

Assessment of Functional Disability in Patients of Rheumatoid Arthritis by Health Assessment Questionnaire

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ABSTRACT

Introduction: Assessment of disability is an important component of chronic debilitating disease like Rheumatoid Arthritis. Health Associated Questionnaire-Disability index (HAQ-DI) is a validated tool to measure “patient reported outcome” in patients suffering from Rheumatoid arthritis. This questionnaire checks the functional ability of the patients under 8 domains: dressing, eating, walking, rising, reach, hygiene, grip and usual activities. This study aims to describe the functional disabilities & their associations in patients of Rheumatoid Arthritis.

Material and Methods: 72 patients having definite Rheumatoid Arthritis without any significant comorbid illnesses from a tertiary care hospital in eastern India participated in the study. Patients having clinically significant comorbid conditions were excluded as these could have an external impact on the functional ability of patient suffering from Rheumatoid Arthritis. The study was conducted over a period of two years. Statistical analysis was done with Microsoft Excel & online statistical calculators available in www.socseistatistics.com.

Results: Out of 72 patients, 47 were females & 15 were males. The mean age was 38.5 years. The mean HAQ-DI score was 1.73 and the mean disease duration was 3.19 years. 31 patients had HAQ-DI score of 2 or more and 16 patients had score of 1 or less. Mean age & mean HAQ-DI was lesser in males than in females but the difference was not statistically significant. There was statistically significant positive correlation between duration of disease & HAQ-DI score.

Conclusion: Majority of the patients (43%) had severe functional disability on presentation. The disability had a significant positive association with the duration of disease.

Keywords: Health Assessment Questionnaire, Rheumatoid Arthritis, Disability Index

MATERIAL AND METHODS

105 patients diagnosed as having definite Rheumatoid arthritis as per American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) 2010 classification criteria for Rheumatoid Arthritis (RA), attending Medicine OPD of a tertiary care hospital of eastern India over a period of two years were included in the study. The patients who were found to have the following conditions were excluded from the study: psychiatric disorders, uncontrolled Diabetes Mellitus, organic cardiac pulmonary renal or hepatic diseases, active infections, malignancy and pregnancy. These conditions were excluded as these could have an external effect on a patient's self-assessment of his/her functional status in addition to the disabilities due to Rheumatoid arthritis. The duration of their disease & their demographic characteristics were noted. Routine investigations including complete blood count, liver function test, renal function tests, chest Xray, electrocardiograph, Erythrocyte sedimentation rate (ESR), Rheumatoid factor & Anti Cyclic citrullinated polypeptide Antibody were done. 72 patients ultimately participated in the study following screening for exclusion criteria.

The page 1 & 2 of the questionnaire used in the study are shown in Figure 1 & 2 respectively.

The patients were asked questions over the 8 different domains of dressing & grooming, arising, eating, walking, hygiene, reach, grip & activities. These 8 categories were further subdivided into items or subcategories. The patient responded to these items and for each item there is a 4-level response (0, 1, 2, 3) according to severity of disability experienced in performing those activities. (0 = without any difficulty; 1 = with some difficulty; 2 = with much difficulty; and 3 = unable to do). The HAQ-Disability Index (HAQ-DI) was thus calculated using the highest sub-category score determining the value for each category, unless aids or devices are used. The category scores are then averaged

INTRODUCTION

Functional disability is a common outcome in a chronic debilitating disease like Rheumatoid Arthritis. Health Associated Questionnaire- Disability Index (HAQ-DI) is a recognised patient reported outcome to assess the health outcome in patients of Rheumatoid arthritis.¹⁻⁴ Computation of HAQ-DI is done by recording the response of the patients to a 2-page questionnaire. This questionnaire would check the functional ability of the patients under 8 domains: dressing, eating, walking, rising, reach, hygiene, grip and usual activities. In this study we have described the spectrum of functional disabilities in patients of Rheumatoid arthritis from Eastern India.

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	Age	Disease duration In years	Dressing	Arising	Eating	Walking	Hygiene	Reach	Grip	Activities	HAQ-DI composite score
Mean	38.5	3.19	1.6	1.7	1.2	1.5	2	1.9	1.9	2	1.73
SD	11.6	2.53	0.85	0.8	0.8	1.05	0.86	0.89	0.83	0.89	0.75
Std error	1.37	0.3	0.1	0.09	0.09	0.12	0.1	0.11	0.1	0.11	0.09
95% CI	35.8-41.2	2.59-3.79	1.4-1.8	1.51- 1.89	1.01-1.39	1.26-1.74	1.8-2.2	1.69-2.11	1.71- 2.09	1.79-2.21	1.56-1.9
Median	31	2.25	2	2	1	1	2	2	2	2	1.75
Max value	18	14	0	0	0	0	0	0	0	0	0.25
Min value	61	0.5	3	3	3	3	3	3	3	3	3

Table-1: Descriptive statistics of the patients (n=72)

	Number	Mean Age	Mean HAQ-DI
Female	57	38.12	1.72
Male	15	40.93	1.775
P value (2 tailed) by independent t- test		P= 0.41	P= 0.81

Table-2: Difference in age & HAQ-DI scores between males & females

into an overall HAQ-DI from zero to three. It also included a companion aids/devices variable to record assistance if any required by the patient to carry out his/her usual activities. The use of aids or devices or physical assistance increases a score of zero to one or one to a two to more accurately represent underlying disability; scores of 3 are not modified. Statistical analysis: Descriptive statistics were obtained by Microsoft excel software & online statistical calculators available in www.socscistatistics.com.

RESULTS

Out of the 72 patients, 57 were females & 15 were males. 42 belonged to urban whereas 30 belonged to the rural population. The mean age of the patients was 38.5 years (18-61 years).

The descriptive statistics of the patients have been shown in Table 1.

Table 1 shows that the mean values of each of the components of HAQ-DI i.e., dressing & grooming, arising, eating, walking, hygiene, reach, grip and activities are 1.6, 1.7, 1.2, 1.5, 2, 1.9 and 2 respectively. This indicates that self-hygiene & day to day household activities are most severely affected in Rheumatoid arthritis. The least affected functional modalities are eating & walking. The mean HAQ-DI score was found to be 1.73. The mean disease duration was 3.19 years.

Figure 3 shows that most patients-31 (43%) were having HAQ -DI score of 2 or more and 16 patients (22%) had a HAQ DI score of 1 or less. The remaining 25(35%) had their scores between 1 &2.

Table 2 shows that mean age & mean HAQ-DI were lower among females compared to men but the difference was not statistically significant (p>0.05 by independent t test).

Age was seen to have a weak negative correlation with HAQ-DI score (Pearson’s r = -0.048) but it was not statistically significant (p>0.05).

There was a significant positive correlation between duration of disease & HAQ-DI score [Pearson’s r (2-tailed) = 0.465, p value< 0.01]. Figure 4 shows the scatter diagram of HAQ-DI score with respect to disease duration.

DISCUSSION

HAQ-DI is one of the “patient reported outcomes” which are recorded in the forms of objective answers to a questionnaire.¹⁻³ The answering of the questionnaire followed by calculation of the score is a very quick procedure and can be recorded within 5 minutes.⁵ Hence, even if the patients fail to make it to the doctor’s clinic, which is so often the case specially in

The STANFORD HEALTH ASSESSMENT QUESTIONNAIRE
Stanford University School of Medicine, Division of Immunology & Rheumatology

HAQ Disability Index:

In this section we are interested in learning how your illness affects your ability to function in daily life. Please feel free to add any comments on the back of this page.

Please check the response which best describes your usual abilities OVER THE PAST WEEK:

	<u>Without ANY</u> <u>difficulty</u> ⁰	<u>With SOME</u> <u>difficulty</u> ¹	<u>With MUCH</u> <u>difficulty</u> ²	<u>UNABLE</u> <u>to do</u> ³
DRESSING & GROOMING				
Are you able to:				
-Dress yourself, including tying shoelaces and doing buttons?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Shampoo your hair?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ARISING				
Are you able to:				
-Stand up from a straight chair?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Get in and out of bed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EATING				
Are you able to:				
-Cut your meat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Lift a full cup or glass to your mouth?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Open a new milk carton?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WALKING				
Are you able to:				
-Walk outdoors on flat ground?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Climb up five steps?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please check any AIDS OR DEVICES that you usually use for any of these activities:

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> Cane | <input type="checkbox"/> Devices used for dressing (button hook, zipper pul long-handled shoe horn, etc.) |
| <input type="checkbox"/> Walker | <input type="checkbox"/> Built up or special utensils |
| <input type="checkbox"/> Crutches | <input type="checkbox"/> Special or built up chair |
| <input type="checkbox"/> Wheelchair | <input type="checkbox"/> Other (Specify: _____) |

Please check any categories for which you usually need HELP FROM ANOTHER PERSON:

- | | |
|--|----------------------------------|
| <input type="checkbox"/> Dressing and Grooming | <input type="checkbox"/> Eating |
| <input type="checkbox"/> Arising | <input type="checkbox"/> Walking |

Figure-1: Page 1 of HAQ-DI questionnaire

the backdrop of COVID-19 pandemic, this recording can be done even over a telephone. The treatment protocol could be modified based on the patient reported outcomes of current therapy. One important feature of this study was however the exclusion of the patients with significant comorbid illnesses which could have adversely affected HAQ. Since its introduction, the original HAQ has been modified manifold. Pincus and colleagues developed the modified HAQ (MHAQ), simplifying the scoring for daily clinical care. In the MHAQ, the questions from the original HAQ were reduced to one or two per category, also deriving its total score by taking the average of the eight categories.^{6,7} The HAQ-DI increases with duration of RA, reflecting the accumulated joint damage.⁸ In fact, over long term, the

correlation between HAQ-DI and radiographic changes increases.^{8,9} In multiple studies, HAQ-DI has been found to be validated as a consistent measure of patient related outcome.¹⁰⁻¹³ A HAQ-DI of 0 indicates no functional disability, while a Disability Index of 3 indicates severe functional disability. A healthy individual is expected to have a HAQ-DI of 0. However, though there is no official recommendation as to what constitutes mild, moderate, or severe disability, a score of ≤ 1.0 is regarded as indicative of mild disability, and a score ≥ 2.0 is considered to indicate severe disability.¹⁴ The Disability Index values in between can be considered moderate. In this study, it was found that majority of the patients

Please check the response which best describes your usual abilities **OVER THE PAST WEEK:**

	Without ANY difficulty ⁰	With SOME difficulty ¹	With MUCH difficulty ²	UNABLE to do ³
HYGIENE				
Are you able to:				
-Wash and dry your body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Take a tub bath?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Get on and off the toilet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
REACH				
Are you able to:				
-Reach and get down a 5-pound object (such as a bag of sugar) from just above your head?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Bend down to pick up clothing from the floor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GRIP				
Are you able to:				
-Open car doors?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Open jars which have been previously opened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Turn faucets on and off?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ACTIVITIES				
Are you able to:				
-Run errands and shop?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Get in and out of a car?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Do chores such as vacuuming or yardwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please check any AIDS OR DEVICES that you usually use for any of these activities:

<input type="checkbox"/> Raised toilet seat	<input type="checkbox"/> Bathtub bar
<input type="checkbox"/> Bathtub seat	<input type="checkbox"/> Long-handled appliances for reach
<input type="checkbox"/> Jar opener (for jars previously opened)	<input type="checkbox"/> Long-handled appliances in bathroom
	<input type="checkbox"/> Other (Specify: _____)

Please check any categories for which you usually need HELP FROM ANOTHER PERSON:

<input type="checkbox"/> Hygiene	<input type="checkbox"/> Gripping and opening things
<input type="checkbox"/> Reach	<input type="checkbox"/> Errands and chores

Figure-2: Page 2 of HAQ- DI questionnaire

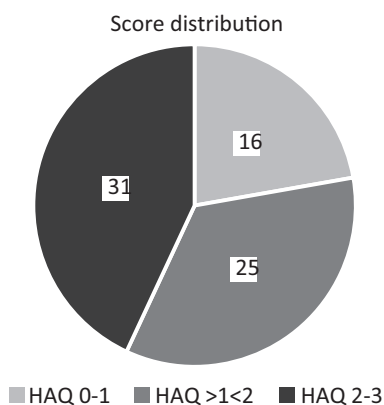


Figure-3: Distribution of HAQ-DI scores in the patients (n=72)

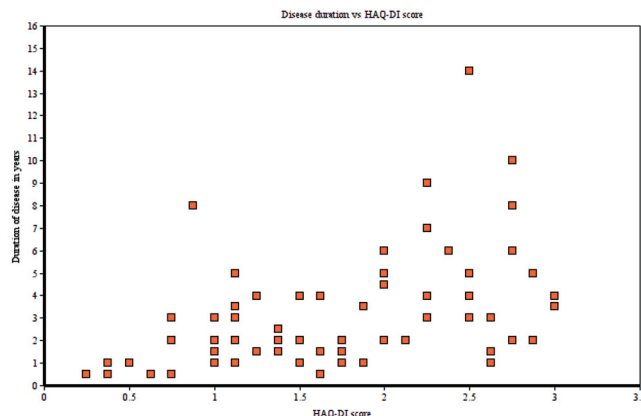


Figure-4: Distribution of HAQ-DI vs duration of disease

(43%) were having HAQ DI score of 2 or more indicating that they are having severe disability. There were however no significant differences among the age or HAQ-DI scores between males & females. Though there was a weak negative correlation between age & HAQ scores but it was not statistically significant. There was a statistically significant positive correlation between the duration of disease & HAQ-DI score.

Our study indicates that Indian patients attending the OPD are mostly having high levels of disability at presentation. The mean disease duration of more than 3 years indicate that we mostly do not get our patients in the early phase of the

disease. This delayed presentation has also got an effect on increased disability as indicated by the positive correlation between disease duration & HAQ-DI scores. There are very few publications on Indian patients being evaluated with HAQ-DI score.^{15,16} So, our study would help to provide a glimpse of the disability prevailing in the eastern Indian patients suffering from Rheumatoid Arthritis.

The main limitations of our study were its low sample size & also all the patients were not followed up longitudinally. So, the change in HAQ- DI values over time could not be assessed. Larger studies spanning over a longer period with multiple serial observations would provide a better

understanding of the disabilities and their variations.

CONCLUSION

Our study shows that severe disability at presentation with prolonged disease duration and a positive association between increased disability and duration of disease are the prominent features found in our patients.

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