Construct Validities of the Quality of Well-Being Scale and the MOS-HIV-34 Health Survey for HIV-infected Patients

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This research assessed the construct validities of two health-related quality-of-life instruments: the Quality of Well-Being Scale (QWB) and the Medical Outcomes Study 34-item HIV Health Survey (MOS-HIV-34). A sample of 100 adult male, HIV-infected patients, across six HIV disease classifications, was used as subjects. Four convergent validity measures of health-related quality of life were used: CD4 cell counts, beta-2 microglobulin levels, disease classification, and age. All convergent validity measures were significant for the QWB. Forty percent of the convergent validity comparisons with the MOS-HIV-34 were statistically significant. Because the two measures provide different perspectives on health-related quality of life, both instruments appear to be useful in measuring health-related quality of life in this patient population. *Key words*: HIV; quality of life; quality of well-being scale; construct validity. **(Med Decis Making 1997;17:439–446)**

Health-related quality-of-life assessment represents a relatively recent advance in measuring the effectiveness of medical interventions.[1–3] Traditionally, the effectiveness of a medical intervention was assessed using mortality data. However, many medical treatments may have little effect on mortality, but may affect health-related quality of life. While mortality data are relatively easy to obtain, they tell us little about wellness.[4]

The construct of health-related quality of life is gradually becoming accepted as an important outcome measure in assessing a medical intervention. The measurement of health-related quality of life is receiving more attention, particularly in the development of instruments that are reliable and valid. Assessing the validity of health-related quality-of-life measures presents many difficulties, primarily because there is no well-defined criterion with which measures can be compared.[5] When there is no known "gold standard" a series of construct-validation exercises can serve as validation criteria. In construct validation, the meaning of a measure comes to be defined through its association with other measures.[6]

Health-related quality of life is a multidimensional construct.[7] The dimensions of health-related quality of life vary depending on the specific instrument used, but in general they include dimensions that assess physical, mental, and social functioning. Health-related quality-of-life instruments are plentiful. A recent review listed over 300 instruments.[8] Research is needed, however, to evaluate the reliability and validity of these instruments. This paper presents data regarding the construct validities of two instruments for measuring quality of life, the Quality of Well-Being Scale (QWB) and the Medical Outcomes Study 34-item HIV Health Survey (MOS-HIV-34), in a specific patient population.

The two instruments had been used in measuring health-related quality of life in HIV-infected patients in previous research. Due to the lack of an accepted criterion-related measure, the construct validities of the two health-related quality-of-life instruments

Received June 13, 1996, from PCS Health Systems, Inc., Scottsdale, Arizona (TEH); the Department of Family and Preventive Medicine, University of California, San Diego, La Jolla, California (RMK, TLP); the Center for Pharmaceutical Economics and Department of Pharmacy Practice and Science, College of Pharmacy, The University of Arizona, Tucson, Arizona (SJC, JRD); and the Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta and Institute of Pharmaco-Economics, Edmonton, Alberta, Canada (JAJ). Revision accepted for publication April 16, 1997. Presented in part at the annual meeting of the Association for Health Services Research, June 14, 1994. Supported in part by Glaxo International Pharmacoeconomic Research, Research Triangle Park, NC, and funded in part by NIMH Grant P50 MH45294.

The agreement between the authors and the sponsoring company and agency ensured the authors' independence in the design of the study, the interpretation of data, writing of the report, and decisions regarding publication, regardless of the results of the analysis.

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were assessed by evaluating hypothesized relationships with clinical measurements.

Methods

STUDY SUBJECTS

The subjects were HIV-infected men enrolled at the HIV Neurobehavioral Research Center (HNRC) in San Diego, California. One hundred subjects participated in the research. The 100 subjects were categorized into six groups according to their Centers for Disease Control and Prevention classifications. The subjects signed a consent form prior to participation in the research. The University of Arizona Health Sciences Center Human Subjects Committee and the University of California at San Diego Human Subjects Committee deemed this research exempt from human-subjects review.

DATA COLLECTION

Data collection began on September 14, 1992, and concluded on March 16, 1993. All of the data collected for this research were gathered by research assistants at the HNRC. Data collection occurred in three steps. The first two steps took place on the same day. Step 1 was an assessment of the subjects' health-related quality of life using the QWB and the MOS-HIV-34. Step 2 was measurement of the subjects' CD4 cell counts and beta-2 microglobulin levels. Step 3 occurred on a different day, usually within 10 days of steps 1 and 2. Step 3 involved obtaining demographic data from the subjects.

The time frame was a result of the scheduling pattern of patients at the clinic where the research was conducted. Patients would come in for laboratory tests, then be scheduled for clinic visits, usually within 10 days of the laboratory tests. On advice of the people who operated the clinic, dividing the data collection into two phases was the optimal approach to data collection in their clinic.

HEALTH-RELATED QUALITY OF LIFE

At the time this study was conducted, the QWB was available only as an interviewer-administered questionnaire that takes approximately 10–15 minutes to complete. (Development of a self-administered version is nearing completion.) With the QWB, functional status is assessed using three scales representing related but distinct aspects of daily functioning: mobility, physical activity, and social activity.[9] In addition, symptom/problem complexes representing symptomatic complaints that might inhibit function and well-being are assessed. Using empirically-derived general-population preference weights, the three levels of functioning are integrated with the symptom/problem complexes to produce a single score or index that represents an individual's point-in-time health status or quality of life. The number is on a scale that ranges from 0.0 to 1.0, representing death and perfect health, respectively.

The QWB has been used in applied research to measure health-related quality of life in various disease states. For example, the QWB was used to assess the health status of patients with chronic obstructive pulmonary disease (COPD).[10] The outcome variables included scores from the QWB; FEV_1, the amount of air a person can exhale in one second; and exercise tolerance. The study found that the scores on the QWB were correlated with FEV_1 ($r = 0.54$, $p < 0.001$) and exercise tolerance ($r = 0.54$, $p < 0.05$), supporting the convergent validity of the QWB.

Orenstein et al. used the QWB to assess health-related quality of life of 44 patients with cystic fibrosis.[11] To test for convergent validity, measures of lung function and exercise tolerance were assessed. The study also found a significant correlation between the Vo_2 maximum, a measure of oxygen consumption, and scores on the QWB ($r = 0.58$, $p < 0.01$).

The QWB was also used to evaluate health-related quality of life in 303 rheumatoid-arthritis patients in a double-blind drug study.[12] The QWB was used to assess functioning, along with three other measures, and was found to be as sensitive as the other three function measures in assessing patient responses to either drug therapy or placebo. Other measures, including clinical measures, pain measures, and global impression measures, were found to correlate with the results of the QWB.

The QWB was used further to assess the health-related quality of life in another sample of arthritis patients.[13] Scores from the QWB were compared with disease-specific measures of arthritic patients' physical and social functioning, and a scale measuring depression in patients. Even though the QWB is a general health-related quality of life instrument, it was found to be as sensitive to changes in arthritis patients' health status as were the disease-specific measures.

The MOS-HIV-34 health survey represents one of the first disease-specific health-related quality-of-life instruments for use in an HIV-infected population. Use of the MOS-HIV-30 was first reported by Wu and colleagues in 1991.[14] It was administered in a cross-sectional study of HIV-infected patients. The instrument was developed by modifying the MOS Short-Form General Health Survey (MOS-SF), a 20-item questionnaire that measures general health-related quality of life via eight dimensions: overall health, pain, physical functioning, role functioning, social

functioning, mental health, quality of life, and health transition.[15] The MOS-SF was modified to include three additional dimensions that would be relevant to HIV-infection: energy/fatigue, cognitive function, and health distress. Of the 20 original items in the MOS-SF, 13 were used in the MOS-HIV, with an additional 17 items added to cover the three new dimensions.

The MOS-SF was used in a cross-sectional study among 520 subjects in various phases of HIV infection.[16] The study found that MOS-SF scores were correlated with the clinical status of patients, as measured by numbers and frequencies of symptoms experienced by the subjects.

A recent study using the MOS-HIV-30 assessed the reliability and validity of its results in 107 subjects with AIDS-related complex (ARC) or acquired immunodeficiency syndrome (AIDS).[14] Internal consistency was assessed by calculating a Cronbach's alpha for scores from each of the 11 dimensions. Five dimensions had coefficients of 0.78 or greater, while role function equaled 0.50. Validity of the quality-of-life measurement was supported by success in differentiating between the two groups by finding a significant difference in seven of the 11 scales between subjects experiencing three or fewer symptoms and the group experiencing more than three symptoms.

As noted above, the MOS-HIV-30 was originally composed of 30 items; however, the instrument used in this research included four additional items. This revised instrument is referred to as the MOS-HIV-34. The additional four items were added to the overall health dimension, previously measured by one item.

CONVERGENT VALIDITY

This research used four convergent validity measures. The first was the CD4 cell count. CD4 counts measure the circulating T-helper cells, components of the blood that act to prevent infection. CD4 levels correlate positively with the clinical states of HIV-infected patients and are used as a clinical marker to monitor the course of the illness and determine therapy.[17] The second convergent validity measure was the beta-2 microglobulin level. In prior research, beta-2 microglobulin levels were negatively correlated with the clinical states of HIV-infected patients.[18] The third convergent validity measure was subject age. Wachtel et al. found a significant difference in health-related quality-of-life scores of HIV-infected subjects based on age.[16] Older patients were found to have lower health-related quality of life compared with younger subjects. Kaplan et al., using a cross-sectional sample of subjects from a community population, also found a significant negative correlation between age and the scores on the QWB.[6] The fourth convergent validity measure was the HIV disease classification of the subject. Ragsdale and Morrow found that subjects with more advanced classifications of HIV infection had lower health-related quality of life.[19]

STATISTICAL ANALYSIS

Health-related quality-of-life scores on the QWB and the 11 dimensions of the MOS-HIV-34 were correlated with the continuous convergent validity measures (i.e., CD4 level, beta-2 microglobulin level, and age) using Pearson product–moment correlations. In addition, the patients were divided into quartiles based on their scores for these three convergent validity measures. Mean health-related quality-of-life scores of patients in the top quartile were then compared with the mean scores of those in the bottom quartile, using t tests. Finally, one-way analysis of variance (ANOVA) was used to compare patient's health-related quality-of-life scores on the two instruments based on disease classification.

In summary, seven convergent validity comparisons were made for both instruments: 1) age was correlated with health-related quality-of-life score; 2) health-related quality-of-life scores of patients in the top and bottom quartiles for age were compared; 3) CD4 levels were correlated with health-related quality-of-life scores; 4) health-related quality-of-life scores for patients in the top and bottom quartiles for CD4 counts were compared; 5) beta-2 microglobulin level was correlated with health-related quality-of-life score; 6) health-related quality-of-life scores for patients in the top and bottom quartiles for beta-2 microglobulin were compared; and 7) health-related quality-of-life scores for different disease-state classifications were compared.

An a priori level of significance of 0.05 was used in all analyses. It was decided that if more than 50% of the dimensions of the MOS-HIV-34 were significant in relationship to the convergent validity measures, this would be considered supportive evidence for convergent validity. While there is no theoretical basis for the use of 50% as the hurdle for significance, from a commonsense perspective, using a very high level, e.g., 90%, would be too extreme, and using a very low level, e.g., 20%, would be too low. The selection of 50% as a hurdle for significance seemed reasonable; in addition, the data needed for the reader to evaluate the results with the hurdle at a lower or higher level are available.

Results

DEMOGRAPHICS

A total of 100 subjects were recruited for this research. All subjects were male patients infected with

Table 1 • HIV-infection Classifications of 96 Subjects

HIV-infection Classification	Subjects % (No.)
2	10.4 (10)
3	33.3 (32)
4a	16.7 (16)
4c1	3.2 (3)
4c2	9.4 (9)
4d	27.1 (26)

HIV. The majority (85%) of the subjects were white. The mean age of the subjects was 35.3 years, with a range of 23 to 56 years. Table 1 shows the distribution of subjects in the HIV classification; disease classifications were not available for four subjects.

Table 2 • Total Household Incomes for 90 Subjects

Income Category	Subjects % (No.)
<$10,000	13.1 (13)
$10,000–19,999	26.2 (26)
$20,000–29,999	30.3 (30)
$30,000–39,999	14.1 (14)
$40,000–59,999	7.0 (7)
>$60,000	9.1 (9)

Sixty percent of the subjects worked for pay. The subjects worked an average of 36.4 hours a week, with a range of 5 to 65 hours a week. The subjects who worked were paid an average of $22,700 a year, with a range of $1,300 to $80,000 a year. Table 2 shows the subjects' total household incomes; data were not available for ten subjects. More than half of the subjects earned between $10,000 and $30,000. Seventy-nine percent of the subjects were covered by either private or public health insurance. The majority (85%) of subjects indicated some post-secondary education. The mean CD4 count for the subjects was 403 cells/mm^3 (range 8–1,016 cells/mm^3). The mean beta-2 microglobulin level was 2.8 mg/L (range: 0.9–5.9 mg/L).

HEALTH-RELATED QUALITY-OF-LIFE INSTRUMENT SCORES

The mean score (95% confidence limits) on the QWB was 0.712 (0.689, 0.734). The mean scores for the 11 dimensions of the MOS-HIV-34 ranged from 59.3 for Health Transition to 84.8 for Cognitive Function (table 3).

The internal consistency of the MOS-HIV-34 was evaluated for this sample of HIV-infected men. The acceptable level of reliability varies depending on the purpose of the instrument. For group comparisons, the minimum acceptable level of reliability is generally considered to be lower than that for comparisons among or between individuals.[20] The purpose of this research was to compare groups. Helmstadter considers reliability of more than 0.50 adequate for group comparisons.[21]

Table 3 • MOS-HIV-34 Dimension Mean Scores and 95% Confidence Limits

MOS-HIV-34 Dimension	Score Mean (95% Confidence Limits)
Overall health	61.6 (56.1, 67.1)
Physical function	77.7 (71.9, 83.5)
Role function	69.5 (60.8, 78.2)
Social function	84.4 (79.9, 88.9)
Cognitive function	84.8 (80.9, 88.6)
Pain	74.0 (69.5, 78.5)
Mental health	73.7 (70.1, 77.4)
Energy/fatigue	62.2 (58.1, 66.3)
Health distress	83.1 (79.2, 86.9)
Quality of life	73.0 (69.0, 77.0)
Health transition	59.3 (52.3, 60.2)

The mean reliability, as measured by internal consistency, of the dimensions of the MOS-HIV-34 in this research was 0.69. The internal consistency of four of the 11 dimensions of the MOS-HIV-34 could not be assessed because they each consisted of only one item. The coefficients for the remaining seven dimensions, with more than one item, were all greater than 0.50, thus meeting the minimum level of reliability as determined by Helmstadter[21] (table 4). The reliability of the QWB was not assessed in this research, as it was administered only one time and hence only one score is available.

Pearson product–moment correlations were calculated between QWB scores and scores on the MOS-HIV-34 dimensions. The scores on the MOS-HIV-34 dimensions and the scores on the QWB, with

Table 4 • Cronbach's Alphas for the MOS-HIV-34 Dimensions, 100 Subjects

MOS-HIV-34 Dimension	Cronbach's Alpha
Overall health (five items)	0.57
Physical function (six items)	0.58
Role function (two items)	0.89
Social function (one item)	—
Cognitive function (four items)	0.68
Pain (one item)	—
Mental health (five items)	0.86
Energy/fatigue (four items)	0.62
Health distress (four items)	0.63
Quality of life (one item)	—
Health transition (one item)	—

Table 5 • Correlation among MOS-HIV-34 Dimensions and Scores on the Quality of Well-Being Scale

MOS-HIV-34 Dimension	Correlation with the Quality of Well-Being Scale
Overall health	r = 0.57; p = 0.0000
Physical function	r = 0.62; p = 0.0000
Role function	r = 0.64; p = 0.0000
Social function	r = 0.38; p = 0.0002
Cognitive function	r = 0.44; p = 0.0000
Pain	r = 0.42; p = 0.0000
Mental health	r = 0.23; p = 0.024
Energy/fatigue	r = 0.47; p = 0.0000
Health distress	r = 0.24; p = 0.018
Quality of life	r = 0.37; p = 0.0002
Health transition	r = −0.01; p = 0.920

the exception of the Health Transition dimension, were significantly positively correlated (table 5). This result would be expected since the two instruments are purported to measure the same construct.

CONVERGENT VALIDITY

Quality of Well-Being Scale. Scores on the QWB were significantly correlated with CD4 counts (r = 0.41; p = 0.001). An unpaired t test was used to compare the QWB scores of subjects with CD4 counts in the first quartile (i.e., subjects with lowest CD4 counts) and the fourth quartile. The QWB scores of the individuals in the first quartile (0.667 ± 0.2) were significantly lower than the QWB scores of those in the fourth quartile (0.772 ± 0.2) (p = 0.0006).

Similar results were found for comparisons based on beta-2 microglobulin levels. A significant negative correlation was found between QWB score and beta-2 microglobulin level (r = −0.40; p = 0.0002). The mean QWB score for subjects in the first quartile (0.789 ± 0.2) was significantly higher than the mean QWB score for subjects in the fourth quartile of beta-2 microglobulin levels (0.649 ± 0.2) (p = 0.0001).

When QWB scores were compared based on disease classifications, the subjects in class 3 (0.772 ± 0.018) had significantly higher scores than did the subjects in classes 4a (0.623 ± 0.032), 4c1 (0.653 ± 0.024), and 4d (0.590 ± 0.056).

There was a negative relationship between age and scores on the QWB (r = −0.35; p < 0.0001), indicating that older subjects had lower scores on the QWB. A difference in mean QWB scores was shown between subjects in the first and fourth age quartiles (p = 0.004), with younger subjects having significantly higher QWB scores than older subjects.

MOS-HIV-34 dimension scores. There was a significant and positive relationship between seven of the 11 dimensions and the CD4 counts (table 6). Two of the 11 MOS-HIV-34 dimensions significantly correlated with beta-2 microglobulin levels (table 7). The MOS-HIV-34 dimension scores were compared between the first and fourth quartiles for CD4 levels (table 8) and the beta-2 microglobulin levels (Table 9). Five of the 11 dimensions were significantly different between the upper and lower quartiles of the distributions for CD4 levels and beta-2 microglobu-

Table 6 • Correlation among MOS-HIV-34 Dimension Scores Based on CD4 Levels

MOS-HIV-34 Dimension	Correlation with the CD4 Level
Overall health	r = 0.43; p = 0.0000
Physical function	r = 0.46; p = 0.0000
Role function	r = 0.47; p = 0.0000
Social function	r = 0.31; p = 0.002
Cognitive function	r = 0.16; p = 0.11
Pain	r = 0.26; p = 0.01
Mental health	r = 0.01; p = 0.87
Energy/fatigue	r = 0.33; p = 0.001
Health distress	r = 0.09; p = 0.36
Quality of life	r = 0.20; p = 0.045
Health transition	r = −0.06; p = 0.56

Table 7 • Correlation among MOS-HIV-34 Dimensions and Beta-2 Microglobulin Levels

MOS-HIV-34 Dimension	Correlation with Beta-2 Microglobulin Level
Overall health	r = −0.19; p = 0.07
Physical function	r = −0.35; p = 0.0008
Role function	r = −0.40; p = 0.0001
Social function	r = −0.20; p = 0.058
Cognitive function	r = −0.15; p = 0.15
Pain	r = −0.14; p = 0.18
Mental health	r = −0.01; p = 0.88
Energy/fatigue	r = −0.11; p = 0.29
Health distress	r = −0.01; p = 0.92
Quality of life	r = −0.09; p = 0.38
Health transition	r = 0.06; p = 0.51

Table 8 • Comparison of MOS-HIV-34 Dimension Scores Based on CD4 Quartile One and CD4 Quartile Four

MOS-HIV-34 Dimension	CD4 Quartile One Mean (*n* = 26)	CD4 Quartile Four Mean (*n* = 22)	Significance of Difference
Overall health	48.5 ± 4.88	74.3 ± 5.31	p = 0.0008
Physical function	64.7 ± 4.86	93.9 ± 5.28	p = 0.0002
Role function	48.1 ± 7.76	88.6 ± 8.4	p = 0.0009
Social function	78.5 ± 3.69	93.6 ± 4.0	p = 0.007
Cognitive function	81.5 ± 4.12	88.4 ± 4.48	p = 0.26
Pain	69.2 ± 4.15	79.1 ± 4.51	p = 0.11
Mental health	74.3 ± 3.30	74.4 ± 3.59	p = 0.99
Energy/fatigue	55.0 ± 3.67	70.9 ± 3.99	p = 0.005
Health distress	81.9 ± 3.82	84.3 ± 4.15	p = 0.67
Quality of life	67.3 ± 3.35	75.0 ± 3.64	p = 0.13
Health transition	62.5 ± 3.57	55.7 ± 3.88	p = 0.20

Table 9 • Comparison of MOS-HIV-34 Dimension Scores Based on Beta-2 Quartile One and Beta-2 Quartile Four

MOS-HIV-34 Dimension	Beta-2 Quartile One Mean (n = 22)	Beta-2 Quartile Four Mean (n = 23)	Significance of Difference
Overall health	69.5 ± 5.4	52.2 ± 5.3	p = 0.08
Physical function	92.4 ± 6.1	60.1 ± 5.9	p = 0.0005
Role function	95.5 ± 8.0	43.5 ± 7.9	p = 0.0000
Social function	92.7 ± 4.4	79.1 ± 4.3	p = 0.03
Cognitive function	93.4 ± 3.4	82.4 ± 3.4	p = 0.03
Pain	82.7 ± 5.0	69.6 ± 4.9	p = 0.07
Mental health	76.4 ± 3.5	75.3 ± 3.4	p = 0.83
Energy/fatigue	67.9 ± 4.3	60.0 ± 4.2	p = 0.20
Health distress	84.5 ± 4.3	80.7 ± 4.3	p = 0.53
Quality of life	78.4 ± 4.6	68.5 ± 3.9	p = 0.09
Health transition	53.4 ± 4.7	56.5 ± 4.6	p = 0.64

lin levels. As the two tables show, the patients who differed based on the biological markers of beta-2 microglobulin and CD4 cell counts differed significantly in physical health, but not mental health.

When the scores for the different dimensions of the MOS-HIV-34 were correlated with age, four of the 11 dimensions significantly related to age (table 10). Younger subjects scored higher on Overall Health ($r = -0.21$; $p = 0.047$), Physical Functioning ($r = -0.26$; $p = 0.01$), and Role Function ($r = -0.27$; $p = 0.007$), but lower on Health Transition ($r = 0.21$; $p = 0.043$). When MOS-HIV-34 scores were compared for subjects in the first and fourth quartiles, mean dimension scores were significantly different between young and old subjects in three dimensions, Overall Health, Physical Function, and Role Function. In all three dimensions, the younger quartile had significantly higher scores.

Table 10 • Correlation among MOS-HIV-34 Dimensions and Age

MOS-HIV-34 Dimension	Correlation With Age
Overall health	r = −0.21, p = 0.047
Physical function	r = −0.26, p = 0.010
Role function	r = −0.27, p = 0.007
Social function	r = −0.14, p = 0.184
Cognitive function	r = −0.04, p = 0.665
Pain	r = −0.17, p = 0.110
Mental health	r = −0.003, p = 0.973
Energy/fatigue	r = −0.10, p = 0.322
Health distress	r = −0.04, p = 0.723
Quality of life	r = 0.006, p = 0.948
Health transition	r = 0.21, p = 0.043

Mean scores on five of the 11 dimensions were significantly different among subjects in the different disease classifications, with subjects in disease classes 4c1 and 4d having the lowest scores on the MOS-HIV-34 dimensions of Overall Health, Physical Functioning, Role Function, Pain, and Energy/Fatigue (table 11).

In summary, there were four convergent validity measures used in this research: CD4 levels, beta-2 microglobulins, disease classification, and age. A total of seven comparisons were made among these four convergent validity measures and the eleven MOS-HIV-34 dimensions and the scores on the QWB. All of the convergent validity measures with the QWB were significant. On average, 40% of the convergent validity comparisons with the MOS-HIV-34 instrument were significant.

Table 11 • Comparison of MOS-HIV-34 Dimensions by Disease Classification

MOS-HIV-34 Dimension	Tukey-Kramer Post Hoc Comparison (Alpha = 0.05)
Overall health	2 > 4c1, 4d
Physical function	2 > 4c1, 4c2 3 − 4c1, 4c2, 4d 4a > 4c2
Role function	2 > 4c1, 4c2, 4d 3 > 4c1, 4c2, 4d 4a > 4c1, 4c2
Social function	No difference
Cognitive function	No difference
Pain	3 > 4c1
Mental health	No difference
Energy/fatigue	3 > 4d
Health distress	No difference
Quality of life	No difference
Health transition	No difference

Discussion and Conclusions

In general, there is value in the use of both an index, such as the QWB, and a profile, such as the MOS-HIV-34. Index instruments present an aggregated score, which can be helpful in deciding which medical intervention is best overall. Profile instruments present scores for individual dimensions, and can be used to follow progress at the patient or group level by following the changes in individual dimension scores.[22] The question remains, however, whether either of these instruments should be used in assessing health-related quality of life of HIV-infected patients. This decision should be based on the reliability and validity of the two instruments.

Construct validation seeks to explain why there are changes in patients' health-related quality of life. In health-related quality-of-life research, construct validity is supported by convergent and discriminant

validity. Convergent validity is achieved by gathering data from other sources that are in agreement with the findings of health-related quality-of-life instruments.

In this research, two health-related quality-of-life instruments were compared with four convergent validity measures: CD4 cell counts, beta-2 microglobulin levels, disease state, and age. When comparing QWB scores across the four convergent validity measures, using the various comparisons, 100% of the comparisons were statistically significant. This finding supports the convergent validity of the QWB.

The MOS-HIV-34 scores, when compared across the same four convergent validity measures, were significant in 40% of the cases. While evaluations for two of the individual MOS-HIV-34 dimensions were significant in all comparisons, two other dimensions failed all comparisons. Does the 40% level of significant comparisons provide support for the convergent validity of the MOS-HIV-34? There is no definitive answer to this question, as convergent validity is not a yes-or-no question. Convergent validity assessment is a relative concept, not an absolute one, and is established over a series of studies, using various convergent validity measures.

While sample size can turn practically insignificant differences into statistically significant differences, this study clearly did not utilize an overwhelming sample size. The concern regarding the practical significance of the findings is always important, independent of the p-value. The focus of this research was to assist clinicians in assessing the use of two instruments for measuring health-related quality of life, based on convergent validity. The criterion measures used to evaluate convergent validity were carefully selected; the findings, in spite of potential alpha slippage, provide clinicians with valuable and new information regarding the convergent validity of the two instruments.

Additional support for the use of the QWB and the MOS-HIV-34 in this patient population is provided in a recent study by Copfer et al.[23] In their sample of HIV-infected patients, it appeared that the measurement of disease-specific quality of life was highly reliable, with internal consistency coefficients ranging from 0.85 to 0.95 for the 11 dimensions of the MOS-HIV-34. These values are higher than the coefficients presented in this report. As in our study, Copfer et al. found that all 11 dimensions of the MOS-HIV-34 were significantly correlated with the QWB score. Using a multiple regression model, it was demonstrated that 80% of the variance in QWB scores was accounted for by nine of the 11 dimensions of the MOS-HIV-34.[23]

Assessing convergent validity is a complex task, and several factors may influence the results. The first variable that affects convergent validity is the comparison measures utilized. In this research, there were four convergent validity measures: CD4 levels, beta-2 microglobulin levels, disease state, and age. Individuals may challenge that any of these are valid convergent validity criteria for health-related quality of life. The measures do focus on quantitative measures versus more qualitative measures.

There are other clinical indicators that may be used as convergent variables. Among the potential variables that could be used to evaluate the convergent validity of the QWB and the MOS-HIV-34 are magnetic resonance imaging (MRI) evaluations, neurologists' ratings of patients' central and peripheral neurologic dysfunctions, and psychological evaluations from instruments such as the Profile of Mood States (POMS). Research evaluating the convergent validity of the MOS-HIV-34 with the above measures would be valuable. Significant associations between these measures and the QWB have recently been published.[18] An additional measure that may prove useful in assessing convergent validity in HIV disease is viral load.

Based on the results presented herein, it may be premature to conclude that the QWB has greater convergent validity than the MOS-HIV-34 in HIV-infected patients. As discussed earlier, general instruments can be used across disease states and are therefore useful in comparing health-related quality of life in different disease states. Disease-specific instruments are useful only in assessing health-related quality of life in a single disease state. A guideline in measuring health-related quality of life is to use a general instrument for comparison across disease states and a disease-specific instrument for more sensitive measurement within a disease state.[24] However, Kaplan and colleagues, in research assessing health-related quality of life in patients with arthritis, found that this guideline does not always hold.[25]

Since this research was conducted, there has been a shift in the composition of the cohort of HIV-infected patients. This research was conducted in gay men; it does not support the generalization to other risk groups. No other published research has evaluated this finding in other risk groups.

In summary, the results of this study provide support for both the QWB, a generic measure, and the MOS-HIV-34, a disease-specific instrument, in the measurement of health-related quality of life of HIV-infected individuals. Because the two measures provide different perspectives on health-related quality of life, both instruments appear to be useful in measuring health-related quality of life in this patient population. Continuing evaluation of the strengths and weaknesses of these health-related quality-of-life instruments and methods of assessing construct validity is warranted.

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