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HARMONY AND DISCORD: UNRAVELING THE TAPESTRY OF DISABILITY IN MULTIPLE SCLEROSIS

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Abstract

Objective: To compare the judgments of clinicians on which domains of health in the short form questionnaire (SF-36) would be most important to patients with multiple sclerosis with the opinions of patients themselves; to compare assessment of physical disability in multiple sclerosis by a clinician using Kurtzke's expanded disability status scale and a non-clinically qualified assistant using the Office of Population Census and Surveys' (OPCS) disability scale with self-assessment.
Design: Cross sectional study.
Setting: Clinical department of neurology, Damanhour medical institute, Egypt.
Subjects: 84 consecutive patients with multiple sclerosis attending a neurology outpatient clinic for review or neurology ward for rehabilitation.
Main outcome measures: Scores on the SF-36; EuroQol; Kurtzke's expanded disability status scale; the OPCS disability scale.
Results: Patients and doctors differed on the most essential aspects of health status ($\chi 2=21$, df=7, P=0.003). Patients' rating of physical impairment using the SF-36's physical functioning domain was significantly linked with physicians' assessment (r=-0.87, P<0.001) and non-clinical assessment (r=-0.90, P<0.001). However, none of the physical impairment measurements linked with the overall health-related quality of life as evaluated by EuroQol. In the SF-36, quality of life was associated with energy, general health, and mental health, all of which patients evaluated higher than doctors and lower than controls.
Conclusions: Patients with multiple sclerosis, and potentially those with other chronic conditions, are less concerned about physical handicap than their doctors are. Clinical trials in multiple sclerosis should evaluate the effect of treatment on other aspects of health status that patients' value, which are also influenced by the disease process, are more closely related to overall health-related quality of life, and may be negatively impacted by treatment side effects

Keywords:
Multiple sclerosis. Clinicians, Patients, Quality of lif.

Introduction

The optimal assessment of the success of a therapeutic intervention is determined by the disease's natural history. Sometimes it is sufficient to just assess the effect of therapy on case fatality or the risk of significant sequelae, such as stroke or myocardial infarction. Many illnesses, however, are not deadly nor associated with acute consequences. In these cases, determining the result typically includes either directly measuring the amount and severity of the disease or having a clinician analyze the physical impairment or handicap produced by the condition. However, both of these techniques are costly, time-consuming, and prone to bias if assessors' blinding to treatment allocation is imperfect [(1)], and none considers the possible negative effects of therapy on other areas of health. Self-evaluation by patients minimizes bias from an external assessor, allowing measurement of the effect of therapy on general health-related quality of life, and may not be less useful than clinical assessment in terms of physical disabilities.

Recent interferon beta studies have emphasized the confusion over how to effectively quantify success in clinical trials in multiple sclerosis [(2-5)]. Treatment lowers the frequency of new lesions on magnetic resonance brain scans, as

well as the number of relapses in patients,2 3 and may reduce neurological impairment and disability progression rate as determined by neurologists [4,5]. However, the impact of therapy on other aspects of health, which may be as or more significant to patients, has not been assessed. Indeed, little is known about which elements of health are significant to people with multiple sclerosis or other debilitating disorders, and therefore whether it is required to test the efficacy of treatment on more than simply the physical symptoms of the disease. Furthermore, it is uncertain if a neurologist is required to measure physical impairment or if patients can assess themselves adequately.

We therefore compared the perceptions of patients with multiple sclerosis and clinicians as to the relative importance of the eight different domains of health-related quality of life measured by the short form 36 (SF-36),6 7, and for each domain, we compared the observed quality of life of patients with that expected for general population controls matched for age, gender, and locality. We also looked at the correlation between patients' self-assessment of physical disability using the SF-36's physical function domain and physical disability measured by a neurologist and a non-medically qualified assistant (using different scales), as well as the correlation between each measure of physical disability and patients' overall health-related quality of life.

Methods

Over the course of eight weeks, we investigated all individuals with multiple sclerosis who were either hospitalized to the neurology ward for rehabilitation or attended the neurology outpatient clinics at Damanhour medical institute, Egypt. Patients were eligible if they provided informed consent and met the following criteria: they had a clinically definite or laboratory-supported clinically probable diagnosis of multiple sclerosis according to Poser et al's criteria [8], they had no acute neurological relapse in the previous month, they lived in the Lothian region, and they were aware that they had multiple sclerosis. A neurologist evaluated neurological impairment using Kurtzke's enlarged disability status scale [9,10]. An impartial non-clinically qualified assistant delivered the Office of Population Censuses and Surveys (OPCS) disability questionnaire [11], and patients filled out the SF-366 7 and EuroQol health-related quality of life questionnaire [12]. The order of clinical examination and questionnaire delivery was not established, and both investigators were unaware of each other's findings.

After completing the surveys, patients were given a standard written explanation of each of the eight categories of health-related quality of life measured by the SF-36 and asked which three elements were the most significant predictors of their overall quality of life. Using the same descriptions, clinicians in the department of clinical neurosciences (senior and junior neurologists or neurosurgeons) were asked to identify the three domains of the SF-36 that they believed were the most important determinants of health-related quality of life for patients with Multiple Sclerosis.

A 1993 study of health-related quality of life among nearly 6000 Lothian residents' yielded age and sex stratified tabular control data for each of the SF-36 areas [13]. The results were presented in the form of mean scores for men and women in five-year age bands. The predicted score for each instance was calculated using the appropriate age and sex matched mean control value.

Statistical analysis

Kurtzke's scale was regarded as an ordinal scale, and its scores were connected with others using the Spearman rank technique and a two-tailed test of significance. The OPCS scale and the SF-36 were used as interval scales. All analyses were carried out using the statistical application SPSS for Windows (version 24).

Results

Of the 103 eligible patients who visited the department throughout the research period, 84 (82%) consented to take part. The median age was 41 years (range 28-68); 56 patients were female, and 66 were outpatients. The median Kurtzke scale score was 5.5 (with a range of 1 to 8). The frequency distribution of major SF-36 dimensions reported by patients and clinicians (fig 1) varied from those anticipated by chance alone (patients: $\chi2=16.2$, df=7, P=0.02; clinicians: $\chi2=44.7$, df=7, P<0.0001) and from each other ($\chi2= 21.4$, df=7, P=0.003). Clinicians were substantially more likely than patients to consider physical functioning and physical role constraints essential, while being significantly less concerned with mental health and emotional role restrictions. The average score among the patients was lower.

The non-medically certified assistant scored physical impairment using the OPCS disability scale, which was associated with the neurologist's Kurtzke's scale score (r=0.84, P<0.0001). Physical impairment, as determined by patients using the SF-36's physical functioning category, was substantially linked with both Kurtzke's scale score and total OPCS disability score (fig 2). However, no other SF-36 domain scores were connected with Kurtzke's scale scores, and only the vitality score was correlated with the OPCS disability score (table 2). Neither the Kurtzke's scale nor the OPCS score was connected with the overall health-related quality of life measured by patients using the visual analogue scale in the EuroQol.

Discussion

Concerns of patients

Doctors struggle to estimate their patients' overall quality of life [14,15]. O'Boyle and colleagues contended that a legitimate measure of quality of life should assess each individual's level of functioning in the areas of life that he or she considers being most significant [16]. We have demonstrated, at least in multiple sclerosis, that clinicians' perceptions of the relative relevance of health-related quality of life areas differ from those of patients. The pattern of domains regarded as relevant by patients and doctors differs considerably from the distribution predicted by chance alone. In other words, there was some consensus among patients and physicians about which areas were most significant. However, there was a considerable difference between the groups. In general, professionals were more concerned than patients with physical signs of sickness, whereas patients were more concerned with intangibles like mental health and vitality.

Although we did not investigate the veracity of these evaluations, we did provide some evidence of their relevance. To begin, patients with multiple sclerosis scored considerably lower than general population controls in three of the four SF-36 domains (mental health, vitality, and overall health), which they evaluated higher than doctors. Second, these domains had a strong correlation with their estimations of total health-related quality of life. This does not necessarily imply that the patient's point of view is more essential than the doctor's. Doctors often have a greater awareness of the natural history and potential clinical symptoms of a certain disease and their recommendations may be based on extensive experience treating a large number of patients. Nonetheless, while deciding whether to prescribe medication, clinicians should keep in mind that their concerns may differ from those of their patients, and trialists, as recently indicated, should consider include patients' perspectives when organizing studies [17,18].

Assessment of physical disability

Regardless of whatever areas of health-related quality of life are significant to individuals with multiple sclerosis, physical impairment should certainly be evaluated in trials of therapies that have the potential to affect the condition. Although Kurtzke's scale is the most widely used measure of impairment in multiple sclerosis, it is costly and time-consuming to administer since it necessitates a thorough clinical examination by a neurologist. Questionnaire-based disability assessments, such as the OPCS scale, offer the benefit of being administered by non-clinical assistants, although this will still be very expensive in a large multicenter experiment. Furthermore, both strategies need assessors to be blind to treatment allocation. Non-blinded evaluation can greatly prejudice the findings of multiple sclerosis studies in favor of treatment [1], and blinding is difficult to do in reality without going to great efforts. Self-assessment by patients has the benefit of eliminating the possibility of bias by an external assessor, but it does not prevent bias caused by placebo effects reported by patients. Postal or telephone follow-up using the SF-36 or a comparable instrument would be simple to standardize and cost-effective.

A non-clinically certified assistant assessed physical impairment using the OPCS disability scale, which was linked with that obtained by a neurologist using Kurtzke's scale. The functional limits profile has also been found to be substantially associated with the Kurtzke scale [19]. We demonstrated that patients' self-assessment of impairment using the SF-36's physical functioning domain can yield information that is very similar to that obtained using Kurtzke's scale or the OPCS disability scale. Patients might complete their self-assessment via mail or phone, and on a cross-sectional basis, this would yield approximately 80% of the information collected with Kurtzke's scale or the OPCS scale (r2=0.76 and r2=0.81, respectively). However, none of the physical disability metrics were found to be related to the patients' overall health-related quality of life as assessed by the EuroQol questionnaire. Overall health-related quality of life was most strongly associated with vitality, general health, and mental health on the SF-36. Given that patients considered all of these domains to be important, and that the scores obtained from patients for each of the domains were lower than those expected based on control data--that is, the scores had been influenced by

the disease process--the assessment of overall health-related quality of life appears to be valid. Other research have demonstrated the reproducibility of measuring health-related quality of life in multiple sclerosis [20].

Side effects of treatment

The discovery that patients regard factors such as vitality, general health, and mental health as essential drivers of their overall health-related quality of life is significant when deciding how to effectively include medication side effects into clinical trial outcomes. Side effects are rarely factored into the overall trial outcome and are often stated separately. It is up to doctors to decide if the advantages of therapy outweigh the adverse effects. However, because physicians' and patients' concerns may differ, this may not be suitable. Treatments for multiple sclerosis frequently result in side effects that are severe enough to impair patients' quality of life [21]. For example, interferon beta may cause reactions at the injection site, flu-like symptoms, nausea, myalgia, fever, depression, and malaise [2,3,4,5,22] each of which is likely to have an adverse effect on the very domains of health related quality of life that patients consider more important than doctors. Measuring outcome with an overall measure of health related quality of life would at least record the patients' perspective on whether the treatment was worse than the disease itself.

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Tables

Table 1: The median scores of 84 patients with multiple sclerosis in each domain of SF-36 were compared with the expected scores derived from age- and sex-matched controls from the general population.

	Patients with multiple sclerosis			
Domain	Expected mean score*	Median (range) score†	% Below expected score	P value
Physical functioning	87	20 (0-90)	93	<0.0001
Physical role limitations	81	25 (0-100)	93	<0.0001
Vitality	60	35 (0-95)	83	<0.0001
General health	72	47 (10-90)	76	0.001
Mental health	74	68 (4-96)	69	0.02
Emotional role limitations	82	100 (0-100)	48	0.88
Social functioning	82	75 (0-100)	55	0.64
Bodily pain	76	92 (0-100)	40	0.28

Figures

Fig 1: Frequency with which each of eight domains of health related quality of life in SF-36 were said to be among the three most important determinants of overall quality of life by 84 patients with multiple sclerosis compared with frequency expected by 25 clinicians working in clinical neurosciences department

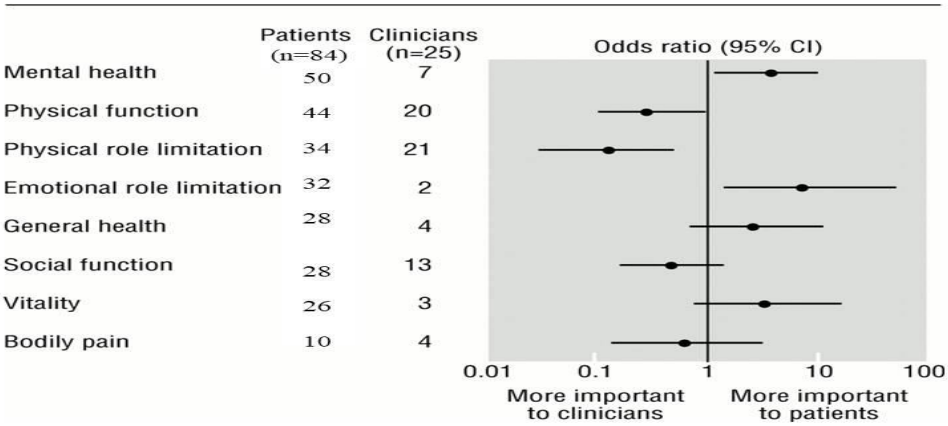

Fig2: Correlation between score for physical function in SF-36 assessed by patients and (*bottom*) score on the Kurtzke's scale assessed by neurologist and (*top*) OPCS disability score assessed by non-medically qualified assistant. The number beside some dots shows the number of points overlying each other

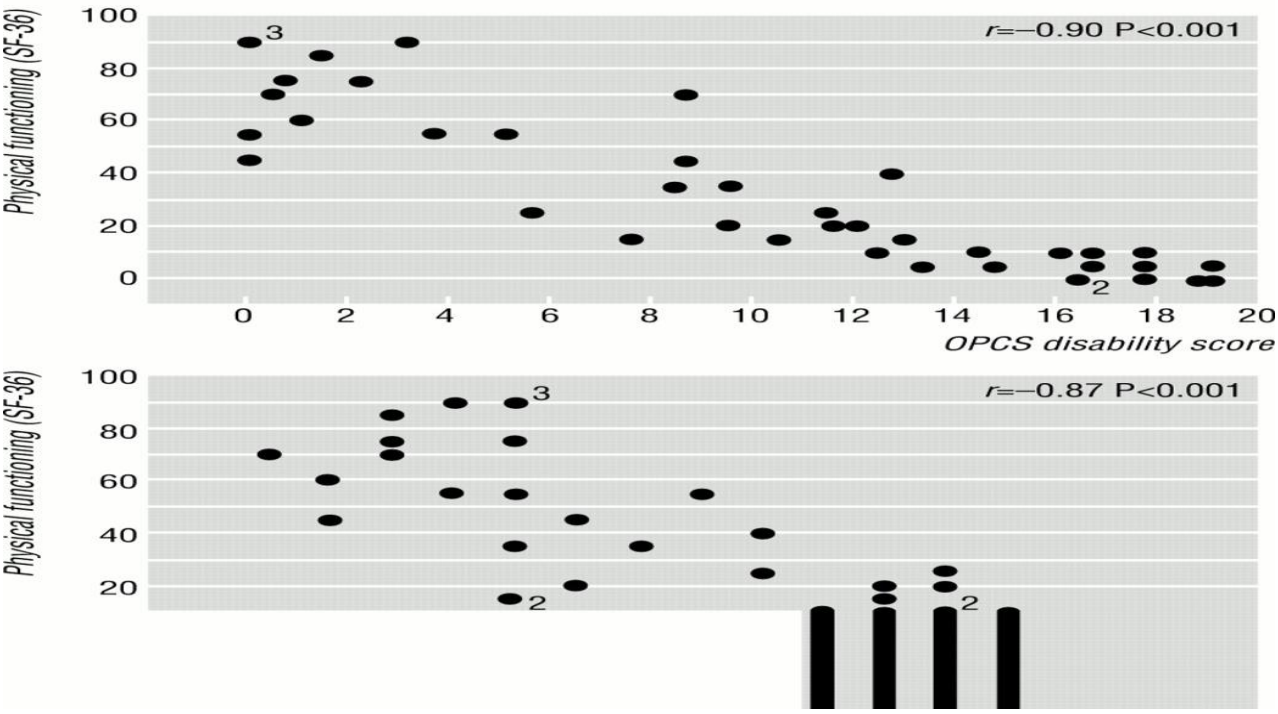

Fig 3: Correlation between patients' assessments of their overall health related quality of life derived from EuroQol questionnaire and (*bottom*) the score on Kurtzke's scale assessed by neurologist and (*top*) OPCS

disability score assessed by non-medically qualified assistant. The number beside some dots shows the number of points overlying each other