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Brief communication

Quality of life in Indian patients with rheumatoid arthritis

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Abstract

Purpose of Study: Rheumatoid arthritis (RA) is a multisystem disease with various extra-articular manifestations (EAMs). Health-related quality of life (HRQOL) issues are assuming increasing importance in chronic rheumatic diseases like RA. No data on QOL in RA is available from the Indian subcontinent. There is also a paucity of literature on the impact of EAMs on HRQOL in RA. The objective of this study was to address these lacunae. *Methods*: The study group comprised 81 patients with RA from a rheumatology clinic in India. Quality of life was estimated by the generic HRQOL measure: World Health Organization quality of life instrument (WHOQOL-Bref). Disease activity in RA was measured by calculating Disease Activity Score-28 (DAS28). *Results*: The mean HRQOL scores of the patients were 12.0 ± 2.8, 13.2 ± 2.7, 14.4 ± 2.9 and 13.3 ± 2.6 in the physical, psychological, social, and environmental domains of the WHOQOL-Bref respectively. Age, gender, disease duration, educational status, constitutional symptoms, rheumatoid factor positivity, erosions and deformities did not influence HRQOL. Disease activity had a negative influence on the physical and psychological domains. Patients with EAMs had significantly higher DAS28 scores compared to patients without EAMs. Even after adjustment for disease activity, patients with EAMs had lower HRQOL scores than patients without these features (statistically significant for physical domain). *Conclusions*: The physical domain of HRQOL is most affected in Indian patients with RA. Increasing disease activity and presence of EAMs worsens the quality of life.

Key words: Extra-articular manifestations (EAMs), Health-related quality of life (HRQOL), Rheumatoid arthritis (RA), World Health Organization quality & life instrument (WHOQOL-Bref)

Abbreviations: ACR – American College of Rheumatology; DAS28 – Disease Activity Score-28; EAMs – Extra-articular manifestations; ESR – Erythrocyte sedimentation rate; GHS – General Health score; HAQ – health assessment questionnaire; HRQOL – health-related quality of life; QOL – quality of life; RA – rheumatoid arthritis; RF – rheumatoid factor; SJC – swollen joint count; TJS – tender joint count; VAS – visual analog scale; WHOQoL-Bref – Brief version of the World Health Organization quality of life instrument, WHOQoL-100

Background

Rheumatoid arthritis (RA) is a multi-system disease that affects nearly 1% of the adult population globally [1]. Measures of disease activity and disease damage are thought to be insufficient to fully assess the impact of RA on an individual. Quality of life assessment in RA provides much needed long-term outcome information on drug therapy, beyond clinical trials [2]. Most studies on health-related quality of life (HRQOL) in RA have emanated from the developed countries. Despite being home to nearly one-sixth of the world's population, there is no data on HRQOL in Indian

patients with RA. Also, the existing studies have focused on a large number of factors affecting HRQOL in RA-like disease activity, joint counts, functional class, grip strength, socio-economic and educational status, body-mass index, spirituality, age, gender, knowledge of disease etc. [3–11]. Most have concentrated on the articular aspect of the disease with a marked paucity of literature on the relationship between HRQOL and extra-articular manifestations (EAMs), a very common occurrence in RA. The objectives of this prospective study were to gather data on QOL in Indian patients with RA and also study the impact of EAMs on various HRQOL domains.

Materials and methods

Patients

Patients with RA fulfilling the 1987 American College of Rheumatology criteria [12] were recruited from the Outpatient Department of the All India Institute of Medical Sciences, New Delhi. Patients were explained the objectives of the study and verbal informed consent obtained. Of the 92 patients approached, complete data was available for 81 (88%) patients who were included in the study. Eleven patients with missing data like radiographs, erythrocyte sedimentation rate (ESR) etc. were not included in the final analysis of the study, since in the absence of this clinical data, calculation of Disease Activity Scores (DAS), comment on EAMs etc. is not feasible. Patients were specifically asked about sicca symptoms (dry eyes, dry mouth), records reviewed, and a thorough physical examination with relevant investigations carried out for ascertainment of EAMs. Interstitial lung disease was defined on clinical and radiologic grounds. Peripheral neuropathy, lymphadenopathy, purpura, rheumatoid nodules were picked up on clinical examination. Patient identity was masked and coded before data analysis.

Data collection

Anemia was defined as hemoglobin value less than 13 mg% in males and 12 mg% in females [13]. Disease activity was assessed using the standard Disease Activity Score 28 (DAS28) [14–17]. The DAS28 uses a 28 tender joint count (TJC), a 28 swollen joint count (SJC), ESR and a General Health Score (GHS) on a 10-point visual scale to produce an overall continuous measure of RA disease activity. DAS28 scores can range from 0 to 9.4. Patients were categorized using DAS28 scores into low $\{\text{DAS28} \leqslant 3.2\}$, moderate $\{> 3.2 \leqslant 5.1\}$ and high $\{\text{DAS28} > 5.1\}$ disease activity [15]. Steinbrocker's functional class was noted for each patient [18].

HRQOL was measured using the WHOQOL-Bref (World Health Organization quality of life instrument) [19]. This is a generic, cross-cultural [20] quality of life instrument consisting of 26 questions assessing 24 facets from four HRQOL domains. We used WHOQOL-Bref, which has been validated in Hindi, as a measure of QOL [20]. Earlier studies have used generic instruments like SF 36, Stanford HAQ and AIMS or a RA-specific instrument, the RAQOL [3–11, 21]. However, the cross-cultural comparability of these instruments has not been demonstrated for all countries making their direct application in developing countries questionable [20]. WHOQOL-Bref, a 26-item questionnaire derived from the 100 item parent WHOQOL - 100, gives a reliable, valid and responsive assessment of QOL that is applicable across cultures [20]. This parsimonious instrument can be used in place of the parent questionnaire where time is restricted, respondent burden must be minimized and where facet level detail is unnecessary. It has been recently shown that the WHOQOL-Bref is a valid outcome measure for interventions that aim to improve quality of life in RA [22]. The generic nature of this instrument also permits comparison with different diseases. This is important in developing countries where different diseases compete for allocation of scarce resources and health planners tend to relegate rheumatic diseases to the background.

Interviewers administered the instrument to all patients. 74 patients took the Hindi version while 7 patients preferred the English version. The two groups did not differ in terms of disease variables or HRQOL scores.

Statistical analysis

Data were recorded on a pre-designed proforma and managed on an MS Office Excel spread sheet.

Categorical variables were summarized by frequency (percentage). Quantitative variables (after checking for normality) were summarized by mean and standard deviation. Pearson's correlation coefficient and 95% confidence intervals (CIs) were computed for each pair of domain score vs. disease activity score, TJC and SJC. We categorized the values of R as: weak: <0.3; moderate: 0.3–0.7; and strong: >0.7. One-way analysis of variance (ANOVA) was used to compare various domain scores between the three categories of disease activity (Low/Moderate/High). In case of overall significance shown in ANOVA, we used Scheffe's *post-hoc* analysis adjusting for multiple comparisons to determine pair-wise difference in mean values. Patients were categorized on the basis of presence or absence of any EAM. Analysis of co-variance was used to compute mean values of various HRQOL domain scores in the two groups (EAM present/absent), adjusting for disease activity scores. Student's *t*-test was then used to compare mean adjusted values of various domain scores in the two groups. STATA 7.0 statistical software was used for data analysis. In this study, p value <0.05 was considered as statistically significant.

Results

The study group comprised 81 patients; their demographic and clinical features are summarized in Table 1.

Disease characteristics

The mean ± SD tender and swollen joint counts were 4.4 ± 5.2 and 2.8 ± 3.9, respectively. The mean DAS28 score was 4.3 ± 1.3. Twenty-seven (33%) patients exhibited deformities. Erosions on hand radiographs were seen in 35 (43.2%) patients. Sixty-one patients (75%) reported the presence of constitutional symptoms. Anemia was noted in 49 (60.5%) patients (61.5% males and 60% females). Thirty-one patients (38.3%) showed one or more EAM (Table 2). Notably, sicca symptoms were the most common EAM, seen in nearly one fifth of the patients.

Table 1. Demographic and clinical characteristics of study subjects

Total number of patients	81
Males	26 (32.1%)
Female	55 (67.9%)
Age (yrs): Median (range)	42 (20–67)
Disease duration (yrs): Median (range)	5 (0.17–30)
Educational qualifications	
High school or less	37 (45.7%)
Above high school	44 (54.3%)
Disease activity	
Low (DAS28 $\leqslant$ 3.2)	13 (16%)
Moderate (DAS28$>$ 3.2 $\leqslant$ 5.1)	48 (59.3%)
High (DAS28 $>$ 5.1)	20 (24.7%)
Steinbrocker's functional Class	
Class I	61 (75.3%)
Class II	17 (21.0%)
Class III	3 (3.7%)
Class IV	0 (0.0%)

HRQOL scores

The mean ± SD HRQOL scores of the patients were 12.0 ± 2.8, 13.2 ± 2.7, 14.4 ± 2.9 and 13.3 ± 2.6 in the physical health, psychological, social, and environmental domains of the WHO-QOL-Bref, respectively. The correlation between HRQOL scores, DAS28 and joint counts is shown in Table 3. The relationship between disease activity and HRQOL scores is depicted in Table 4. Patients with EAMs had significantly higher DAS28 scores (4.70 against 4.05, $p = 0.024$) compared to patients without EAMs. In order to neutralize the influence of disease activity, we adjusted the HRQOL scores for DAS. Despite adjustment for disease activity, patients with EAMs had lower DAS adjusted HRQOL scores than patients without these features (Table 5). However, these were significantly low only in the

Table 2. Frequency of extra-articular manifestations in 81 Indian patients (n = 31)

Extra-articular manifestations	Number (Percentage)
Sicca symptoms	13 (18.3)
Rheumatoid nodules	9 (11.1)
Lymphadenopathy	6 (7.4)
Purpura	3 (3.7)
Gangrene	2 (2.5)
Peripheral neuropathy	2 (2.5)
Interstitial lung disease	1 (1.2)

Table 3. Pearson's Correlation coefficient (95% CI) of HRQOL domains with disease activity score, tender and swollen joint counts

HRQOL Domains	Disease Activity Score (DAS28)	Tender joint count	Swollen joint count
Physical	−0.5 (−0.7, −0.3)	−0.5 (−0.7, −0.3)	−0.3 (−0.5, −0.1)
Psychological	−0.4 (−0.6, −0.2)	−0.4 (−0.6, −0.2)	−0.2 (−0.4, 0.0)
Social	−0.1 (−0.2, 0.2)	−0.1 (−0.2, 0.2)	−0.1 (−0.2, 0.2)
Environmental	−0.1 (−0.2, 0.2)	−0.1 (−0.3, 0.1)	−0.2 (−0.4, 0.0)

physical health domain of WHOQOL-Bref ($t = 2.16$, $p = 0.042$).

Factors like age, gender, educational status, disease duration, constitutional symptoms, and Steinbrocker class did not significantly alter the quality of life scores of patients. Similarly, the presence or absence of deformities or erosions on hand radiographs did not significantly affect HRQOL in our cohort.

Discussion

The literature on QOL in RA from Asian countries is scant. The twin objectives of our study were to ascertain QOL in Indian patients with RA and also examine the influence of various parameters especially EAMs, which are seen in as many as 40% of patients with RA [23].

Our study showed that HRQOL scores were lowest in the physical domain. This is in keeping with other studies in the literature. A comparison of inter-domain scores in most studies shows that scores are invariably low in the physical domains as compared to the social domain [5, 24, 25]. This has been observed in chronic diseases other than rheumatoid arthritis also [26]. The strong family support system in India could be a contributor to the relatively high scores in social and environmental domains. We did not find any association of HRQOL with age, gender, disease duration, educational status, constitutional symptoms, rheumatoid factor positivity, erosions and deformities in our study. Some authors have reported reduced QOL in women with elderly onset RA [10]. The weak correlation between various clinical and laboratory variables in RA and HRQOL scores is likely because factors like seropositivity, disease duration etc. do not directly influence outcome in a multi-system disease like RA. There is no single variable which can be said to have an overwhelming influence on QOL. Nearly 60% of our patients had anemia. Since hookworm infestation and consequent anemia are very widespread in India, it was considered a confounder and excluded from analysis. There was a negative influence (moderate correlation) of disease activity scores on the physical and psychological domains in our cohort (Table 3). Disease activity has been shown to adversely affect physical and psychological QOL in earlier studies also [4, 11, 27–31]. Disease activity did not affect the social and environmental domains in our patient with RA. The lack of correlation between social and environmental QOL scores and increasing DAS28 scores may partly be explained by an enhancement of social support as the physical condition of the patient worsens [5, 9].

Nearly one-third of our patients had EAMs. Our study revealed that EAMs had a significant

Table 4. HRQOL scores of patients with low, moderate and high disease activity

HRQOL Domain	Low* (n = 13)	Moderate* (n = 48)	High*(n = 20)	*p*-Value		
				Low vs. moderate	Low vs. high	Moderate vs. high
Physical	14.1 ± 2.4	12.4 ± 2.5	10.0 ± 2.5	0.073	< 0.001	0.002
Psychological	14.9 ± 2.4	13.3 ± 2.2	11.8 ± 3.3	0.154	0.003	0.071
Social	15.1 ± 3.4	14.1 ± 3.1	14.9 ± 1.8	0.771	1.000	0.870
Environmental	13.2 ± 2.2	13.6 ± 2.3	12.9 ± 3.4	1.000	1.000	0.888

* Values are presented as mean ± SD.

Table 5. Influence of extra-articular manifestations on HRQOL scores

Extra-articular manifestations	HRQOL domains			
	Physical	Psychological	Social	Environmental
Present (n = 31)	11.3 ± 2.4	13.0 ± 2.6	14.3 ± 2.7	13.2 ± 2.7
Absent (n = 50)	12.5 ± 2.4	13.3 ± 2.6	14.5 ± 3.0	13.5 ± 2.4
p-value	0.042	0.557	0.811	0.612

Values are presented as mean ± SD.

effect on the physical health domain of WHO-QOL-Bref after adjusting for disease activity. We could not come across any other reference on the influence of EAMs on QOL in RA. This is surprising given that fact that RA is a multisystem disease. We, however, could not assess the relative impact of individual EAMs because some of these manifestations were confined to just 1 or 2 patients. A larger cohort of patients would help clarify this further.

Our study, thus, reveals that physical domain of HRQOL is the one which is most impaired in Indian patients with RA. Disease activity has a significant negative influence on physical and psychological domains of QOL. EAMs are associated with significantly lower physical domain scores. The influence of individual EAMs on QOL needs to be studied in a larger cohort of patients.

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