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Patient Empowerment and Associations with Disease Activity and Pain-Related and Lifestyle Factors in Patients With Rheumatoid Arthritis

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Background. Empowerment is important to patients with rheumatoid arthritis (RA) because most care is in the form of self-management. The aim was to study levels of empowerment and associated variables in patients with RA and to investigate longitudinal clinical data in patients with low and high empowerment.

Methods. A postal survey was sent in 2017 to patients with RA from the BARFOT (Better Anti-Rheumatic Pharmacotherapy) cohort that included questions about disease activity, pain-related factors, lifestyle habits, and contained the Swedish Rheumatic Disease Empowerment Scale (SWE-RES-23). The 844 patients who answered the SWE-RES-23 made up the cohort of the present study. Differences in level of empowerment between groups (low, moderate, and high empowerment) were analyzed with ANOVA. Logistic regression analysis was used to study variables associated with low empowerment. Thirdly, we performed comparisons in longitudinal data (15 years) of disease activity, pain, and physical function between the three empowerment groups (low, moderate, and high empowerment).

Results. Patients with low empowerment (n = 282) were significantly older, more often women, and reported worse pain-related factors and physical function and lower moderate and vigorous physical activity compared with those with high empowerment (n = 270). An analysis of longitudinal data found that patients with low empowerment had worse pain and physical function at all time points.

Conclusion. Patients with low empowerment have more pain-related symptoms, poorer physical function, and are less physically active. To promote patient empowerment in rehabilitation interventions it is important to identify and support self-management.

INTRODUCTION

Most patients with rheumatoid arthritis (RA) are challenged in their self-management of symptoms such as pain, fatigue, and impaired functioning, all of which affect general health and quality of life (1). Patient-centered standards of care have been developed for patients with RA, with the purpose of empowering this patient group to develop responsibility for their disease (2), in line with the theory of person-centered care (3). Patient information about the disease, treatment, and a healthy lifestyle are highlighted as important elements of rheumatological care, as is empowering patients to make informed and shared decisions (2).

Patient empowerment is a concept used in health care and is often referred to as a health promotional goal (3–5). The World

Health Organization states that empowerment is a process to gain greater control over decisions and actions influencing health and to obtain the ability to control one's life. The empowerment process entails involving patients to understand their role, receive adequate individual patient education, and receive encouragement to become co-actors in shared decision-making and make informed decisions regarding their health and life (5). For patients with RA, being empowered means that patients have a belief in their own capacity to manage everyday life, which could cover managing fatigue, pain, and physical functioning. Managing a chronic disease, such as RA, entails patients being able to make informed decisions and change their priorities, with a view to optimizing their quality of life (6). Among patients with RA, it has been seen that the focus on

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self-management and empowerment to master their life situation increases over time (7).

Self-efficacy is one of several inter-related factors that contribute to patient empowerment (4,8). Self-efficacy could be seen as the ability to set goals and accomplish them, thereby boosting empowerment and contributing to healthy self-management (9). It is not the disease per se but how a person handles the situation, supported by adequate external help, that determines the level of self-management (9). Among patients with RA, increased self-efficacy has not only been reported to be associated with a higher quality of life, function, and physical activity and less pain, inflammation, and disease activity, but also adherence to medication (10,11). Patients with high self-efficacy have a stronger belief in their own abilities and are better equipped to manage their illness and health issues. Self-efficacy influences the individual's ability to manage disease symptoms, treatment, and lifestyle changes that become necessary in life with a chronic disease to maintain an acceptable quality of life (9,11).

Therefore, patient empowerment is important in rheumatology care, and there is a need for relevant tools to assess empowerment among these patients. Patient-reported outcome measures (PROMs) can be useful to evaluate health care interventions (12,13) and to measure levels of empowerment in patients with rheumatic diseases. For this reason, the Swedish Rheumatic Disease Empowerment Scale (SWE-RES-23) was developed and validated (14). The SWE-RES-23 was adapted from the Diabetes Empowerment Scale, which measures psychosocial self-efficacy (15).

In relation to patients with RA, little is known about the associations between levels of empowerment and patient characteristics, disease characteristics, symptoms, lifestyle, and health-related quality of life. To the best of our knowledge, there is a research gap concerning empowerment and disease impact in patients with RA, from both a cross-sectional and a long-term perspective. The aim of the present study was to investigate levels of empowerment and associated variables in patients with RA and to examine longitudinal clinical data in patients with low versus high empowerment.

PATIENTS AND METHODS

Patients. The present study involved patients with RA from the BARFOT (Better Anti-Rheumatic Pharmacotherapy) cohort, who were recruited between 1992 and 2006 and included in the study at the time of diagnosis (N = 2837). All patients fulfilled the American College of Rheumatology criteria for the classification of RA (16) and had a disease duration of 12 months or less. The patients were treated with disease-modifying antirheumatic drugs in accordance with the recommended treatment strategy in Sweden, as described in earlier studies (17). The patients were assessed according to a structured protocol at inclusion and after 3, 6, 12, 24, 60, 96, and 180 months. In 2017, a postal survey was sent to 1542 still-living patients, with two postal reminders; the second reminder also included the questionnaire. The response rate was 69% (n = 1065). The 844 patients who responded to the SWE-RES-23 questionnaire made up the study cohort. Compared with respondents, nonrespondents of SWE-RES-23 (n = 221) had an older mean (SD) age (74 years [10]) years vs 65 [13] years; $P < 0.001$), higher mean (SD) EuroQol 5 Dimensions 3 levels (EQ-5D-3L) (0.75 [0.25] vs 0.70 [0.25]; $P = 0.027$), and a higher proportion were men (44% vs 36%; $P = 0.023$).

Patient-reported outcomes from the questionnaire. Questionnaire data from the postal survey (2017) were used (18) in the cross-sectional analysis. The survey included the SWE-RES-23 (14), a 23 item-questionnaire measuring empowerment. Each item was scored on a five-point Likert scale, ranging from strongly disagree (score of 1) to strongly agree (score of 5). The total SWE-RES-23 score is the mean score of the 23 items, in which a higher score indicates higher empowerment. The items are also summarized into five subscales (Factors 1-5): goal achievement and overcoming barriers to goal achievement (Items 4-11), self-knowledge (Items 18-23); managing stress (Items 12-15); assessing dissatisfaction and readiness to change (Items 1-3); and support for caring (Items 16 and 17). The score for each subscale is the mean value of the included items (14). A test of the reliability of SWE-RES-23 was performed within this study. A subsample of 30 individuals answered the questionnaire twice, 2 weeks apart. SWE-RES-23 showed good internal consistency (a Cronbach's α coefficient of 0.950) and high test-retest reliability (intraclass correlation coefficient of 0.950).

Disease characteristics assessed were self-reported tender joint count (TJC; 28 joints) and swollen joint count (SJC; 28 joints) (19) and medical treatment. Health-related quality of life was measured with the EQ-5D-3L (0-1 [worst to best]) (20) and patient global assessment (PatGA) (numeric rating scale [NRS] of 0-10 [best to worst]). Physical functioning was assessed with the Health Assessment Questionnaire (HAQ) (0-3 [best to worst]) (21), fatigue was assessed with NRS (0-10 [best to worst]) and pain intensity as assessed with NRS (0-10 [best to worst]).

Lifestyle questions adhered to the Swedish National Health Survey and included smoking, alcohol, diet, and physical activity (22). Smoking habits were categorized by the following: never-smoker, smoker, and previous smoker. Diets were divided into traditional mixed diet and nontraditional mixed diet (Mediterranean, low-glycemic, vegetarian, vegetarian with seafood, vegan, gluten-free, or other). Physical activity was assessed by questions about frequency and duration, reported as minutes/week spent on moderate physical activity and vigorous physical activity. Alcohol consumption was assessed with the Alcohol Use Disorders Identification Test Consumption (AUDIT C) questionnaire (23). The

questions are scored from 0 to 4 (best to worst), with a total score of 0 to 12 points. The limit for hazardous drinking, according to the Swedish National Institute of Public Health, is AUDIT C of more than 4 points for women and more than 5 points for men (www.fhi.se).

Clinical outcomes over 15 years. For the longitudinal analysis, data at inclusion and the follow-ups after 3 and 6 months, and 1, 2, 5, 8, and 15 years were used, including disease activity measures, both DAS28 and DAS28-3 (28 joints-disease activity score calculated without PatGA). DAS28-3 (24) include erythrocyte sedimentation rate (ESR) in accordance with

Table 1. Descriptions in the 2017 questionnaire, including all participants and comparisons between the lowest, moderate, and highest groups of SWE-RES-23

	All	Low, Mean (SD)	Moderate, Mean (SD)	High, Mean (SD)	ANOVA P Value	Tukey Post Hoc Analysis Groups Significantly Different
N	844	282	292	270		
Female sex, %	74	78	75	69	0.049	
Age, y	65 (13)	66 (13)	65 (13)	63 (12)	0.005	Lo vs Hi
Disease duration,[a] y	15.6 (3.9)	15.7 (4.1)	15.4 (3.7)	15.6 (3.8)	0.677	
Education, y	8 (6)	7 (6)	8 (6)	8 (6)	0.431	
Marital status, %						
Single	27	32	23	27	0.035	
Married/cohabiting	73	68	77	73		
Smoking habits, %						
Non-smoker	43	42	37	44		
Smoker	13	11	12	15	0.215	
Previous smoker	44	47	51	41		
TJC28 (0-28)	5 (6)	6 (8)	6 (6)	4 (5)	<0.001	Lo vs Hi; Mod vs Hi
SJC28 (0-28)	3 (5)	3 (5)	3 (5)	2 (4)	0.002	Lo vs Hi; Mod vs Hi
PatGA	3 (2)	4 (3)	3 (2)	2 (2)	<0.001	Lo vs Hi; Mod vs Hi
Pain	3 (2)	4 (3)	4 (2)	3 (2)	<0.001	Lo vs Hi; Mod vs Hi
Fatigue	4 (3)	5 (3)	4 (3)	3 (3)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
HAQ	0.62 (0.61)	0.81 (0.69)	0.62 (0.57)	0.42 (0.51)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
EQ-5D-3L	0.70 (0.25)	0.62 (0.29)	0.70 (0.22)	0.79 (0.19)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
Physical activity, %						
Moderate <150 min/wk	66	73	67	59	0.003b	
Moderate ≥150 min/wk	34	27	33	41		
Vigorous <60 min/wk	72	78	76	63	<0.001b	
Vigorous ≥60 min/wk	28	22	24	37		
Diet, %						
Traditional mixed diet	80	81	81	79	0.749b	
Other diets	20	19	19	21		
Drinking habits, %						
Nonhazardous	59	57	58	61	0.548b	
Hazardous	41	43	42	39		
SWE-RES-23 total	3.8 (0.7)	3.1 (0.3)	3.8 (0.2)	4.6 (0.3)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
SWE-RES-23 Factor 1	3.9 (0.7)	3.1 (0.5)	3.9 (0.3)	4.7 (0.4)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
SWE-RES-23 Factor 2	3.9 (0.8)	3.2 (0.6)	3.9 (0.4)	4.7 (0.4)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
SWE-RES-23 Factor 3	3.6 (0.3)	2.9 (0.6)	3.9 (0.5)	4.4 (0.6)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
SWE-RES-23 Factor 4	3.8 (0.8)	3.2 (0.6)	3.7 (0.6)	4.5 (0.7)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod
SWE-RES-23 Factor 5	3.8 (1.1)	3.0 (1.0)	3.8 (0.8)	4.5 (0.8)	<0.001	Lo vs Hi; Mod vs Hi; Lo vs Mod

Abbreviations: EQ-5D-3L, EuroQol 5 dimensions 3 levels; HAQ, Health Assessment Questionnaire; Hi, highest third; Lo, lowest third; Mod, moderate; PatGA, patient global assessment; SJC, swollen joint count; SWE-RES-23, Swedish Rheumatic Disease Empowerment Scale; TJC, tender joint count; vs, versus.
For the SWE-RES-23, Factor 1 = goal achievement, Factor 2 = self-knowledge, Factor 3 = managing stress, Factor 4 = assessing dissatisfaction and readiness to change, and Factor 5 = support for caring.
[a] From diagnosis to questionnaire.
[b] χ^2.

Westergren (25), (HAQ; 0-3, best to worst) (21), and Pain (visual analog scale, 0-100, best to worst).

Statistics. The test for normality showed a Shapiro-Wilk test of $P < 0.001$, indicating that the SWE-RES-23 was not normally distributed. Therefore, the data were trichotomized, and the patients with low empowerment (lowest third [Lo]; SWE-RES-23 < 3.49) were compared with those with moderate empowerment (Mod) (SWE-RES-23 3.49-4.04) and high empowerment (highest third [Hi]; SWE-RES-23 ≥ 4.05) both in cross-sectional analysis using data from the 2017 questionnaire and in longitudinal analysis with data from inclusion to 15-year follow-up. To test differences between groups, the χ^2 test was used for proportions; comparisons between groups were performed with ANOVA, including the Tukey post hoc analysis if the P value was less than 0.05. The longitudinal comparisons were performed by repeated-measures ANOVA. All tests for significance were two-tailed. The cutoffs were 150 minutes/week or more for fulfilling moderate physical activity and 60 minutes/week or more for vigorous physical activity. Cross-sectional associations to low empowerment (2017 questionnaire data) were performed by univariate logistic regression models and multivariate regression models controlling for age and sex comparing patients reporting low empowerment with all others. Variables associated with low SWE-RES in the univariate regression model with a significance level of $P < 0.25$ were introduced into the multivariate models. Statistical analyses were performed using SPSS Statistics 21 software (IBM Corp.).

RESULTS

In total, 844 patients (74% women), with a mean (SD) age of 65 (13) years, were included in the study (Table 1). The included patients had a mean (SD) disease duration from diagnosis to the questionnaire of 15.6 (3.9) years. The mean (SD) total SWE-RES-23 in all included patients was 3.8 (0.7) (Table 1). The mean value for the various SWE-RES-23 Factors 1 to 5 ranged from 3.9 to 3.6, with the lowest mean for Factor 3 (managing stress) (Table 1).

Comparison between the low and high empowerment groups. The patients were divided according to their reported value of total SWE-RES-23, and comparisons between those with low (n = 282), moderate (n = 292), and high (n = 270) empowerment were made. Those with low empowerment were older and a higher proportion were women compared with those reporting high empowerment (Table 1). Patients with low empowerment also had worse pain-related factors, such as higher TJC, worse PatGA, more pain, more fatigue, worse HAQ, and worse EQ-5D, compared with those reporting high empowerment. There were no differences in disease duration, SJC, or years of education (Table 1). The group with low empowerment were more often living alone (Table 1).

Regarding lifestyle habits, differences between the groups reporting low and high empowerment were found in physical activity. More than 150 minutes/week of physical activity was reported in 27% of patients in the low empowerment group versus 41% of patients in the high empowerment group. Vigorous physical activity of more than 60 minutes/week was reported in 22% of those with low empowerment compared with 37% of those with high empowerment (Table 1).

Associations with low empowerment. In the logistic analysis, the following factors were associated with reporting low empowerment: older age, being a woman, and living alone. Pain-related factors, such as higher TJC and worse outcomes in PatGA, pain, fatigue, HAQ, and EQ-5D, were also associated with low empowerment. There were also associations between lower physical activity and low empowerment. No associations were found regarding smoking, diet, or alcohol habits (Table 2).

Empowerment and clinical outcomes over 15 years. In analyzing longitudinal data from diagnosis to 15-year follow-up, there was a difference between the groups in disease activity (DAS28-3) over time ($P = 0.036$; Figure 1A). The longitudinal analysis over 15 years of the inflammatory parameter (ESR) showed no differences between the three groups ($P = 0.294$; Figure 1B).

Comparing pain over 15 years in the two groups, there was no difference in inclusion between the groups. All groups reported a decrease in pain from inclusion to 3-month follow-up, after which pain was reported by the group with low empowerment leveled out. The pain reported by the group with high empowerment continued to decrease until 2-year follow-up and then leveled out. There is a significant difference between the groups from 2 to 15 years, with worse pain reports found in patients categorized with low empowerment compared with those with high empowerment ($P < 0.001$; Figure 1C).

An assessment of physical functioning (HAQ) showed no differences between the groups at inclusion. The group with low empowerment leveled out after 3 months in HAQ scores and remained at the same level over the next 15 years. The group with high empowerment improved in physical functioning until 2-year follow-up and then leveled out and remained at the same level. There are significant differences between the groups over time (Lo vs Hi: $P < 0.001$; Mod vs Hi: $P = 0.005$).

DISCUSSION

Information concerning levels of empowerment and its association with disease impact is scarce. For this reason, we conducted both cross-sectional and longitudinal analyses on health factors associated with empowerment. We found that patients with low empowerment reported more pain and worse HAQ in both cross-sectional and longitudinal comparisons. These findings support the need for team-based rehabilitation interventions to enhance empowerment in patients with RA.

Table 2. Univariate and multivariate logistic regression, controlling for age and sex, showing associations with low empowerment (lowest third SWE-RES-23; n = 282) versus all other included respondents to SWE-RES-23 (n = 562)

	Univariate Logistic Regression				Multivariate Logistic Regression		
	N	OR	95% CI	P Value	OR	95% CI	P Value
Age	844	1.01	1.00-1.03	0.020	1.02	1.00-1.03	0.010
Sex							
Male	218	1					
Female	626	1.40	1.00-1.97	0.049	1.47	1.04-2.07	0.028
Education, y	835	0.98	0.96-1.01	0.221	0.98	0.96-1.01	0.182
Marital status							
Married/cohabitating	605	1					
Single	228	1.45	1.05-1.98	0.022	1.27	0.92-1.77	0.150
Smoking habits							
Non-smoker	341	1					
Smoker	105	0.47	0.52-1.34	0.839			
Previous smoker	387	0.97	0.71-1.32	0.968			
TJC28 (0-28)	844	1.04	1.01-1.06	<0.001	1.03	1.01-1.05	0.006
SJC28 (0-28)	844	1.03	1.00-1.06	0.060	1.02	0.99-1.05	0.154
PatGA (0-10)	844	1.19	1.12-1.27	<0.001	1.18	1.11-1.26	<0.001
Pain (0-10)	844	1.14	1.08-1,21	<0.001	1.13	1.07-1.20	<0.001
Fatigue (0-10)	844	1.14	1.09-1.21	<0.001	1.14	1.08-1.20	<0.001
HAQ	844	2.08	1.64-2.64	<0.001	1.97	1.54-2.53	<0.001
EQ-5D-3L	844	0.16	0.09-0.28	<0.001	0.17	0.09-0.32	<0.001
Moderate PA							
≥150 min/wk	280	1					
<150 min/wk	553	1.60	1.16-2.19	0.004	1.53	1.11-2.10	0.010
Vigorous PA							
≥60 min/wk	249	1					
<60 min/wk	584	1.50	1.07-2.10	0.017	1.38	0.98-1.94	0.069
Diet							
Traditional mixed	670	1					
Nontraditional mixed	164	0.97	0.68-1.40	0.873			
Drinking habits							
Nonhazardous	439	1					
Hazardous	310	1.12	0.82-1.52	0.483			

Abbreviations: CI, confidence interval; EQ-5D-3L, EuroQol 5 dimensions 3 levels; HAQ, Health Assessment Questionnaire; OR, odds ratio; PA, physical activity; PatGA, patient global assessment; SJC, swollen joint count; SWE-RES-23, Swedish Rheumatic Disease Empowerment Scale; TJC, tender joint count.

Living with a chronic disease such as RA places high demands on the individual, who must be able to manage symptoms, consequences of the disease, and lifestyle changes, together with both pharmacological and nonpharmacological treatments, to achieve good treatment results. Thus, self-management requires patient empowerment in terms of both internal and external strengths and belief in one's own ability (26,27). Previous research in patients with RA has primarily focused on evaluating how interventions (28) or person-centered care and nurse-led clinics have impacted patients' empowerment (27,29–31). In those studies, empowerment was usually described by patients in interviews (29–31) and rarely assessed by PROMs (28).

The results of the present study show that the mean level of the reported empowerment in patients with RA was comparable with earlier presented data for other chronic diseases (eg, diabetes, which also requires high levels of self-management) (32–34). Patient empowerment is particularly relevant for patients with chronic disease (eg, RA), given that patients are expected to self-manage the majority of their care (1,26,27,35). This is of importance because empowerment emphasizes the patient's

own internal resources, which can be negatively affected by RA-related symptoms and by external factors, such as a lack of social support (36). In person-centered care, the role of health care professionals is to facilitate empowerment through engaging patients, creating partnerships, and sharing decision-making. Empowerment is based on meeting each patient's needs, helping patients to think critically, and encouraging them to enhance their inherent resources and capacity to master their life situations. Therefore, patient empowerment–based care and education aim to enhance autonomy and enable patients to identify needs, make informed decisions, solve problems, and master their life situations (3). Commonly reported needs in patients with RA include how to manage pain and impaired physical function that affects their life situation (1,26). In the present study, patients with low empowerment were slightly older, more often women, and reported worse pain-related factors, physical function, and health-related quality of life. All of these variables were also associated with low levels of empowerment in the regression analysis. Other studies also report associations between low self-efficacy, worse pain, and physical function
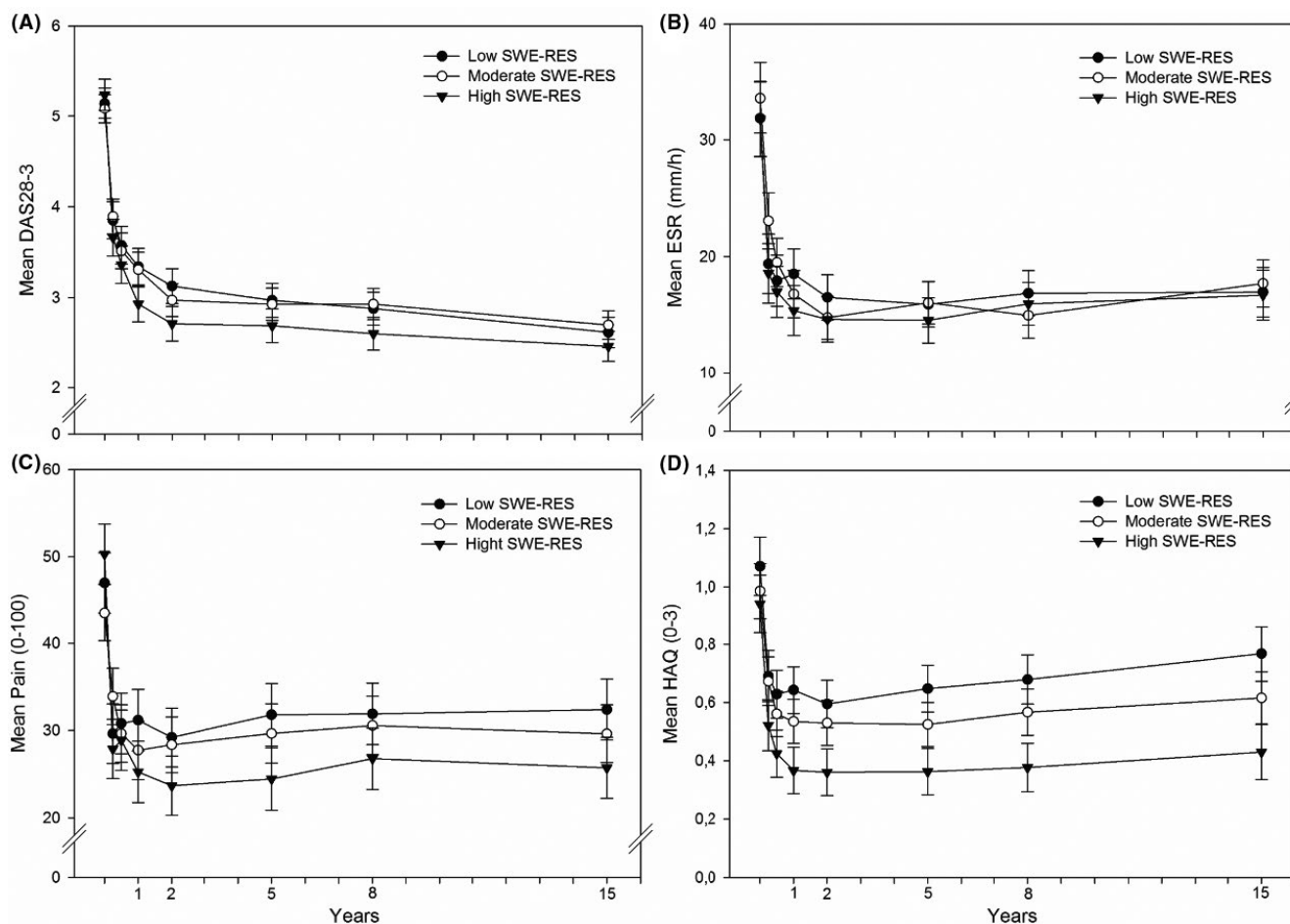
Figure 1. **A**-**D**, The 28-joint Disease Activity Score calculated without the patient global assessment (DAS28-3) (**A**), erythrocyte sedimentation rate (ESR) (**B**), pain (**C**), and Health Assessment Questionnaire (HAQ) (**D**) over 15 years in patients with low (n = 282), moderate (n = 292) and high (n = 270) Swedish Rheumatic Disease Empowerment Scale (SWE-RES-23). The error bars show 95% confidence intervals.

(37,38). Because self-efficacy is considered to contribute to empowerment (4,8), it could explain the associations between empowerment, pain, and physical function. However, because of the cross-sectional design of the present study, cause and effect cannot be determined.

Fewer patients with low levels of empowerment had moderate and vigorous activity. Low levels of empowerment were also associated with lower physical activity levels. Other studies describe similar results (39–41). Previous research shows self-efficacy to be an important determinant of exercise adherence and compliance (42).

To improve self-efficacy and thereby empowerment, it is therefore important to provide appropriate interventions from a multidisciplinary perspective (10,43–45) for patients with RA, with a view to having a positive impact on pain, health-related quality of life, and physical function.

In comparing longitudinal outcomes between the groups, the low empowerment group had worse pain and physical function at all follow-ups over 15 years. Various studies have reported associations between self-efficacy, pain, and physical function in which those with low self-efficacy reported more pain and worse physical function (46,47).

We also studied the associations between empowerment, disease activity, and inflammatory markers, with the hypothesis that these factors did not have a statistical relationship. There were hardly any differences in disease activity assessed by DAS28-3 and inflammation between the groups. However, when assessing disease activity by DAS28, there were differences at follow-ups between 1 year and 15 years. One study found associations between DAS28 and self-efficacy, which was assessed with the Arthritis Self-Efficacy Scale (ASES) (48). The associations could be mediated by pain. In the present study, we used DAS28-3 to minimize the impact of pain on the disease activity score, given the high associations between pain and PatGA (49,50). The differences in links between disease activity and self-efficacy could also be because of the different questionnaires that we used (ASES and SWE-RES-23).

The SWE-RES-23 is a new instrument; there are very few reports regarding data from clinical settings, and information concerning clinical cutoffs has not been reported, which is why we used a statistical cutoff. We can not calculate a clinical cutoff

because we do not have data on disease activity (DAS28) and inflammation (ESR or c-reactive protein) at the time of the questionnaire, nor do we have empowerment information at baseline, which is a limitation.

The present study is a multicenter study, and the authors do not have insight into whether specific interventions were implemented that aimed to strengthen patients' empowerment or self-efficacy; this is a limitation of the study. We also lack longitudinal data on empowerment; levels of empowerment might change over time, and this could influence the interpretation of the results. It is not possible to establish a cause and effect relationship, and the results should be interpreted with caution. Despite this, the study cohort comprised well-monitored patients with RA from six specialist clinics in Sweden, with a high response rate to the survey, and these factors strengthen the results.

In conclusion, assessing empowerment in patients with RA is important, above all, to be able to provide support and enhance patients' own inner resources. Measuring the level of empowerment can provide important information about how patients with RA cope with symptoms and physical limitations. Patients with low levels of empowerment are less physically active and have more pain and poorer physical function. The present study shows that it may be important to identify patients with low levels of empowerment, as they may need extra support in managing symptoms and may require rehabilitation interventions that are targeted to promote patient empowerment.

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AUTHOR CONTRIBUTIONS

All authors were involved in drafting the article or revising it critically for important intellectual content, and all authors approved the final version to be published. Dr. Andersson had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
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Acquisition of data. Andersson.
Analysis and interpretation of data. Larsson, Bremander, Andersson.

REFERENCES

1. Parenti G, Tomaino SC, Cipolletta S. The experience of living with rheumatoid arthritis: A qualitative metasynthesis. J Clin Nurs 2020;29:3922–36.

2. Stoffer MA, Smolen JS, Woolf A, Ambrozic A, Bosworth A, Carmona L, et al. Development of patient-centred standards of care for rheumatoid arthritis in Europe: the eumusc.net project. Ann Rheum Dis 2014;73:902–5.

3. Funnell MM. Patient empowerment: what does it really mean? Patient Educ Couns 2016;99:1921–2.

4. Tengland PA. Empowerment: a conceptual discussion. Health Care Anal 2008;16:77–96.

5. Nutbeam D. Health promotion glossary. Health Promot 1998;13: 349–64.

6. Malm K, Bergman S, Andersson ML, Bremander A, Larsson I. Quality of life in patients with established rheumatoid arthritis: a phenomenographic study. SAGE Open Med 2017;5:2050312117713647.

7. Landgren E, Bremander A, Lindqvist E, Nylander M, Van der Elst K, Larsson I. "Mastering a New life situation" - patients' preferences of treatment outcomes in early rheumatoid arthritis - a longitudinal qualitative study. Patient Prefer Adherence 2020;14:1421–33.

8. Bravo P, Edwards A, Barr PJ, Scholl I, Elwyn G, McAllister M, et al. Conceptualising patient empowerment: a mixed methods study. BMC Health Serv Res 2015;15:252.

9. Rawlett KE. Journey from self-efficacy to empowerment. Health Care 2014;2:1–9.

10. Lorig K, Laurent DD, Plant K, Krishnan E, Ritter PL. The components of action planning and their associations with behavior and health outcomes. Chronic Illn 2014;10:50–9.

11. Marks R. Self-efficacy and arthritis disability: an updated synthesis of the evidence base and its relevance to optimal patient care. Health Psychol Open 2014;1:2055102914564582.

12. McAllister M, Dunn G, Payne K, Davies L, Todd C. Patient empowerment: the need to consider it as a measurable patient-reported outcome for chronic conditions. BMC Health Serv Res 2012;12:157.

13. Pekonen A, Eloranta S, Stolt M, Virolainen P, Leino-Kilpi H. Measuring patient empowerment - a systematic review. Patient Educ Couns 2020;103:777–87.

14. Arvidsson S, Bergman S, Arvidsson B, Fridlund B, Tingstrom P. Psychometric properties of the Swedish Rheumatic Disease Empowerment Scale, SWE-RES-23. Musculoskeletal Care 2012;10:101–9.

15. Anderson RM, Funnell MM, Fitzgerald JT, Marrero DG. The Diabetes Empowerment Scale: a measure of psychosocial self-efficacy. Diabetes Care 2000;23:739–43.

16. Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS, et al. The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. Arthritis Rheum 1988;31:315–24.

17. Hafstrom I, Ajeganova S, Andersson ML, Bala SV, Bergman S, Bremander A, et al. A Swedish register-based, long-term inception cohort study of patients with rheumatoid arthritis - results of clinical relevance. Open Access Rheumatol 2019;11:207–17.

18. Malm K, Bergman S, Bremander A, Larsson I, Andersson ML, BARFOT study group. Discussions of lifestyle habits as an integral part of care management: a cross-sectional cohort study in patients with established rheumatoid arthritis in Sweden. Rheumatol Adv Pract 2019;3:rkz039.

19. Prevoo ML, van 't Hof MA, Kuper HH, van Leeuwen MA, van de Putte LB, van Riel PL. Modified disease activity scores that include twenty-eight-joint counts: development and validation in a prospective longitudinal study of patients with rheumatoid arthritis. Arthritis Rheum 1995;38:44–8.

20. Burstrom K, Sun S, Gerdtham UG, Henriksson M, Johannesson M, Levin LA, et al. Swedish experience-based value sets for EQ-5D health states. Quality Life Res 2014;23:431–42.

21. Ekdahl C, Eberhardt K, Andersson SI, Svensson B. Assessing disability in patients with rheumatoid arthritis: use of a Swedish version of the Stanford Health Assessment Questionnaire. Scand J Rheumatol 1988;17:263–71.

22. National health survey. Health on equal terms. 2016. URL: https://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/.

23. Selin KH. Alcohol Use Disorder Identification Test (AUDIT): what does it screen? Performance of the AUDIT against four different criteria in a Swedish population sample. Substance Use Misuse 2006;41:1881–99.

24. Balsa A, Carmona L, Gonzalez-Alvaro I, Belmonte MA, Tena X, Sanmarti R, et al. Value of Disease Activity Score 28 (DAS28) and

DAS28-3 compared to American College of Rheumatology-defined remission in rheumatoid arthritis. J Rheumatol 2004;31: 40–6.

25. Westergren A. Studies of the suspension stability of the blood in pulmonary tuberculosis 1. Acta Medica Scandinavica 1921;54:247–82.

26. Donnelly S, Manning M, Mannan H, Wilson AG, Kroll T. Renegotiating dimensions of the self: A systematic review and qualitative evidence synthesis of the lived experience of self-managing rheumatoid arthritis. Health Expect 2020;23:1388–411.

27. Voshaar MJ, Nota I, van de Laar MA, van den Bemt BJ. Patient-centred care in established rheumatoid arthritis. Best Pract Res Clin Rheumatol 2015;29:643–63.

28. Arvidsson S, Bergman S, Arvidsson B, Fridlund B, Tingstrom P. Effects of a self-care promoting problem-based learning programme in people with rheumatic diseases: a randomized controlled study. J Adv Nurs 2013;69:1500–14.

29. Arvidsson SB, Petersson A, Nilsson I, Andersson B, Arvidsson BI, Petersson IF, et al. A nurse-led rheumatology clinic's impact on empowering patients with rheumatoid arthritis: a qualitative study. Nurs Health Sci 2006;8:133–9.

30. Larsson I, Bergman S, Fridlund B, Arvidsson B. Patients' experiences of a nurse-led rheumatology clinic in Sweden: a qualitative study. Nurs Health Sci 2012;14:501–7.

31. Sweeney AT, McCabe C, Flurey CA, Robson JC, Berry A, Richards P, et al. The patient perspective of nurse-led care in early rheumatoid arthritis: a systematic review of qualitative studies with thematic analysis. J Clin Nurs 2020;30:145–60.

32. Fitzgerald M, O'Tuathaigh C, Moran J. Investigation of the relationship between patient empowerment and glycaemic control in patients with type 2 diabetes: a cross-sectional analysis. BMJ Open 2015;5:e008422.

33. Isaksson U, Hajdarevic S, Abramsson M, Stenvall J, Hornsten A. Diabetes empowerment and needs for self-management support among people with type 2 diabetes in a rural inland community in northern Sweden. Scand J Caring Sci 2015;29:521–7.

34. De Sousa WJ, de Torres HC, Dos Santos JC, Nunes LB, Reis IA, Martins MA. Assessment of the complexity of drug therapy and psychosocial and behavioral aspects in people living with type 2 diabetes mellitus. Int J Clin Pharm 2021;43:743–7.

35. Mollard E, Michaud K. Self-management of rheumatoid arthritis: mobile applications. Curr Rheumatol Rep 2020;23:2.

36. Leino-Kilpi H, Maenpaa I, Katajisto J. Nursing study of the significance of rheumatoid arthritis as perceived by patients using the concept of empowerment. Journal of Orthopaedic Nursing 1999;3:138–45.

37. Martinez-Calderon J, Zamora-Campos C, Navarro-Ledesma S, Luque-Suarez A. The role of self-efficacy on the prognosis of chronic musculoskeletal pain: a systematic review. J Pain 2018;19:10–34.

38. Jackson T, Xu T, Jia X. Arthritis self-efficacy beliefs and functioning among osteoarthritis and rheumatoid arthritis patients: a meta-analytic review. Rheumatology 2020;59:948–58.

39. Freid LM, Ogdie A, Baker JF. Physical activity patterns in people with inflammatory arthritis indicate they have not received recommendation-based guidance from health care providers. ACR Open Rheumatol 2020;2:582–7.

40. Knittle KP, de Gucht V, Hurkmans EJ, Vlieland TP, Peeters AJ, Ronday HK, et al. Effect of self-efficacy and physical activity goal achievement on arthritis pain and quality of life in patients with rheumatoid arthritis. Arthritis Care Res 2011;63:1613–9.

41. Suh C-H, Jung J-Y, Oh H, Boo S. Evaluation of factors affecting the levels of physical activity in patients with rheumatoid arthritis: a cross-sectional study. Clinical Rheumatol 2019;38:2483–91.

42. McAuley E, Blissmer B. Self-efficacy determinants and consequences of physical activity. Exerc Sport Sci Rev 2000;28:85–8.

43. Shao J-H, Yu K-H, Chen S-H. Effectiveness of a self-management program for joint protection and physical activity in patients with rheumatoid arthritis: a randomized controlled trial. Int J Nurs Stud 2021;116:103752.

44. Goeppinger J, Lorig KR, Ritter PL, Mutatkar S, Villa F, Gizlice Z. Mail-delivered arthritis self-management tool kit: a randomized trial and longitudinal followup. Arthritis Rheum 2009;61:867–75.

45. Lorig K, Ritter PL, Plant K, Laurent DD, Kelly P, Rowe S. The South Australia health chronic disease self-management Internet trial. Health Edu Behav 2013;40:67–77.

46. Shaikh HA, Khan MS, Hussain F, Karishma K. Relationship of self-efficacy and disability in patients with rheumatoid arthritis. Journal of the Dow University of Health Sciences 2019;13:143–7.

47. Vergara F, Rosa J, Orozco C, Bertiller E, Gallardo M, Bravo M, et al. Evaluation of learned helplessness, self-efficacy and disease activity, functional capacity and pain in Argentinian patients with rheumatoid arthritis. Scand J Rheumatol 2017;46:17–21.

48. Primdahl J, Wagner L, Holst R, Horslev-Petersen K, Group AS. The impact on self-efficacy of different types of follow-up care and disease status in patients with rheumatoid arthritis–a randomized trial. Patient Educ Couns 2012;88:121–8.

49. Lee YC, Cui J, Lu B, Frits ML, Iannaccone CK, Shadick NA, et al. Pain persists in DAS28 rheumatoid arthritis remission but not in ACR/EULAR remission: a longitudinal observational study. Arthritis Res Ther 2011;13:R83.

50. Strand V, Kaine J, Alten R, Wallenstein G, Diehl A, Shi H, et al. Associations between Patient Global Assessment scores and pain, physical function, and fatigue in rheumatoid arthritis: a post hoc analysis of data from phase 3 trials of tofacitinib. Arthritis Res Ther 2020;22:243.