

The Co-Relation between Disease Activity and Quality of Life among Patients with Peripheral Spondyloarthropathy

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Abstract

Background: More disability and incapacity to work and a poorer quality of life in spondyloarthritis (SpA) in the presence of enthesitis is associated with higher disease activity. **Objective:** To find out the co-relation between disease activity and quality of life among patients with peripheral spondyloarthropathy. **Methodology:** From March 2021 to February 2022, the Department of Physical Medicine and Rehabilitation at BSMMU, Dhaka, performed a cross-sectional research. A total of 105 individuals diagnosed with pSpA who were included in the trial were chosen on purpose. Excluded from the research were patients with concomitant systemic inflammatory rheumatic diseases such as RA, SS, lupus, and Dermatomyositis. The validated Bengali version of The Ankylosing Spondylitis Disease Activity Score (ASDAS), including C-reactive protein (ASDAS-CRP), was used to measure disease activity, while the validated Bengali version of the Short Form Health Survey (SF) 12v2 was used to evaluate health-related quality of life. **Results:** The participants' mean age was 38.8(±9.8) years, and 68(64.8%) were male. The mean duration of sickness was 4.3(±3.3) years, with 55.4% of cases lasting less than 3 years. The mean ASDAS-CRP was 3.9(±0.08), with 69(65.7%) individuals having a very high Disease Activity Score. 100% of the individuals in the research experienced arthritis and inflammatory back pain. The majority of research subjects had the HLA B27 gene (N=101, or 96.2%), and 99(94.3%) had enthesitis. Physical Component Summary (PCS) and Mental Component Summary (MCS) mean scores were 34(±7.8) and 41(±7.7), respectively. A slight negative association existed between age and PCS scores on the SF-12 ($r=-0.233$, $p=0.017$). There was a negative connection between illness duration and PCS ($r=-0.339$, $p=0.001$) and MCS ($r=-0.290$, $p=0.003$) SF-12 scores. Again, there was a moderate negative connection between ASDAS-CRP and the PCS and MCS scores of the SF-12 ($r=-0.406$, $p=0.001$) and the MCS scores of the SF-12 ($r=-0.461$, $p=0.001$). **Conclusion:** The Disease Activity Score of the majority of individuals with peripheral spondyloarthritis was very high. The psychological health of these patients was superior to their physical health. Both physical and mental health components were negatively linked with illness duration. There was a moderate inverse connection between ASDAS-CRP and the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores of the SF-12.

Keywords: Peripheral spondyloarthropathy (pSpA), Ankylosing, Spondylitis Disease, Activity Score including C-reactive protein (ASDAS-CRP), Short Form Health Survey (SF-12v2)

I. INTRODUCTION

A characteristic feature of the inflammation at tendon, fascia, capsule or ligament attachment sites spondyloarthritis (SpA) is called enthesitis. The inflammatory reaction intrinsic to enthesitis may be quite extensive, although enthesitis has traditionally been viewed as a focal abnormality [1]. In the clinical practice, the diagnosis of enthesitis is based on clinical examination, including interview (pain at the site of an enthesitis that subsides following physical exercise) and observing pain in an enthesitis upon compression [2]. To assess enthesitis although less feasible, ultrasound and magnetic resonance image (RMI) are more direct ways. Spondyloarthritides include Ankylosing spondylitis (AS), psoriatic arthritis (PsA), SpA linked with inflammatory bowel disease (IBD), reactive arthritis (ReA), juvenile-onset SpA, and undifferentiated SpA. (SpA). Inflammation of the axial joints, asymmetric oligoarthritis and enthesitis are among the symptoms [3]. Spondyloarthritis is caused by both genetic polymorphism and environmental factors. Different kinds of spondyloarthritis may be associated with distinct gene-environment interactions. The B27 variant of human leukocyte antigen B is the most prevalent allele. The primary therapy target for inflammation is TNF. [4] Asia had 16.7 per 10,000, Europe 23.8, North America 31.9, Latin America 10, while Africa had 23.8%. 7.4 It was estimated that between 1.30 million and 1.56 million cases occurred in Europe and Asia, respectively [5]. 80% of patients reported symptoms before age 30, and 5% before age 45 [6]. In Bangladesh, men are affected with Ankylosing spondylitis at a higher rate than females. [7] SpA is subdivided into axial SpA (axSpA), which mostly affects the spine and sacroiliac joints (SIJ), and peripheral SpA (pSpA), which is characterized by arthritis, enthesitis, and/or dactylitis. Patients with involvement of the thoracic spine and enthesitis at the costosternal and manubriosternal joints may have chest pain that is made worse by coughing or sneezing. Early-stage AS is associated with mild to severe chest tightness [8]. SpA patients often exhibit Extra Musculoskeletal Manifestation(EMM), such as Acute Anterior Uveitis(AAU), psoriasis, or IBD [9]. pSpA is sex-equal. Lower extremities asymmetrical major joint oligoarthritis was prevalent among those younger than 40. Some had signs of soft tissue and/or extra-articular SpA (36%) and a family history of the disease (20%). In contrast to axial axSpA/AS, root/central joint involvement is minimal in pSpA. Otherwise, arthritis was exactly the same [10]. Typical peripheral SpA articular involvement is asymmetric, mono or oligoarticular inflammatory arthritis that affects the lower extremities more than the upper extremities [11]. Enthesitis is a sign of spondyloarthritis. Chronic inflammation of the enthesitis causes cystic and erosive bone alterations. Syndesmophytes are caused by excessive bone development, periosteal changes, spurs, and subperiosteal new bones. Enthesis regions are

sensitive and painful to palpation. Enthesitis pain diminishes quality of life [12]. In clinical trials and health care research, HRQoL is commonly used to quantify the impact of chronic diseases [13]. There are both generic and specialized HRQoL surveys [14]. There are disease-, patient-, function-, and problem-specific instruments. Generic measures are neither disease- or population-specific and are applicable to a variety of diseases [15]. HRQoL may be measured and compared across populations using generic instruments, regardless of the underlying disorders [16]. 36-item Medical outcome study Short Form Health survey is the most often used general measurement tool. According to years of experience, the SF 36 is lengthy and some participants may have problems comprehending the questions. The SF 12v1 consists of 12 identical items from each of the eight SF 36 subscales. Numerous European countries, Iran, and Morocco have recognized it. Recent Bengali SF 12v2 validation [17].

II. OBJECTIVES

To find out the co-relation between disease activity and quality of life among patients with peripheral spondyloarthropathy.

III. METHODOLOGY

This cross-sectional study was taken in the Department of Physical Medicine and Rehabilitation at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from March 2021-February 2022. A total of 105 patients were enrolled in this research as study population. Patients diagnosed with pSpA visiting the Physical Medicine and Rehabilitation department at BSMMU, Dhaka, were chosen using the purposive sample method. This research includes male and female patients diagnosed with pSpA according to ASAS criteria and between the ages of 18 and 65. Patients with concurrent systemic inflammatory rheumatic disease, such as RA, SSC, lupus, Dermatomyositis, Medical comorbidity that would prevent the patient from participating fully in study procedures (e.g., uncontrolled Diabetes Mellitus, acute stroke, recent myocardial infarction, terminal conditions such as end-stage renal disease, congestive heart failure, or cancer), and cognitive impairment were excluded from this study.

Data Collection and Analysis

Patients with pSpA who visited the Department of Physical Medicine and Rehabilitation at the BSMMU in Dhaka within the study period were enrolled. According to ASAS peripheral SpA criteria, peripheral spondyloarthropathy ASDAS-CRP was used to evaluate disease activity. Patient's CRP was assessed taken written consent from each patient. The ASDAS-CRP was evaluated. Data were analyzed by SPSS version 26.0. The study results were presented in frequency and percentage tables. Continuous variable

means and categorical variable frequency distributions were used to characterize sample characteristics. Comparing the means of two groups by Student t test and ANOVA test. Pearson correlation was used to

assess the correlation of SF12v2. ASDAS-CRP readings, patient age, and illness duration PCS/MCS were considered significant at p-value calculating,

RESULTS

Table1: Distribution of Socio demographic profile of the patients (N=105)

Variables	Frequency (n)	Percentage (%)
Age group(in years)		
Up to 40 yrs.	54	51.4
41-50 yrs.	47	44.8
>50 yrs.	4	3.8
Mean \pm SD	38.8 \pm 9.8	
Range	18-65	
Gender		
Male	68	64.8
Female	37	35.2
Body Mass Index		
Normal	53	50.5
Overweight	37	35.2
Obese	15	14.3
Mean \pm SD (Kg/m ²)	25.4 \pm 4.0	
Range	19.9-39.0	

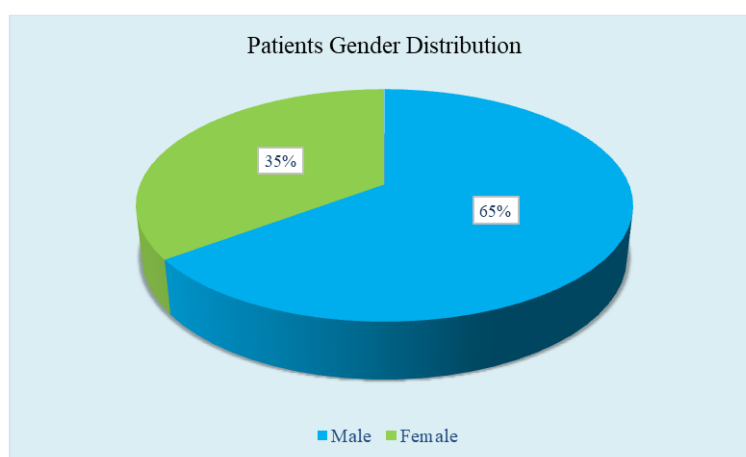


Figure I: Patients Gender Wise Distribution (N=105)

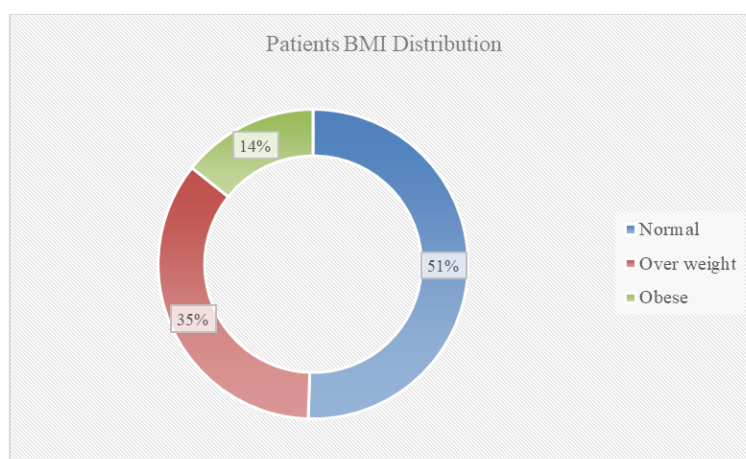


Figure II: Patients BMI Distribution (N=105)

Table 1 showed that more than half of the study participants 54(51.4%) were younger than 40 years, 47(44.8%) were from 41-50 year's age group and few 4(3.8%) were from >50 year's age group. The mean age of the study participants was 38.8(\pm 9.8) years which ranged from 18-65 years. Among the 105 study

participants, about two-thirds of the study participants 68(64.8%) were male while 37(35.2%) were female. Regarding BMI, 53(50.5%) had normal, 37(35.2%) had overweight and 15(14.3%) had obese BMI. The mean BMI of the study participants was 25.4(\pm 4.0) Kg/m² which ranged from 19.9-39.0Kg/m².

Table 2: Distribution of study participants by duration of disease (N=105)

Duration of disease (in years)	Frequency (n)	Percentage (%)
Up to 3 yrs.	55	52.4
3-6 yrs.	27	25.7
>6 yrs.	23	21.9
Mean \pm SD	4.3 \pm 3.3	
Range	0.5-15.0	

Table 2 showed that 55(52.4%) study participants had up to 3 years, 27(25.7%) had 3-6 years' and 23(21.9%) had >6 years' disease duration time. The

mean duration time of disease was 4.3 (\pm 3.3) years which ranged from 0.5-15.0 years.

Table 3: Comparison of PCS and MCS among different disease duration (N=105)

Duration of disease (in years)	PCS	MCS
Up to 3 yrs.	37.6 \pm 5.6	43.8 \pm 7.0
3- 6 yrs.	29.8 \pm 8.9	39.3 \pm 8.2
>6 yrs.	30.5 \pm 7.2	37.6 \pm 6.7
P-value	<0.001	0.001

Table 3 showed that the PCS of the study participants were significantly higher in study participants who had disease duration up to 3 years than others (p<0.001). Again, the MCS of the study

participants were significantly higher in study participants who had disease duration up to 3years than others (p=0.001).

Table 4: Distribution of study participants by Ankylosing Spondylitis Disease Activity Score (ASDAS-CRP) (N=105)

Activity Score (ASDAS-CRP)	Frequency (n)	Percentage (%)
Low (1.3-2.0)	0	0.0
High (2.1-3.5)	36	34.3
Very high(>3.5)	69	65.7
Mean \pm SD	3.9 \pm 0.8	
Range	2.5-5.5	

Table 4 showed that among 105 total study patient 36(34.3%) study patients had high disease activity Score while 69(65.7%) had very high disease

activity score. No study participant had low disease activity score. The mean ASDAS-CRP of the study patients was 3.9 \pm 0.8 which ranged from 2.5-5.5.

Table 5: Distribution of study participants by ASAS criteria for the diagnosis of peripheral SpA (N=105)

ASAS criteria	Frequency (n)	Percentage (%)
Arthritis	105	100.0
Inflammatory back pain	105	100.0
HLAB27	101	96.2
Enthesitis	99	94.3
Family history of spondyloarthropathy	78	74.3
Dactylitis	71	67.6
Sacroiliitisbyimaging	59	56.2
Preceding infection	63	60.0
Psoriasis	3	2.9
Crohn/colitis	4	3.8
Uveitis	2	1.9

Table 5 showed among the 105 study patients, all 105(100.0%) had arthritis and inflammatory back pain. HLA B27 was present in most of the study participants 101(96.2%) and 99(94.3%) had enthesitis. Family history of spondyloarthropathy was present in

78(67.6%) study participants. Majority of the study participants had dactylitis 71(67.5%), sacroiliitis 56.2(56.2%) and preceding infection 63(60.0%). Few had psoriasis 3(2.9%), Crohn/colitis 4(3.8%) and Uveitis 2(1.9%) respectively.

Table 6: SF-12 scores of study participants with peripheral SpA (N=100)

SF-12	Mean \pm SD
Physical Component Summary(PCS)	34.0 \pm 7.8
Mental Component Summary(MCS)	41.3 \pm 7.7

Table 6 showed that the mean Physical Component Summary (PCS) of the study participants

was 34.0(\pm 7.8) and the Mental Component Summary (MCS) was 41.3(\pm 7.7).

Table 7: Correlation between age of the study participants and SF-12 scores of study participants with peripheral SpA (N=105)

Age of the study participants	r	p
Physical Component Summary (PCS)	-0.233	0.017
Mental Component Summary (MCS)	-0.063	0.522

Table 7 showed the negative correlation ($r=-0.233$) between age of the study participants and Physical Component Summary (PCS) of SF-12 scores. Pearson correlation coefficient test showed that this

correlation was significant ($p=0.017$). However, There no significant correlation between age of the study participants and Mental Component Summary (MCS) ($r=-0.017$, $p=0.552$).

Table 8: Correlation between duration of disease and SF-12 scores of study participants with peripheral SpA (N=105)

Duration of disease	r	p
Physical Component Summary (PCS)	-0.339	<0.001
Mental Component Summary(MCS)	-0.290	0.003

Table 8 showed the negative correlation ($r=-0.339$) between duration of the disease and Physical Component Summary (PCS) of SF-12 scores. Pearson correlation coefficient test showed that this correlation

was significant ($p<0.001$). Again, there was weak negative correlation between duration of the disease and Mental Component Summary (MCS) which was significant ($r=-0.290$, $p=0.003$).

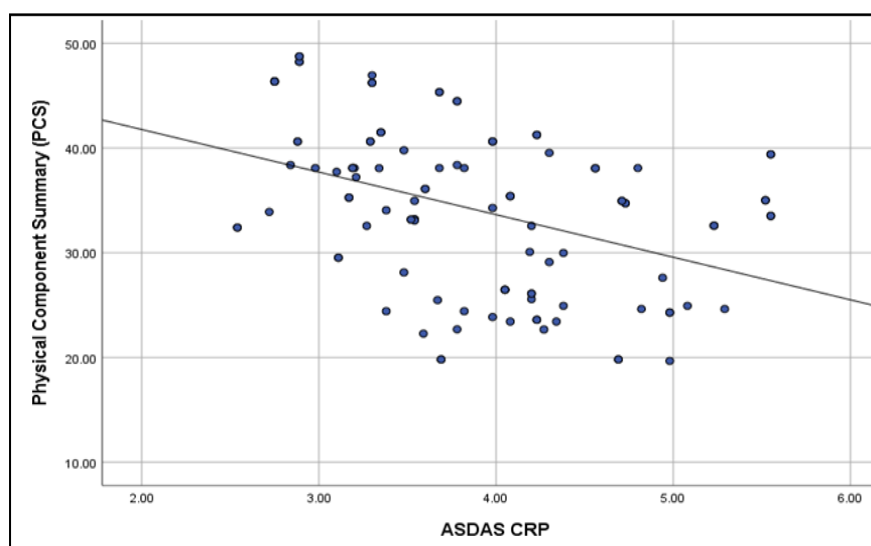


Figure III. Correlation between ASDAS-CRP and Physical Component Summary (PCS) of SF-12 (n=105)

There was moderate negative correlation ($r=-0.461$) between ASDAS-CRP and Mental Component Summary (MCS) of SF-12 scores. Pearson correlation

coefficient test showed that this correlation was significant ($p<0.00$)

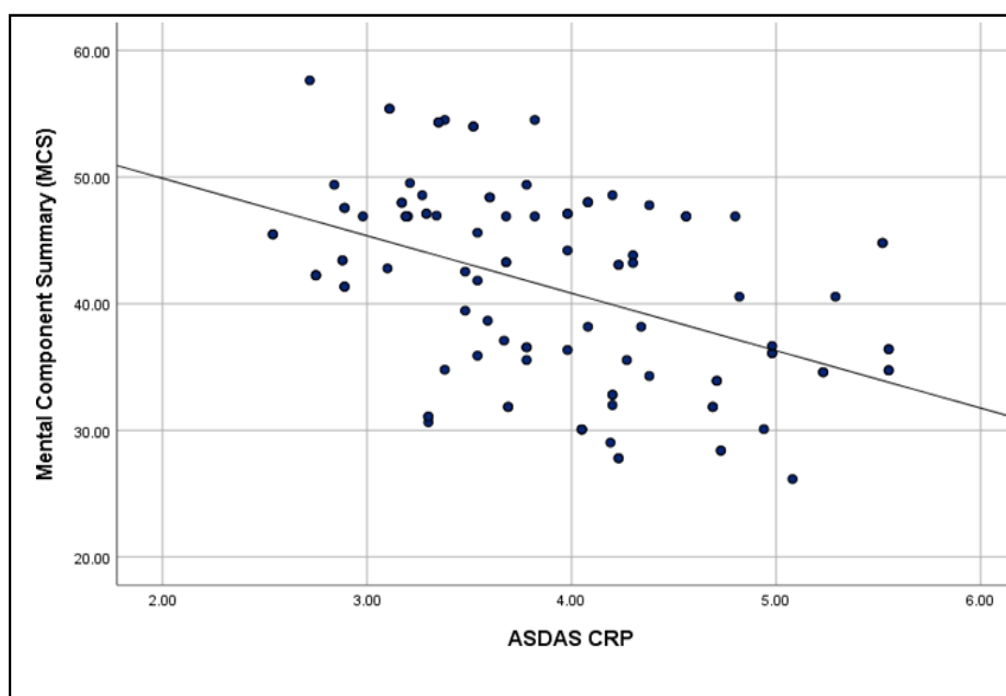


Figure IV: Correlation between ASDAS-CRP and Mental Component Summary (MCS) of SF-12 (n=105)

DISCUSSION

The peripheral joints are affected by peripheral spondyloarthritis [13]. This study investigated the quality of life of peripheral neuropathy patients. 105 individuals participated in this cross-sectional study. pSpA-diagnosed. The Bengali translation observed illness activity. ASDAS, ASDAS-CRP, and the validated Bengali version of SF-12v2 were evaluated. Study Most individuals with peripheral spondyloarthritis had a high DALY. Better mental health than physical health. Mental and physical wellness have a negative correlation with sickness duration. Moderately negative connection between ASDAS-CRP and PCS/MCS in the SF-12 MCS summary. More over fifty percent of the 38.8(±9.8) years old study participants were female. 51.4% of participants were under the age of 40. Other peripheral Spondyloarthritis studies [18]. 64% of the 105 participants in the study were guys. Observed 8 male-to-female 2.6-to-1 also discovered this. 50.5% of patients in the study had a BMI of 25.4(±4.0) kg/m². The BMIs of participants were normal. When the mean BMI was 24.8 kg/m² in [10]. The mean length of sickness among participants was 4.3(3±3) years. 52.4% of study participants experienced disease lasting up to three years, whereas 21.9% had illness lasting beyond six years. The 5-year clinical study of peripheral spondyloarthritis. No patient's ASDAS-CRP score was low 3.9(±0.8). Two-thirds had an elevated disease activity score. In a separate study [10], the average ASDAS-CRP was 2.2% 2017 [10] examined inflammation or infection in non-psoriatic individuals, while the present study included ASAS patients with a mean ASDAS-CRP level. All of the participants in this study had arthritis, according to this study [19],

revealed that 92% of patients had arthritis; Hegde *et al.* reported that 96% of individuals had arthritis [20]. 85.2% of people had arthritis. Each participant experienced inflammatory back pain. Research According to, [18] 85.0% of patients suffered inflammatory back pain. HLA-B27 and SPARKS articular and extra-articular. [21] The bulk of students (96.2%). 71.0% had HLA B27. 92% [18] [19]. The majority of study participants experienced enthesitis (94.3%). Numerous Enthesitis is uncommon, according to studies [18]. 20.0% to 26.7% of patients were diagnosed with enthesitis. Dactylitis [11] is a hallmark of peripheral spondyloarthritis. The majority of people had dactylitis (67.5%). Result [20] [22]. This may be the result of several research on patient selection criteria. Few patients had psoriasis (2.9%), Crohn's/colitis (3.8%), and Uveitis (0.1%). (1%). 2% of [18] exhibited a decrease in the frequency of results. 56.2% of the participants in this study had sacroiliitis (revealed in imaging). 36.0% of patients with peripheral spondyloarthritis with axial involvement (pSpA) were diagnosed with sacroiliitis using MRI. Compared to a prior research, the prevalence of SIJ was greater in the present sample, as was the disease duration. Mental Component Summary was lower than the mean SF-12 PCS (34.0 vs 41.3). PCS was the disease load in peripheral Spondyloarthritis in Brazil, according to Lopes *et al.* Ribeiro *et al.* (2016) [23] evaluated the quality of life (QOL) of spondyloarthritis patients (SpA) In Brazil, enthesitis may lower patient's quality of life. 94.3% of study participants had a lower SF-12v2 score for enthesitis. The quality of life of peri-arthritis patients was impacted. Yang's systematic evaluation revealed that the pooled mean of MCS was larger than the pooled mean of PCS. Patients are able to adapt

efficiently to their slowly progressing sickness despite their significant handicap. ASDAS-CRP and PCS are somewhat negatively related. ASDAS-CRP, MCS ($r = -0.406, -0.461$). According to Garrido-Cumbrera *et al.* [24] excessive disease activity is a risk factor for poor health. High disease activity is indicative with poor spondyloarthritis quality [25]. The study revealed no association between SF-PCS and MCS. 12 socio-demographic. According to [26], women have poorer life satisfaction. According to them, women detest the situation more than men. Patients in this study were diagnosed with arthritis and inflammatory back pain (94.3%) Enthesitis. [27] found a connection between enthesitis and peripheral symptoms. Enthesitis increased illness prevalence. Functional capacity and quality of life decline. These enthesitis patients exhibited superior ankylosing spondylitis quality of life scores. As most patients had enthesitis, neither the PCS nor the MCS of the SF-12 include sociodemographic factors of significance. This study revealed a negative relationship between PCS and MCS length SF-12s. A shorter length of sickness improved PCS and MCS. As the disease worsened, the PCS symptoms of SF-12 MCS deteriorated.

CONCLUSION

The disease activity score of the majority of individuals with peripheral spondyloarthritis was very high. The psychological health of these patients was superior to their physical health. Both physical and mental health components were negatively linked with illness duration. There was a moderate inverse connection between ASDAS-CRP and the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores of the SF-12.

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