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Source / Izvornik: **Rheumatology International, 2012, 32, 3471 - 3479**

Journal article, Accepted version
Rad u časopisu, Završna verzija rukopisa prihvaćena za objavljivanje (postprint)

https://doi.org/10.1007/s00296-011-2190-6

Permanent link / Trajna poveznica: https://urn.nsk.hr/urn:nbn:hr:105:429921

Jajić Z., Rajnpreht I., Kovačić N., Lukić I. K., Velagić V., Grubišić F., Marušić A., Grčević D. (2012) ***Which clinical variables have the most significant correlation with quality of life evaluated by SF-36 survey in Croatian cohort of patient with ankylosing spondylitis and psoriatic arthritis?*** **Rheumatology International, 32 (11). pp. 3471-9. ISSN 0172-8172**

http://www.springer.com/journal/296/

http://link.springer.com/journal/296/

http://dx.doi.org/10.1007/s00296-011-2190-6

http://medlib.mef.hr/1818

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Abstract

The aim of our study was to assess clinical variables with the best correlation to quality of life (QOL) assessed by medical outcome survey Short-Form 36 (SF-36) in patients with spondyloarthritides, including ankylosing spondylitis (AS) and psoriatic arthritis (PsA). We analyzed the cohort of 54 patients (22 patients with PsA and 32 patients with AS), who filled the Croatian version of SF-36. For each type of arthritis, patients were clinically evaluated using the extensive list of clinical variables categorized into subjective and objective group. For AS patients, subjective and objective variables (spinal mobility measurements, clinical assessment of spinal pain, patient assessments of disease activity and pain) correlated mainly with the physical functioning concept of SF-36. Patients assessments of fatigue correlated with the energy/fatigue subscale whereas patient assessment of enthesial pain correlated with the pain subscale. Correlations between clinical variables and SF-36 concepts of PsA patients showed more diverse distribution than for AS. Objective variables (spinal mobility measurements, a 76-joint score, clinical assessment of spinal pain) correlated with concepts concerning physical health and pain. Several subjective patient assessments correlated with energy/fatigue, emotional well-being, pain and general health subscales. Both patient and physician assessment of PsA activity correlated with the role limitations due to emotional problems. Bath ankylosing spondylitis functional index (BASFI) had the strongest correlation with the physical functioning concept of SF-36 in both diseases. Our findings provide important information to help selecting the variables with strongest impact on QOL, for better planning the management strategies and achieving better rehabilitation results.

Keywords: ankylosing spondylitis, psoriatic arthritis, clinical variables, quality of life, SF-36

Introduction

Spondyloarthritides belong to the group of seronegative arthropathies that have some common features and the overall prevalence of about 1% [1, 2]. They are clinically characterized by inflammatory back pain, radiological spondylitis and pathological enthesitis. Ankylosing spondylitis (AS) and psoriatic arthritis (PsA) are the most important representatives in this group of entities. The course of seronegative arthropathies is variable, but one third of patients have severe disease with disabling consequences [3]. AS predominantly affects axial skeleton with the involvement of sacroiliac joints, and often also entheses and extra-articular structures. It leads to irreversible structural changes causing decreased spinal mobility [4, 5]. PsA may involve both the peripheral joints and spine, with variable incidence. In addition to the joint involvement patient with PsA have a skin disease [4, 6]. The combination of joint and skin manifestations of PsA has a specific impact on patient functioning, well being and quality of life (QOL) [7, 8]

The aim of this study was to validate the clinical variables that most accurately correlate with QOL in patients with AS and PsA. To asses QOL we used the Croatian version of the medical outcome survey Short-Form 36 (SF-36) questionnaire, a generic QOL instrument, divided into eight subscales, each covering a particular health concept [9]. In addition, we separately evaluated the association of subjective and objective clinical variables with different concepts of the QOL as assessed by SF-36 subscales. Differentiation between these two categories of variables is clinically very important since spondyloarthropathies result in large functional impairments that consequently produce major impact on all aspects of QOL of the affected patients [7, 10, 11].

Patients and methods

Patients

The study group included the cohort of 54 consecutive patients (22 patients with PsA and 32 patients with AS) who were treated at the Department of Rheumatology and Physical Medicine, Sisters of Mercy University Hospital, Zagreb, in 2007-2008 and agreed to participate in the study. They were enrolled on the basis of their clinical diagnosis: AS was diagnosed according to the modified New York criteria [12] and PsA according to Moll and Wright's criteria [13]. Patients suffering from PsA had different clinical disease forms: spondylitis with or without peripheral arthritis (n=16), oligoarthritis (n=3), symmetric polyarthritis (n=2) and distal metacarpophalangeal arthritis (n=1). Patients suffering from AS were divided into two groups: spondylitis with peripheral arthritis (n=19) and spondylitis only (n=13). We received the approval from the institutional Ethics Committee and obtained informed consent from all the patients before the beginning of the study.

Clinical variables

Upon admittance, medical history was recorded for each patient, together with demographic parameters, blood analysis and detailed clinical assessment, after which they filled out the SF-36 survey. For each type of arthritis, patients were clinically evaluated using an extensive list of clinical variables [14] categorized into subjective and objective group (Table 1).

The category of subjective variables included patient assessment of disease manifestations, including pain, fatigue, stiffness and sleeping disorder. All subjective patient assessments were measured using the visual analog scale (VAS) except for the sleeping disorder caused by the night pain, which was scored from 0 to 3 (score 0 means no pain whereas score 3 means that pain significantly interferes with sleep causing severe discomfort) [15, 16].

The category of objective variables included duration since first symptoms and since diagnosis [17], physician assessment of disease manifestations (including spinal mobility measurements, joint scores for pain and swelling and number of affected entheses), laboratory and radiological measurements. Hart and Robinson criteria were used for the radiological diagnosis of sacroiliitis in both AS and PsA group of patients [18]. Spinal pain was clinically scored from 0 to 4 (score 0 means no pain during palpation or movement and no muscle tension whereas score 4 means extensive pain during palpation with disabled mobility) [15, 16]. Spinal mobility measurements included: chest expansion (cm), occiput-to-wall distance (cm), index of sagittal movement for cervical, thoracic and lumbar spine (cm), lumbar spine lateral flexion (finger-to-floor distance) (cm) and chin-to-sternum distance (cm). Number of affected entheses was assessed by Maastricht ankylosing spondylitis enthesitis score (MASES) [15]. Radiological assessments of enthesitis were classified into four stages: minimal changes, destructive changes, reconstructive changes and ossification of tendon fibers [19, 20].

Functional status was assessed by Bath ankylosing spondylitis functional index (BASFI) consisting of 10 subscales, 8 measuring physical functioning (VAS) and 2 evaluating patient mobility [21]. Disease activity was measured with Bath ankylosing spondylitis disease activity index (BASDAI) comprising six subscales (VAS) concerning fatigue, spinal and peripheral joint pain, localized tenderness and morning stiffness (both qualitative and quantitative) [22]. In PsA patients, activity of the disease was also evaluated by DAS28 index, which includes a 28-joint count of swollen and tender joints, patient assessment of general health (VAS) and

erythrocyte sedimentation rate [23]. Physical status was measured using the Health Assessment Questionnaire (HAQ) disability index [24]. Psoriasis severity was rated according to the Psoriasis area severity index (PASI) in PsA patients [25]. PASI combines the assessment of the severity of lesions and the affected area into a single score in the range from 0 (no disease) to 72 (maximal severity).

Croatian version of SF-36 QOL questionnaire

All patients filled out the Croatian version of SF-36 QOL questionnaire consisting of 36 items, measuring health status. Each of questionnaire items refers to one of the following 8 health concepts: physical functioning (10 items), pain (2 items), role limitations due to physical health problems (4 items), role limitations due to personal or emotional problems (3 items), emotional well-being (5 items), social functioning (2 items), energy/fatigue (4 items) and general health perception (5 items). It also includes a single item that provides an indication of perceived change in general health. Items are scored in the range from 0 to 100. All items are arranged in order in which higher score defines a more favorable health status [8].

Statistical analysis

Clinical data for each type of spondyloarthritis were presented, depending on data distribution, as mean ± standard deviation (SD) or median (range) and compared using Student t-test or Mann-Whitney test respectively. Differences in SF-36 subscale values for binomic variables, such as the presence of bamboo spine phenomenon, diastasis of rectus abdominis muscles or umbilical extrusion, were assessed by the Mann-Whitney test. Values for other clinical variables were correlated with the subscales of SF-36 survey using rank correlation and Spearman's coefficient rho (ρ) with its 95% confidence interval (CI). Statistical analysis was performed using the MedCalc software package (Mariakerke, Belgium). For all experiments, α-level was set at 0.05.

Results

Patient characteristics

We assessed a cohort of 54 consecutive patients, 22 suffering from PsA and 32 suffering from AS by a number of clinical variables (Tables 1 and 2). The average BASFI score, as an overall measurement of physical functioning, was 5.6±2.5 for PsA patients and 5.7±2.4 for AS patients, demonstrating that both groups included patients with similar functional impairment. The average BASDAI score was also comparable between the patient groups (6.0±2.2 for PsA and 5.9±2.1 for AS group). Approximately 10 years were required to verify the diagnosis after the beginning of the symptoms in AS patients and only around 4 in PsA patients, probably due to the more obvious skin psoriatic manifestations. Positive family history for the disease was found in 10/32 of AS patients and only in 3/22 of PsA patients. Peripheral arthritis in combination with axial involvement in AS group was presented in 14/20 women and 5/12 male patients. Among patients suffering from PsA, 9/11 women and 7/11 men had spondylitis with or without peripheral arthritis, whereas only a few patients had other clinical forms of the disease. Moreover, the intensity of enthesial pain was similar for PsA subgroup with the form of spondylitis and AS patients (55.4±26.1 and 53.7±26.4 respectively). In PsA group, 15/22 patients had active skin psoriasis with median value for PASI 1.75 (range 0.1-8.2), indicating rather mild psoriatic manifestations.

In addition to the clinical variables, patients were assessed by SF-36 survey. As expected, AS patients had reduced QOL values for concepts measuring physical health (average value of 7.9±20.5 for the role limitations due to physical health and 28.9±18.1 for the bodily pain), whereas PsA patients experienced severely reduced QOL within concepts measuring both physical and emotional health (average value of 11.9±18.2 for the role limitations due to physical health and 25.0±41.5 for the role limitations due to emotional problems). Nevertheless, the perception of general health was similar in both groups of patients (average value of 29.3±18.0 for AS and 34.8±13.7 for PsA), indicating comparable disease severity in respect to QOL.

Assessment of AS patients

For AS patient group, we correlated subjective and objective variables with 8 subscales and with perceived change in health of SF-36 survey. Among different health concepts covered by SF-36, subjective and objective variables showed the best correlation with physical functioning subscale (Table 3), whereas only few significant correlations were found for other subscales. Significantly correlated objective variables were spinal mobility measurements, clinical assessment of spinal pain, phenomena that are the consequence of deteriorating chest expansion and physician assessment of disease activity, whereas significantly correlated subjective variables were patient assessments of disease activity, general and enthesial pain, intensity of morning stiffness and BASFI. The strongest correlation with highest significance was found between overall measurement of physical functioning BASFI and physical functioning subscale of SF-36 ($p=0.008$, rank correlation). Moreover, patients exhibiting bamboo spine phenomenon, diastasis of rectus abdominis muscles and umbilical extrusion, as indicators of prolonged disease with deteriorating progression, had significantly lower values for the physical functioning subscale than patients without those manifestations ($p<0.05$, Mann-Whitney). Additional significant correlations found between clinical variables and other SF-36 subscales included correlations of patient assessments of disease activity, fatigue and spinal pain with the concept assessing role limitations due to physical health problems ($p<0.05$, rank correlation) as well as patient assessments of fatigue and the number of

vertebra showing squaring, as one of the features of severe spinal affection, with the energy/fatigue subscale of SF-36 ($p<0.05$, rank correlation). The only variable correlated with the pain subscale of SF-36 was patient assessment of enthesial pain ($p=0.003$, rank correlation). We found no correlation between other clinical variables listed in Table 1 and any of the SF-36 health concepts.

Assessment of PsA patients

Significant correlations between clinical variables and SF-36 survey health concepts of PsA patients showed more diverse distribution than for AS patients (Table 4). Several variables from the objective group significantly correlated with concepts concerning physical health and pain (Table 4; nonsignificant correlations were not shown). Spinal mobility measurements and 76-score for painful joints significantly correlated with the concept assessing role limitations due to physical problems whereas physician assessment of disease activity correlated with the concept assessing role limitations due to emotional problems. Nevertheless, some of the spinal mobility measurements had only borderline significance (Table 4). The strongest correlation was found between the clinical assessment of spinal pain and pain subscale of SF-36 survey ($p=0.004$, rank correlation). Among subjective variables only BASFI had strong correlation with the concept assessing physical functioning ($p=0.016$, rank correlation). Patient assessment of disease activity correlated with energy/fatigue subscale ($p=0.005$, rank correlation) and role limitations due to emotional problems ($p=0.027$, rank correlation) as well as general health perception of SF-36 survey ($p=0.01$, rank correlation). Patient assessment of general pain correlated with the SF-36 concept assessing pain ($p=0.026$, rank correlation) and energy/fatigue ($p=0.013$, rank correlation). Patient and physician assessments of disease activity were in concordance regarding correlation with SF-36 concept assessing role limitations due to emotional problems. Since most of the enrolled PsA patients had the clinical disease form that includes spondylitis (16/22) we separately analyzed the correlation of their clinical variables with the SF-36 subscales. In general, correlations for this subgroup of PsA patients with spinal involvement showed similar pattern as the total group of PsA patients (not shown).

Discussion

In this study, we aimed to determine which clinical variables affect the QOL assessed by SF-36 survey in spondyloarthritides, namely AS and PsA. The majority of significant correlation in the AS group was obtained between the clinical variables and physical functioning concept of SF-36. In contrast, significant correlations between clinical variables in PsA patients and SF-36 health concepts had more diverse pattern involving several SF-36 subscales. BASFI had the strongest correlation with physical functioning concept of SF-36 in both diseases. QOL is the extremely important outcome measurement in AS and PsA, since both spondyloarthritides are chronic diseases with functional impairments that affect each aspect of patient's well being from working ability to family life [7, 10, 11]. Moreover, psoriatic skin manifestations in PsA have the impact on emotional and social functioning [7, 8]. SF-36 survey has been widely used by numerous studies to assess QOL in chronic rheumatic diseases [4, 5, 8, 10, 26-30]. We used Croatian version of SF-36 QOL questionnaire and, even though we had rather limited number of patients within groups, obtained strong correlations between different clinical variables and several SF-36 health concepts for those diseases. Our findings provide important evidence for the assessment validity and clinical significance of SF-36 as a QOL measurement instrument.

In AS group both, subjective and objective variables correlated mainly with the physical concept of SF-36. This particularly applies to several spinal mobility measurements (index of sagittal movement, occiput-to-wall and chin-to-sternum distance). Although chest expansion itself did not correlate with any of the SF-36 concepts, diastasis of rectus abdominis muscles and umbilical extrusion, as indicators of prolonged disease with deteriorating chest expansion [31, 32], significantly correlated with physical functioning subscale. Previous studies already showed the relationship between SF-36 concepts and disease activity or functional indices in patients with AS [27, 28]. However there are only few studies focused on the relationship between spinal mobility and health-related QOL assessment by SF-36 in AS [5, 11, 26]. One of them found that Bath ankylosing spondylitis metrology index correlated with physical functioning and general health concepts [5], whereas another showed the correlation of modified Schober index, measuring spinal mobility, with the role limitations due to physical health problems and pain [26]. In our study, patient assessment of enthesial pain but not the number of affected entheses correlated with the pain subscale of SF-36. We can assume that the intensity of pain rather that the number of painful entheses has greater impact on QOL related to the pain concept of SF-36. Recent study by Turan et al found that the Mander enthesis index, measuring severity of enthesitis, has the strongest correlation with physical functioning, role limitations due to physical health problems, pain and vitality concepts [27]. They also assessed spinal mobility measurements but only chest expansion significantly correlated with the role limitations due to emotional problems. Subjective variables such as patient assessment of disease activity, general pain, intensity of morning stiffness and enthesial pain also correlated with physical functioning concept of SF-36, indicating that they are as important in affecting the perception of physical health as objective variables. Therefore we should devote more attention to record and analyze subjective variables when deciding on treatment management of AS patients.

Objective clinical variables in PsA patients correlated with concepts concerning physical health and pain. Correlation of the joint score for pain with role limitations due to physical health problems was expected considering that, among chronic inflammatory joint diseases, PsA is the second most destructive arthritis after rheumatoid arthritis (RA) [33]. For QOL assessment, PsA is often compared with RA and not other

spondyloarthropathies [7, 29], due to shared affinity for the peripheral skeleton affection and consequently frequent need for treatment management comparable with RA [33]. However other studies in PsA patients reported that emotional and mental health is stronger affected than in RA due to the existence of skin disease [29, 34, 35]. We did not find correlations between psoriasis of the skin or nails with SF-36 subscales related to the emotion well-being. Psoriatic manifestations did not correlate with SF-36 concept related to physical health as well. This may be due to the limited number of PsA patients, but also because our patients had rather mild psoriatic manifestations (i.e. low PASI). Husted et al discussed that difficulties arising from skin disease should cause role limitations due to emotional problems, but also suggested that this subscale could be affected by additional emotional burden of arthritis and chronic, episodic nature of psoriasis activity [29]. On the other hand there is a possibility that the concepts important for the QOL perception of PsA patients are not well covered with the QOL SF-36 instrument [34]. In general, there is a limited number of studies intended to reveal the impact of clinical variables of PsA patients on SF-36 subscales. This may be because of variety of PsA clinical forms resulting in difficulties in composing a uniform study group. Moreover, several studies questioned the currently valid classification of PsA seeking for its revision [35-37]. Most of our patients had the PsA clinical form of spondylitis with or without peripheral arthritis making them suitable for the comparison with AS patients, which can explain the strong correlation of BASFI and physical functioning concept of SF-36 for both, AS and PsA groups. Moreover, the intensity of enthesial pain was similar for AS patients and PsA subgroup with the form of spondylitis. However, there was no significant correlation between enthesial pain and the pain subscale of SF-36 in PsA subgroup with spondylitis or total PsA group. This is unexpected since enhesitis plays the important role in the pathogenesis of PsA [38]. Nevertheless, patient assessment of general pain and clinical assessment of spinal pain were associated with the pain subscale of SF-36 survey.

Finally, we compared data obtained for physical functioning concept of SF-36 between the two diseases AS and PsA, since those two types of spondyloarthropathies are rarely compared by the existing literature. We expected the correlation of the spinal mobility measurements and BASFI with the QOL assessment of our patients. BASFI has proven relationship with the concepts of SF-36 survey. It had the strongest impact on physical functioning concept of SF-36 in both diseases in our study. Our results confirmed previously observed association between spinal mobility measurements in AS and SF-36 concepts concerning physical health [5, 10, 11, 27, 28]. As we stressed before, most of our PsA patients had spinal affection, which explains the results similar to AS. This finding further suggests that the spinal mobility measurements could have a significant impact on QOL not only in AS, but in other spondyloarthropathies as well. In addition, significant correlation between the score addressing joint pain in PsA patients and physical functioning concept of SF-36 indicates the importance of the assessment of peripheral involvement as the characteristic of PsA.

In conclusion, the perception of general health was similar in both AS and PsA, indicating comparable disease severity in respect to QOL. However, there were some meaningful differences in how those two types of spondyloarthritides affect health-related QOL indicating unique disabilities associated with each of them. Among SF-36 health-concepts, the physical functioning subscale most accurately reflects disease condition in AS, whereas in PsA both, subscales measuring physical and emotional well-being were affected by disease condition. Further analysis of larger patient cohort would allow for more complex multivariate statistical analysis able to indicate the most important independent clinical variables that affect SF-36 health-concept subscales.

Furthermore, it is very important to select the most informative and accurate variables affecting the QOL in AS and PsA as lifelong diseases. They affect physical, emotional and social component of human functioning, and that aspect must be taken into account during the planning of therapeutic management [4, 6-8, 39, 40]. In addition, patients suffering from chronic diseases are frequently hospitalized and demotivated for long appointments and questionnaires. Thus, it is important to focus on the information that most accurately reflects their health condition. Obtaining data using too extensive survey reduces their validity and is exhausting for the patients. The results of this study provide the validation of SF-36 survey for the comparison between AS and PsA patients. QOL assessment by different subscales offer the important information to help planning the management strategies by focusing on variables having the strongest impact on QOL in our patients, thus achieving better rehabilitation results.

Acknowledgement

This work was supported by the grants from the Croatian Ministry of Science, Sport and Education (108-1080229-0142, 108-1080229-0140). We thank Mrs. Katerina Zrinski-Petrović for her technical assistance. All the authors disclosure no conflict of interest.

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Table 1. Clinical variables recorded in patients with ankylosing spondylitis (AS) and psoariatic arthritis (PsA)

SUBJECTIVE VARIABLES[a]	**AS**	**PsA**
patient assessment of pain, fatigue and disease activity (VAS)	+	+
patients assessment of the duration (min) and intensity of morning stiffness (VAS)	+	+
patient assessment of spinal pain daily, nightly or general (VAS)	+	+
patients assessment of sleeping disorder due to the night pain (0 to 3)	+	+
patient assessment of enthesial pain (VAS)	+	+
BASFI (0-10), BASDAI (0-10), HAQ (for PsA)	+	+
OBJECTIVE VARIABLES		
duration since first symptoms and since diagnosis (years)	+	+
physician assessment of disease activity (VAS)	+	+
joint scores for pain and swelling (28-, 74- and 76-joint score) for PsA; peripheral arthritis (yes/no); if yes 68- and 66-joint score for AS	+	+
clinical assessment of spinal pain (0 to 4)	+	+
spinal mobility measurements (cm)	+	+
diastasis of rectus abdominis muscles (yes/no), rubber ball stomach phenomenon (yes/no), umbilical extrusion (yes/no)	+	+
number of affected entheses (0-13)	+	+
laboratory variables: HLA genotyping, erythrocite sedimentation rate (mm/h), C-reactive protein (mg/L)	+	+
radiological score of sacroiliitis, symphysitis, enthesitis of Achilles tendon and affection of manubriosternal symphysis (0-4)	+	+
radiological assessment of enthesitis at the point of insertion on tuber ossis ischii and trohanter major (0-4), bamboo spine phenomenon (yes/no), syndesmophytes (yes/no), vertebral squaring (number)	+	-
radiological assessment of erosive changes of wrists, small joints of the hand and foot, acroosteolysis, cup deformity, erosions of finger phalanges, ankylosis, periosteal phalangeal reaction (yes/no)	-	+
DAS28 (0-10); PASI (0-72); dactylitis, psoriasis of the nails and skin (yes/no)	-	+
QUALITY OF LIFE		
Croatian version of SF-36 questionnaire (0-100)	+	+

[a]VAS, visual analog scale; BASFI, Bath ankylosing spondylitis functional index; BASDAI, Bath ankylosing spondylitis disease activity index; HAQ, Health Assesment Questionnare; DAS28, Disease activity score including a 28-joint count; PASI, Psoriasis area and severity index; SF-36, Short-Form 36, a generic quality of life questionnaire.

Table 2. Selected demographic and clinical characteristics of patients with ankylosing spondylitis (AS) and psoriatic arthritis (PsA)

	AS (n=32)	PsA (n=22)
Age (years)[a]	51.4 ± 9.7	54.2 ± 8.3
Male/female	12/20	11/11
Duration since diagnosis (years)	7 (2.0-11.0)	10.5 (4-12)
Duration since first symptoms (years)	17 (12-29.5)	12 (6.5-21.3)
General pain (VAS)	6.6 ± 2.1	6.6 ± 1.7
Fatigue (VAS)	5.7± 2.9	5.8 ± 2.1
Patient assessment of morning stiffness (VAS)	6.0± 2.3	4.2± 3.3
BASDAI (0-10)	5.9 ± 2.1	6.0 ± 2.2
BASFI (0-10)	5.7 ± 2.4	5.6 ± 2.5
DAS28 (0-10)		4.3 ± 1.6
PASI (0-72)		1.75 (0.1-8.2)
Clinical assessment of spinal pain (0-4)	2.5 ± 0.9	1.7 ± 1.2
Enthesial pain (VAS)	5.4 ± 2.5	4.7 ± 2.8
Index of sagittal movement for lumbar spine (cm)	3.7 ± 1.8	4.8 ± 1.4
Joint scores for pain (68 for AS; 76 for PsA)	9 (1-51)	30 (1-76)

[a]Depending on data distribution, values are presented as mean ± standard deviation or median (range).

Table 3. Correlation of clinical variables with physical functioning subscale of SF-36 health survey for patients with ankylosing spondylitis

	Physical functioning (0-100)[a]	
	ρ (95% CI)	p
Patient assessment of disease activity (VAS)	-0.496 (-0.775 to -0.053)	0.035
Patient assessment of morning stiffness (VAS)	-0.575 (-0.816 to -0.163)	0.015
Patient assessment of general pain (VAS)	-0.579 (-0.818 to -0.169)	0.014
BASFI (0-10)	-0.681 (-0.880 to -0.280)	0.008
Physician assessment of disease activity (VAS)	-0.617 (-0.841 to -0.211)	0.011
Clinical assessment of spinal pain (0-4)	-0.520 (-0.807 to -0.032)	0.044
Enthesial pain (VAS)	-0.516 (-0.786 to -0.081)	0.029
Index of sagittal movement for cervical spine (cm)	0.564 (0.148 to 0.811)	0.017
Index of sagittal movement for lumbar spine (cm)	0.566 (0.150 to 0.812)	0.016
Occiput-to-wall distance (cm)	-0.483 (-0.775 to -0.021)	0.046
Chin-to-sternum distance (cm)	-0.476 (-0.779 to 0.006)	0.05

[a]Clinical variables were correlated with SF-36 subscale values of 8 health concepts using rank correlation and Spearman's coefficient (ρ) with its 95% confidence interval (CI). Only the results for statistically significant correlations of physical functioning subscale ($p \leq 0.05$) are presented.

Table 4. Correlation of clinical variables with subscales of SF-36 health survey for patients with psoriatic arthritis

SF-36 subscales (0-100)[a]	*Physical functioning*		*Role limitations (physical)*		*Pain*		*Energy/fatigue*		*Role limitations (emotional)*	
	ρ (95% CI)	P	ρ (95% CI)	P	ρ (95% CI)	P	ρ (95% CI)	P	ρ (95% CI)	P
Patient assessment of disease activity (VAS)							-0.725 (-0.898 to -0.358)	0.005	-0.572 (-0.832 to -0.107)	0.027
Patient assessment of general pain (VAS)					-0.575 (-0.833 to -0.110)	0.026	-0.643 (-0.864 to -0.217	0.013		
BASFI (0-10)	-0.623 (-0.855 to -0.184)	0.016								
Physician assessment of disease activity (VAS)									-0.522 (-0.808 to -0.035)	0.043
Clinical assessment of spinal pain (0-4)					-0.770 (-0.920 to -0.425)	0.004				
Index of sagittal movement for lumbar spine (cm)			0.496 (-0.022 to 0.804)	0.06[b]						
Occiput-to-wall distance (cm)			-0.473 (-0.785 to 0.030	0.06[b]						
Lumbar spine lateral flexion (cm)			-0.651 (-0.878 to -0.183)	0.019						
76-score for painful joints			-0.557 (-0.825 to -0.084)	0.031						

[a]Clinical variables were correlated with SF-36 subscale values of 8 health concepts using rank correlation and Spearman's coefficient (ρ) with its 95% confidence interval (CI). Only the statistically significant correlations (P≤0.05) are presented.
[b]Spinal mobility measurements with borderline significance (P≤0.06).