

BRIEF COMMUNICATION

Validation of the WHOQOL-BREF Quality of Life Questionnaire for Use with Medical Students

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ABSTRACT

Purpose: The purpose of the present study was to validate the use of the abbreviated version of the World Health Organization Quality of Life (WHOQOL-BREF) questionnaire with medical students.

Methods: A sample of 274 medical students in their fourth and fifth years of study (80% response rate) completed the WHOQOL-BREF instrument. The four-domain factor structure of the questionnaire was tested using confirmatory factor analysis. A variety of other tests of reliability and validity were conducted.

Results: Goodness-of-fit indices from the confirmatory factor analysis were acceptable, and the factor structure of the WHOQOL-BREF was confirmed in this sample. Reliability was good, but three of the items showed strong ceiling effects.

Conclusion: The WHOQOL-BREF is valid to use with medical students to assess health-related quality of life. Some items, such as those inquiring about pain and medication, may not be suitable for medical students or young people in general. Implications for medical education are presented, including that the WHOQOL-BREF may be a useful inventory for research into the determinants of health-related quality of life of medical students.

Keywords: Medical students, quality of life, validation, WHOQOL-BREF



Introduction

The assessment of health-related quality of life (QoL) is a burgeoning area of study^{1,2}. The World Health Organization³ defines quality of life as 'individuals' perceptions 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. This definition reflects the view that quality of life refers to a subjective evaluation that is embedded in a cultural, social and environmental context' (pp. 551-552). The World Health Organization Quality of Life (WHOQOL) questionnaires are among the most widely used QoL assessment tools in the world. The short version, the WHOQOL-BREF, is particularly popular, since its brevity reduces participant response burden and thus facilitates its use in conjunction with other measures³. Compared to other related instruments, such as the SF36⁴, the WHOQOL-BREF has very strong cross-cultural applicability^{3,5}, and is thus readily suited to culturally diverse contexts.

In medical education, it is important to measure QoL in order to be able to optimize training, where stress and burnout are substantial factors affecting drop-out rates⁶. The QoL of medical students is also likely to have implications for their future competence as clinicians⁷. However, in order for the instrument to be used with medical students, its psychometric properties will first need to be tested with this group, especially since previous research identified some concerns when using the questionnaire with younger people⁵. The purpose of the present study was to provide psychometric data to evaluate the suitability of the WHOQOL-BREF for use with medical students.

Methods

Medical students in their fourth and fifth years of study at the School of Medicine, Auckland, New Zealand, were invited to participate in the present study. In this medical school, students take a preclinical course for their first three years followed by another three years of clinical training⁸.

Data were collected half way through the fourth and fifth years. Students were approached during lectures and invited to complete the paper version of the WHOQOL-BREF. This questionnaire has 26 items on a five-point Likert scale, which includes two global items about QoL and health, respectively, and 24 items relating to four domains calculated as the sum of seven items for physical, six for psychological, three for social and eight for environmental QoL. Table 1 presents the items (or facets) of each of the domains, as well as the order in which the questions appear in the instrument. The WHOQOL-BREF can be used free of charge, provided that researchers contact their national WHOQOL centre or group for permission. If readers are unable to locate a national or regional WHOQOL group, they are very welcome to contact the authors of the present study for assistance.

Participation in the present study was voluntary and answers were anonymous. All data analyses were conducted using SPSS v.16.0, except for the confirmatory factor analyses, which were conducted with LISREL v.8.80. This study was approved by the University of Auckland Human Ethics Committee.

Results

A total of 274 students completed the questionnaire, yielding a response rate of 80%. The average age of the sample was 22.7 years (sd = 2.8), with 150 female student respondents. In relation to ethnicity, 99 students answered that they were European, 97 Asian, 14 Māori, 14 Pasifika, and 47 indicated that they were of another ethnicity (three did not respond to this question).

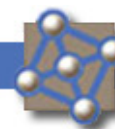


Table 1: WHOQOL-BREF questions (facets) by the four domains and order in which the questions appear in the instrument

Domain	Facet	Question number in the WHOQOL-BREF
Global items	Overall quality of life	1
Physical health	General health	2
	Pain and discomfort	3
	Dependence on medicinal substances and medical aids	4
	Energy and fatigue	10
	Mobility	15
	Sleep and rest	16
	Activities of daily living	17
	Work Capacity	18
Psychological health	Positive feelings	5
	Spirituality, religion and personal beliefs	6
	Thinking, learning, memory and concentration	7
	Bodily image and appearance	11
	Self-esteem	19
	Negative feelings	26
Social relationships	Personal relationships	20
	Sexual activity	21
	Social support	22
Environmental Quality of life	Freedom, physical safety and security	8
	Physical environment (pollution/noise/traffic/climate)	9
	Financial resources	12
	Opportunities for acquiring new information and skills	13
	Participation in and opportunities for recreation/leisure activities	14
	Home environment	23
	Health and social care: Accessibility and quality	24
	Transport	25

Coefficients of kurtosis and skewness were within the acceptable range of -1.00 to 1.00 for the majority of the WHOQOL-BREF items. Items 3 ('To what extent do you feel that physical pain prevents you from doing what you need to do?') and 4 ('How much do you need any medical treatment to function in your daily life?') had kurtosis coefficients of 1.37 and 2.33 and skewness coefficients of 1.39 and 1.53, respectively. Item 15 ('How well are you able to get around physically?') had a kurtosis value of -1.17, and Item 22 ('How satisfied are you with the support you get from your friends?') had a skewness value of 1.06. For Items 3, 4 and 15, more than 50% of the respondents marked the highest response category, indicating strong ceiling effects and, thus, limited variability of responses across the Likert-scale response options. The means of the two global items and domain scores are shown in Table 2.

Reliability of the WHOQOL-BREF was assessed using Cronbach's alpha. For the overall scale, alpha was 0.89, and ranged from 0.74 to 0.77 for the individual domains. All values were above 0.70, which demonstrated adequate internal consistency. Criterion-related validity was assessed by correlating item and domain scores with the score of each of the two global items (Item 1: 'How would you rate your quality of life?' and Item 2: 'How satisfied are you with your health?'). All 24 remaining items were



significantly correlated with Items 1 and 2 ($p < 0.01$), except for Item 4, which was significantly correlated with Item 2 ($p < 0.01$), but not with Item 1. All domain scores were significantly ($p < 0.01$) correlated with Item 1 (Pearson's r ranged from 0.38 to 0.63), as well as Item 2 (0.32 to 0.47).

Table 2: Means and standard deviations of the two global items and the four domain scores of the WHOQOL-BREF administered to medical students (n=274)

	Mean	Standard deviation
Item 1: Global Quality of Life	4.00	0.82
Item 2: Global Health	3.85	0.96
Physical Domain	21.75	3.08
Psychological Domain	20.87	2.80
Social Domain	11.27	2.43
Environmental Domain	29.97	4.65

Ordinal confirmatory factor analysis was conducted using the maximum likelihood method of estimation, and allowing factors to be correlated. Root mean square error of approximation was 0.078, and, thus, above the 0.060 cut-off value for an excellent fit, but below the 0.080 cut-off for an acceptable fit. The comparative fit index was 0.93 and, therefore, close to the >0.95 criterion for a very good fit⁹. A third goodness-of-fit index, the standardized root mean square residuals, indicated that the fit was good, with a value of 0.079 (criterion <0.080).

Discussion

The present study examined the psychometric properties of the WHOQOL-BREF when applied to medical students. While the sample size of the present study can only be considered small to moderately large, it was sufficient to support a confirmatory factor analysis¹⁰, and the high response rate adds confidence to the representativeness of the sample of the target population. Overall, the instrument performed well as an assessment tool of QoL with respect to this target group. The four-domain structure was confirmed, and, with only some minor exceptions, the individual items that combine to form the domain score were significantly correlated with the two global items assessing QoL and health, thus, demonstrating adequate criterion-related validity. Reliability was excellent, with Cronbach's alpha values comparable to those reported when using this instrument with a large international sample of the general population³.

Items 3 (pain and discomfort), 4 (dependence on medicinal substances and medical aids) and 15 (mobility) demonstrated strong ceiling effects, and it is therefore recommended that these items receive special scrutiny. Similar effects have been previously reported, and appear to be a common occurrence when collecting data from samples of younger people⁵. These items inquire about physical health; it is understandable that a large proportion of young people score highly on these items. Ceiling effects obviously reduce differentiation of scores, and Items 3, 4 and 15 could therefore be excluded retrospectively from statistical analyses on a case-by-case basis when making comparisons within the sample. Since all three of the question items form part of the physical domain, within-sample variation of domain scores will also be reduced. For that reason, examination of individual items may be preferable. This may help to better directly provide information about specific areas that might be in need of intervention.



Conclusions

There are numerous implications of the present findings. First, this study confirms that medical educators can confidently use the WHOQOL-BREF to measure QoL in their students. Second, pastoral workers, educators and psychological staff can use the WHOQOL-BREF as a diagnostic instrument, and it is also likely to be fruitful in assessing the efficacy of interventions that are implemented to address problems associated with wellness and burnout⁷. Finally, the WHOQOL-BREF is likely to be a useful inventory for research into the determinants of health-related QoL of medical students.

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