



MONASH University



The Assessment of Quality of Life
(AQoL) Instruments

Multi Instrument
Comparison Study

Centre for Health Economics

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and contact us:

www.AQoL.com.au
ASSESSMENT OF QUALITY OF LIFE



The Instruments

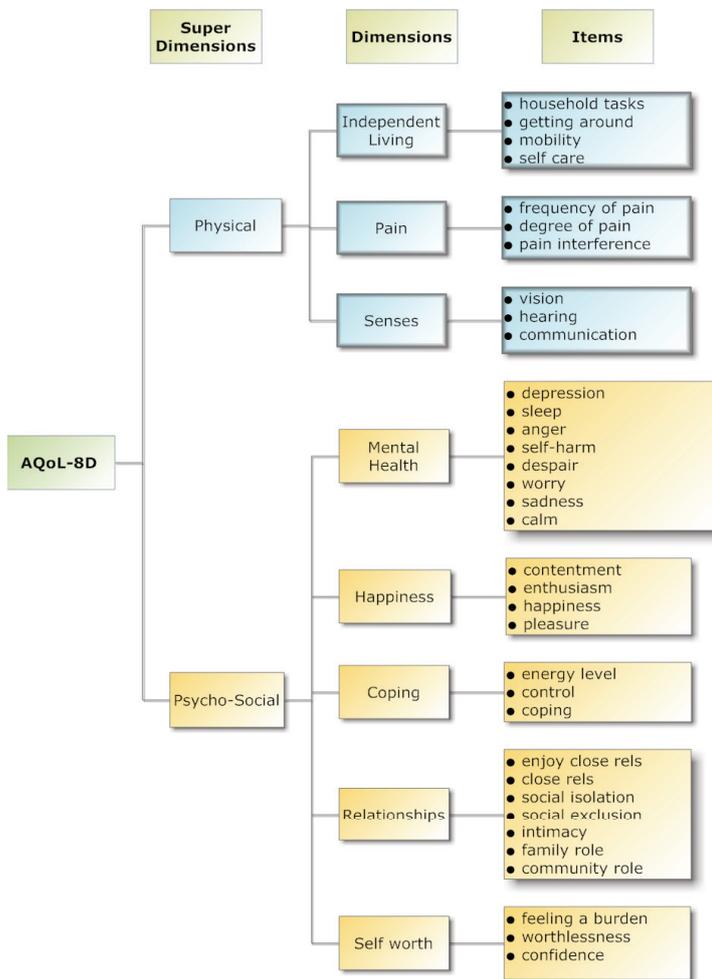
What is AQoL?

- The AQoL instruments are Multi-Attribute Utility (MAU) instruments for measuring health state 'utility'
- There are 5 AQoL instruments: AQoL-8, 4D, 6D, 7D, 8D
- Each instrument contains dimensions (pain, depression, etc) for profiling health states
- Scoring formulae are available in SPSS and STATA on the website

Why Use the AQoL?

- Good evaluation requires instruments which are sensitive to the health states they measure
- The sensitivity of existing instruments varies greatly and utility scores are inconsistent
- The AQoL instruments were created to increase measurement sensitivity, especially in the psychosocial dimensions
- Questionnaires take between **2-6 minutes** to complete

Figure 1: Structure of the AQoL-8D



How do AQoL instruments differ from other instruments?

- Use of theoretically correct psychometric construction methods
- Multi-tier descriptive systems to increase sensitivity
- Provision of dimension scores, each representing psychometrically valid scales for profiling health states
- Provision of reliable and valid utility scores for the largest number of health states to date.

Why were AQoL instruments created?

Evidence has shown that utility scores from existing instruments (the EQ-5D, HUI 3, SF-6D, 15D, QWB) differ significantly.

This is illustrated in Figure 2 below with data from a relatively healthy group [4]. Each graph plots an individual's score on one instrument (X) against their score on a second instrument (Y). If the instruments both measured the same quantity (utility) then the scores would be the same. The equation for the best fitting line between points would be X=Y and points on the graphs would all lie on the dotted line. In contrast, the best fitting lines differ significantly from this and the variance (scatter of points around the line) is very large.

The two most comprehensive studies to date found similar results. Only about half the variance in the scores of any MAU instrument could be explained by another MAU instrument [1, 2].

A draft review of MAU instruments for the forthcoming AJ Culyer Encyclopedia of Health Economics may be found in Richardson et al. [3].

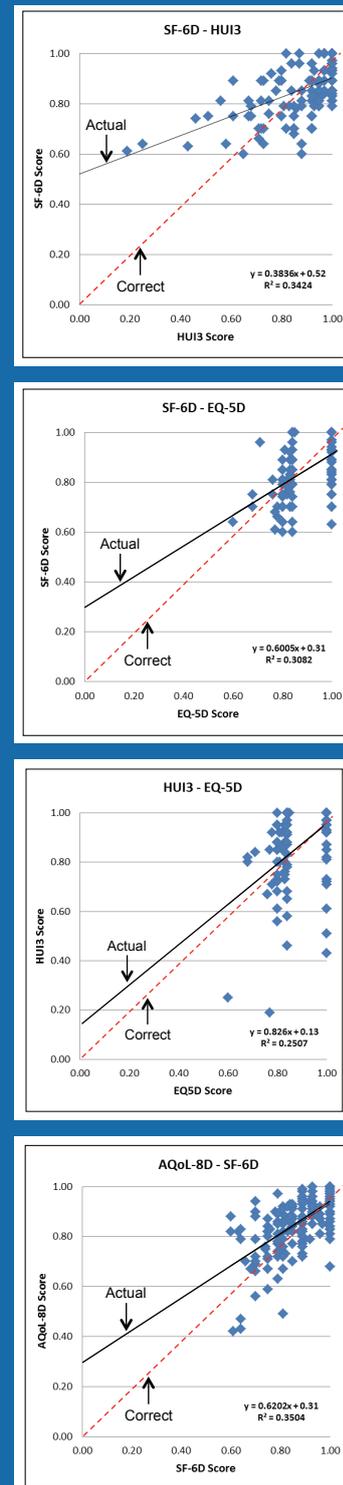


Figure 2. Pairwise comparison of instrument scores

The Multi Instrument Comparison (MIC) Project

The MIC project administered 12 instruments and a Self TTO (time trade-off self-assessment) in 6 countries and included quotas of people in 7 chronic disease areas. The project involves collaboration with QoL researchers in Australia (Richardson, Cummins), the USA (Kaplan), UK (Coast), Norway (Olsen), Germany (Schlander) and Canada. By August 2012 the number of responses was 7,720.

Table 1 Country and disease area summary

Countries	Australia, USA, UK, Norway, Germany, Canada		
Disease areas	<ul style="list-style-type: none"> Healthy (no disease) Arthritis 	<ul style="list-style-type: none"> Asthma Cancer Depression 	<ul style="list-style-type: none"> Diabetes Hearing Loss Heart disease
Instruments	Subjective wellbeing (Happiness)	PWI ¹ , IHS ² , SWLS ³	
	Multi attribute utility (MAU)	EQ-5D-5L, SF-6D, HUI 3, 15D, QWB, AqoL-4D, AqoL-8D	
	Multi attribute (MA) (non utility)	SF-36	
	Capabilities	ICECAP-A	
	Other	SELF TTO, Demographics, SES	
⁽¹⁾ Personal Wellbeing Index(PWI); ⁽²⁾ Integrated Household Survey (IHS); ⁽³⁾ Satisfaction with Life Survey (SWLS)			
Source: MIC Project User Manual: Data Description and Use			

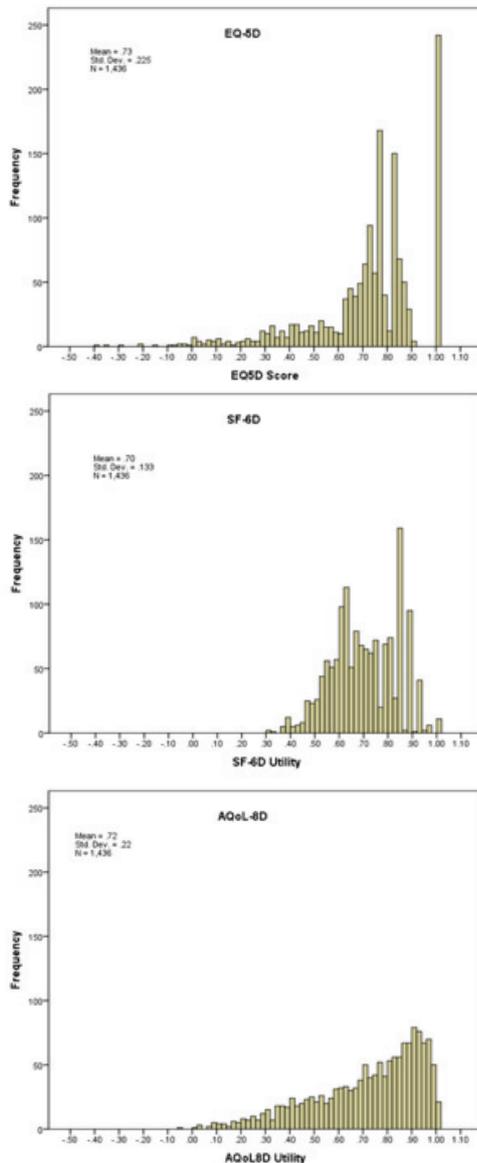
Results from the MIC Project

Preliminary analyses of Australian data are available online in Richardson et al. [5]. Some results are shown below.

(i) Frequencies: Figure 3 shows the frequency distribution of EQ-5D-5L, SF-6D and AqoL-8D for 1,436 individuals.

The more sensitive AqoL-8D descriptive system results in a more satisfactory distribution. It has minimal ceiling effects (U=1.0; EQ-5D 16%; AqoL-8D 1.6%) and plausible lower values for a sample where 80% had one of the listed diseases (U < 0.4: SF-6D 1.4%; AqoL-8D 10.6%).

Figure 3 Frequency distribution of MAU instruments (n = 1,436)



(ii) Convergent Validity: Figures 4-6 show correlation coefficients. The Intra Class Correlation (Figure 4) indicates how close (or not) absolute scores are to one another. The results show they are not very close for measures which should be identical.

Figure 4 Average Correlation with 7 other instruments

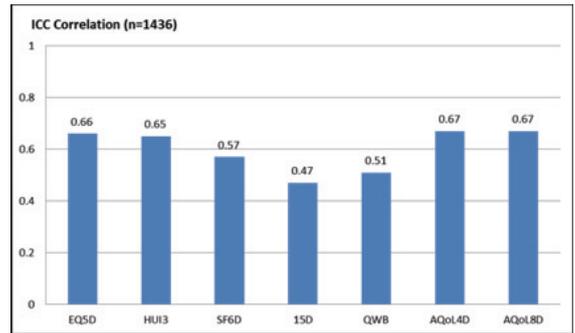
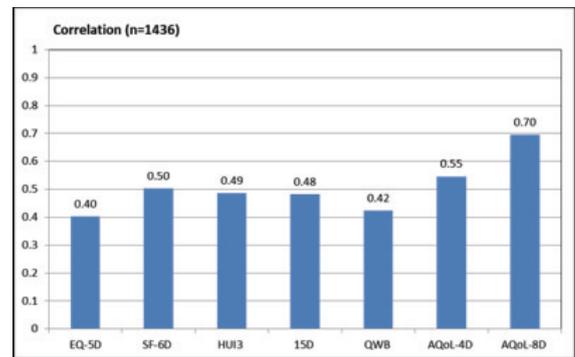


Figure 5 Correlation with Happiness*



*Happiness measured by 'Satisfaction with Life Survey'

Figures 5 and 6 display the correlation of instrument scores with happiness and with the Self TTO (which requires respondents to trade their present health state for a shorter improved life). The correlation of happiness (SWLS) with AqoL-8D (0.7) is 75% greater than with EQ-5D (0.4). Correlation with the Self TTO indicates that the AqoL-8D more closely reflects individuals' assessment of own health than other instruments.

Figure 6 Correlation of MAU instruments with Self TTO

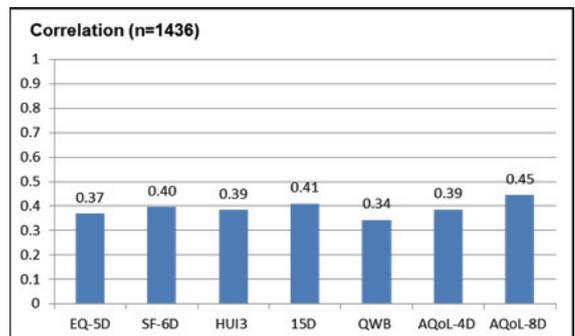
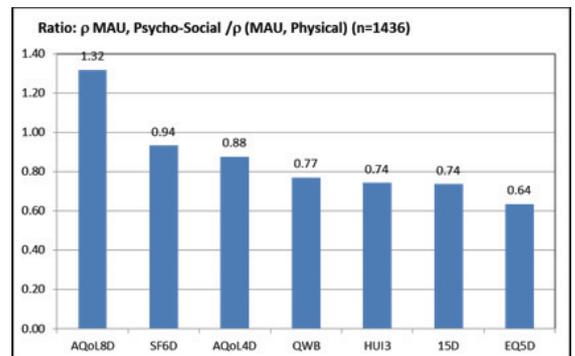


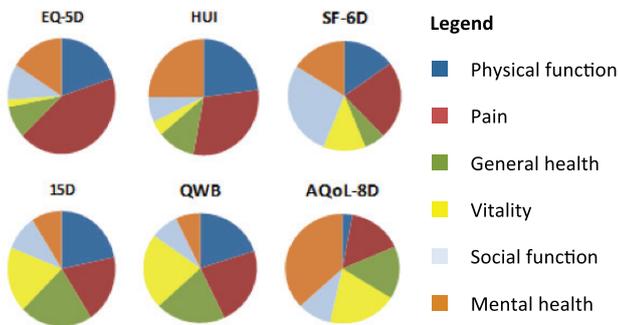
Figure 7 Sensitivity to psycho-social versus physical dimensions



(iii) What is measured (Content Validity): The correlation between an instrument and the two SF-36 summary scores for physical and psycho-social health give an indication of the instrument's sensitivity to physical and psycho-social health. Figure 7 gives the ratio of these correlations. It therefore indicates the relative sensitivity of an instrument to these two broad dimensions. Figure 7 reveals that the AQoL-8D has about double the relative sensitivity to psycho-social health of the EQ-5D as measured by the SF-36 summary scores.

Figure 8 shows the importance of different health dimensions in 'explaining' variation in 'utility' as measured by different instruments. Results were derived from the multiple regression of 'utility' upon the dimension scores of the SF-36. They therefore show the importance of dimensions after standardising for differences in other dimensions. For example when the dimensions of the SF-36 all increase by 1 standard deviation, pain and mental health account for 42.1% and 15.0% of the total increase in the EQ-5D respectively, as shown by the red and orange segments in Figure 8. In contrast, with the same increase in SF-36 dimension scores, pain and mental health account for 30.1% and 25.2% of the total increase in the HUI 3. Overall Figure 8 demonstrates dissimilarity in the 'content' of different instruments.

Figure 8 Relative increase in utility with a 1 standard deviation increase in each dimension of the SF-36



Source: Richardson et al [5].

(iv) International Comparison: Figure 9 illustrates the effect of dissimilar instrument content. Respondents reporting depression had lower scores on the AQoL-8D reflecting the greater sensitivity of the AQoL-8D to psycho social health states. The figure indicates a surprising similarity of results between countries.

Figure 9 Utility of depressed patients in 5 countries.

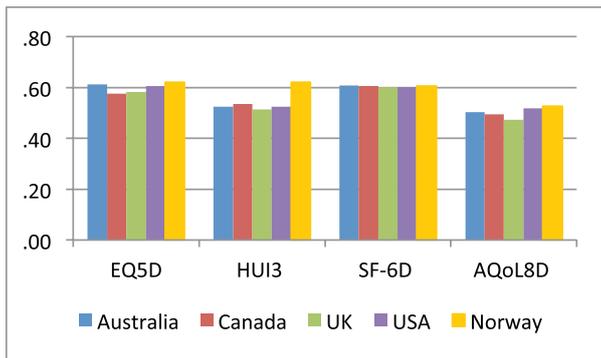
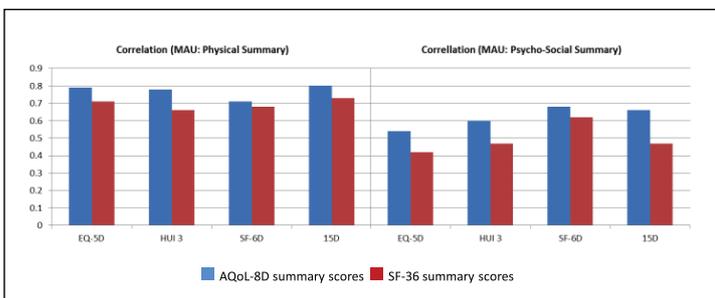


Figure 10 Sensitivity of AQoL-8D dimension summary scores (n=1436)



(v) Profiling health states: Like the SF-36, AQoL-8D has 8 validated dimensions and 2 summary dimensions for physical and psycho-social health which are available to profile health states. The correlation of the SF-36 and AQoL-8D summary scores with 4 MAU instruments, shown in Figure 10, indicates a closer relationship with AQoL-8D than with SF-36 summary scores.

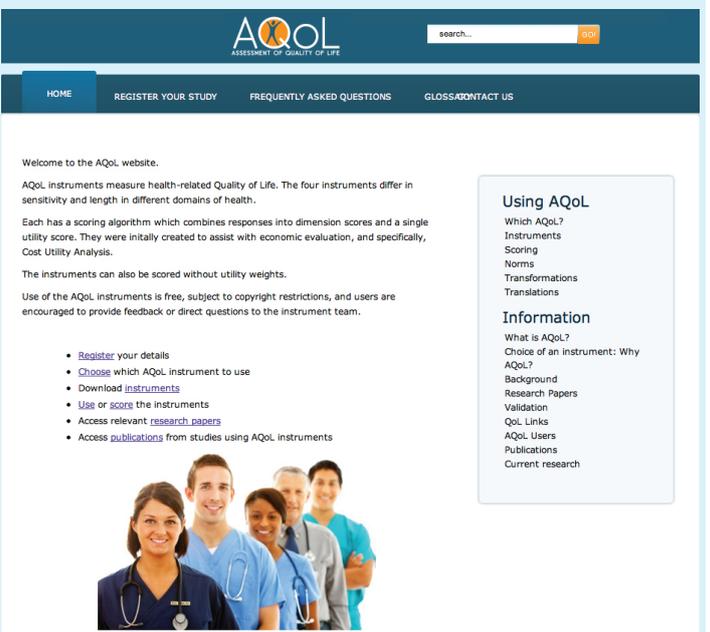
Preliminary Conclusion

The chief conclusion from preliminary analysis is that different MAU instruments measure different 'constructs'. The term QoL refers to something different in each instrument: the 'utility' produced by each instrument therefore measures preferences for a different concept of QoL.

Data Availability

From January 2014 the full database and AQoL manual will be available on the AQoL website. Before this, selected data may be obtained from the MIC team for projects which are not being undertaken by the team (contact angelo.iezzi@monash.edu). Australian data are currently available. From November 2012 selected data from the UK, US, Canada and Norway will be available.

The AQoL website



Examples of Frequently Asked Questions

These include general questions. Examples include:

- Why use an MAU instrument?
- Should we use a single MAU instrument? (No: the implied logic is incorrect unless the instrument is perfect. Analogously we would not achieve comparability in the measurement of medical need through the use of a single and insensitive indicator such as blood pressure. In fact, use of a single insensitive instrument guarantees discrimination against some classes of intervention. Other current instruments discriminate particularly against mental health services.)

References

[1] Fryback, D. G., M. Palta, et al. (2010) 'Comparison of 5 health related quality of life indexes using item response theory analysis.' Medical Decision Making 30(1): 5-15.

[2] Hawthorne, G., Richardson, J., Day, N. (2001) 'A comparison of the Assessment of Quality of Life (AQoL) with four other generic utility instruments.' Annals of Medicine 33: 358-370.

[3] Richardson, J., McKie, J., Bariola, E. (2011) Review and Critique of Related Multi Attribute Utility Instruments, Research Paper 64, (forthcoming in A Culyer (ed), Encyclopedia of Health Economics, Elsevier Science San Diego). Melbourne, Centre for Health Economics, Monash University [http://www.buseco.monash.edu.au/centres/che/pubs/researchpaper64.pdf].

[4] Khan MA, Richardson J (2011) A comparison of 7 instruments in a small, general population, Research Paper 60, Melbourne, Centre for Health Economics, Monash University

[5] Richardson, J., Iezzi, A., Khan, M., Maxwell, A. (2012) Cross National Comparison of Twelve Quality of Life Instruments, MIC Paper 2, Australia, Research Paper 78, Centre for Health Economics, Monash University.