Effectiveness of Needs-Based Quality of Life Instruments

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ABSTRACT

Several years experience has now been gained in the use of needs-based measures in clinical trials and such use is increasing rapidly. This paper shows how four needs-based quality of life (QoL) instruments have proved effective in determining the benefits of interventions from the patients’ perspective in clinical studies and trials. The instruments discussed are: the Quality of Life in Depression Scale (QLDS), the Migraine Specific Quality of Life Scale (MSQoL), the Recurrent Genital Herpes Quality of Life (RGHQoL), and the Quality of life—Assessment in Growth Hormone Deficient Adults (QoL-AGHDA).

Keywords: adult growth hormone deficiency, depression, migraine, quality of life, recurrent genital herpes.

Introduction

Since 1992 the needs-based quality of life (QoL) model proposed by Hunt and McKenna [1] has formed the basis of 20 disease-specific QoL instruments developed by researchers in the UK and the US. The content of each of these instruments was developed directly from interviews with relevant patients. Consequently, items reflect the concerns of the patients rather than those of investigators. The measures are easy to administer and complete and are well accepted by both investigators and respondents. All language versions of the instruments developed have better psychometric qualities than many of the available health-related quality of life (HRQL) instruments. For example, all 11 language versions of the Quality of Life in Depression Scale display test–retest reliability values above 0.90, a crucial indicator of the instrument’s responsiveness and construct validity [2]. Test–retest reliability of the scales in the SF-36 has been reported in five studies [3–7]. Of the 40 estimates provided, 2 were 0.90 or above and only 6 reached the minimum required for use in a clinical trial (0.85 [8]). Reliability estimates observed for the main European generic health status questionnaire, the Nottingham Health Profile (NHP), while higher than those for the SF-36, also generally fail to reach an adequate level [9].

Quality of Life in Depression

The Quality of Life in Depression Scale (QLDS) was the first needs-based QoL measure [11]. It has been widely adapted for use throughout Europe and the Americas [2] and has been used in several clinical trials and studies. Two of these studies reported on the responsiveness of the QLDS [12,13]. These were open-label general practice studies with patients followed up for 8 weeks following initiation of treatment with fluoxetine. Scores on the QLDS were closely related to severity of depression as determined by the Hamilton Depression Rating Scale, as shown in Table 1 [13]. Mean scores on the QLDS for the 133 patients who completed the study fell from 22.0 to 5.2. In the Grégoire et al. study [12] patients were aged 60 years or above (n = 196). A similar improvement in scores was found (mean = 23.1 at baseline and 8.4 after 8 weeks).
This equated to effect sizes of 1.93 and 1.92, respectively. Such values are rarely achieved in clinical studies with an effect size of 1.0 being considered large. Walker and colleagues [14] undertook an identical study with moclobemide, which they reported to be a more effective antidepressant than fluoxetine. Effect sizes for the eight SF-36 subscales (the outcome measure selected in the study) ranged from 0.12 to 0.71.

**Migraine Specific Quality of Life**

The superior responsiveness of a needs-based instrument was clearly shown in a study comparing the performance of the Migraine Specific Quality of Life Scale (MSQoL) and the SF-36 with 1383 migraineurs treated with zolmitriptan [15]. The MSQoL is employed to determine changes over time in a patient’s QoL resulting from effective treatment of their migraine. It is completed between headaches and is not concerned with the symptoms or disability associated with the attack itself. It is hypothesized that as a patient gains confidence that they are receiving an effective treatment, their QoL will improve. This hypothesis was supported by the finding that MSQoL score improvements were significantly greater among patients who responded to treatment at 2 hours than those who did not.

The effect size for the MSQoL was 0.25 and that for the eight SF-36 scales averaged 0.03. These differences in responsiveness are considerable and could account for the improvements in MSQoL scores being statistically significant while those for the SF-36 were not.

**Quality of Life in Recurrent Genital Herpes**

Patel and colleagues [16] reported on the impact of suppressive antiviral therapy on the QoL of patients with recurrent genital herpes (RGH). As with migraine, the QoL issue was whether treatment that prevents or reduces the number or severity of outbreaks improves the overall QoL of the patient. Again the concern was not with the experience of an outbreak—a recent instrument (the Herpes Outbreak Impact Questionnaire) has been produced for this purpose [17].

The Recurrent Genital Herpes Quality of Life (RGHQoL) questionnaire [18] was with 1349 patients who had experienced a minimum of six herpes outbreaks in the previous year. The mean improvement in score on the RGHQoL of patients on active therapy ranged from 9.4 to 12.0 from a baseline of 30.2 to 33.9. Improvement in score in the placebo group was 4.8 points from a baseline of 32.4. The study clearly showed the benefits of therapy on QoL.

In a subsequent study [19], the SF-36 and RGHQoL were employed with 307 RGH patients. Neither frequency of recurrences nor pain and discomfort experienced during outbreaks influenced scores on the SF-36. In contrast, RGHQoL scores were significantly related to both recurrence frequency and severity of pain and discomfort during recurrences.

**Adult Growth Hormone Deficiency**

One of the most widely used needs-based instruments is the QoL-AGHDA (Quality of life—Assessment in Growth Hormone Deficient Adults [20]) despite the relatively low prevalence of the condition. This is due to the absence of clear clinical indicators of disease severity.

Studies of growth hormone replacement in the Netherlands [21] and Spain [22] indicated that the QoL-AGHDA had greater responsiveness than the Nottingham Health Profile. A further study was conducted to validate the Swedish version of the QoL-AGHDA through the implementation of Rasch analysis [23]. The study also sought to compare the QoL of 111 adults with untreated GH deficiency with that of a reference population (1448 adult subjects randomly selected from the population of Göteborg).

Most items in both samples were found to fit the Rasch model, confirming the unidimensionality of QoL-AGHDA. Overall, the hierarchical order of the items from the two samples was similar, although certain items performed differently in the two samples. For example, “I have to force myself to do all the things that need doing,” reflects more severely impacted QoL for the reference sample than for the patient sample. Examination of the person’s QoL logit scores showed that these minor inconsistencies had no overall effect on the results obtained with the measure.

Data from the two populations showed significant differences, as determined by nonoverlapping
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confidence intervals. Figures 1 and 2 show the mean QoL-AGHDA scores for males and females, respectively. These have been transformed by Rasch analysis to range from 0 to 100. This is the first real evidence that adults who are GH-deficient have inferior QoL to those without the deficiency. Indications from other studies using the QoL-AGHDA are that substitution therapy improves the QoL of deficient adults up to the level expected for an average population.

This is also the first occasion on which a disease-specific questionnaire has been used to provide valid comparisons between healthy and diseased populations. The fact that the two groups treat some items differently partly explains why it is misleading to use a generic health status measure for such a purpose. As the scales of measures such as the NHP and SF-36 fail to fit the Rasch model, it is not possible to establish that such comparisons, or indeed those between patients with different diseases are valid.

Recently, the National Institute for Clinical Excellence in the UK has reported on the use of replacement growth hormone [24]. They recommended that recombinant human growth hormone (somatropin) treatment should be given to an adult with GH deficiency only if he meets certain criteria; one of which is that the individual has a score of at least 11 on the QoL-AGHDA. Furthermore, an adult who has been started on GH treatment should be re-assessed for QoL status 9 months after the initiation of therapy. GH treatment should be discontinued if the individual has a QoL improvement of fewer than 7 points in QoL-AGHDA score. This is the first time that a QoL measure has been used to determine whether or not treatment should be given.

Conclusions

These studies suggest that needs-based QoL measures are more capable of detecting changes in level of QoL associated with effective treatment than existing measures commonly used in studies, when used in the populations for which they were developed. Such responsiveness is a crucial quality of an outcome measure. As these measures become more widely used in trials it is anticipated that their value will become more widely recognized.

References

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