Very difficult	0%	0%	3.3%	0.8%
Interviewers	Very easy	92%	30%	23.3%	52.3%
	Somewhat easy	8%	52%	53.3%	35.4%
	Somewhat difficult	0%	8%	20.3%	7.7%
	Very difficult	0%	10%	3.3%	4.6%

## Conclusions

The Spanish version of the MQLI has become the first instrument for the assessment of QOL validated in a Peruvian sample. The results suggest that the MQLI is a brief, easy-to-use, reliable instrument (across time), having a high discriminant validity and internal consistency. The application of the MQLI is recommended for clinical care and clinical research, as well as for epidemiological research.

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