

Association between disease activity and quality of life among patients with rheumatoid arthritis

Rômulo Lopes da Costa¹, Felício de Freitas Netto¹, Diogo von Gaevernitz Lima¹, Fabiana Postiglione Mansani¹, Marcelo Derbli Schafranski¹, Bruno Queiroz Zardo¹, Alceu de Oliveira Toledo Júnior², Lorena de Freitas Calixto¹, José Carlos Rebuglio Velloso², Elisangela Gueiber Montes²

¹Medicine Department, State University of Ponta Grossa, UEPG, Ponta Grossa, PR, Brazil, ²Clinical and Toxicological Analysis Department, State University of Ponta Grossa, UEPG, Ponta Grossa, PR, Brazil

The aim of this study is the association between the scores of disease activity, functional capacity and quality of life among patients diagnosed with rheumatoid arthritis, under clinical treatment at the Regional University Hospital of Campos Gerais - Wallace Thadeu de Mello and Silva. The sample was composed by volunteer patients, who freely underwent 3 research questionnaires. With the results of the survey, the disease activity score was correlated to the functional capacity and the quality-of-life scores. A mean of 3.87 and 1.2 was observed for the disease activity and the functional capacity scores, respectively, yet not achieving a correlation between those two variables. A strong correlation between the disease activity and the “functional capacity”, “general health status” and “mental health” domains was found. The lowest average observed corresponded to “physical limitation”, from the quality-of-life questionnaire. There was no statistically significant correlation between disease activity and functional capacity, although disease activity seems to affect the mental health, general health status and functional capacity of patients.

Keywords: Arthritis. Disease activity. Quality of life.

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory disease that leads to an important impairment in quality of life, alongside with high social impact, caused by the reduced participation of patients in the job market, as a consequence of persistent pain and functional incapacity (Ollier, Harrison, Symmons, 2001). The clinical condition is marked by symmetric polyarthritis, mainly in small hands, feet and wrist joints. The inflammatory state leads to morning stiffness, clinically significant when lasting more than one hour (van Vollenhoven, 2010).

The DAS28, originated from the “Disease Activity Score” (DAS), assesses 28 joints that may present pain and/or swelling using the general analogic health scale and optional use of C reactive protein (CRP) or erythrocyte sedimentation rate (ESR), as laboratory inflammatory markers (Prevo *et al.*, 1995). This is the most commonly applied measure to assess inflammatory activity in clinical trials (Wells *et al.*, 2009).

Different tools are available to evaluate quality of life, to detect changes in patient’s health, to assess the prognosis, and guide the treatment. It consists of generic tools, such as the Medical Outcomes Study 36-Item Form Health Survey (SF-36), as well as specific tools, such as the Health Assessment Questionnaire (HAQ) (Walker, Littlejohn, 2007).

It is assumed that quality of life and functional capacity of this population has an inverse relation with

*Correspondence: E. G. Montes. Departamento de Análises Clínicas e Toxicológicas. Universidade Estadual de Ponta Grossa, UEPG. Avenida General Carlos Cavalcanti, 4748. CEP: 84030-900, Uvaranas, Ponta Grossa, PR, Brasil. Phone: 55-42-3220-3113. E-mail: elisangela.gueiber@uol.com.br. ORCID: <https://orcid.org/0000-0003-1694-085X>

their clinical aspects. Thus, the aim of this study is to assess the quality of life in patients with RA, considering the disabling aspects of the disease's progression.

MATERIAL AND METHODS

This is an analytic, cross-sectional, non-controlled study, in which 59 patients diagnosed with RA took part. These patients were diagnosed according to the American College of Rheumatology (ACR) diagnostic criteria, being under clinical treatment at the Regional University Hospital of Campos Gerais - Wallace Thadeu de Mello and Silva (HURCG). Patients (male and female) over 18 years old signed a free and informed consent term, approved by the Ethics Committee on Research of the Universidade Estadual de Ponta Grossa (under the number 1.879.373), before answering the questions.

The disease activity was assessed by the Disease Activity Score in 28 joints (DAS28). In order to calculate the score, four variables were used: counting the 28 joints (left and right sides, shoulders, elbows, wrists, knees and hand proximal metacarpophalangeal and interphalangeal joints), the presence of swelling, C reactive protein (CPR) serum levels and the analogical visual scales for general health status and global disease activity (related by the patient himself and whose score went from 0 to 100 points). The disease could be classified as "in remission" ($DAS28 < 2.6$), "low activity" ($2.6 \leq DAS28 \leq 3.2$), "moderate activity" ($3.2 < DAS28 \leq 5.1$) and "high activity" ($DAS28 > 5.1$) (van der Heijde *et al.*, 1990).

For assessing functional status and quality of life, the following questionnaires were applied:

a) The HAQ, in which the difficulty level for executing daily tasks is assessed, ranging from "no difficulty = 0" to "unable to do it = 3". The final score is

achieved by the average of the highest score from the 8 categories given (Walker, Littlejohn, 2007).

b) The SF-36 assesses negative health aspects (disease or illness), as well as positive aspects (well-being). It consists of 8 domains/dimensions (functional capacity, physical limitation, pain, general health status, vitality, social aspects, emotional limitation, mental health), whose items determine a scale ranging from 0 to 100, in which 0 is considered the worst, and 100 the best status (Linde *et al.*, 2008). Every patient answered spontaneously each one of the questions mentioned.

Initially, exploratory analysis was applied to data and described through the score values obtained. The Spearman Correlation Coefficient was used, once ordinal qualitative variables were studied, in order to assess the correlation level between the DAS28 questionnaire and the results obtained from the HAQ and each domain from the SF-36 questionnaire. A univariate analysis was applied due to the reduced sample of the study.

All data gathered were tabulated and analyzed using the *Medcalc*® software, version 14.8.1, adopting $p < 0.05$ as level of significance.

RESULTS AND DISCUSSION

The questionnaires were answered by 55 volunteers and their respective DAS28 was calculated.

It was detected a mean DAS28 of 4.32 (SD=1.45), from which 47% presented moderate activity disease (n=28), 29% presented high activity disease (n=17), 8% presented low activity disease (n=5) and 10% presented disease in remission (n=6), as shown in Table I and in Figure 1. The HAQ functional status analysis (Table I) showed a mean of 1.32 in its scores (SD=0.79).

TABLE I - Description of the scores obtained by the HAQ and SF-36 questionnaires

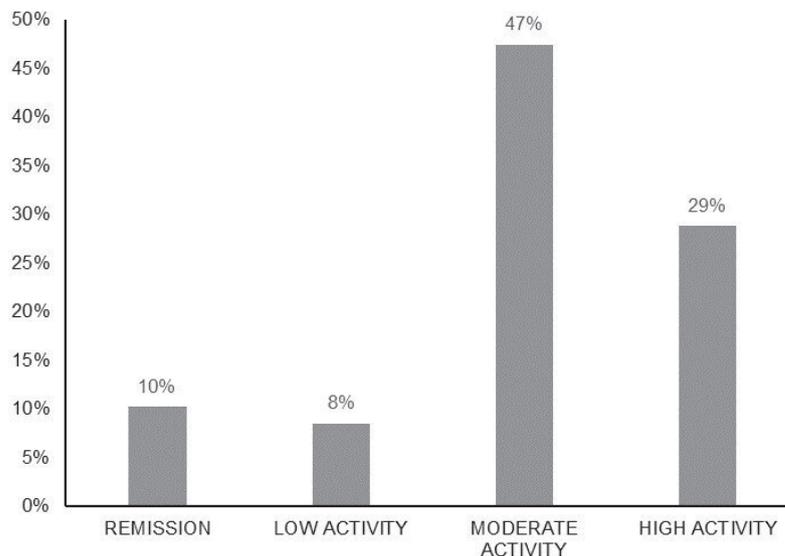


FIGURE 1 - Frequency of DAS28 results (n=59).

SF-36 questionnaire presented the worst score at the “physical limitation” domain, with a mean of 21.81, given that 54% of patients scored under 20. On the other hand,

the best score was observed in the “social aspects” and “mental health” domains, with mean values of 56.6 and 54.83, respectively, as illustrated in Table I and Figure 2.

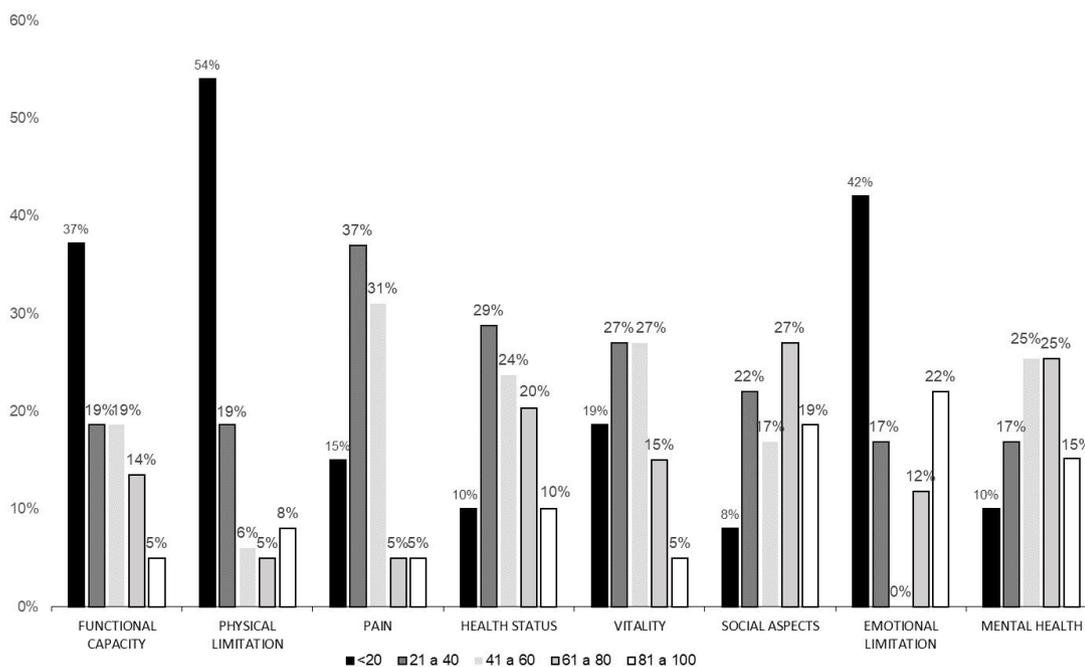


FIGURE 2 - Frequency of the results of the SF-36 questionnaire domains.

As shown in Tables II and III, a strong negative correlation was observed when comparing the DAS28 with the “functional capacity”, “physical limitation” and “pain”, “general health status”, “social aspects”, “emotional

limitation”, and “mental health” domains from the SF-36, although not showing correlation with the “vitality” domain. Moreover, a strong correlation was achieved as well between the DAS28 and the HAQ questionnaire.

TABLE I - Description of the scores obtained by the HAQ and SF-36 questionnaires

	Average	SD ⁺	CI (95%) [†]
DAS28	4,32	1,45	[3,93;4,71]
HAQ	1,32	0,79	[1,10;1,53]
Functional capacity*	37,27	26,06	[30,22;44,31]
Physical limitation*	21,81	32,65	[12,99;30,64]
Pain*	37,00	21,25	[31,25;42,74]
Health status*	48,34	23,34	[42,03;54,65]
Vitality*	44,72	22,77	[38,56;50,88]
Social aspects*	56,60	27,94	[49,05;62,50]
Emotional limitation*	38,15	41,31	[26,98;49,32]
Mental health*	54,83	23,77	[48,40;61,26]

*Domain SF-36; ⁺Standard deviation; [†]Confidence Interval.

TABLE II - Correlation of DAS28 score with HAQ scores

HAQ	rho [‡]	p ⁺	CI (95%) [†]
	0,3	0,02	[0,04;0,53]

⁺p value<0,05; [†]Confidence Interval; [‡]rho's Spearman Coefficient.

TABLE III - Correlation of DAS28 score with SF-36 domains

SF36	ρ^{\dagger}	p^{\ddagger}	CI (95%) [†]
Functional capacity*	-0,37	0,004	[-0,58;-0,12]
Physical limitation*	-0,26		
	0,04		
	[-0,49;-0,003]		
Pain*	-0,39	0,003	[-0,59;-0,14]
Health status*	-0,45	0,0005	[-0,64;-0,21]
Vitality*	-0,25	0,06	[-0,48;0,01]
Social aspects*	-0,35	0,007	[-0,56;-0,09]
Emotional limitation*	-0,27	0,03	[-0,50;-0,01]
Mental health*	-0,36	0,006	[-0,57;-0,11]

[†]p value<0,05; [‡]Confidence Interval; [†]rho's Spearman Coefficient.

The Disease activity score (DAS28) has shown that 76% of patients presented moderate or high disease activity, indicating absent or inadequate response to treatment, although the questionnaire has a broad definition of “disease in remission” (Gaujoux-Viala *et al.*, 2012). Large cohort studies demonstrate, in its initial assessments (Combe *et al.*, 2003), a mean HAQ varying from 0.8 to 1.9 (Young *et al.*, 2000), being the mean (1.32) obtained in this study within its interval.

A strong positive correlation was found between disease activity (assessed by the DAS28) and functional limitation, obtained by the HAQ, corroborating with other findings in scientific literature. That is the case of the study of Courvoisier *et al.* (2008), which showed a correlation between those two variables at the beginning of the study, as well as in 5 and 10 years follow-up studies.

The cohort study conducted by Drossaers-Baker *et al.* (1999), showed a strong correlation between the functional status of RA patients – assessed by the HAQ – and disease activity – assessed by the DAS28. Nevertheless, at the end of a 12 year follow up, this correlation showed no statistical significance anymore.

A large part of studies related to the SF-36 in RA patients are cohort studies, allowing a comparison

between the initial and final samples of the studies. The results found in our survey demonstrate the disease's impact on the quality of life of patients, physically limiting their daily activities, and showing high impact on patients' emotional aspects, that may limit their social contacts (Mota, Laurindo, Santos, 2010). However, the mentioned study, unlike the present one reports a low impairment in the mental health from RA patients. Nevertheless, a strong correlation between impairments in mental health and disease activity rate is described in literature, what was also confirmed in this paper.

According to Linde *et al.* (2008) the “functional capacity” and “pain” domains are correlated with the disease's severity, corresponding with findings in the present study.

The disease activity in patients with RA, measured by the DAS28 score, was correlated with the expected functional limitation in this disease by an objective analysis of the HAQ. Additionally, the impairment in the “functional capacity”, “physical limitation”, “pain”, “general health status”, “social aspects”, “emotional limitation” and “mental health” domains, subjectively measured by the SF-36 questionnaire, showed a strong correlation with the disease activity.

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