A randomised comparison of the EuroQol and Short Form-36 after stroke

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The impact of a disease on health related quality of life is important but difficult to measure. If the instrument used for measuring this is too complicated some people may not answer some questions and others may not respond at all. Although incomplete data may introduce biases, make interpretation difficult, and reduce the generalisability of the results,[1] papers on selecting quality of life instruments have ignored response frequency.[2 (2, 3)] We postulated that the brevity and simplicity of the EuroQol questionnaire (six separate questions and a visual analogue scale) would achieve a better response in stroke survivors than the SF-36 (34 separate questions) and performed a randomised controlled trial to test this hypothesis.

Methods and results

We included all patients who had been entered by United Kingdom centres in the International Stroke Trial between 2 March 1993 and 31 May 1995 who were not known to be dead. We randomised eligible patients using an allocation code generated by an adaptive randomisation algorithm (minimisation)[(4)] to postal follow up with either the EuroQol or the SF-36 instrument. We incorporated both instruments into questionnaire booklets which also asked for the patient's address, type of residence, functional outcome after stroke, and whether or not the patient completed the form independently. We posted the booklets with a personalised letter explaining the purpose of the study and a reply paid envelope. We asked subjects to complete the questionnaire without help if possible, and, if they could not, to give it to a relative or carer willing to respond for them. A reminder letter and questionnaire were sent after two weeks. The primary measures of outcome for each instrument were: the frequency of response after the first mailing and the reminder and the number of forms with "no domains of missing data." The study was powered (power $=0.95=(1-\beta)$,$\alpha=0.05$) to detect an absolute difference in overall response of 5%—that is, of 50 forms per 1000 between the two groups, assuming an overall mean response of 75%.

Of the 4016 patients in the International Stroke Trial, 2253 patients were eligible and randomised. The groups were well matched for age, sex, and distribution of baseline stroke syndromes. The median time between the onset of stroke and form completion was 56 weeks (range 17-125) in both groups. Response and "response with no missing data" were significantly more frequent in patients allocated the EuroQol instrument (see table). For both instruments about half of all completed forms were completed by the patients (51% for the EuroQol and 50% for SF-36) rather than by carers. Respondents to the EuroQol questionnaire reported dependency in activities of everyday living significantly more often than patients responding to the SF-36 (58% *v* 50%, P = 0.00006).

Comment

This is the first randomised comparison of two commonly used health status measures. Patients allocated to the EuroQol were significantly more likely to respond and to provide complete data. The observed difference, although modest in absolute terms (about 50 additional forms returned per 1000 mailed), would translate to a shortfall of about 1000 completed forms in a survey of 20 000 subjects studied by SF-36 rather than the EuroQol. The 11% absolute difference in forms with no missing data is also important. Use of the EuroQol could increase the efficiency of the study and reduce the resources required. Also the better the response, the less the risk of bias by the empirical use of arbitrary values for missing items of data.

In our study patients who responded with the EuroQol instrument were more likely to be dependent. Thus, by enabling responses to be obtained even from patients with poor outcomes, a simple instrument may have more power to detect differences than a more complex measure with a lower frequency of response. Simple questionnaires with higher response frequencies may therefore be preferable to more complex intruments.

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Table 1 Comparison of response frequency and completeness of data for the EuroQol and SF 36. Results are numbers (and percentages)

Measure of performance	Questionnaire allocated: SF-36 (n=1128)	Questionnaire allocated: EuroQol (n=1125)	Absolute difference (%)	Odds ratio of response (95% CI)	P
Response					
To first mailing	679 (60)	747 (66)	6	1.31 (1.1 to 1.6)‡	0.002
After two mailings	849 (75)	905 (80)	5	1.35 (1.1 to 1.6)‡	0.003
Complete data					
No missing data	616 (55)*	747 (66%)†	11%	1.64 (1.4 to 1.9)§	< 0.0001

*Questionnaires with no missing data (after interpolation of missing values where possible) for the SF-36.
†Questionnaires with no missing data (for the EuroQol any missing data resulted in a missing domain).
‡Odds of response, comparing Euroqol with SF-36 (odds >1 indicate EuroQol better).
§Odds of response with no missing data , comparing Euroqol with the SF-36 (odds >1 indicate EuroQol better).