Socioeconomic status in Behçet's syndrome

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Abstract

Objective

To compare socioeconomic status (SES) of patients with Behçet's syndrome (BS) with other chronic inflammatory diseases and healthy controls (HC), and to identify associated clinical factors.

Methods

The InCharge Financial Distress/Financial Well-being (IFDFW) and Socioeconomic Status Composite (SES-C) scales were translated, validated in Turkish, and administered face-to-face to 506 BS, 144 ankylosing spondylitis (AS), 113 psoriatic arthritis (PsA), 140 inflammatory bowel disease (IBD), and 94 multiple sclerosis (MS) patients, and 402 HC. SES-C served as the primary outcome measure. Ordinal logistic regression identified independent SES predictors across all participants and within the BS subgroup.

Results

Both instruments demonstrated excellent psychometric properties in Turkish (ICC=0.979 for IFDFW; ICC=0.962 for SES-C). BS patients had the lowest mean SES-C score (17.76±2.98); 33.9% were classified in the very low or low SES categories, exceeding IBD (25.7%), PsA (20.4%), AS (16.0%), HC (15.7%), and MS (11.7%). In multivariate analysis, BS (OR 2.135, p<0.001) and IBD (OR 1.709, p=0.015) were independently associated with lower SES, whereas MS was associated with higher SES [OR 0.516, p=0.009]. Within the BS subgroup, employment status (OR 4.480, p<0.001) and BDCAF score (OR 1.154, p=0.022) were independent predictors of lower SES. Lower SES persisted in BS patients without major organ involvement.

Conclusions

BS patients had the lowest SES among all groups. The opposing SES associations of BS and MS within the same healthcare setting support disease-specific environmental contributions to pathogenesis. The independent association of disease activity with lower SES in BS suggests a bidirectional relationship, in which low SES may amplify disease through environmental exposures while active disease drives socioeconomic decline through work disability.

Key words

Behçet's syndrome, damage indexes, disease activity, economics, epidemiology, aetiopathogenesis, socioeconomic status

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Introduction

Behçet's syndrome (BS) is a chronic, relapsing, systemic inflammatory disease of unknown aetiology (1, 2). The disease follows a distinct geographic distribution, with the highest prevalence along the ancient Silk Road, including Turkey, Iran, Japan and China (1). HLA-B51 remains the most replicated genetic susceptibility factor; however, genetic predisposition alone does not fully explain disease expression or geographic clustering, implicating environmental determinants in BS pathogenesis (3).

Accumulating evidence suggests that an exaggerated immune response triggered by environmental factors play a central role in BS pathogenesis (4-8). Cross-reactivity and molecular mimicry involving streptococcal antigens (1, 3), the pathergy phenomenon reflecting exaggerated neutrophilic responses to non-specific stimuli (5, 7), alterations in the oral and gut microbiome (8, 9), and the documented efficacy of prophylactic penicillin in reducing mucocutaneous manifestations (10) collectively indicate a close relationship between environmental microbial exposure and disease expression. Additionally, the temporal decline in BS severity and incidence observed over the past three to four decades has been attributed to changing environmental conditions, including improved hygiene and rising living standards (10-18).

Socioeconomic status (SES) can serve as a surrogate measure for several environmental risk factors relevant to immune-mediated diseases, including oral hygiene practices, infectious exposure, dietary habits, healthcare accessibility, and psychosocial stress (19-23). In many chronic inflammatory conditions, low SES has been associated with greater disease burden, reduced treatment adherence, and worse long-term outcomes (24-27). Data on SES in BS are scarce. The few available studies, including a national uveitis registry study (28), a study in neuro-Behçet patients (29) and a preprint from Iran (30), consistently reported lower socioeconomic indicators in BS patients, but were limited by the absence of validated SES instruments and lack of comparator inflammatory disease groups.

The Socioeconomic Status Composite (SES-C) scale (31) and the InCharge Financial Distress/Financial Well-being (IFDFW) scale (32), both originally developed and validated in English, offer comprehensive, multidimensional assessments of socioeconomic conditions.

The aims of this two-phase study were (i) to translate, adapt and validate the SES-C and IFDFW scales in Turkish, and (ii) to compare the socioeconomic profiles of patients with BS against those with ankylosing spondylitis (AS), psoriatic arthritis (PsA), inflammatory bowel disease (IBD), multiple sclerosis (MS),and healthy controls (HC).

Materials and methods

Study design

This cross-sectional study was conducted in two phases at Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, from September 2024 through August 2025. In the first phase, we translated, adapted, and validated the Turkish versions of the SES-C (31) and IFDFW (32) scales. In the second phase, we applied these validated instruments to compare the socioeconomic profiles of patients with BS, diseased controls, and healthy controls from the same geographic and healthcare setting (Figure 1). We used SES-C as the primary outcome measure. We further examined disease-specific predictors of low SES within the BS cohort, with particular attention to clinical and disease-related variables.

Phase 1. Validation and reliability of SES-C and IFDFW scales

a) Scale descriptions

SES-C has been first developed by Sacre *et al.* in Lebanon in 2023 (31). It includes questions for both the index participant and the head of the household, and aims to assess monthly household income, economic well-being, employment status, need for financial assistance, crowding index, perceived social class, debt status, and education level. The total SES-C score is calculated by summing the codes of 10 items, with a possible range of 6 to 28. SES-C incorporates the IFDFW scale, devel-

oped by Prawitz *et al*. in USA in 2006, as its second item (32). The IFDFW scale assesses individuals' subjective financial well-being across domains including financial stress, satisfaction, worry about meeting expenses, confidence in handling emergencies, and the extent to which financial constraints limit daily activities. It is a self-report measure that consists of 8 items, each scored from 1 to 10, with higher scores indicating better financial status (32). IFDFW scores were divided into four categories (8-25, 26-50, 51-75 and 76-80). Both scales are positively oriented; lower scores denote lower SES/poorer financial wellbeing. Both SES-C and IFDFW have been validated in English (31, 32).

b) Translation and validation procedure

After obtaining permission from the original authors (31, 32), the SES-C and IFDFW scales were translated from English to Turkish and back-translated by two independent professional translators. A panel of five physicians reviewed all versions, and discrepancies were resolved by consensus. For IFDFW Item 5, after consultation with the scale developers, "$1,000 (USD)" was converted using purchasing power parity and set at 10,000 Turkish lira (TL) (32, 33). Linguistic clarity and equivalence were tested in a bilingual sample of university students and graduates. They were all healthy individuals independent of the comparative cohort analysed in Phase 2. The minimum sample size was set at 50 participants, based on the rule of at least five participants per item for a 10-item scale. The 50 participants in the test-retest phase were all healthy controls. Turkish and English versions of the scales (Supplementary data) were administered separately via Google Forms with a 4-6-week interval.

Phase 2. Scale administration to study groups

a) Description of the study groups and eligibility

We enrolled consecutive adult patients with BS, AS, and PsA from Rheumatology clinics, and patients with IBD and MS from Gastroenterology and Neurology clinics of the same university hospital, respectively. Healthy controls were recruited consecutively from the General Internal Medicine outpatient clinic at Cerrahpaşa Faculty of Medicine among individuals attending for non-inflammatory reasons (routine check-up, dyspepsia, uncontrolled hypertension). The eligibility required the absence of any chronic inflammatory, rheumatologic, autoimmune, or neurologic disease. Healthy controls were also matched to the BS patient cohort by age and sex.

Groups were age-matched; however, sex distribution differed across diseases due to the inherent epidemiologic characteristics. Patients with BS, AS, PsA, and MS met the International Criteria for Behçet's Disease (ICBD) (34), Assessment of SpondyloArthritis international Society (ASAS) criteria (35), Classification Criteria for Psoriatic Arthritis (CASPAR) (36), and McDonald criteria (37), respectively. Diagnosis of IBD (Crohn's disease (CD)/ulcerative colitis (UC)) was based on colonoscopic and histopathological findings.

Participants were excluded if they were under 18 years of age, did not provide informed consent, or were unable to understand or complete the study questionnaires. Nine people were excluded. These included one person under 18, 5 people who did not consent to complete the questionnaire, and 3 people who could not understand the questions. Twenty BS patients with eye disease had visual acuity too low to read the questions, and 24 patients (12 BS, 3 PsA, 4 IBD and 5 HC) were illiter-

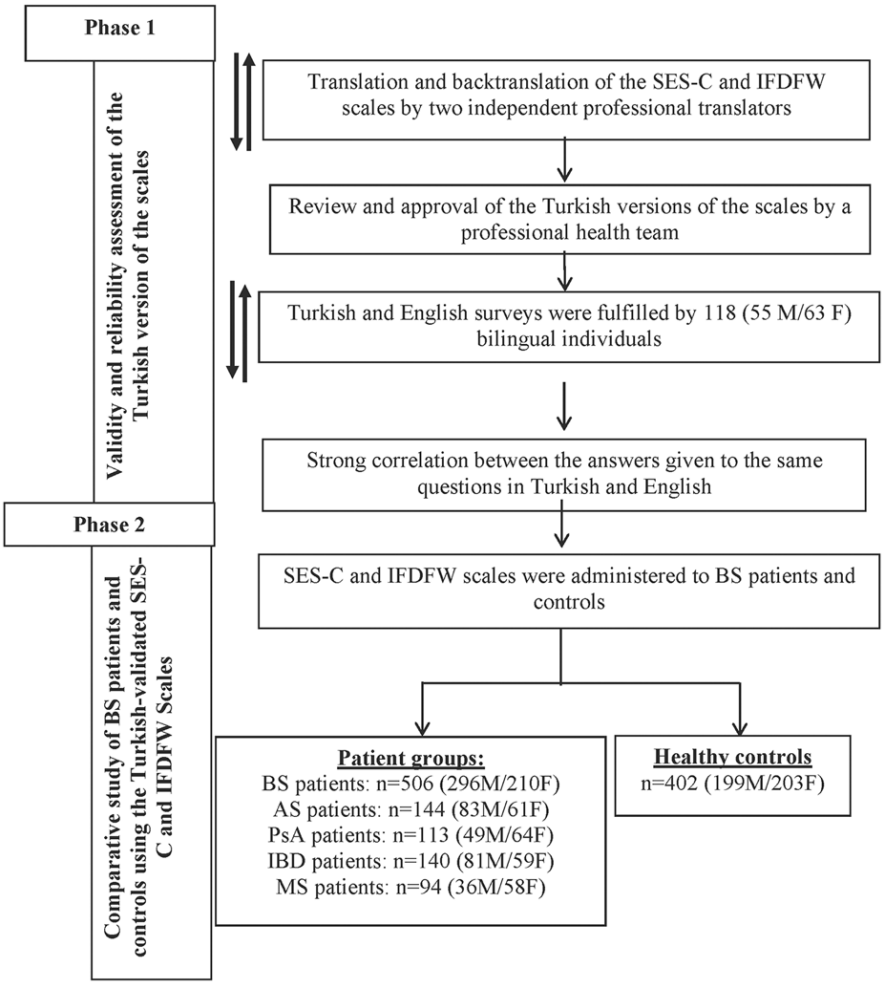

Fig. 1. Flow chart: study phases.
SES-C: Socioeconomic Status Composite scale; IFDFW: InCharge financial distress/financial wellbeing scale; BS: Behçet's syndrome; AS: ankylosing spondylitis; PsA: psoriatic arthritis; IBD: inflammatory bowel disease, IBD include Crohn's disease (61M/42F) and ulcerative colitis (20M/17F); MS: multiple sclerosis; M: males; F: females.

ate, making a total of 44 participants who needed assistance to complete the questionnaire.

b) Disease activity or severity indices for BS

Sociodemographic data were recorded for all participants and disease duration for all patients. For BS patients, additional clinical features including organ involvement patterns and family history of BS were documented. Disease activity in BS was assessed using the Behçet's Disease Current Activity Form (BDCAF) (38), while cumulative disease damage was evaluated using the Clinical Activity Index (39), Krause Index (40), and Behçet's Disease Overall Damage Index (BODI) (41). Attack-free best-corrected visual acuity within the preceding year was recorded using Snellen charts; visual acuity below 20/200 was defined as legal blindness (42). The mean visual acuity of both eyes was used in the analyses.

c) Scale administration

Turkish versions of the questionnaires were administered face-to-face to patients and controls in outpatient clinics by T.A. Completion time was about 6-7 minutes. When needed, participants received clarification to ensure correct understanding and complete responses.

Statistical analysis

Phase 1. Validation and reliability assessments of the scales

Data were screened for univariate outliers. Sampling adequacy and factorability were evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. Construct validity of IFDFW-T was assessed by exploratory factor analysis (EFA), with factor retention based on eigenvalues >1 and scree plot inspection; items with factor loadings ≥0.40 were retained. Internal consistency was evaluated using Cronbach's alpha (acceptable if α>0.70) (43). Cross-language agreement (Turkish *vs*. English forms) was assessed using Spearman correlation, Bland-Altman analysis, and intraclass correlation coefficients (ICC). For item-level agreement, Cohen's kappa was used. Spearman coefficients>0.70 were considered strong (44), and kappa ≥0.81 was considered near-perfect agreement (45).

Phase 2. Sample size, group comparisons, and regression analyses

Sample size was estimated using G*Power 3.1.9.7 (46). For one-way ANOVA (6 groups), assuming α=0.05, power=90%, and moderate effect size (f=0.25), the required minimum was 45 participants per group. For ordinal logistic regression with 8 independent variables, a minimum total sample size of 500 was targeted (47).

Normality tests (Kolmogorov-Smirnov, Shapiro-Wilk test, visual histograms, and q-q plots) were done. Normally distributed continuous variables were expressed as mean±standard deviation (SD) and were compared using one-way ANOVA with Tukey post-hoc tests; non-normally distributed variables were expressed as median (min-max) and were compared using Kruskal-Wallis tests with Mann-Whitney U post-hoc pairwise comparisons. Categorical variables were compared using chi-square or Fisher's exact tests, as appropriate. Analyses were performed in the overall cohort and stratified by sex. In the BS group, the relationships among damage indices, disease activity, and SES-C scores were assessed by Spearman's correlation.

Ordinal logistic regression was used to identify factors associated with SES in the overall cohort and in the BS subgroup. Multivariate ordinal logistic regression was performed in the whole cohort to test whether disease group, and BS in particular, was independently associated with SES-C after adjustment for sociodemographic confounders selected according to the original SES-C development study. Disease-specific regression models were additionally performed to identify within-group determinants of SES-C. Lowest SES-C category served as the primary dependent variable. Variables with p<0.05 in univariate analyses were entered into multivariable models; model fit was assessed. Two-sided p<0.05 was considered statistically significant. Analyses were performed in SPSS v26.0 (IBM, Armonk, NY, USA).

Ethical statement

Ethical approval was received from the Ethics Committee of Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine (approval number: E-83045809-604.01-1078916). Informed consent was obtained from all participants. The study was conducted in accordance with the Helsinki Declaration.

Results

Phase 1. Turkish validation and reliability of the scales

One hundred eighteen (55M/63F) bilingual volunteers answered both the Turkish and English versions of the IFDFW and SES-C questionnaires within a median interval of 4 weeks (IQR: 4-5). The median age of the participants was 28 years (IQR: 26-29).

a) IFDFW

Preliminary analyses supported factorability (KMO=0.893; Bartlett's test p<0.001). Exploratory analysis showed a single-factor structure (eigenvalue >1) explaining 58.46% of total variance; scree plot findings were consistent. Communalities ranged from 0.335 to 0.722, and factor loadings from 0.579 to 0.849. Reliability was high: Cronbach's α=0.886, corrected item-total correlations 0.496-0.758, and no meaningful change in α after item deletion (Supplementary Table S1). Agreement/reproducibility was excellent (ICC=0.979, 95% CI 0.970–0.985; p<0.001). Cross-language equivalence was very strong (Supplementary Table S2), with a high correlation between total Turkish and English IFDFW scores (r=0.950, p<0.001), supported by Bland-Altman agreement (Supplementary Fig. S1a, S1b).

b) SES-C

SES-C also showed excellent cross-language equivalence. Turkish and English item responses were strongly correlated (all p<0.001) (Supplementary Table S3), and total scores were highly correlated (r=0.954, p<0.001) (Supplementary Fig. S1c). Reproducibility was excellent (ICC=0.962, 95% CI 0.946–0.973; p<0.001). In Bland-Altman analysis, only 3 participants (2.54%) were outside the 95% limits of agreement (Supplementary Fig. S1d),

Table I. Sociodemographic features of all study participants.

	Behçet syndrome (BS), n=506	Ankylosing spondylitis (AS), n=144	Psoriatic arthritis (PsA), n=113	Inflammatory bowel disease, (IBD), n=140	Multiple sclerosis (MS), n=94	Healthy controls (HCs), n=402	*p*-value
Age, mean ± SD, years	42.61 ± 11.08	42.5 ± 10.59	43.18 ± 12.48	42.41 ± 13.01	40.12 ± 10.44	42.61 ± 11.74	0.520
Disease duration, med. (min-max), years	14 (0.1-60)	10 (0.2-45)	4 (0.1-42)	10 (0.2-43)	5 (0.1-29)	-	<0.001 [a, b, c, d, e, f]
Male gender, n (%)	296 (58.5)	83 (57.6)	49 (43.4)	81 (57.9)	36 (38.3)	199 (49.5)	<0.001
BMI, mean ± SD, kg/m^2	27.04 ± 5.10	26.99 ± 4.46	28.27 ± 5.48	26.03 ± 5.79	25.63 ± 4.73	27.72 ± 5.46	<0.001 [g, h, i, l, j]
Comorbidities, n (%)							
Hypertension	85 (16.8)	30 (20.8)	25 (22.1)	18 (12.9)	8 (8.5)	61 (15.2)	0.051
Diabetes mellitus	47 (9.3)	11 (7.6)	15 (13.3)	7 (5)	1 (1)	40 (10.0)	0.018
Malignancy	13 (2.6)	0 (0)	0 (0)	5 (3.6)	1 (1)	5 (1.2)	0.067
Living in rural region, n (%)	28 (5.5)	4 (2.8)	2 (1.8)	4 (2.8)	1 (1)	5 (1.2)	0.006
Difficult access to healthcare, n (%)	171 (33.8)	37 (25.7)	36 (31.9)	39 (27.9)	14 (14.9)	70 (17.4)	<0.001
Marital status, n (%)							0.017
Single	111 (21.9)	28 (19.4)	26 (23)	39 (27.8)	31 (32)	98 (24.4)	-
Married	370 (73.1)	109 (75.7)	75 (66.3)	89 (63.6)	63 (67)	284 (70.6)	-
Divorced/Widowed	22 (4.3)	7 (4.9)	12 (10.6)	12 (8.6)	1 (1)	20 (4.9)	-
Not reported	3 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Children, med. (min-max)	2 (0-7)	2 (0-7)	2 (0-5)	1 (0-8)	1 (0-4)	2 (0-5)	<0.001 [a, b, c, h, l, k]
Smoking status, n (%)							<0.001
Never smoked	194 (38.3)	55 (38.2)	37 (32.7)	59 (42.1)	47 (50)	206 (51.2)	-
Ex-smoker	104 (20.5)	23 (16)	27 (23.9)	40 (28.6)	24 (25.5)	59 (14.7)	-
Active smoker	207 (40.9)	66 (45.8)	49 (43.4)	41 (29.3)	23 (24.5)	137 (34)	-
Not reported	1 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Alcohol use, n (%)							0.011
Never	379 (74.9)	88 (61.1)	84 (74.3)	102 (72.8)	57 (60.6)	298 (74.1)	-
Socially	114 (22.5)	50 (34.7)	27 (23.8)	34 (24.3)	36 (38.3)	89 (22.1)	-
Regularly	13 (2.6)	6 (4.2)	2 (1.8)	4 (2.8)	1 (1)	15 (3.7)	-

[a]BS *vs*. IBD; $p<0.05$, [b]BS *vs*. MS; $p<0.05$, [c]AS *vs*. MS; $p<0.05$, [d]BS *vs*. AS; $p<0.05$, [e]BS *vs*. PSA; $p<0.05$, [f]AS *vs*. PSA; $p<0.05$, [g]PSA *vs*. IBD; $p<0.05$, [h]PSA *vs*. MS; $p<0.05$, [i]IBD *vs*. HCs; $p<0.05$, [l]MS *vs*. HCs; $p<0.05$, [j]IBD *vs*. MS; $p<0.05$, [k]BS *vs*. HCs; $p<0.05$.

and item-level agreement was near-perfect (Supplementary Table S4).

Phase 2. SES-C evaluation among the study groups

a) Clinical description of the study groups

The clinical and sociodemographic characteristics of all study groups are summarized in Table I. We studied in total 506 (296M/210F) patients with BS. Organ involvement included eye (n=172, 115M/57F), vascular (n=170, 145M/25F), joint (n=129, 69M/60F), parenchymal central nervous system (n=42, 29M/13F), and gastrointestinal (n=20, 12M/8F); patients could have one or more organ systems involved. Fifty-three patients (all female) had isolated mucocutaneous disease. In the BS cohort, disease activity and damage indices were as follows: BDCAF score, median 1 (range 0–7); BODI score, median 2 (range 0–14); Clinical Activity Index, median 5 (range 1–20) and Krause severity score, median 5 (range 1–19). We also included in the study 144 (83M/61F) AS, 113 (49M/64F) PsA, 140 (81M/59F) IBD patients [CD: (61M/42F) and UC: (20M/17F)], 94 MS patients (36M/58F) and 402 (199M/203F) healthy controls.

b) Socio-demographic characteristics and comorbid diseases of the study groups

All participants: males and females combined

Male sex was more frequent in BS (58.5%), AS (57.6%), and IBD (57.9%) compared to PsA (43.4%), MS (38.3%), and HC (49.5%) ($p<0.001$). Groups were balanced for mean age (range: 40.12–43.18 years; $p=0.520$). BS patients had the longest median disease duration, followed by AS, IBD, MS, and PsA ($p<0.001$). BMI differed significantly among all participants ($p<0.001$) driven by lower values in IBD and MS patients. Diabetes mellitus (13.3%) and hypertension (22.1%) were most prevalent among PsA patients.

BS patients reported the highest rate of difficulty in access to healthcare (33.8%), compared to MS (14.9%) and HC (17.4%) ($p<0.001$), and had the highest rate of rural residence (5.5%) among all groups ($p=0.006$). Marital status differed significantly across groups ($p=0.017$); BS had one of the higher marriage rates (73.1%), following AS (75.7%). Conversely, MS patients had the highest rate of being single (32%) and the lowest rate of rural residence (1%). Active smoking was most frequent in AS (45.8%) and PsA (43.4%) ($p<0.001$). Social drinking was most prevalent in MS (38.3%) and AS (34.7%) ($p=0.011$).

Sex stratified analyses: separate analysis of males and females

Sex-stratified analyses revealed broadly consistent patterns across male and female subgroups (Supplementary Tables S5 and S6). Age was comparable across groups in both sex-stratified analyses. Disease duration preserved its significance in both males and females. BMI differences remained significant only among males, as did comorbidities and rural residence. Marital status did not reach significance in either sex examined separately. Active

Table II. Socioeconomic Status Composite (SES-C) scale items: distribution across all study participants.

	Behçet syndrome (BS), n=506	Ankylosing spondylitis (AS), n=144	Psoriatic arthritis (PsA), n=113	Inflammatory bowel disease (IBD), n=140	Multiple sclerosis (MS), n=94	Healthy controls (HCs), n=402	*p*-value
Social status							<0.001
Poor, n (%)	62 (12.3)	13 (9)	5 (4.4)	13 (9.3)	5 (5.3)	27 (6.7)	-
Low-intermediate, n (%)	349 (69)	91 (63.2)	85 (75.2)	96 (68.6)	51 (54.3)	246 (61.2)	-
High-intermediate, n (%)	93 (18.4)	38 (26.4)	22 (19.5)	30 (21.4)	35 (37.2)	119 (29.6)	-
Wealthy, n (%)	2 (0.3)	2 (1.4)	1 (0.9)	0 (0)	3 (3.2)	10 (2.5)	-
N/A, n (%)	0 (0)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
IFDFW category							<0.001
Category 1, n (%)	124 (24.5)	22 (15.3)	17 (15)	24 (17.1)	8 (8.5)	57 (14.2)	-
Category 2, n (%)	241 (47.6)	66 (45.8)	60 (53)	72 (51.4)	34 (36.2)	200 (49.8)	-
Category 3, n (%)	127 (25)	51 (35.4)	32 (28.3)	41 (29.3)	49 (52.1)	134 (33.3)	-
Category 4, n (%)	14 (2.8)	5 (3.4)	4 (3.5)	2 (1.4)	3 (3)	11 (2.7)	-
N/A, n (%)	0 (0)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Total IFDFW score, mean±SD	39.97 ± 17.85	45.24 ± 17.7	42.17 ± 17.79	41.35 ± 16.32	51.29 ± 17.45	44.14 ± 16.54	0.002 [a, b, c, d, e, f, g]
Having debt, n (%)	178 (35.2)	54 (37.5)	49 (43.4)	51 (36.4)	50 (53.2)	176 (43.8)	0.006
Monthly income level							
No income, n (%)	9 (1.8)	0 (0)	3 (2.7)	1 (0.7)	0 (0)	6 (1.5)	0.001
Low, n (%)	191 (37.7)	37 (25.7)	34 (30)	48 (34.3)	18 (19.1)	109 (27.1)	-
Moderate, n (%)	298 (58.9)	99 (68.8)	72 (63.7)	87 (62.1)	70 (74.5)	271 (67.4)	-
High, n (%)	8 (1.6)	8 (5.5)	4 (3.5)	3 (2.1)	6 (6.4)	16 (4)	-
N/A, n (%)	0 (0)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Being employed in a job, n (%)	281 (55.5)	87 (60.4)	65 (57.5)	74 (52.9)	51 (52.3)	252 (62.7)	0.202
Financial aid from others							<0.001
Regularly, n (%)	69 (13.6)	10 (6.9)	4 (3.5)	8 (5.7)	1 (1)	14 (3.5)	-
Sometimes, n (%)	45 (8.9)	14 (9.7)	15 (13.3)	19 (13.6)	18 (19.1)	57 (14.2)	-
Never, n (%)	391 (77.3)	120 (83.4)	94 (83.2)	112 (80)	75 (79.8)	331 (82.3)	-
N/A, n (%)	1 (0.2)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Crowding index (person/room)							0.042
>3, n (%)	3 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.2)	-
1.51-3, n (%)	79 (15.6)	13 (9)	13 (11.5)	21 (15)	7 (7.4)	31 (7.7)	-
1.1-1.5, n (%)	149 (29.4)	41 (28.5)	38 (33.6)	34 (24.3)	19 (20.2)	114 (28.4)	-
0.51-1, n (%)	230 (45.5)	76 (52.8)	49 (43.4)	69 (49.3)	55 (58.5)	211 (52.5)	-
0-0.5, n (%)	44 (8.7)	13 (9)	13 (11.5)	15 (10.7)	13 (13.8)	45 (11.2)	-
N/A, n (%)	1 (0.2)	1 (0.6)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Head of the family's educational level							<0.001
Illiterate, n (%)	11 (2.2)	0 (0)	3 (2.7)	4 (2.9)	0 (0)	5 (1.2)	-
Primary, middle or high school, n (%)	411 (81.2)	98 (68)	80 (70.8)	101 (72.1)	50 (53.2)	261 (64.9)	-
University, n (%)	83 (16.4)	46 (31.9)	30 (26.5)	34 (24.3)	44 (46.8)	136 (33.8)	-
N/A, n (%)	1 (0.2)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Participant's educational level							<0.001
Illiterate, n (%)	12 (2.4)	0 (0)	3 (2.6)	4 (2.9)	0 (0)	5 (1.2)	-
Primary, middle or high school, n (%)	382 (75.5)	91 (63.2)	81 (71.7)	85 (60.7)	38 (40.4)	223 (55.5)	-
University, n (%)	111 (21.9)	53 (36.8)	29 (25.7)	50 (35.7)	56 (59.6)	174 (43.3)	-
N/A, n (%)	1 (0.2)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
The head of the family having a job, n (%)	337 (66.6)	117 (81.2)	88 (77.9)	97 (69.3)	71 (75.5)	288 (71.6)	0.009
Total SES-C score, mean ± SD	17.76 ± 2.98	19.10 ± 2.91	18.65 ± 2.74	18.39 ± 2.89	20.25 ± 3.08	19.24 ± 2.66	<0.001 [a, b, c, d, e, f, g, h, i]
SES-C category							<0.001
Very low, n (%)	4 (0.7)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-
Low, n (%)	168 (33.2)	23 (16)	23 (20.4)	35 (25)	11 (11.7)	63 (15.7)	-
Moderate, n (%)	305 (60.3)	103 (71.5)	79 (69.9)	92 (65.7)	58 (61.7)	290 (72.1)	-
High, n (%)	28 (5.5)	18 (12.5)	11 (9.7)	11 (7.9)	25 (26.6)	49 (12.2)	-
Not reported, n (%)	1 (0.2)	0 (0)	0 (0)	1 (0.7)	0 (0)	0 (0)	-

IFDFW: Incharge Financial Distress/Financial Well-being scale; SES-C: Socioeconomic Status Composite scale.
[a]PSA *vs*. MS; $p<0.05$, [b]IBD *vs*. MS; $p<0.05$, [c]BS *vs*. MS; $p<0.05$, [d]BS *vs*. HCs; $p<0.05$, [e]AS *vs*. MS; $p<0.05$, [f]BS *vs*. AS; $p<0.05$, [g]MS *vs*. HCs; $p<0.05$, [h]IBD *vs*. HCs; $p<0.05$, [i]BS *vs*. PSA; $p<0.05$. N/A; not applicable.

smoking differed significantly in both sexes, though with some differences in group ranking. Alcohol use showed the opposite dissociation: the overall significant difference was attributable primarily to females, with males showing no significant between-group variation.

c) SES-C and IFDFW scale scores and category distribution

All participants: males and females combined

There was a significant and strong correlation between the total IFDFW and SES-C scores of all participants (r=0.739, $p<0.001$) (Supplementary Fig. S2). SES-C was considered as the primary composite measure.

Total SES-C scores demonstrated significant differences across groups ($p<0.001$) (Table II). BS patients had the lowest mean SES-C score

(17.76±2.98), while MS patients had the highest (20.25±3.08). Accordingly, low or very low SES-C category was most prevalent in BS and least prevalent in MS, while high SES-C category was most frequent in MS and least frequent in BS (p<0.001) (Table II).

Across individual items, self-reported social status was lowest in BS and highest in MS (p<0.001). Income level followed a similar gradient, with low monthly income most prevalent in BS and least prevalent in MS (p=0.001). BS participants also reported the highest rates of regular financial aid from others and the lowest rates of head-of-household employment (both p<0.001). Household crowding was greatest in BS. Debt burden was highest in MS and lowest in BS (p=0.006). Employment status of participants did not differ significantly across groups (p=0.202). BS patients and their head of families had the lowest educational levels (high school level or below in participants:77.9%, in heads of household: 83.4%) among all groups (p<0.001). Conversely, MS patients and their heads of families had the highest educational levels. Mean total IFDFW score, included as a SES-C component, was likewise lowest in BS and highest in MS (p=0.002), with IFDFW category distribution reflecting the same gradient.

Sex stratified analyses: comparison between males vs. females

When SES-C and IFDFW scores were stratified by sex within each group, significant differences emerged only in the AS cohort, where men reported higher IFDFW (48.23±17.69 *vs.* 41.18±17.05, p=0.011) and higher SES-C scores (19.75±2.90 *vs.* 18.21±2.70, p=0.002) than women. No statistically significant sex differences were observed in BS, PsA, IBD, MS, or healthy controls, although a non-significant trend toward lower IFDFW scores in women was present in BS (p=0.073), IBD (p=0.073), and healthy controls (p=0.066). Detailed values are presented in Table III.

Sex stratified analyses: separate analysis of males and females

Table III. IFDFW and SES-C score comparisons between genders across study groups.

	IFDFW score	p-value	SES-C score	p-value
Behçet syndrome				
Males, n =296	41.22 ± 18.26	0.073	17.91 ± 3.16	0.223
Females, n =210	38.21 ± 17.15		17.57 ± 2.69	
Ankylosing spondylitis				
Males, n =83	48.23 ± 17.69	0.011	19.75 ± 2.90	0.002
Females, n =61	41.18 ± 17.05		18.21 ± 2.70	
Psoriatic arthritis				
Males, n =49	40.63 ± 16.02	0.446	18.53 ± 2.60	0.960
Females, n =64	43.34 ± 19.08		18.73 ± 2.85	
Inflammatory bowel disease				
Males, n =81	43.39 ± 16.03	0.073	18.73 ± 3.01	0.116
Females, n =59	38.58 ± 16.43		17.98 ± 2.7	
Multiple sclerosis				
Males, n =36	48.61 ± 18.79	0.286	19.64 ± 3.60	0.181
Females, n =58	52.53 ± 16.38		20.57 ± 2.67	
Healthy controls				
Males, n =199	45.54 ± 17.18	0.066	19.42 ± 2.72	0.287
Females, n =203	42.78 ± 15.82		19 ± 2.6	

IFDFW: Incharge Financial Distress/Financial Well-being scale; SES-C: Socioeconomic Status Composite scale.

Separate analysis of SES-C items including IFDFW category between males and females were largely consistent with the overall cohort findings (Supplementary Tables S7 and S8, Supplementary Fig. S3). The SES-C gradient, with BS recording the lowest and MS the highest mean scores, was preserved in both male and female subgroups (both p<0.001), as were the educational gradients for participants and heads of household (all p<0.001).

However, several items followed a different pattern. Debt burden did not reach significance in either sex. Financial aid from others was significant only among males. Employment status of participants became significant when analysed males and females separately showing significant between-group variation in either sex analyses. Crowding index lost its significance. Head-of-household employment approached but did not reach significance in males (p=0.050) or females (p=0.071). Income level remained significant among males (p=0.047) and approached significance in females (p=0.053).

Subgroup analysis of BS patients according to major organ involvement

In a subgroup analysis of 191 (69M/122F) BS patients without major organ involvement, the mean SES-C scores of BS patients remained still significantly the lowest among the study groups (BS: 17.95±2.88, AS: 19.10±2.91, PSA: 18.65±2.74, IBD: 18.39±2.89, MS: 20.25±3.08, HCs: 19.24±2.66) (p<0.001). This was true when males and females were separately analysed (p=0.008 and p<0.001, respectively). Likewise, BS patients with major organ involvement (n=315) had significantly the lowest SES-C scores among all groups (BS: 17.68±3.03, AS: 19.10±2.91, PSA: 18.65±2.74, IBD: 18.39±2.89, MS: 20.25±3.08, HCs: 19.24±2.66) (p<0.001).

Sensitivity analysis excluding BS patients with longer disease duration

We conducted a sensitivity analysis in which BS patients with a disease duration of ≥15 years were excluded, and the inter-group comparison was repeated in the remaining cohort (BS n=263; AS n=144; PsA n=113; IBD n=140; MS n=94; HCs n=402). The pattern was unchanged: BS patients continued to have the lowest mean SES-C (17.83±2.90) and IFDFW (40.69±17.70) scores among all groups (both p<0.001), with significant pairwise differences between BS and AS, MS, and HCs (all p<0.001).

Correlation of socioeconomic status with disease activity/damage indices among BS patients

In the BS cohort, total SES-C scores showed weak inverse correlations with disease activity and damage indices. Lower socioeconomic status

Table IV. Predictors of socioeconomic status in all study participants.

	Socioeconomic Status		Composite scale (SES-C) category*	
	Univariate analysis, OR (%95 CI)	*p*-value	Multivariate analysis[a], OR (%95 CI)	*p*-value
Study group (reference category: healthy controls)				
Behçet's syndrome	2.617 (1.976-3.472)	<0.001	**2.135 (1.579-2.888)**	**<0.001**
Ankylosing spondylitis	0.986 (0.664-1.506)	1.000	0.933 (0.606-1.436)	0.756
Psoriatic arthritis	1.324 (0.848-2.066)	0.217	1.066 (0.670-1.697)	0.786
Inflammatory bowel disease	1.773 (1.182-2.666)	0.006	**1.709 (1.109-2.636)**	**0.015**
Multiple sclerosis	0.458 (0.285-0.736)	0.001	**0.516 (0.315-0.845)**	**0.009**
Age (per 1 year decrease)	0.973 (0.963-0.983)	<0.001	**1.017 (1.004-1.029)**	**0.010**
Gender (reference category: female)	0.826 (0.664-1.026)	0.084	-	-
Body mass index (kg/m²) (per 1 unit increase)	1.051 (1.030-1.074)	<0.001	**1.031 (1.007-1.056)**	**0.009**
Living in the rural region (reference category: urbanized region)	3.251 (1.805-5.847)	<0.001	**1.994 (1.035-3.845)**	**0.039**
Marital status (reference category: being married)	0.709 (0.557-0.904)	0.006	**1.684 (1.238-2.289)**	**0.001**
Number of children	1.597 (1.461-1.748)	<0.001	**1.615 (1.431-1.823)**	**<0.001**
Smoking status (reference category: not smoking)	1.256 (1.004-1.569)	0.046	**1.473 (1.149-1.890)**	**0.002**
Alcohol use (reference category: socially/regularly using alcohol)	1.912 (1.489-2.454)	<0.001	1.274 (0.965-1.679)	0.086
Employment status (reference category: employed)	4.988 (3.895-6.394)	<0.001	**4.919 (3.747-6.458)**	**<0.001**
Difficult access to healthcare	2.408 (1.884-3.081)	<0.001	**2.118 (1.610-2.784)**	**<0.001**
Having comorbidities	1.890 (1.510-2.369)	<0.001	1.303 (0.999-1.701)	0.051

*Analysis was carried out according to decreasing rankings of the SES-C categories.
[a]Method: Ordinal logistic regression analysis. Sample size (included in analysis): 1382 individuals. Model fitting; Chi square: 403.140, $p<0.001$. Goodness-of-Fit; Pearson Chi-square: 3102.294, $p=1$. Pseudo-R-square; Nagelkerke: 0.308.

Table V. Predictors of socioeconomic status within the Behçet's syndrome group.

	Socioeconomic Status		Composite scale (SES-C) category*	
	Univariate analysis, OR (%95 CI)	*p*-value	Multivariate analys[a]is[a], OR (%95 CI)	*p*-value
Age (per 1 year decrease)	0.982 (0.966-0.998)	0.031	1.016 (0.998-1.037)	0.103
Gender (reference category: female)	1.340 (0.940-1.908)	0.105	-	-
Body mass index (kg/m²) (per 1 unit increase)	1.061 (1.025-1.098)	0.001	1.039 (0.999-1.081)	0.054
Marital status (reference category: being married)	1.396 (0.931-2.092)	0.107	-	-
Employment status (reference category: employed)	4.708 (3.209-6.902)	<0.001	**4.480 (2.949-6.813)**	**<0.001**
Having comorbidities	2.087 (1.459-2.985)	<0.001	1.459 (0.948-2.249)	0.086
Longer disease duration (years)	1.007 (0.990-1.025)	0.467	-	-
Major organ involvement	1.069 (0.745-1.533)	0.716	-	-
Uveitis	1.234 (0.858-1.776)	0.257	-	-
Decrease in mean visual acuity of both eyes	2.298 (1.061-4.978)	0.035	1.022 (0.517-2.024)	0.949
Vascular involvement	0.833 (0.574-1.207)	0.335	-	-
Parenchymal neurological involvement	2.079 (1.172-3.690)	0.012	1.807 (0.937-3.488)	0.077
BODI score	1.121 (1.042-1.204)	0.002	1.083 (0.988-1.187)	0.087
Clinical activity index	1.055 (1.003-1.111)	0.039	-	-
Krause score	1.046 (0.983-1.112)	0.154	-	-
Total BDCAF score	1.245 (1.114-1.390)	<0.001	**1.154 (1.021-1.307)**	**0.022**
Receiving periodic intravenous infusions (IFX or CYC)	1.468 (0.954-2.262)	0.081	-	-

BODI: Behçet's syndrome overall damage index; BDCAF: Behçet's disease current activity form; IFX: infliximab; CYC: cyclophosphamide.
*Analysis was carried out according to decreasing rankings of the SES-C categories.
[a]Ordinal logistic regression was used and 496 patients with BS were included in analysis. Model fitting; Chi square: 95.256, $p<0.001$. Goodness-of-Fit; Pearson Chi-square: 1245.314, $p=1$. Pseudo-R-square; Nagelkerke: 0.214.
Note: Given multicollinearity, the analysis continued using only the BODI among the damage indices, while the total BDCAF score was used to assess overall disease activity over the past month.

was associated with higher BDCAF scores (r=–0.164, $p<0.001$), higher BODI scores (r=–0.149, $p=0.001$), and higher Clinical Activity Index scores (r=–0.090, $p=0.044$). In contrast, the Krause severity score was not correlated with SES-C (r=–0.053, $p=0.234$).

d) Predictors of SES

Predictors of SES among all participants: all study groups pooled analysis

The SES predictors for all participants are shown in Table IV. In multivariate logistic regression analysis including all participants, BS (OR 2.135, $p<0.001$) and IBD (OR 1.709, $p=0.015$) diagnoses were independent predictors of lower SES after adjusting for demographic and clinical confounders, while MS diagnosis was associated with higher SES (OR 0.516, $p=0.009$). Furthermore, when BS patients stratified

for major organ involvements, having both BS with (OR 2.009, $p<0.001$) or without major organ involvement (OR 2.148, $p<0.001$) was independently associated with lower SES.

Among sociodemographic covariates, being unemployed was the strongest independent predictor of lower SES-C (OR 4.919, $p<0.001$), followed by difficult access to healthcare (OR 2.118, $p<0.001$) and being unmarried (OR 1.684, $p=0.001$). Younger age, higher BMI, presence of comorbidities, greater number of children, smoking and living in the rural region were also independently associated with lower SES-C (all $p<0.05$). Gender or using alcohol were not found to be associated with SES-C.

Predictors of SES among BS patients

As presented in Table V, among BS patients, ordinal logistic regression identified employment status and total BDCAF score as independent predictors of SES-C. Unemployment was the strongest independent predictor of lower SES-C (OR 4.480, 95% CI 2.949–6.813; $p<0.001$), followed by higher BDCAF score, which was independently associated with lower SES-C to a lesser degree (OR 1.154, 95% CI 1.021–1.307; $p=0.022$). Several variables that were significant on univariate analysis, including age, BMI, comorbidities, parenchymal neurological involvement, BODI score, and decreased visual acuity, did not retain independent significance after adjustment. Sex, marital status, disease duration, major organ involvement, uveitis, vascular involvement, and immunosuppressive treatment did not reach significance in either analysis.

Predictors of SES in other disease groups

We also assessed predictors that could be associated with low SES-C in other disease groups, besides BS. Considering smaller sample size of these groups, we could only include age, gender, BMI, employment status and number of children as covariates in the logistic regression analysis. In the disease-specific multivariate models, unemployment was the strongest predictor in every group: AS (OR 5.259, $p=0.001$), PsA (OR 9.698, $p<0.001$), IBD (OR 8.055, $p<0.001$), and MS (OR 5.987, p=0.001). A higher number of children was additionally associated with lower SES-C in the PsA (OR 1.61, $p=0.031$), IBD (OR 1.63, $p=0.005$), and MS (OR 2.13, $p=0.004$) groups, but not in AS.

Discussion

In this study, we validated the Turkish versions of the SES-C and IFDFW scales and used them to compare the socioeconomic profiles of patients with BS, AS, PsA, IBD, and MS, as well as healthy controls within the same healthcare setting. Importantly, our study revealed that a) the Turkish versions of IFDFW and SES-C demonstrated excellent validity and reliability; b) BS patients had the lowest SES among all study groups, both in males and females; c) among all participants, BS and IBD diagnoses were independently associated with lower SES after adjusting for sociodemographic confounders, whereas MS diagnosis was independently associated with higher SES; and d) among BS patients, unemployment and high disease activity emerged as the two independent factors associated with lower SES-C.

The first phase of our study addressed a methodological gap. Although the IFDFW and SES-C scales were originally developed and validated in English (31, 32), no Turkish versions were available. Both instruments maintained their psychometric properties after translation, with excellent internal consistency (Cronbach's $\alpha=0.886$ for IFDFW), strong cross-language agreement (ICC=0.979 for IFDFW; ICC=0.962 for SES-C), and preserved factorial structure. The strong correlation between IFDFW and SES-C total scores in the study population (r=0.739) further confirmed the construct validity of these instruments in the Turkish-speaking population and justified their combined use for a comprehensive socioeconomic assessment.

The finding that BS patients had the lowest SES among all groups is consistent with, and extends, the limited existing literature on this topic. In a large national uveitis registry study, Yalçındağ *et al*. found that BS patients had lower educational attainment, higher rates of low-income employment or unemployment, and were more likely to reside in low-GNP cities compared to patients with other non-infectious uveitis entities (28). Pehlivan *et al*. reported that neuro-Behçet's patients had significantly lower educational levels, monthly income, and poorer hygiene conditions compared to MS patients and headache controls, though their study was limited to the neurological subgroup and included only 50 patients per group (29). A preprint study from Iran similarly reported an association between low SES and more severe disease manifestations, including ocular involvement (30).

Beyond these, a small number of studies have examined work impairment (48-51) and cost-of-illness (52, 53) in BS.

The lower SES of BS patients was evident across all measured dimensions. Whether this is a cause or consequence, our cross-sectional design could not address. Nevertheless, some discussion about this matter can be provided.

First, the significantly lower educational attainment of both BS patients and their household heads, compared with all other groups, suggests that BS disproportionately affects populations with pre-existing socioeconomic disadvantage. Because education is typically completed before disease onset in most patients, this gradient likely reflects a baseline socioeconomic characteristic of BS patients rather than a consequence of the disease itself. It is also true that BS onset in young adulthood and its recurrent exacerbations can disrupt education and early career development in a minority (11, 12, 39). Similarly, the higher proportion of household heads with only school-level education and the greater frequency of regular financial aid receipt among BS patients point to a broader pattern of intergenerational socioeconomic disadvantage. This pattern is consistent with the concept that BS clusters in populations with lower socioeconomic backgrounds (along the Silk Road), lending support to the role of environmental exposures in disease pathogenesis.

Second, severe and recurrent complications (ocular, vascular and neurological) may create sustained work

impairment in BS (11, 12, 48-56). This is particularly relevant for physically demanding occupations requiring lower levels of formal education, which characterise a substantial proportion of our BS cohort. Indeed, unemployment reached 44.5% among BS patients in our study. Similarly, Floris *et al*. demonstrated that damage accumulation, particularly ocular involvement, significantly reduces work capacity in BS (48). On the other hand, even in the BS subgroup without major organ involvement, SES remained significantly lower than in MS patients and healthy controls, indicating the lower socioeconomic backgrounds rather than a consequence of the disease itself. In line with this, presence or absence of major organ involvement did not affect lower or higher SES-C category.

Third, the relationship between disease activity and SES is likely bidirectional. On one hand, active disease directly impairs work capacity through absenteeism and presenteeism. Serin *et al*. reported that 42% of BS patients missed workdays and 48% experienced at least 50% productivity reduction during flares, and a multinational study demonstrated marked presenteeism in patients with active ocular, genital, and joint involvement (50, 51). On the other hand, low SES may perpetuate disease activity through poor nutrition, limited healthcare access, inadequate treatment adherence, chronic stress, and increased exposure to microbial triggers, creating a vicious cycle that is difficult to break. The association between BS and low SES has rather important implications for understanding the etiopathogenesis of the disease (57). The dysbiosis hypothesis may link environmental conditions and SES to BS pathogenesis: disruption of the oral and gastrointestinal microbiome increases mucosal permeability, allowing microbial products to enter the circulation and sustain innate immune activation (58, 59). The prominence of mucosal involvement in BS (oral and genital ulcers) is consistent with this mechanism. Recent studies have also shown that dietary factors, closely linked to socioeconomic conditions, can trigger oral ulcer recurrences in BS patients (60-62).

An important finding was the independent association of MS with higher SES, directly contrasting the BS pattern and consistent with the observations of Pehlivan *et al*. (29). This pattern aligns with the hygiene hypothesis, which links improved sanitary conditions and reduced microbial exposure to increased risk of certain autoimmune diseases (23). MS prevalence is well-documented to be higher in more developed, higher-SES settings (63, 64). Our within-country comparison demonstrates that even within the same healthcare system, BS and MS patients occupy opposite ends of the socioeconomic spectrum, reflecting different relationships between environmental exposures and immune dysregulation in each disease.

The independent association of IBD diagnosis with lower SES in the multivariate analysis for the SES-C scale also warrants discussion. While earlier literature suggested that IBD, like MS, was more prevalent in populations with higher socioeconomic level (65, 66), more recent population-based studies have challenged this notion, demonstrating higher hospitalisation rates, service utilisation, and disease-associated mortality among IBD patients with low SES (67, 68). Furthermore, the increasing incidence of IBD in developing countries undergoing socioeconomic transitions suggests a more complex relationship than previously assumed (69). This finding is of particular relevance given that IBD, particularly CD, shares common pathogenetic and clinical features with BS (1, 70, 71), raising the possibility that similar socioeconomic mechanisms may operate across these conditions.

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inference regarding the directionality of the SES-disease relationship. Although we propose a bidirectional model, longitudinal studies are needed to delineate whether low SES precedes and contributes to BS onset, whether BS leads to socioeconomic decline, or both. Second, the single-center design, while ensuring standardisation, may limit generalisability to other geographic and socioeconomic settings, and our findings need to be corroborated in other ethnic groups. Third, sample sizes of the diseased control groups were relatively small. Sex distribution differed across disease groups due to the inherent epidemiological characteristics, necessitating stratified analyses alongside pooled ones. This reduced statistical power in some subgroups, particularly MS. Fourth, since the study was conducted over approximately one year between 2024 and 2025, economic fluctuations during this period may have influenced financial well-being, although this effect is likely negligible. Fifth, although our center has operated within Turkey's national social security system throughout the study period, a sensitivity analysis excluding patients with disease duration ≥15 years confirmed that the SES-C gradient in BS was not attributable to the inclusion of long-standing patients. Finally, selection bias cannot be entirely excluded, as patients attending a tertiary referral centre may not be fully representative of the broader disease population.

This study also has several strengths. To our knowledge, it is the first and largest study to systematically compare the SES and financial well-being of patients with BS, AS, PSA, IBD and MS with each other and with the general population using validated instruments. The two-phase design, incorporating Turkish validation of the SES-C and IFDFW scales followed by clinical application, enabled methodological rigor. The comprehensive assessment of BS-specific clinical variables, including disease activity, damage indices, and organ involvement patterns, allowed detailed analysis of within-disease SES predictors.

Our findings carry direct implications for clinical practice. Employment status emerged as the strongest predictor of lower SES across all disease groups. This could be a simple and practical screening marker during routine visits. The independent association between disease activity and lower SES in BS further supports sustained disease control. This is crucial for not only to prevent organ damage but also to preserve work capacity and financial stability. Finally, incorporating brief socioeco-

nomic assessments, such as the validated SES-C, into routine evaluation may help identify disadvantaged patients.

In conclusion, BS patients had the lowest SES among all inflammatory disease groups and the general population, and this association was independent of sociodemographic confounders. The significantly lower educational level of both BS patients and their household heads suggests that this disadvantage precedes disease onset, pointing to a role for environmental exposures associated with low SES in disease pathogenesis. The contrasting association of MS with higher SES within the same healthcare setting further supports the notion that distinct environmental factors contribute differently to the pathogenesis of these diseases. Disease activity may have a bidirectional relationship with socioeconomic disadvantage: low SES may drive disease activity, while active disease simultaneously deepens socioeconomic decline. Longitudinal studies are needed to clarify this relationship.

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