Clinical rheumatology, 1984, 3, N° 3, 305-309

Measurement of disability in Dutch rheumatoid arthritis patients

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SUMMARY A self-administered health-assessment questionnaire (HAQ) was completed by 38 Dutch rheumatoid arthritis (RA) patients and the results compared to those obtained objectively when the same subjects were interviewed and asked to perform standardised tasks included in the HAQ. The results of the interview and the questionnaire showed a high degree of overall correlation and inter-component correlation. The correlation was comparable in outpatients with milder disease and in patients with more severe disease and was not influenced by age. The questionnaire offers a valid approach to the assessment of the functional disability of RA patients.

Key words: Rheumatoid Arthritis, Disability, Functional Assessment.

INTRODUCTION

In 1980, Fries et al. (1) presented a questionnaire for self-administration to assess disability in patients with RA. This filled a generally felt need for a more objective tool for evaluating the grade of disability in RA patients and for comparing various groups of RA patients. This questionnaire was enthusiastically accepted and modified in Britain (2).

After translation, the self-administered questionnaire was compared with the results of a detailed interview, to determine its reliability and validity when used in Dutch RA patients with all types of disability.

Whenever possible, the interview scores were based on physical performance. This approach provided an objective assessment of patient disability, and both reliability and validity could be assessed by comparing the questionnaire scores with the interview scores.

PATIENTS AND METHODS

The Dutch questionnaire used in the present study was derived from the one developed by Fries et al. (1), which was translated literally, leaving its structure intact. The questionnaire comprises eight components which represent the activities of daily living (ADL). The components are: dressing and grooming, rising, eating, walking, hygiene,

Received 6 September 1983
Revised 12 February 1984
Accepted 23 February 1984

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reach, grip and activities. Each component is covered by two to four questions. In all, there are 23 questions. One of Fries's components concerning "sexual activities" was omitted to avoid an expected negative response. One question was added to components 2, 4, 6 and 8, all four having been derived from the British version of this questionnaire (2). One question, concerning public transportation, was added to the eighth component; this was considered particularly relevant to the Dutch situation. The HAQ used is shown in Table I.

The interview was derived from the questionnaire. This was done by adding a number of sub-questions to all questions. Whenever possible, patients were asked to perform the acts indicated by the question. A combination of the information obtained from the response to the question and the simulated act produced an objective answer to the original question. For example: to question a. of the component "hygiene": "Are you able to wash and dry your entire body?" we added the sub-questions: "Are you able to do your back?", "Are you able to dry your feet?", "Are there any other parts of your body which you cannot reach well?". In the interview the patients were also asked to simulate the use of a towel.

For both questionnaire and interview, the responses were scored on a four-point scale: 0 = without difficulty, 1 = with some difficulty, 2 = with much difficulty, 3 = impossible. This is a modification of Fries's (1) scale, which was also used in the British version of this questionnaire (2).

The questionnaire was extended by the addition of a fifth column in which the respondents could indicate whether they used an aid or a device. For the interview the score was modulated according to whether an aid or a device was used by the respondent.

The highest score for any question within a component was taken as the score for that component. The disability index for both questionnaire and interview was calculated by adding the scores of the components and

Table I.

1. *Dressing and grooming*
   Are you able to:
   a. Get your clothes out of the closet and drawers?
   b. Dress yourself including handling of closures (buttons, zippers, snaps?)
   c. Shampoo your hair?

2. *Arising*

   Are you able to:
   a. Stand up from an armless straight chair?
   b. Get in and out of bed?

3. *Eating*

   Are you able to:
   a. Cut your meat?
   b. Lift a full cup or glass to your mouth?

4. *Walking*

   Are you able to:
   a. Walk outdoors on flat ground?
   b. Climb up stairs?

5. *Hygiene*

   Are you able to:
   a. Wash and dry your entire body?
   b. Use the bathtub or take a shower?
   c. Turn taps on and off?
   d. Get on and off the toilet?

6. *Reach*

   Are you able to:
   a. Comb your hair?
   b. Reach and get down a 1 kg bag of sugar which is just above your head?
   c. Bend down to pick up clothing from the floor?

7. *Grip*

   Are you able to:
   a. Open car doors?
   b. Open jars which have been previously opened?
   c. Use a pen or pencil?

8. *Activity*

   Are you able to:
   a. Get in and out of a car?
   b. Run errands and shop?
   c. Use public transport?
   d. Do chores such as vacuuming, housework or light gardening?

dividing the sum by the total number of components.

The questionnaire was designed for self-administration and the interview was carried out by the same person throughout the study. The interval between the interview and the questionnaire ranged from 0 to 20 days (mean of 6 days). In six cases the interval between interview and questionnaire was longer than 10 days.

Thirty-eight patients participated: 22 females and 16 males. Their ages ranged from 22 to 81; the mean age was 60 years. All patients satisfied the ARA criteria for definite or classical RA. Two groups could be distinguished: an out-patient population of 20 patients (9 females and 11 males), and 18 hospital in-patients (13 females and 5 males). The first group was slightly handicapped and could have been expected to have a low average score. The second group was severely handicapped and could have been expected to have a high average score. Thus, the complete range of the questionnaire scale could be evaluated.

Comparison of the questionnaire and the interview scores was made using the Spearman rank correlation and the Pearson correlation tests.

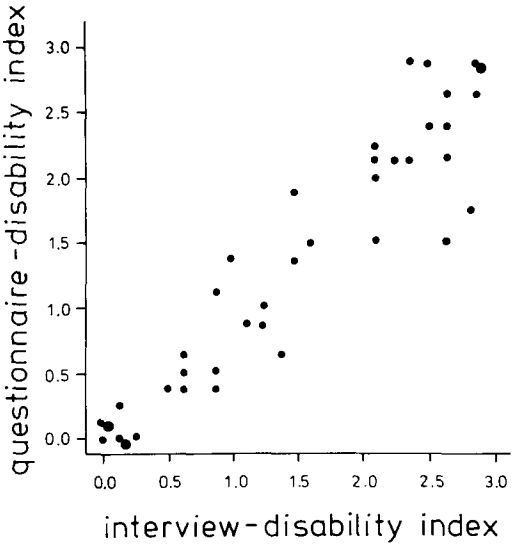

Fig. 1: Interview versus questionnaire disability indices for 38 RA patient.

RESULTS

The relationship between the interview and the questionnaire disability indices of all patients showed a strong positive correlation (Fig. 1). The mean values obtained for the interview and the questionnaire disability indices were 1.47 ± 0.98 and 1.35 ± 0.99, respectively. The mean values for the out-patient and the hospital in-patient groups were 0.80 ± 0.72 and 1.95 ± 0.86 for the questionnaire and 0.91 ± 0.76 and 2.10 ± 0.76 for the interview, respectively. The correlation between interview scores and questionnaire scores of the hospitalised population did not differ significantly from that of the out-patient population. Applied to the interview and questionnaire scores, the Spearman rank correlation was 0.94 ($p < 0.001$) and the Pearson test gave a value of 0.95 ($p < 0.001$). The correlation for the separate components were all high and lay in the same range (Table II).

Over-all questionnaire versus interview agreement, which is a stricter requirement than correlation, was also assessed (Table III). It was found that the questionnaire and the interview agreed exactly for 65% of the responses and coincided by a matter of one point 95% of the time (Table III).

A tendency was observed to under-reporting by patients. Neither questionnaire nor interview scores correlated with the age of the patient and the difference between questionnaire and interview scores did not increase significantly in older patients. In addition the time interval between the interview and the HAQ had no influence on the results.

DISCUSSION

Fries et al. (1) fulfilled a very real need when they designed a questionnaire that could provide objective assessment of disability in RA patients and which was inexpensive and easy to use. This led us to determine its reliability and validity for use in The Ne-

Table II *Results of scoring 38 patients for 8 components of interview (I) and questionnaire (Q) with correlation between interview and questionnaire scores for each component*

	COMPONENTS OF QUESTIONNAIRE AND INTERVIEW															
	1		2		3		4		5		6		7		8	
Score	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
0	11	12	15	15	15	15	10	9	9	11	12	14	8	8	8	9
1	9	10	10	9	9	13	5	9	10	11	7	7	11	15	6	8
2	10	8	6	7	8	7	12	9	10	7	5	4	11	6	5	5
3	8	8	7	7	6	3	11	10	9	9	14	13	8	7	19	15
Missing items	–	–	–	–	–	–	–	1	–	–	–	–	–	2	–	1
Spearman correlation	0.82		0.81		0.88		0.83		0.84		0.87		0.86		0.94	
Pearson correlation	0.82		0.81		0.89		0.83		0.83		0.89		0.86		0.93	

Table III *Differences between questionnaire and interview scores of 38 patients for 8 components and 23 items*

Questionnaire score minus interview score	1*			2		3		4		5				6			7			8				Total (%)
	A*	B*	C*	A	B	A	B	A	B	A	B	C	D	A	B	C	A	B	C	A	B	C	D	
−3														1	1									2 (0)
−2			2	2	1		1				1	1		1	1				2	2	1	1		16 (2)
−1	12	5	4	3	5	8	7	9	5	11	7	6	5	7	3	7	9	6	11	4	12	8	5	159 (18)
0	23	29	27	29	24	28	26	22	23	22	22	22	25	25	30	25	22	25	22	27	22	26	20	566 (65)
+1	3	4	3	1	8	2	4	6	7	3	8	5	7	3	3	5	3	4	3	4	1	1	12	101 (12)
+2			2	3						2		2	1			1	1						1	13 (1)
+3												2		1										3 (0)
Missing items								1	3								3	3		1	2	2		15 (2)

* See Table I.

therlands. This was done by comparing the results obtained from the self-administered translated questionnaire with those obtained during an interview in which the respondents were also asked to give physical demonstrations of some of the specific tests. Our evaluation showed a very close correlation between the results of the questionnaire and the interview. This means that the questionnaire can be used for assessment of the disability of Dutch RA patients. It is important in this connection that the resulting disability index is not influenced by the age of the patient. The disability index gives some indication as to whether a patient is self-sufficient in the ADL. The individual score reveals activities in which a patient is most restricted and whether something can be done about the situation, for example, by supplying the patient with an aid.

To relate the disability index to the physical state of RA patients the following scale is suggested: 0.0 – 0.5: the patient is completely self-sufficient and has hardly any difficulties in ADL; 0.5 – 1.25: the patient is reasonably self-sufficient and experiences

minor and even some major difficulties in performing ADL; 1.25 – 2.0: the patient is still self-sufficient, but has many major problems with ADL; 2.0 – 3.0: the patient may be called severely handicapped. Most of the latter individuals were found in the hospitalized group. This rating system is superior to that of Steinbrocker et al. (3), because it is continuous instead of comprising only four discrete categories. Other forms of questionnaire have been devised (4) and give similar results to that of Fries (1). The results obtained by the other questionnaires were similar whether the questionnaire was self-administered or given by an occupational therapist although only patients with RA requiring hospitalisation were assessed.

Although the questionnaire is reliable for a group as a whole, it has limitations in individual cases. Respondents who have been in a hospital for a long time, as is often the case for those with severe RA, frequently find it difficult to assess their ability to perform ADL. Furthermore, the instructions given before the questionnaire appeared to be too difficult for subjects with limited intellectual capacities. In these cases self-assessment is probably not the best way to obtain information; an interview would be more effective. For most RA patients however, this questionnaire is a valuable instrument for the assessment of patient disability.

REFERENCES

1. Fries, J.F., Spitz, P., Kraines, R.G., Holman, H.R. Measurement of patient outcome in arthritis. Arthritis Rheum, 1980, 23, 137-145.
2. Kirwan, J.R., Reeback, J.S. Using a modified Stanford Health assessment questionnaire to assess disability in UK patients with rheumatoid arthritis. Ann Rheum Dis, 1983, 42, 219-220.
3. Steinbrocker, O., Traeger, C.H., Battérman, R.C. Therapeutic criteria in rheumatoid arthritis. JAMA 1949, 140,659-662.
4. Singer, F., Kolarz, G., Mayrhofer, F., Scherak, O., Thumb, N. The use of questionnaires in the evaluation of the functional capacity in rheumatoid arthritis. Clin Rheumatol, 1982, 1, 251-261.