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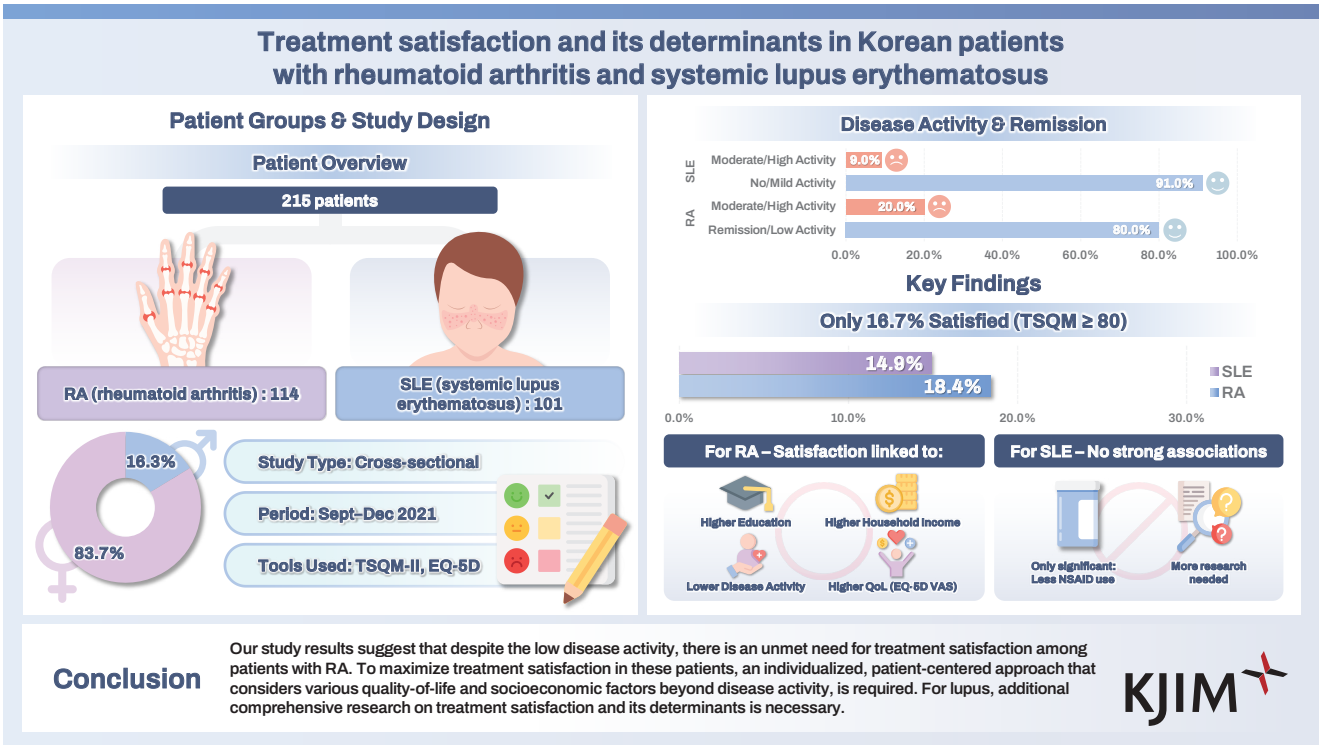
Treatment satisfaction and its determinants in Korean patients with rheumatoid arthritis and systemic lupus erythematosus

Hyo Jin Choi[1], Mi Ryoung Seo[1], Eunji Kim[2,3], and Han Joo Baek[4]

[1]Department of Internal Medicine, Division of Rheumatology, Gachon University Gil Medical Center, Incheon; [2]Department of Preventive medicine, Gachon University College of Medicine, Incheon; [3]Artificial Intelligence and Big-Data Convergence Center, Gil Medical Center, Gachon University College of Medicine, Incheon; [4]Department of Internal Medicine, Pyeongchang Health Center and County Hospital, Pyeongchang, Korea



Background/Aims: This study aimed to evaluate the treatment satisfaction and its determinants in patients with rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE).

Methods: This cross-sectional study was conducted between September 2021 and December 2021. Data on demographics, clinical features, and responses to the Treatment Satisfaction Questionnaire for Medication (TSQM) and Euroquality of life 5 dimensions (EQ-5D) were collected.

Results: In total, 215 patients were included, comprising 114 with RA and 101 with SLE. The cohort was predominantly female (82.3%; 73.7% in patients with RA and 92.1% in patients with SLE). Only 16.7% reported being 'satisfied' with their

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treatment (global satisfaction score of TSQM ≥ 80), with patients with RA (18.4%) and those with SLE (14.9%). Patients with RA showed significant differences in global satisfaction and factors such as educational attainment, household income, global assessment, disease activity, and EQ-5D visual analogue scale scores. In contrast, the incidence of SLE showed no significant differences except non-steroidal anti-inflammatory drugs users. In multivariable analyses, household income was independently associated with global satisfaction in patients with RA, but not in those with SLE. Sensitivity analysis, excluding patients with moderate to high disease activity, showed similar results.

Conclusions: Our study results suggest that despite the low disease activity, there is an unmet need for treatment satisfaction among patients with RA. To maximize treatment satisfaction in these patients, an individualized, patient-centered approach that considers various quality-of-life and socioeconomic factors beyond disease activity, is required. For lupus, additional comprehensive research on treatment satisfaction and its determinants is necessary.

Keywords: Treatment Satisfaction Questionnaire for Medication; EuroQol 5-dimension; Rheumatoid arthritis; Systemic lupus erythematosus

INTRODUCTION

Treatment satisfaction, reported as a patient-reported outcome, is primarily defined as a patient's evaluation of outcomes related to the medication process and its effects [1]. As a key indicator of the quality of health services [2], treatment satisfaction helps to assess the effectiveness of treatment, inform decisions in clinical practice, and predict treatment outcomes. They play a critical role in the management of chronic diseases. High treatment satisfaction can enhance medication adherence and persistence, improve the quality of life, strengthen relationships with healthcare providers, and boost self-management capabilities [3-6].

Systemic rheumatic diseases (SRDs) such as rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) are major causes of disability, severely impacting an individual's quality of life and imposing significant economic burdens on society, thus affecting public health in various ways [7]. In recent decades, there have been significant advancements in SRD treatment owing to improvements in therapeutic approaches and the emergence of biological agents. However, the complex nature of the disease, need for ongoing medication, and intricacies in treatment regimens make clinical management challenging for patients with these conditions.

Non-adherence and non-compliance are common issues in chronic diseases such as RA and SLE and are associated with poorer disease outcomes and higher levels of healthcare resource utilization [8-13]. Therefore, adherence is crucial for the effective management of SRDs. Current treatment recommendations include shared decision-making between patients and physicians as a comprehensive principle. Within this framework, satisfaction with the decision-making process has a decisive effect on the treatment process, contributing to patient adherence and persistence [14].

Although treatment satisfaction influences medication adherence and continuity of care, there has been limited focus and research regarding satisfaction with treatments for specific SRDs. In this study, we aimed to investigate treatment satisfaction in patients with RA and SLE, and the factors that potentially affect it.

METHODS

This cross-sectional study was conducted from September 2021 to December 2021 using the Treatment Satisfaction Questionnaire for Medication (TSQM) version II and the Euroquality of life 5 dimensions (EQ-5D) version 3 L. The study participants were patients with RA or SLE who attended a Rheumatology Clinic at Gachon University Gil Medical Center, Incheon. RA was diagnosed based on the 2010 American College of Rheumatology classification criteria [15], whereas SLE was diagnosed based on the 1998, 2002, or 2019 criteria [16]. Informed consent was obtained from all patients at the time of enrollment. Demographic data, clinical and laboratory features, and responses to the TSQM and EQ-5D were collected upon enrollment.

The TSQM version II consists of 11 questions covering four specific domains: effectiveness, side effects, convenience, and global satisfaction. The scores are calculated by sum-

ming the items in each domain and transforming the composite score into a value ranging from 0 to 100, with a score of 100 indicating the highest satisfaction [17]. The EQ-5D version 3 L includes five questions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) with three levels of response (level 1 indicates no problems and level 3 indicates extreme problems) and an EQ-5D visual analogue scale (VAS) ranging from 0 to 100, where 100 represents the best well-being state.

All patients completed an additional questionnaire that gathered information on disease onset, educational attainment, health insurance status, monthly household income, smoking or alcohol intake, marital status, occupation, family history of rheumatic diseases, and demographic data such

Table 1. Demographics, socioeconomics and clinical data of patients

	Total (n = 215)	RA (n = 114)	SLE (n = 101)
Sex (male:female)	38:177 (17.7:82.3)	30:84 (26.3:73.7)	8:93 (7.9:92.1)
Age at the survey (yr)	52.8 ± 12.5	57.8 ± 10.0	47.2 ± 12.7
Body mass index (kg/m^2)	23.4 ± 4.3	22.8 ± 4.0	24.2 ± 4.5
Disease duration (yr)	9.1 ± 8.0	6.8 ± 7.3	11.8 ± 7.9
Duration of education (yr)	11.5 ± 3.1	11.0 ± 3.2	12.0 ± 3.0
National health insurance	188 (87.4)	107 (93.9)	81 (80.2)
Medical care 1	23 (10.7)	4 (3.5)	19 (18.8)
Medical care 2	4 (1.9)	3 (2.6)	1 (1.0)
Household income per month			
< 300 (*10,000 won)	122 (57.0)	58 (51.3)	64 (63.4)
300–500 (*10,000 won)	53 (24.8)	27 (23.9)	26 (25.7)
≥ 500 (*10,000 won)	39 (18.2)	28 (24.8)	11 (10.9)
ESR (mm/h)	9.9 ± 9.5	9.3 ± 9.3	10.7 ± 9.7
CRP (mg/dL)	0.3 ± 0.7	0.4 ± 0.8	0.3 ± 0.5
Patient's GA	3.0 ± 2.3	3.0 ± 2.3	3.0 ± 2.3
Physician's GA	2.1 ± 1.8	1.7 ± 1.9	2.6 ± 1.7
Swollen joint count		0.7 ± 1.9	NA
Tender joint count		0.7 ± 2.1	NA
DAS28-ESR		2.0 ± 1.1	NA
Remission/low		91 (79.8)/10 (8.8)	
Moderate/high		10 (8.8)/3 (2.6)	
DAS28-CRP		1.8 ± 0.9	NA
Remission/low		98 (86.0)/9 (7.9)	
Moderate/high		6 (5.3)/1 (0.9)	
SLEDAI		NA	1.8 ± 2.4
No/mild activity			51 (50.5)/41 (40.6)
Moderate/high activity			8 (7.9)/1 (1.0)
EQ-5D VAS	68.6 ± 19.3	70.7 ± 18.8	66.1 ± 19.6
NSAIDs users	115 (53.5)	83 (72.8)	32 (31.7)
Steroids users	78 (36.3)	43 (37.7)	35 (34.7)

Values are presented as number (%) or mean ± standard deviation.
RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; ESR, erythematous sedimentation rate; CRP, C-reactive protein; GA, global assessment; DAS28, Disease Activity Score 28; SLEDAI, Systemic Lupus Erythematous Disease Activity Index; EQ-5D, Euro-quality of life 5 dimensions; VAS, visual analog score; NSAIDs, non-steroidal anti-inflammatory drugs; NA, not applicable.

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as height and weight. Both patients and physicians provided global assessments. Laboratory data included complete blood count, blood chemistry, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP). The physician conducted joint examinations and assessed the Disease Activity Score 28 (DAS28) for RA and the Systemic Lupus Erythematous Disease Activity Index (SLEDAI) for SLE.

Statistical analysis

Categorical data were analyzed using the Mann–Whitney U-test and Pearson's chi-squared test. Univariable and multivariable logistic regression analyses were also performed. Statistical analyses were performed using the SPSS Ver. 20 (SPSS Inc., Chicago, IL, USA). Null hypotheses of no difference were rejected if the *p* values were less than 0.05.

Ethics statements

This study was approved by the Institutional Review Board of Gachon University Gil Medical Center (approval number: GBIRB 2021-301).

RESULTS

In total, 215 patients were enrolled in this study, including 114 with RA and 101 with SLE. Of these, 82.3% were female (73.7% in patients with RA and 92.1% in patients with SLE). The mean age of the participants was 52.8 years (57.8 years and 47.2 years). The mean duration of disease was 9.1 years (6.8 years and 11.8 years). The mean duration of education was 11.5 years (11.0 years and 12.0 years) (Table 1). Regarding health insurance, household income, lifestyle factors, marital status, occupation, and comorbidities are summarized in Table 1 and Supplementary Table 1.

The mean score of physicians' global assessment was 2.1 (1.7 in patients with RA and 2.6 in patients with SLE), and the mean scores of DAS28-ESR and DAS28-CRP were 2.0 and 1.8, respectively. Most patients were in remission during the survey, with 79.8% achieving remission according to DAS28-ESR and 86.0% achieving remission according to DAS28-CRP. The mean SLEDAI score was 1.8, and the mean EQ-5D VAS score was 68.6. Most patients were in no or mild activity during survey (91.1% according to SLEDAI) (Table 1). Non-steroidal anti-inflammatory drugs (NSAIDs), methotrexate, and sulfasalazine were commonly used in patients with RA. In contrast, hydroxychloroquine, azathioprine, and mycophenolate mofetil were commonly used in patients with SLE. Biologics or targeted synthetic disease-modifying antirheumatic drugs (b/ts DMARDs) were used only in patients with RA (Supplementary Table 1)

The mean TSQM summary scores were as follows: (1) treatment effectiveness, 64.5 (66.5 in patients with RA and 62.3 in patients with SLE); side effects, 97.6 (97.9 and 97.3); convenience of administration, 67.7 (66.9 and 68.7); global satisfaction, 65.2 (66.2 and 63.9) (Table 2).

A global satisfaction score of 80 or higher was defined as "satisfactory." Among the patients with RA, the "satisfied" group (n = 21, 18.4%) exhibited characteristics such as a greater educational attainment, a higher income, a lower global assessment of patients/physicians, a lower disease activity, and a higher EQ-5D VAS (all, $p < 0.05$) compared to the group with scores less than 80 (Table 3). However, among the patients with SLE, "satisfied" group (n = 15, 14.9%) showed only a fewer NSAIDs users compared to the group with scores less than 80 ($p = 0.033$) (Table 4). With regards to the EQ-5D questionnaire, the "satisfied" group in the patients with RA showed more "no problem" responses for mobility ($p = 0.018$), pain/discomfort ($p = 0.025$), and anxiety/depression ($p = 0.010$) compared to the group with scores less than 80 (data not shown). However, no signifi-

Table 2. Summary scores of the TSQMs in the patients with rheumatoid arthritis and systemic lupus erythematosus

TSQM scores	Total (n = 215)	RA (n = 114)	SLE (n = 101)
Treatment effectiveness	64.5 ± 13.6	66.5 ± 13.8	62.3 ± 13.0
Side effectiveness	97.6 ± 13.6	97.9 ± 5.1	97.3 ± 6.8
Convenience of administration	67.7 ± 11.0	66.9 ± 11.2	68.7 ± 10.8
Global satisfaction	65.2 ± 12.7	66.2 ± 12.3	63.9 ± 13.1

Values are presented as mean ± standard deviation.
TSQM score range: 0–100; a score of 100 indicates most satisfied.
TSQM, Treatment Satisfaction Questionnaire for Medication; RA, rheumatoid arthritis; SLE, systemic lupus erythematosus.

Table 3. Patient characteristics according to global satisfaction score in rheumatoid arthritis

Global satisfaction scores (n = 114)	< 80 (n = 93, 81.6%)	≥ 80 (n = 21, 18.4%)	*p* value
Sex (male:female)	22:71 (23.7:76.3)	8:13 (38.1:61.9)	0.140
Age at the survey (yr)	58.4 ± 10.5	55.2 ± 7.0	0.079
Body mass index (kg/m^2)	22.6 ± 4.0	23.7 ± 3.8	0.436
Disease duration (yr)	7.0 ± 7.5	5.7 ± 6.4	0.374
Duration of education (yr)	10.6 ± 3.0	13.1 ± 3.2	0.002
National health insurance	88 (94.6)	19 (90.5)	0.061
Medical care 1	4 (4.3)	0 (0.0)	
Medical care 2	1 (1.1)	2 (9.5)	
Household income/mo			0.004
< 300 (*10,000 won)	54 (58.7)	4 (19.0)	
300–500 (*10,000 won)	18 (19.6)	9 (42.9)	
≥ 500 (*10,000 won)	20 (21.7)	8 (38.1)	
ESR (mm/h)	9.2 ± 9.3	9.6 ± 9.7	0.770
CRP (mg/dL)	0.5 ± 0.9	0.2 ± 0.2	0.361
Patients' GA	3.5 ± 2.3	1.1 ± 1.2	< 0.001
Physician's GA	1.9 ± 1.9	0.9 ± 1.4	0.014
Swollen joint count	0.8 ± 2.1	0.2 ± 0.7	0.082
Tender joint count	0.8 ± 2.2	0.1 ± 0.7	0.029
DAS28-ESR	2.1 ± 1.1	1.5 ± 0.9	0.015
Remission/low	72 (77.4)/9 (9.7)	19 (90.5)/1 (4.8)	0.575
Moderate/high	9 (9.7)/3 (3.2)	1 (4.8)/0 (0.0)	
DAS28-CRP	1.9 ± 0.9	1.3 ± 0.5	< 0.001
Remission/low	78 (83.9)/9 (9.7)	20 (95.2)/0 (0.0)	0.470
Moderate/high	5 (5.4)/1 (1.1)	1 (4.8)/0 (0.0)	
EQ-5D VAS	67.4 ± 18.2	85.3±13.8	< 0.001
NSAIDs users	65 (69.9)	18 (85.7)	0.180
Steroids users	36 (38.7)	7 (33.3)	0.804

Values are presented as number (%) or mean ± standard deviation.
Mann–Whitney U and Pearson's chi-square tests were used.
ESR, erythematous sedimentation rate; CRP, C-reactive protein; GA, global assessment; DAS28, Disease Activity Score 28; EQ-5D, Euro-quality of life 5 dimensions; VAS, visual analogue scale; NSAIDs, non-steroidal anti-inflammatory drugs.

cant differences were observed in patients with SLE.

In the patients with RA, the factors associated with global satisfaction were educational attainment of more than 12 years (unadjusted odds ratio [OR] 6.49, 95% confidence interval [CI] 1.52–27.67) and household monthly income (unadjusted OR 6.74, 95% CI 1.85–24.59, and 5.39, 1.46–19.91) in each group between 300 and 500, or more than 500 (*10,000 won). By multivariable analysis, household income was independently associated with global satisfaction (adjusted OR 12.03, 95% CI 1.91–75.82, and 10.29, 1.65–64.22) respectively (Table 5). Sensitivity analysis among patients with remission or mild disease activity of RA showed similar results (Supplementary Table 2).

Multivariable analysis in the number of patients with SLE showed no significant independent factors associated with global satisfaction (Table 6). However, sensitivity analysis among patients with no or mild activity of SLE revealed that current use of NSAIDs was independently associated with

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Table 4. Patient characteristics according to global satisfaction score in systemic lupus erythematous

Global satisfaction scores (n = 101)	< 80 (n = 86, 85.1%)	≥ 80 (n = 15, 14.9%)	*p* value
Sex (male:female)	7:79 (8.1:91.9)	1:14 (6.7:93.3)	0.661
Age at the survey (yr)	47.5 ± 12.7	45.1 ± 13.0	0.529
Body mass index (kg/m^2)	24.0 ± 4.2	25.1 ± 5.8	0.660
Disease duration (yr)	12.2 ± 8.1	9.3 ± 6.3	0.204
Duration of education (yr)	11.7 ± 3.0	13.3 ± 2.6	0.102
National health insurance	70 (81.4)	11 (73.3)	0.652
Medical care 1	15 (17.4)	4 (26.7)	
Medical care 2	1 (1.2)	0 (0.0)	
Household income/mo			0.680
< 300 (*10,000 won)	56 (65.1)	8 (53.3)	
300–500 (*10,000 won)	21 (24.4)	5 (33.3)	
≥ 500 (*10,000 won)	9 (10.5)	2 (13.3)	
ESR (mm/h)	11.0 ± 10.0	8.7 ± 7.9	0.363
CRP (mg/dL)	0.3 ± 0.5	0.2 ± 0.3	0.843
Patients' GA	3.1 ± 2.2	2.5 ± 2.9	0.201
Physician's GA	2.6 ± 1.7	2.7 ± 1.8	0.930
SLEDAI	1.9 ± 2.2	1.3 ± 3.1	0.068
No/mild activity	39 (45.3)/39 (45.3)	12 (80.0)/2 (13.3)	0.004
Moderate/high activity	8 (9.3)/0 (0.0)	0 (0.0)/1 (6.7)	
EQ-5D VAS	66.1 ± 19.0	72.3 ± 17.1	0.284
NSAIDs users	31 (36.0)	1 (6.7)	0.033
Steroids users	31 (36.0)	4 (26.7)	0.568

Values are presented as number (%) or mean ± standard deviation.
Mann–Whitney U and Pearson's chi-square tests were used.
ESR, erythematous sedimentation rate; CRP, C-reactive protein; GA, global assessment; SLEDAI, Systemic Lupus Erythematous Disease Activity Index; EQ-5D, Euro-quality of life 5 dimensions; VAS, visual analogue scale; NSAIDs, non-steroidal anti-inflammatory drugs.

global satisfaction (adjusted OR 8.65, 95% CI 1.02–73.22, Supplementary Table 2). Body mass index or the use of glucocorticosteroid (> 5 mg/day) were not associated with global satisfaction in both patients with RA and SLE (data not shown).

DISCUSSION

An international study (SENSE study) evaluating treatment satisfaction with the TSQM in patients with moderate to severe active RA found that the average global satisfaction sub-score was 60.9, with only 13.5% of patients reporting good treatment satisfaction [18]. In a subgroup analysis of Japanese patients, the mean global satisfaction sub-score was 56.8, with just 5.9% of patients expressing high treatment satisfaction, indicating lower satisfaction compared to the overall international cohort [19]. Treatment satisfaction among our patients with RA was better, with a mean global satisfaction sub-score of 66.2% and 18.4% for good treatment satisfaction. This may be attributed to the lower disease activity observed in our study population, as approximately 80% of the participants were in remission.

To the best of our knowledge, no studies have evaluated treatment satisfaction using the TSQM in patients with SLE. However, studies using other methods to assess treatment satisfaction have shown relatively high patient-reported satisfaction. In a United States study, 78% of patients re-

Table 5. OR and 95% CI for global satisfaction scores ≥ 80 based on univariable and multivariable logistic regression analyses in rheumatoid arthritis

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Sex		
Male	Reference	Reference
Female	0.50 (0.18–1.37)	0.37 (0.11–1.26)
Age at the survey (yr)	0.96 (0.92–1.01)	1.03 (0.96–1.11)
Duration of education (yr)		
≤ 9	Reference	Reference
9–12	3.42 (0.87–13.4)	3.67 (0.71–18.72)
≥ 12	6.49 (1.52–27.67)	1.92 (0.33–11.05)
Household monthly income		
< 300 (*10,000 won)	Reference	Reference
300–500 (*10,000 won)	6.74 (1.85–24.59)	12.03 (1.91–75.82)
≥ 500 (*10,000 won)	5.39 (1.46–19.91)	10.29 (1.65–64.22)
DAS28-ESR		
Moderate or high	Reference	Reference
Remission or low	2.96 (0.36–4.12)	4.59 (0.40–51.78)
Current use of NSAIDs		
Yes	Reference	Reference
No	0.38 (0.10–1.14)	0.29 (0.05–1.48)
Current use of steroids		
Yes	Reference	Reference
No	1.26 (0.46–3.42)	1.12 (0.34–3.65)
Current use of biologic or targeted DMARDs		
Yes	Reference	Reference
No	2.12 (0.45–10.0)	1.75 (0.19–15.91)
Number of comorbidities	1.03 (0.59–1.78)	1.07 (0.55–2.07)

OR, odds ratio; CI, confidence interval; DAS28, Disease Activity Score 28; ESR, erythrocyte sedimentation rate; NSAIDs, non-steroidal anti-inflammatory drugs; DMARDs, disease-modifying antirheumatic drugs.

ported being at least 'somewhat satisfied' with their current treatment; this figure was 86% in the belimumab treatment group [20]. In a preliminary study using the Lupus Satisfaction Questionnaire (LSQ), 58% of patients reported being at least 'somewhat satisfied' with their treatment [21].

In our study using the TSQM, despite low disease activity in patients with RA, > 80% did not demonstrate good treatment satisfaction. While treatment satisfaction in patients with SLE was like that in patients with RA, their satisfaction sub-score regarding treatment effectiveness was lower than that in patients with RA. Our findings suggest that there are unmet needs in terms of treatment satisfaction in patients with RA with low disease activity as well as patients with SLE.

Treatment satisfaction is closely linked to patient expectations regarding treatment [22]. Factors influencing treatment satisfaction include patient-related factors such as demographic variables and socioeconomic and health status; physician-related factors such as communication and decision-making; systemic factors such as clinical team involvement and referrals; and the disease itself [23,24].

According to the SENSE study, in patients with RA, the use of b/ts DMARDs and high QoL scores are predictors of good treatment satisfaction, while high disease activity is a negative predictor of treatment satisfaction [18]. In a German RA cohort, increased treatment satisfaction was

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Table 6. OR and 95% CI for global satisfaction scores ≥ 80 based on univariable and multivariable logistic regression analyses in systemic lupus erythematous

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Sex		
Male	Reference	Reference
Female	1.24 (0.14–10.87)	1.30 (0.11–14.59)
Age at the survey (yr)	0.98 (0.94–1.02)	0.99 (0.93–1.06)
Duration of education (yr)		
≤ 9	Reference	Reference
9–12	1.74 (0.32–9.46)	2.34 (0.26–20.89)
≥ 12	2.53 (0.47–13.44)	2.95 (0.23–36.75)
Household monthly income		
< 300 (*10,000 won)	Reference	Reference
300–500 (*10,000 won)	1.66 (0.48–5.67)	0.96 (0.22–4.16)
≥ 500 (*10,000 won)	1.55 (0.28–8.53)	1.32 (0.18–9.51)
SLEDAI	0.88 (0.67–1.15)	0.91 (0.70–1.20)
Current use of NSAIDs		
Yes	Reference	Reference
No	7.88 (0.98–62.88)	8.10 (0.99–66.20)
Current use of steroids		
Yes	Reference	Reference
No	1.54 (0.45–5.28)	1.68 (0.41–6.85)
Number of comorbidities	0.96 (0.50–1.84)	1.13 (0.53–2.41)

OR, odds ratio; CI, confidence interval; SLEDAI, systemic lupus erythematosus disease activity index; NSAIDs, non-steroidal anti-inflammatory drugs.

associated with seropositivity, reduced disease activity and pain, and improved physical function. Conversely, the use of glucocorticoids (> 5 mg/day) and comorbid conditions such as depression, fibromyalgia, and obesity are associated with reduced treatment satisfaction [25]. A Chinese study identified factors, such as young age, high educational attainment, high treatment costs, poor communication, high disease activity, and high treatment costs, as contributors to low treatment satisfaction among patients with RA [26,27].

For SLE, a previous Dutch study suggested that factors such as young age and higher or lower educational attainment were associated with low satisfaction in the patients [28]. Factors related to treatment satisfaction identified in a United States study included improvements in leisure activities, symptom relief such as reduced fatigue and pain, and dosing frequency [20]. A multinational study demonstrated that greater disease activity, better coping, and social support were independent correlates of higher satisfaction among patients with SLE [29]. The SLE-UPDATE survey found that treatment satisfaction was generally associated with better QoL. Satisfaction levels were lower for corticosteroids, immunosuppressants, and antimalarials than for belimumab and rituximab [30]. Recently, Italy study reported that long quiescent disease activity, for at least 3 years, may have positive impact on health-related QoL (HRQoL) and depressive symptoms in patients with SLE [31].

In our patients with RA, factors such as educational attainment, household income, global assessments, disease activity, and EQ-5D VAS scores exhibited potentially significant effects on global satisfaction. However, these factors were not significant in the patients with SLE. This study was performed on Korean patients. In contrast to previous studies [25-30], factors such as the use of glucocorticoids (> 5 mg/day), age, or BMI were not associated with global satisfaction in both patients with RA and SLE.

Multivariable analysis also showed that household income

was independently associated with global satisfaction in patients with RA but not in those with SLE. The factors influencing treatment satisfaction in patients with lupus may differ from those in patients with RA, partly because of the more diverse and complex clinical features of lupus. The distinct differences in treatment satisfaction drivers between patients with RA and SLE highlight the need for tailored approaches to improve treatment satisfaction, leading to better adherence to treatment and better clinical outcomes for each patient group.

This study has some limitations. First, the size of the study cohort was relatively small, most cases were in low or remission status, and all patients were from a single tertiary center. Second, because we did not collect data of mental health such as depression or fibromyalgia, we couldn't elucidate clinical significance of those factors in this study. Additionally, the cross-sectional design of the study precluded assessment of follow-up factors. Nonetheless, to the best of our knowledge, this study is the first to evaluate treatment satisfaction using the TSQM both patients with RA and those with SLE.

In conclusion, our results suggest that despite low disease activity, there is an unmet need for treatment satisfaction among patients with RA. To maximize treatment satisfaction in patients with RA, an individualized, patient-centered approach that considers various QoL and socioeconomic factors beyond disease activity is required. For lupus, additional comprehensive research on treatment satisfaction and its determinants, including patient expectations and socioeconomic, cultural, and behavioral factors, is necessary.

KEY MESSAGE

1. Over 80% of patients with both RA and SLE did not report good treatment satisfaction.
2. To maximize treatment satisfaction in patients with RA, an individualized, patient-centered approach that considers various quality-of-life and socioeconomic factors beyond disease activity is required.
3. Factors influencing treatment satisfaction were less clear in patients with SLE. For lupus, additional and comprehensive research on treatment satisfaction and its determinants are necessary.

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Correspondence to
Han Joo Baek, M.D., Ph.D.
Department of Internal Medicine, Pyeongchang Health Center and County Hospital, 11 Noseong-ro, Pyeongchang-eup, Pyeongchang 25374, Korea
Tel: +82-33-330-4839, Fax: +82-32-458-2742
E-mail: baekhj429@googlemail.com
https://orcid.org/0000-0001-7558-052X

CRedit authorship contributions
Hyo Jin Choi: conceptualization, methodology, resources, investigation, data curation, formal analysis, writing - original draft, writing - review & editing, project administration, funding acquisition; Mi Ryoung Seo: investigation; Eunji Kim: data curation, formal analysis; Han Joo Baek: conceptualization, investigation, writing - review & editing

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Supplementary Table 1. Demographic, socioeconomic and clinical data of patients

	Total (n = 215)	RA (n = 114)	SLE (n = 101)
Age at symptom onset (yr)	41.9 ± 14.4	48.9 ± 12.0	34.0 ± 12.8
Age at diagnosis (yr)	43.7 ± 14.6	51.0 ± 11.9	35.4 ± 12.8
Smoking			
Current	30 (14.0)	19 (16.7)	11 (10.9)
Quit	4 (1.9)	4 (3.5)	0 (0.0)
Alcohol			
Soju	52 (24.2)	28 (24.6)	24 (23.8)
Beer	5 (2.3)	4 (3.5)	1 (1.0)
Married status			
Single	30 (14.0)	6 (5.3)	24 (23.8)
Married	160 (74.4)	94 (82.5)	66 (65.3)
Bereaved	10 (4.7)	7 (6.1)	3 (3.0)
Divorced	14 (6.5)	6 (5.3)	8 (7.9)
Occupation			
Student	2 (0.9)	1 (0.9)	1 (1.0)
Housewife	100 (46.5)	55 (48.2)	45 (44.6)
Office worker	20 (9.3)	8 (7.0)	12 (11.9)
Profession	8 (3.7)	4 (3.5)	4 (4.0)
Self-employed	17 (7.9)	12 (10.5)	5 (5.0)
Education/public worker	2 (0.9)	0 (0.0)	2 (2.0)
Sales and service	8 (3.7)	3 (2.6)	5 (5.0)
Others	30 (14.0)	17 (14.9)	13 (12.9)
None	28 (13.0)	14 (12.3)	14 (13.9)
Family history of rheumatic disease	26 (12.1)	12 (10.5)	14 (13.9)
RA	18	12	6
SLE	8	1	7
Sjogren's disease	2	0	2
Comorbidity			
Hypertension	54 (25.1)	30 (26.3)	24 (23.8)
Diabetes mellitus	17 (7.9)	8 (7.0)	9 (8.9)
Dyslipidemia	37 (17.2)	21 (18.4)	16 (15.8)
Heart failure	3 (1.4)	1 (0.9)	2 (2.0)
Myocardial infarction	2 (0.9)	2 (1.8)	0 (0.0)
Coronary artery disease	6 (2.8)	1 (0.9)	5 (5.0)
Chronic renal failure	0 (0.0)	0 (0.0)	0 (0.0)
Conventional DMARDs			
Methotrexate	99 (46.0)	97 (85.1)	2 (2.0)
Hydroxychloroquine	177 (82.3)	79 (69.3)	98 (97.0)
Sulfasalazine	33 (15.3)	32 (28.1)	1 (1.0)
Leflunomide	6 (2.8)	5 (4.4)	1 (1.0)
Tacrolimus	10 (4.7)	6 (5.3)	4 (4.0)
Azathioprine	9 (4.2)	0 (0.0)	9 (8.9)
Mycophenolate mofetil	13 (6.0)	0 (0.0)	13 (12.9)

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Supplementary Table 1. Continued

	Total (n = 215)	RA (n = 114)	SLE (n = 101)
Biologics/targeted synthetic DMARDs			
TNF inhibitors	12 (5.6)	12 (10.5)	0 (0.0)
IL-6R inhibitors	1 (0.5)	1 (0.9)	0 (0.0)
Janus kinase inhibitors	6 (2.8)	6 (2.1)	0 (0.0)

Values are presented as mean ± standard deviation, number (%), or number only.
RA, rheumatoid arthritis; SLE, systemic lupus erythematosus; DMARDs, disease-modifying antirheumatic drugs; TNF, tumor necrosis factor; IL-6R, interleukin-6 receptor.

Supplementary Table 2. OR and 95% CI for global satisfaction scores ≥ 80 based on multivariable logistic regression analyses in the patients with remission or low disease activity of rheumatoid arthritis or with no or mild disease activity of systemic lupus erythematous

	Adjusted OR (95% CI)	
	RA (n = 101)	SLE (n = 92)
Sex		
Male	Reference	Reference
Female	0.32 (0.09–1.13)	1.16 (0.09–13.84)
Age at the survey (yr)	1.02 (0.94–1.10)	1.02 (0.95–1.09)
Duration of education (yr)		
≤ 9	Reference	Reference
9–12	3.36 (0.65–17.1)	3.84 (0.37–39.38)
≥ 12	1.87 (0.32–10.94)	8.48 (0.60–119.44)
Household monthly income		
< 300 (*10,000 won)	Reference	Reference
300–500 (*10,000 won)	9.16 (1.39–60.40)	0.53 (0.11–2.53)
≥ 500 (*10,000 won)	9.33 (1.49–58.19)	1.11 (0.14–8.35)
Current use of NSAIDs		
Yes	Reference	Reference
No	0.31 (0.05–1.65)	8.65 (1.02–73.22)
Current use of steroids		
Yes	Reference	Reference
No	1.26 (0.37–4.22)	2.39 (0.48–11.80)
Number of comorbidities	1.11 (0.57–2.15)	1.25 (0.57–2.74)

OR, odds ratio; CI, confidence interval; NSAIDs, non-steroidal anti-inflammatory drugs.

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