Quality of life in rheumatoid arthritis: Impact of disability and lifetime depressive spectrum symptomatology

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Abstract

Objective

The aim of this study was to investigate the impact of disability and lifetime subthreshold depressive symptoms on Health-Related Quality of Life (HRQoL) among patients with rheumatoid arthritis (RA).

Methods

Ninety-two subjects with a diagnosis of RA according to the American College of Rheumatology (ACR) criteria were recruited at the Department of Rheumatology of the University Hospital, Pisa, Italy. Participants who met DSM-IV-TR diagnostic criteria for current or previous Axis I disorders were excluded. Assessments of functional status and disability was conducted using both the ACR classification and the Stanford Health Assessment Questionnaire (HAQ). Health-related Quality of Life was assessed using the Medical Outcomes Study Short Form 36 health survey questionnaire (MOS-SF36) and lifetime depressive spectrum symptomatology using the Mood Spectrum Questionnaire, Self-Report version (MOODS-SR).

Results

Comparison with MOS-SF36 Italian normative values indicated that RA patients were significantly impaired on mental and physical HRQoL areas. Correlations between MOODS-SR depressive scores and ACR severity (Spearman rho = 0.15, p = 0.07) and HAQ score (Spearman rho = 0.20, p = 0.05) were modest in absolute value and borderline significant. Lifetime mood depressive spectrum was related with impaired HRQoL levels, both in physical (except for bodily pain) and mental (except for social functioning) domains. Associations of mood depressive spectrum and general health , vitality, role emotional and mental health continued to be significant after controlling for functional status, duration of illness , age and gender.

Conclusions

Because lifetime mood depressive symptoms significantly contribute to impairment in HRQoL in RA patients without a past psychiatric history, even after controlling for functional status, duration of illness and demographic characteristics, these symptoms should be assessed for an accurate clinical evaluation and appropriate clinical management of RA patients.

Key words

Rheumatoid arthritis, health-related quality of life, depression, mood spectrum, functional disability.

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Introduction

A considerable body of evidence underlines the negative impact of rheumatoid arthritis (RA) on the physical, psychological, and social functioning of the individual (1-3). Pain, joint damage and disability constitute problems patients have to deal with everyday (4, 5). Significant inability to perform daily activities across many domains which include physical, social and cognitive functioning has been reported in RA patients (6, 7).

According to the World Health Organization definition, Health-Related Quality of Life (HRQoL) refers to the physical, emotional, and social aspects of life influenced by an individual's disease and/or its treatment (8). Particularly in patients with chronic disease, quality of life is a relevant assessment (9). Several instruments are used to measure HRQoL in RA patients, either disease-specific, as the Arthritis Impact Measurement Scales (AIMS) (10) and the Health Assessment Questionnaire (HAQ) (11, 12), or generic such as the Medical Outcomes Study 36-Item Short-Form Health Survey (MOS SF-36) (13). While specific instruments are developed to capture clinical features of a disease, generic instruments are designed to capture aspects of health status in any population regardless of the disease or condition, thereby enabling comparisons across interventions and conditions (14, 15). Previous studies using MOS-SF36 in RA patients documented a reduced quality of life compared with population norms, both on physical and psychological dimensions (16, 17).

Converging evidence indicates that RA is associated with depression; methodological differences have resulted in rates of depression in RA that range from 3% to 80%, although most evidence support rates between 13% and 20%, percentage two to three times as high as that observed in the general population (18-22). Depression interferes with the way patients perceive and cope with their physical illness, increases the level of disability, interferes with treatment response, and results in poor medical compliance and overuse of health services (23, 24). Wells *et al*. (25) highlighted the relationships between psychosocial dysfunction and depressive symptoms in outpatients with chronic physical illnesses; depression can amplify somatic symptoms of arthritis, while causing both health care providers and patients to misattribute symptom report and disability to worsening physical illness.

Depressive symptoms, even in the absence of major depressive disorder, contribute to the psychosocial dysfunction and the burden of suffering faced by RA patients (19, 26). Patients with chronic physical illnesses and subthreshold depressive comorbidity have more disability and lost work days, greater use of services for mental health problems, poor self-rating of emotional health and more lifetime suicide attempts than patients with physical ilnesses only (25). Effective diagnosis and management of depression may reduce some of the disability in RA patients, encourage them to explore avenues that might reduce even more disability, and enhance the person's quality of life (23). Unfortunately, depression co-occuring with a physical illness frequently goes undetected despite the availability of effective psychosocial and somatic treatments. In fact, when standardized psychiatric interviews are used, only the depressions that meet DSM-IV symptom and duration criteria are usually captured. Therefore, non-criterion manifestations may be overlooked.

It is already established that low-grade depressions interfere with functioning (27-29). Moreover, recently, there has been increasing interest in the concept of spectrum conditions linked to DSM-IV mood disorders and in the influence of these conditions on illness course and treatment outcome (30, 31). By 'spectrum' the investigators refer to a dimensional view of psychopathology that includes a broad range of manifestations of the target disorder, including its core DSM-IV criteria, as well as more subtle features such as non-criterion symptoms, maladaptative behavioral traits and temperament (30). They hypothesized that these manifestations may occur as subtle, early-onset manifestations of an illness diathesis, shaping a myriad of developing mental functions. In addition, spectrum features may remain

as residual symptoms after DSM-IV symptoms have remitted. In general, spectrum manifestations of a DSM-IV condition can occur even in the absence of threshold level criteria for the DSM disorder. When spectrum features co-occur with another DSM-IV disorder they influence the presentation and course of that illness. Failure to recognize and attend to residual and/or comorbid spectrum features in treating DSM-IV symptoms is likely to result in continued impairment, even when core axis I symptoms have been well treated.

The Mood-Spectrum Self-Report (MOODS-SR) was developed for research studies to investigate mood spectrum symptomatology (32) occurring during the entire life span in subjects with or without DSM-IV-TR criteria for lifetime and/or current depressive disorder.

The aim of this study is to investigate the impact of disability and lifetime subthreshold depressive symptoms on HRQoL in patients with rheumatoid arthritis.

Materials and methods

Sample

Patients with a diagnosis of RA according to the 1987 American College of Rheumatology revised criteria (ACR) (33) were consecutively recruited over an 8-month period (Jan-Aug, 2002) at the Department of Rheumatology of the Pisa University Hospital, Pisa, Italy. Exclusion criteria were: pregnancy, unstable medical conditions and lifetime psychiatric disorders according to DSM-IV-TR criteria (34). Patients were asked to participate in the study after a routinely scheduled appointment. They were fully informed about the benefits, risks and potential side effects involved in participating in this study and signed informed consents. The study was approved by the Ethics Committee of the University of Pisa. Diagnostic evaluations and psychopathological assessments were performed by two residents in psychiatry, with at least 3 years of clinical experience, and confirmed by two senior psychiatrists (AP and LD) on the basis of DSM-IV-TR criteria. Clinical course and sociodemographic data were collected using a standardized form. Whenever possible, these data were confirmed using medical records and interviews with family members. Patients were naturalistically treated with different combinations of oral glucocorticoids, disease modifying antirheumatic drugs (DMARD) and non-steroid anti-inflammatory drugs (NSAID).

Physical disability assessment

A detailed physical examination of articular and extra-articular features of RA was conducted, followed by a performance-based assessment of limitations in physical function. Two measures of physical disability were used:

1) The ACR RA functional status index is a measure of severity consisting of four classes (35). Each patient is assigned to one of four mutually exclusive classes of functional status by a rheumatologist. The classes are:
   - I: completely able to perform the usual activities of daily living;
   - II: limited in avocational activities;
   - III: limited in vocational and avocational activities;
   - IV: limited in vocational, avocational and self-care activities.
2) The disability index of the HAQ (11) is a 20-item disease-specific instrument that measures the difficulty in performing 8 activities of daily-living: dressing, rising, eating, walking, grooming, reaching, gripping and performing errands. Patients rated their ability to perform the various activities on a 4-level scale: 1 = without any difficulty, 2= with some difficulty, 3 = with much difficulty and 4 = unable to do. The highest scores in each category are summed (range 0-24) and divided by the number of categories scored, to yield a functional disability index on a continuous scale (36). High scores correspond to poor levels of functional ability.

Assessment of depressive symptomatology

Lifetime depressive spectrum symptomatology was assessed using the MOODS-SR (32), a self-report instrument including 161 dichotomous (present/absent) items organized into seven domains: mood-depressed, mood-manic, energy-depressed, energy-manic, cognition-depressed, cognition-manic, rhythmicity and vegetative functions.

The mood domains evaluate mood lability and associated changes in activities, interest in family, friends and romantic relationships, work, hobbies, and sports. The energy domains explore periods of time and situations with significant change in energy levels. The cognition domains explore changes in cognition associated with energy or mood imbalance. Rhythmicity and vegetative functions explore changes in activity, mental and physical efficiency related to the weather and the seasons, and changes in eating, sleep patterns and sexual activity. For the purpose of the present paper, we used the sum of the three depressive domains (mood + energy + cognition scores), that constitutes the depressive component. The higher the score on this component, the more severe is the depressive spectrum condition.

Health-Related Quality of Life (HRQoL) assessment

Health-related quality of life was evaluated using the Medical Outcomes Study 36-item Short Form Health Survey (MOS-SF36), a self-report, generic instrument that has been used extensively in rheumatoid arthritis (13, 37-39). It is composed of 36 items, grouped into eight scales: *physical functioning* (PF, the extent to which health limits physical activities), *role physical* (RP, the extent to which physical health interferes with work or other daily activities), *bodily pain* (BP, the intensity of pain and effect on normal work), *general health* (GH, personal evaluation of health, current and outlook), *vitality* (VT, feeling energetic), *social functioning* (SF, the extent to which physical health or emotional problems interfere with normal social activities), *role emotional* (RE, the extent to which emotional problems interfere with work or other daily activities), *mental health* (MH, general mental health, including depression, anxiety, behavioral-emotional control, general positive affect). Briefly, the first four domains are related to physical health; the others to mental health. Subscale raw scores are standardized and range from

0 to 100, where 0 is the worst and 100 the best possible health status. The MOS-SF36 scale scores of our sample were compared with normative values of the Italian population (40).

Statistical Analysis

MOS-SF36 scores were summarized graphically using box-plots and compared with the Italian normative values. The relationship between functional status, HRQoL and mood spectrum was investigated using Spearman's correlation coefficient or Pearson's correlations coefficient, depending on the measurement scale of the variables. To control for potential confounders, the relationships between MOS-SF36 scale scores and MOODS-SR depressive component score was also analysed using multiple regression models. Separate models were fit for each MOS-SF36 scale (used alternately as dependent variable). Independent variables included the score on the depressive component of the MOODS-SR and the HAQ score (continuous variables) as well as gender, age and age of onset of the disease. SPSS, version 12.0, was used to perform the analyses.

Results

The demographic and clinical characteristics of the study sample (N = 92) are provided in Table I. The mean (SD) age of the RA patients was 61.4 (SD ± 12.7) years; they were mostly female (73%) and married (77%) at index assessment. Duration of illness ranged between 2 months and 55 years, with a median of 72 months. HAQ mean score was 1.12, range 0- 2.87. Figure 1 shows the boxplots for the 8 MOS SF-36 scales. The black segment inside the boxplots indicates the median. The profile of median scores on the 8 scales in the Italian normative sample is reported for comparison.

Patients were almost evenly distributed among the ACR functional classes and, on average, they endorsed 10.4 items on mood depressive spectrum. Correlations between MOODS-SR depressive scores and ACR severity (Spearman rho = 0.15, p = 0.07) and HAQ score (Spearman rho = 0.20, p = 0.05) were modest in absolute value and borderline significant.

Table I. Demographic and clinical characteristics of the sample (n = 92).

Mean age (SD)	61.45 ± (12.73)	
Gender, N (%)		
M	25	(27.2)
F	67	(72.8)
Marital status, N (%)		
Single	6	(6.5)
Married	71	(77.2)
Separated/divorced	2	(2.2)
Widow	13	(14.1)
Occupational status N (%)		
Employed	25	(27.1)
Unemployed	2	(2.2)
Housewife	18	(19.6)
Retired	47	(51.1)
Mean HAQ (SD)	1.1	(0.8)
Median duration of illness (months)	72	(range 2-660)
Median age at onset of illness	52	(range 16-78)
Mean score on MOODS-SR (SD), depressive component	10.4 ± 8.4	
ACR Classes , N (%)		
I	19	(20.7)
II	28	(30.4)
III	26	(28.3)
IV	19	(20.7)

Relationship between HRQoL and demographic and clinical variables

Univariate analyses were first conducted to examine the relationship of HRQoL with demographic and clinical variables. Comparison between MOS-SF-36 scores between males and females indicated that the latter had lower levels of physical functioning, role emotional and vitality. Age was (positively) associated only with role emotional, indicating that older individuals had a better functioning in this area. Marital status was unrelated with HRQoL.

Lifetime mood depressive spectrum was related with significantly impaired HRQoL, both in physical (except for bodily pain) and mental (except for social functioning) domains.

Specifically, Pearson's correlations between the score on depressive mood spectrum and the MOS-SF -36 scales were -0.28 ($p < 0.01$) with physical functioning, -0.23 ($p < 0.05$) with role physical, -0.43 ($p < 0.001$) with role emotional, -0.48 ($p < 0.001$) with mental health, -0.28 ($p < 0.01$) with general health, -0.35 ($p = 0.001$) with vitality. The negative sign of the coefficients

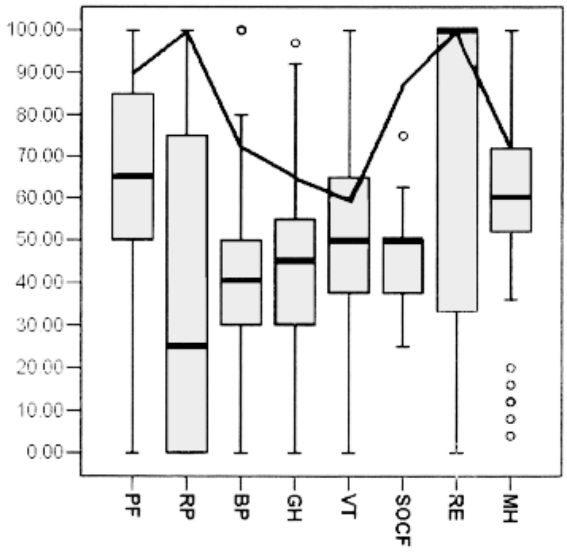

Fig. 1. Boxplots of the 8 SF-36 scales. The thick segments in the boxes indicate the median, circles indicate the outliers. The median profile of the normative Italian sample of subjects in the age range of 55-64 is reported for comparison.

Table II. Results of multiple regression models showing the association between functional impairment, mood spectrum (depressive component) and the 8 scales of SF-36 adjusted for age, gender and duration of illness. Figures are the regression coefficient b (the change in the score of the scale corresponding to a one-unit change in the value of the independent variable) and the significance of this parameter. Negative b-values indicate a negative association between the variable and the MOS SF-36 scale. ns = non-significant.

	PF	RP	BP	GH	VT	SOCF	RE	MH
Gender	0.61 (ns)	16.82 (< 0.05)	1.92 (ns)	2.77 (ns)	0.01 (ns)	-2.59 (ns)	1.20 (ns)	-4.28 (ns)
Age	0.074 (ns)	0.22 (ns)	0.11 (ns)	0.07 (ns)	0.06 (ns)	0.01 (ns)	0.54 (ns)	0.04 (ns)
HAQ	-22.63 (< 0.001)	-31.30 (< 0.001)	-16.34 (< 0.001)	-11.76 (< 0.001)	-13.38 (< 0.001)	2.89 (< 0.05)	-8.31) (ns)	-7.71 (< 0.01)
Spectrum-dep	-0.32 (ns)	-0.4 (ns)	-0.12 (ns)	-0.46 (< 0.05)	-0.42 (< 0.05)	-0.12 (ns)	-1.72 (< 0.01)	-0.82 (< 0.001)
Duration of illness	0.001 (ns)	0.01) (ns)	0.01 (ns)	-0.03 (ns)	0.01 (ns)	0.003 (ns)	0.03 (ns)	-0.01 (ns)

means that the two instruments have opposite directionality, with better HRQoL levels corresponding to higher scores on depressive mood spectrum. The same held for functional status (HAQ), that was significantly (and negatively) associated with each of the SF-36 areas, except for social functioning, with Pearson's correlation coefficients ranging from -0.24 ($p < 0.05$, with mental health) to -0.71 ($p < 0.001$, with physical functioning). Increasing severity of RA was correlated with significant impairment in all the SF-36 areas (Spearman rho between -0.27 and -0.68), except for social functioning.

In order to identify the specific influence of demographic variables, functional status and depressive spectrum on each area of quality of life, 8 multiple linear regression models were fit, using alternately each of the MOS-SF36 scale scores as dependent variable. The depressive spectrum, the HAQ score and gender proved to be significant predictor of the patients' quality of life (Table II). After adjusting for gender, age, duration of illness and depressive spectrum, the HAQ was associated with each of the SF-36 areas, except for social functioning and role emotional. Males had on average better scores on the role physical area than females. The depressive spectrum, after partialling out the effect of the other variables in the model, was associated with general health, vitality, role emotional and mental health.

Discussion

This study assessed the HRQoL using a generic health assessment tool, the MOS-SF-36, in 92 patients with RA. Compared with the normal population, the scores for the eight domains of MOS-SF36 were significantly decreased in RA patients. This data is consistent with those of a previous study (16) in which RA patients showed reduced HRQOL values in all SF-36 domains compared with general population. As expected, the lowest scores were observed in the physical components, especially in role physical and bodily pain, which are related to anatomic-functional damage. Nonetheless, mental domains were also lower than the normative values. It could be argued that RA patients gradually modify their goals over time, discarding goals that appear unreachable. In this way their desires are adjusted to environmental opportunities, their knowledge of previous goals is lost and they become less aware of the loss of life's roles (41).

The level of physical disability, as assessed by the HAQ score, proved to be the most significant predictor of RA patients. This finding is in line with previous studies that reported a strong association between physical disability and HRQoL in RA patients (42). Correlations between ACR functional class and HRQoL total scores were also high and significant except for social functioning.

Lifetime subthreshold depressive symptoms were associated with impaired HRQoL, as already reported (25). Depression in RA patients appears to change the way patients perceive and cope with their physical illness and how they are less likely to be reassured by a doctor or comply with medication (23). Depressed individuals have less interest in leisure, decreased energy, lower motivation, and problems with interpersonal relationships; they are also at risk for more disability days, more RA-related hospitalizations and greater loss of functional status (19). It is not clear whether depression simply reflects a reaction to the disability due to RA or whether primary depression adds to the physical disability and pain, but consensus is growing that the causal relationship between disability, pain and depression may be bi-directional (23, 43, 44).

Our results indicate that depressive spectrum affects the HRQoL of RA patients to a lower extent than physical disability. Still, it suggests that even mild depressive symptomatology contributes, independently of functional disability, to decreasing quality of life levels.

This study has several limitations. First, it is cross-sectional and descriptive in nature; second, the sample includes individuals seeking treatment from a rheumatologist. Thus, it cannot be generalized to community members with RA but not receiving RA treatment and those receiving treatment from other types of specialists. Third, potentially confounding factors that could affect health status (e.g. severity of comorbidities and lifestyle) were not considered in the present study.

In conclusion our data show a reduced HRQoL in RA patients brought on mainly by the level of functional disability. However, lifetime subthreshold depressive symptoms independently predicted both physical and mental

HRQoL, after controlling for functional status, demographic variables and duration of illness, which strengthens the need to assess depressive symptoms in patients with RA even in the absence of overt manifestations of depressive disorders.

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