ORIGINAL ARTICLE

The assessment of Spondyloarthritis International Society Health Index (ASAS HI) in patients with spondyloarthritis - a single centre experience

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ABSTRACT

Aim The Assessment of Spondyloarthritis International Society Health Index (ASAS HI) Croatian version was used to assess health and functioning of patients with spondyloarthritis (SpA) covering aspects of physical, emotional and social functioning.

Methods A cross sectional study was conducted at the Clinic for Internal Diseases Tuzla from January to June 2021. Inclusion criteria: fulfilled the ASAS diagnostic criteria for SpA. Exclusion criteria: failure to fulfil the diagnostic criteria, acute infection, the use of antibiotics in the past month, malignancy, associated disorders, psychiatric disorders, pregnancy, patient's refusal to take part in the study. The Disease Activity Score with C reactive protein values (ASDAS-CRP) was assessed.

Results Eighty three patients (43 male and 40 female) fulfilled the study criteria with median age of 54 years. The median value of ASDAS-CRP was 2.15, since ASAS HI had the median of 8 (interquartile range; IQR: 2-13) points. Patients with inactivity and with low disease activity had the ASAS HI median of 2 (IQR: 0-6) and 5 (IQR: 1-9) points, respectively. Significantly higher values of ASAS HI were found in patients with moderate and high disease activity, males (13.5 and 16) and females (13 and 14), respectively. The correlation between ASDAS-CRP and ASAS HI, ($r=0.62$; $p<0.0009$) was positive, statistically significant. However, the significant correlation between disease duration and ASAS HI values was not found ($r=0.11$; $p=0.28$).

Conclusion The ASAS HI, Croatian version, is valid and reliable disease specific questionnaire for the assessment of health status in patients with SpA in the Bosnian speaking area.

Key words: arthritis rheumatoid, joints, quality of life

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Original submission:
22 September 2023;
Revised submission:
31 October 2023;
Accepted:
12 November 2023
doi: 10.17392/1676-23

Med Glas (Zenica) 2024; 21(1):118-125

INTRODUCTION

Spondyloarthritis (SpA) is a group of rheumatic, inflammatory diseases which are characterized by axial skeleton involvement (sacroiliitis, spondylitis), peripheral (arthritis, dactylitis, enthesitis) and extra-articular manifestations such as uveitis, psoriasis and inflammatory bowel disease (IBD) (1-3). Inflammatory disorders on the spine and peripheral joints cause pain in the lumbar region, stiffness, reduced spine mobility, pain and compromised function in the affected joints (1,2). More prevalent extra-articular disease manifestations are an additional challenge for patients (1,3). Disease manifestations, impaired spine and peripheral joints mobility, manifestation of extra-articular aspects of SpA depending on disease activity, inevitably have a significant impact on activities of daily living, sleep, rest and social life of patients (4-8).

The disease has a variable course and various forms, so functioning, limitation in daily life activities and social participation are defined by its course, which determines patient's quality of life (9,10). An equally important aspect of SpA, and its consequences, in turn, is changed work ability which can further cause social isolation, physical and financial dependency (9). Changes in psychological status are not unusual, and patients can often develop depression, anxiety, feelings of helplessness, low self-confidence, and feelings of lack of control (8-10). Since the effects of the disease are reflected on almost all aspects of life, it is necessary to comprehensively assess the health status of persons with SpA, how the disease affects functioning as well as perspectives involved.

The available questionnaires heretofore have been designed to assess specific aspects such as pain intensity, disease activity, functioning and quality of life (11). The Assessment of Spondyloarthritis International Society (ASAS) has developed the ASAS Health Index (ASAS HI) with the aim to define and compare the disease impact and patient health with all forms of SpA (12). The original ASAS HI questionnaire was written in English, and then translated into 19 languages including Croatian (13,14). The Croatian translation of ASAS HI, owing to its complete comprehensibility, is more acceptable and reliable version for the speaking area of Bosnia and Herzegovina.

The aim of the study was to assess the health index in patients with SpA using ASAS HI, the Croatian translation, and its applicability in the Bosnian-speaking area.

PATIENTS AND METHODS

Patients and study design

The cross-sectional study was conducted at the Clinic for Internal Medicine, University Clinical Centre Tuzla (UCC), from 1 January to 1 June 2021. The study included all patients with the diagnosis of SpA (all forms) who were examined and treated at the Outpatient Clinic and/or Department of Rheumatology: ankylosing spondyloarthritis (AS), reactive arthritis (ReA), psoriatic arthritis (PsA,) spondyloarthritis associated with inflammatory bowel disease (IBD) (SpA-IBD), undifferentiated form (uSpA).

The SpA diagnosis was established according to the ASAS diagnostic criteria for SpA (15). The inclusion criteria were: patient fulfilled the ASAS diagnostic criteria for SpA; the exclusion criteria were failure to fulfil the diagnostic criteria, acute infection or the use of antibiotics in the past one month, malignancy associated disorders, psychiatric disorders, pregnancy, patient's refusal to take part in the study.

The data were collected from questionnaires, physical examination, analyses of a patient's medical histories and medical records. The following was analysed: age and gender, disease duration, presence of extra-articular manifestations (uveitis, psoriasis, IBD), associated disorders, CRP values, HLA-B27 positivity, radiology findings (radiography and/or MRI of the spine and affected joints) and family history of the presence of HLA- B27 associated disorders (Table 1).

All patients were informed and gave their consent to participate in the study.

The study received an approval of the Ethics Committee of UCC Tuzla.

Methods

At the physical examination of a patient, the disease activity was assessed by the Ankylosing Spondylitis Disease Activity Score (ASDAS) (16) with the C reactive protein values (CRP). ASDAS-CRP includes four questions on (1) back

pain intensity, (2) duration of morning stiffness, (3) patient assessment of disease activity, (4) intensity of pain/swelling in peripheral joints over the previous seven days. A patient answered the questions, indicating values from 0-10 on the Visual Analog Scale (VAS). Blood samples for CRP were analysed within 24 hours after blood withdrawal using a BN2 Behring nephelometer (Siemens, Marburg, Germany). CRP values 0-5.0 mg/L were considered normal. ASDAS-CRP was calculated according to the formula:

0.12 x back pain + 0.06 x duration of morning stiffness + 0.11 x patient global assessment + 0.07 x peripheral joint pain/swelling + 0.58 x Ln (CRP+1) (16).

Based on the total ASDAS-CRP scores and according to the disease activity, the patients were classified into four groups: the patients had inactive disease if the ASDAS-CRP score was <1.3; low disease activity if the score was ≥1.3-2.1; the patients with the score ≥2.1-3.5 were considered to have moderate disease activity; and very active disease if the ASDAS-CRP score was ≥3.5 (16).

The health index in patients was assessed using ASAS HI (12) Croatian version. While completing the questionnaire, a standardized operating procedure was followed (16). The questionnaire consisted of 17 questions, with a dichotomous response, 'I agree' and 'I disagree', where the answer 'I agree' is given score 1, and the answer 'I disagree' is given score 0. The questions 7 and 8, compromised sexual function and car driving, are not applicable to all patients, and for those patients who tick the response 'not applicable', the sum score was analysed based on n=16 and n=15, respectively (Table 2). The part related to environmental factors consists of 9 dichotomous items with an identical response option, but without a sum score because of its multidimensional nature (Table 2).

The total score was calculated if up to 20% of the data was missing. If the patients ticked the response 'not applicable', it was calculated as a response and not as a missing value. If the patients missed up to three responses, the total score was calculated according to the formula. If more than three responses were missing (excluding the questions that were answered as 'not applicable'), the assessment was not considered valid and the total score was not calculated. The maximum ASAS HI score was 17, with lower scores indicating a better health status (12).

Statistical analysis

Standard methods of descriptive statistics were used, the variables with distorted distribution were shown with median as a measure of the central value and interquartile range (IQR). To test variable distribution Shapiro-Walk W test were used. To test the statistically significant difference between the samples, parametric and non-parametric significance tests and Pearson's correlation coefficient were used. A value of $p<0.05$ was considered statistically significant.

RESULTS

The study criteria were met by 83 patients with SpA, the median age was 54 years (IQR: 46-61): 43 male, the median age was 53 years (interquartile range; IQR 44-60 years), and 40 females of a similar age, the median was 55 years (IQR: 46.25-62 years) (p=0.42).

The PsA was the most frequent, 52 (62.6.5), then AS, 21 (25.4%), while four (4.8%) patients had axSpA and SpA-IBD. Only two (2.4%) patients had ReA.

Of 83 patients, 11 (13.2%) did not have the extra-articular manifestations, psoriasis was the most common extra-articular manifestation (62.6%); three patients had intermediate uveitis associated with psoriasis, nine (10.1%) patients had intermediate uveitis with no extra-articular manifestations. In addition to intermediate uveitis, one patient had Crohn's disease, while four (3.6%) patients had only Crohn's disease as an extra-articular manifestation.

Forty-five patients were treated only with synthetic disease modifying antirheumatic drugs (sDMARD), 13 received biological drugs (bDMARD), and the remaining 25 patients were treated with a combination s+bDMARDs during the study period.

The ASDAS-CRP was used to assess disease activity, whose median value was 2.15 (IQR: 1.39-3.18). The patients were classified into four groups according to the obtained values of ASDAS-CRP and according to disease activity (Table 1).

The longest disease duration was noticed in patients with moderate disease with the median of

Table 1. Clinical characteristics of 83 patients with spondyloarthritis (SpA) according to disease activity and the values Ankylosing Spondylitis Disease Activity Score (ASDAS)

Clinical characteristics	SpA patients disease activity according to the ASDAS			
	Inactive disease (n=19)	Low disease activity (n=23)	Moderate disease activity (n=27)	High disease activity (n=14)
Age (range) (years)	46 (17-65)	54 (21-72)	52 (40-66)	60 (17-72)
Median range (IQR)	35-60	44-62	17-61	55.5-66
Gender (No; %)				
Males	11 (57.9)	10 (43.5)	14 (51.8)	8 (57.2)
Females	8 (42.1)	8 (42.1)	13 (48.2)	6 (42.8)
Disease duration (range) (years)	4 (0.08-30)	4 (0.03-20)	6 (0.08-30)	2.5 (0.08-41)
Median (range) (IQR)	(1-6)	(3-8)	(1-12)	(0.28-12.25)
HLA B27 (No; %)				
Positive	6 (31.6)	18 (78.3)	12 (44.4)	2 (14.3)
Negative	7 (36.8)	4 (17.4)	8 (29.6)	8 (57.1)
No data	6 (31.6)	1 (4.34)	7 (25.9)	4 (28.6)
RTG characteristics SpA (No; %)				
Present	17 (89.5)	22 (95.6)	27 (100)	14 (100)
Absent	2 (10.5)	1 (4.34)	0	0
Extra-articular manifestations (No; %)				
Psoriasis				
Present	13 (68.4)	14 (60.9)	16 (59.2)	9 (64.3)
Absent	6 (31.6)	9 (39.1)	11 (40.8)	5 (35.7)
Intermediate uveitis (No; %)				
Present	3 (15.8)	3 (13.0)	2 (7.40)	1 (7.1)
Absent	16 (84.2)	20 (86.9)	25 (92.6)	13 (92.9)
Crohn's disease (No; %)				
Present	1 (5.3)	2 (8.7)	1 (4.8)	0
Absent	18 (94.7)	21 (91.3)	26 (96.3)	0
Comorbidity (No; %)				
Present	11 (57.9)	16 (69.6)	20 (74.0)	12 (85.7)
Absent	8 (42.1)	7 (30.4)	7 (25.9)	2 (14.3)
Family history of the HLA B27 associated diseases (No; %)				
Positive	2 (10.5)	4 (17.4)	5 (18.5)	1 (7.1)
Negative	17 (89.5)	19 (82.6)	22 (81.5)	13 (92.9)

6 years (IQR: 1-12), while the shortest duration was in patients with high disease activity (from diagnosis until enrolment in the study), with the median of 2.5 years (IQR: 0.28-12.25) (p=0.17).

The ASAS HI was used to assess the health index in patients with SpA. The median value of ASAS HI was 8 (IQR: 2-13) in 83 patients with SpA, the lowest in patients with inactive disease activity with the median 2 (IQR: 0-6), and the median was 5 (IQR: 1-9) in patients with low disease activity. The significantly higher values were noticed in patients with moderate and very high disease activity, with the median of the same value 13, with IQR: 9-15 and IQR: 10.75-15.25, respectively.

The correlation between disease activity and the health index in 83 patients with SpA was analysed. The correlation between ASDAD-CRP and ASAS HI was positive and statistically significant ($r=0.62$; $p<0.0001$ and 95% CI: 0.466-0.737, respectively.

Analysing the ASAS HI values with respect to the patients' gender in the groups and disease activity, it was found that the greater disease activity was, the higher ASAS HI values were. The highest values were noticed in patients with moderate and high disease activity, both in males (13.5 vs 16) and females (13 vs 14) (Table 2).

In male patients with inactive disease and low disease activity of SpA, the most compromised aspects of the disease were 'ability to perform activities of daily living', 'travel related difficulties due to disease', and 'inability to cope with disease related challenges'; in females with an inactive form of SpA, the most common positive index parameters were 'dissatisfaction due to disease' and 'financial hardship due to disease'. Both male and female patients with moderate disease activity stated that their activities of daily living had been significantly compromised by the disease; in addition, all females in this group stated that the disease had caused fatigue and financial problems.

In males with high disease activity, 'performance of activities of daily living', 'exhaustion, 'problems related to using the toilet', 'poor sleep' and 'inability to cope with disease related challenges' were compromised by the disease. Similarly, all female patients with high disease activity stated that the disease had contributed to sleep disturbance and fatigue. In all females, the 'inability to cope with disease related challenges' parameter was positive (Table 2).

Table 2. Representational parameters and the total assessment of spondyloarthritis international society health index (ASAS HI) values in patients with spondyloarthritis (SpA) in the disease activity groups

Parameter ASAS HI		No (%) of SpA patients with disease activity							
		Inactive disease (n=19)		Low disease activity (n=23)		Moderate disease activity (n=27)		High disease activity (n=14)	
		Male (n=11)	Female (n=8)	Male (n=10)	Female (n=13)	Male (n=14)	Female (n=13)	Male (n=8)	Female (n=6)
Daily activities compromised	Yes	7 (63.6)	3 (37.5)	6 (60)	5 (38.4)	14 (100)	13 (100)	8 (100)	5 (83.3)
	No	4 (36.4)	5 (62.5)	4 (40)	8 (61.6)	0 (0)	0 (0)	0 (0)	1 (16.7)
Standing longer periods compromised	Yes	3 (27.2)	4 (50)	4 (40)	4 (30.8)	11(78.6)	11 (84.6)	4 (50)	5 (83.3)
	No	8 (72.8)	4 (50)	6 (60)	9 (69.2)	3 (21.4)	2 (15.4)	4 (50)	1 (16.7)
Running compromised	Yes	2 (18.2)	3 (37.5)	4 (40)	5 (38.4)	10 (71.4)	7 (53.9)	7 (87.5)	4 (66.7)
	No	9 (81.8)	5 (62.5)	6 (60)	8 (61.6)	4 (28.6)	6 (46.1)	1 (12.5)	2 (23.3)
Problems related to using toilet	Yes	1 (9.1)	2 (25)	3 (30)	4 (30.8)	7 (50)	12 (92.3)	8 (100)	5 (83.3)
	No	10 (90.9)	6 (75)	7 (70)	9 (69.2)	7 (50)	1 (7.7)	0 (0)	1 (16.7)
Exhaustion present	Yes	1 (9.1)	5 (62.5)	3 (30)	5 (38.4)	8 (57.1)	13 (100)	8 (100)	6 (100)
	No	10 (90.9)	3 (37.5)	7 (70)	8 (61.6)	6 (42.9)	0 (0)	0 (0)	0 (0)
Physically demanding jobs done with difficulty	Yes	2 (18.2)	3 (37.5)	4 (40)	4 (30.8)	12 (85.7)	11 (84.6)	6 (75)	6 (100)
	No	9 (81.8)	5 (62.5)	6 (60)	9 (69.2)	2 (14.3)	2 (15.4)	2 (25)	0 (0)
Sexual function compromised	Yes	1 (9.1)	3 (37.5)	4 (40)	4 (30.8)	10 (71.4)	10 (76.9)	7 (87.5)	6 (100)
	No	10 (90.9)	5 (62.5)	6 (60)	9 (69.2)	4 (28.6)	3 (23.1)	1 (12.5)	0 (0)
Car driving compromised	Yes	2 (18.2)	4 (50)	4 (40)	6 (46.1)	13 (92.9)	10 (76.9)	7 (87.5)	5 (83.3)
	No	9 (81.8)	4 (50)	6 (60)	7 (53.9)	1 (7.1)	3 (23.1)	1 (12.5)	1 (16.7)
Interacting with other people, done with difficulty	Yes	1 (9.1)	2 (25)	2 (20)	4 (30.8)	8 (57.1)	7 (53.9)	5 (62.5)	4 (66.7)
	No	10 (90.9)	6 (75)	8 (80)	9 (69.2)	6 (42.9)	6 (46.1)	3 (37.5)	2 (23.3)
Walking on a flat surface, impaired	Yes	2 (18.2)	4 (50)	4 (40)	7 (53.9)	11 (78.6)	7 (53.9)	5 (62.5)	5 (83.3)
	No	9 (81.8)	4 (50)	6 (60)	6 (46.1)	3 (21.4)	6 (46.1)	3 (37.5)	1 (16.7)
Concentration compromised	Yes	1 (9.1)	3 (37.5)	3 (30)	5 (38.4)	5 (35.7)	11 (84.6)	5 (62.5)	5 (83.3)
	No	10 (90.9)	5 (62.5)	7 (70)	8 (61.6)	9 (64.3)	2 (15.4)	3 (37.5)	1 (16.7)
Travel related difficulties	Yes	3 (27.3)	5 (62.5)	5 (50)	8 (61.6)	11 (78.6)	11 (84.6)	6 (75)	6 (100)
	No	8 (72.7)	3 (37.5)	5 (50)	5 (38.4)	3 (21.4)	2 (15.4)	2 (25)	0 (0)
Dissatisfaction due to disease	Yes	4 (36.4)	6 (75)	4 (40)	7 (53.9)	13 (92.9)	6 (46.1)	7 (87.5)	6 (100)
	No	7 (63.6)	2 (25)	6 (60)	6 (46.1)	1 (7.1)	7 (53.9)	1 (12.5)	0 (0)
Washing hair with difficulty	Yes	1 (9.1)	2 (25)	3 (30)	6 (46.1)	4 (28.6)	11 (84.6)	66 (75)	5 (83.3)
	No	10 (90.9)	6 (75)	7 (70)	7 (53.9)	10 (71.4)	2 (15.4)	2 (25)	1 (16.7)
Financial problems	Yes	2 (18.2)	5 (62.5)	4 (40)	8 (61.6)	8 (57.1)	13 (100)	7 (87.5)	6 (100)
	No	9 (81.8)	3 (37.5)	6 (60)	5 (38.4)	6 (42.9)	0 (0)	1 (12.5)	0 (0)
Poor sleep	Yes	4 (36.4)	3 (37.5)	4 (40)	6 (46.1)	9 (64.3)	12 (92.3)	8 (100)	6 (100)
	No	7 (63.6)	5 (62.5)	6 (60)	7 (53.9)	5 (35.7)	1 (7.7)	0	0 (0)
Cannot solve their problems	Yes	3 (27.3)	5 (62.5)	5 (50)	6 (46.1)	12 (85.7)	11 (84.6)	8 (100)	6 (100)
	No	8 (72.7)	3 (37.5)	5 (50)	7 (53.9)	2 (14.3)	2 (15.4)	0 (0)	0 (0)
Total score of ASAS HI (points) Median (range)		0 (0-1.25)	2 (0-2.5)	5 (2.5-9.5)	6 (2.5-10)	13.5 (8.2-15.5)	13 (8-14.5)	16 (12.25-17)	14 (12-16)

The analysis of the correlation between the disease duration and ASAS HI in 83 patients with SpA did not show any statistical significance (r=0.11; p=0.28; CI:0.09-0.328).

DISCUSSION

With 17 dichotomous items the Assessment of Spondyloarthritis International Society Health Index (ASAS HI) covers the spectrum of possible compromised aspects in patients with SpA, addressing aspects of pain, sleep, emotional and sexual function, mobility, self-care, participation and position in society. It can provide a realistic assessment of functioning, disability and health in patients with SpA (17).

According to our findings, this is the first study of this kind in Bosnia and Herzegovina in which the health index of patients with SpA has been assessed using the ASAS HI, the Croatian version. The translation of the ASAS HI questionnaire into the Croatian language, owing to its comprehensibility and similarity to the Bosnian language, has proven to be valid, sufficient and reliable in practice and for research purposes.

The median ASAS HI for our 83 patients was 8 (IQR: 2-13), with somewhat lower values for males, which is consistent with reports of other researchers (12, 18-20). The male gender was significantly associated with lower ASAS HI, also had a lower risk of achieving scores of ASAS HI >5 points than females (18, 21-26).

ASAS HI showed up as a reliable instrument to assess health and functioning in patients with SpA in clinical practice. The cut-off point of ≤4 was determined to discriminate good and moderate as well as ≥12 to discriminate a moderate and poor health status (27). Therefore, the cut off value of 4.0 seems to be of great importance which helps in defining if a patient has inactive disease. It could serve as a simple and accessible instrument for the assessment of disease activity, to distinguish patients with active versus inactive disease in everyday practice (27,28). However, by the 2017 EULAR voting process, it was accepted that a good functional ability was represented as the value of <5 points and a poor functional ability as the value of ≥12 points. These two threshold values defined three categories of health status within ASAS HI with respect to disease activity, functioning and health measures: poor, moderate and good functional ability (29).

Considering the sum score of ASAS HI, our 83 patients were classified into the category of moderate functional ability. The most prominent compromised aspects of functioning in males were similar to females such as impaired "performance of daily activities", "fatigue", "problems related to using toilet" and "poor sleep". Other authors have slightly different observations, they point out that females were at a higher risk than males for the following: difficulty running and standing for long periods of time, frequent exhaustion, loss of interest in sex, and difficulty washing their hair; females had higher scores for back pain, fatigue, and global health assessment. They also noticed that female patients were two to three times more likely than males to have greater pain levels (26,29, 33-37).

Fatigue, an important symptom in SpA, was reported by 67% of our patients. Likewise, 59% patients, female more likely than male (72%), were found to have exhaustion and fatigue as the dominant aspects of disease. These gender-related differences may be explained by variations in biological factors, such as immune responses, genetics, sex hormones, and social or behavioural factors between male and female patients (26,29). However, physicians should pay more attention to the worse health status in females with SpA and try to improve ASAS HI by controlling disease activity with strategies such as adequate medical treatment, rehabilitation and psychosocial support. (18,20,24,25).

SpA can be underrecognized, and a delay of several years between the symptom onset and the diagnosis is common. The average delay between the symptom onset and the diagnosis is estimated to be 5 to 7 years, with evidence that the delay can be significantly longer in females than in males (20-23, 26). Compared to females, males had a younger age at onset of symptoms and longer disease duration. The median age of male and female patients from our study was 53 and 55 years, respectively, with no significant gender differences. The female patients tended to have worse scores mainly in the subjective features (30,31). Since it usually starts in early adulthood, the lifetime impact of the disease on ASAS HI is also important. It has been shown that longer disease duration and aging are associated with decreased functioning (29). However, some researchers reported that, with respect to disease duration, ASAS HI did not show any significant correlation (27,28,30), which is in line with our results.

In a large multinational study conducted to validate the ASAS HI, global functioning showed the strong correlation with disease activity and patient-reported outcomes, which was confirmed by other studies (15,24,28,38,39).

Although the data show that ASAS HI is an instrument which categorizes patients according to disease activity, it is not primarily designed to assess activity (27,28). However, it was noticed that disease activity measures, including ASDAS-ESR, ASDAS-CRP and Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), had positive correlations with ASAS HI (23, 25-27). Our observations are similar with the aforementioned, assessing disease activity using ASDAS-CRP, we found the median of 2.15 (IQR: 1.39-3.18) for our 83 patients with SpA, and the significant correlation between ASDAS-CRP and ASAS HI values. The higher ASAS HI values were noticed in both male (13.5 vs 16) and female (13 vs 14) patients with moderate and high disease activity, and similar values in patients with inactivity and in patients who had low disease activity. ASAS HI was able to discriminate well between patients with different disease activity and functional states (28).

According to our findings, this is the first study of

this kind in Bosnia and Herzegovina in which the health index of patients with SpA has been assessed using the ASAS HI, the Croatian version. Therefore, it presents the latest study results and experiences of the application of ASAS HI in Bosnia and Herzegovina. The translation of the ASAS HI questionnaire into the Croatian language, owing to its comprehensibility and similarity to the Bosnian language, has proven to be valid, sufficient and reliable in practice and for research purposes.

In conclusion, in practice, based on ASAS HI, we can assess the current state, disease activity and functioning as well as gather important information on the adequacy of therapeutic procedures which are used. The total result of different levels of functioning gives a true image of a patient's current status. Our study has shown that the version translated into the Croatian language is valid and reliable disease specific questionnaire for the assessment of health status in patients with SpA in the Bosnian speaking area, acceptable and can be used in everyday practice.

FUNDING

No specific founding was received for this study

TRANSPARENCY DECLARATION

Conflicts of interest: None to declare

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