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ORIGINAL ARTICLE

Work Absenteeism and Its Determinant Factors in Patients with Ankylosing Spondylitis: A Cross-Sectional Study

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Objectives: This study aims to investigate work absenteeism and its determinant factors in patients with ankylosing spondylitis (AS).

Patients and methods: A total of 88 patients were referred to our outpatient clinic with a definitive diagnosis of AS. Of these, the 46 full-time workers (9 women; 37 men; mean age 38.7±8.5 years; range 16 to 60 years) were evaluated. The impact of disease-related factors on absenteeism were analyzed via the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), the Bath Ankylosing Spondylitis Function Index (BASFI), and the Ankylosing Spondylitis Quality of Life (ASQoL) questionnaire. The disease duration and morning stiffness as well as factors such as job-related physical duties [heavy lifting (>10 kg), working with the trunk in an awkward posture, prolonged sitting and standing while working, driving a vehicle for >6 hrs/day], type of occupation, duration of work (years), average hours worked per week, and psychosocial risk factors (job-related distress, fear of returning to work, and job satisfaction) were also assessed.

Results: The mean disease duration was 8±7 years, and the mean days of work absenteeism were 44.8±10.1. There was a significant correlation between work absenteeism and the BASDAI, BASFI, ASQoL, and morning stiffness scores. Among the job-related physical duties and psychosocial risk factors, heavy lifting, job-related distress, fear of returning to work, and job satisfaction were associated with most days of absenteeism. In a stepwise logistic regression analysis, the only items that were significantly related to absenteeism were the high BASDAI scores and low job satisfaction. None of the other demographic characteristics or physical factors demonstrated significance.

Conclusion: Our study results showed that work absenteeism is an important outcome of AS, with the most important determinant factors being the BASDAI scores and the level of job satisfaction.

Keywords: Absenteeism; ankylosing spondylitis; job-related risk factors.

Ankylosing spondylitis (AS) is a chronic inflammatory disease of the joints and entheses.[1] It usually starts in the third decade of life of the patients just as they are becoming more established in their careers,[1] and can lead to significant physical limitations that affect their ability to work.[2,3] Since AS starts at an early age and causes significant problems related to job retention and work absenteeism, the lifetime economic burden is high.[4,5]

Data from the United Kingdom suggests that 50% of AS patients who are of a working age have lost their job due to disease activity.[6] Of those who have a job, 50% have moderate work instability or are at a high risk of losing their jobs.[6] Furthermore, a report from the Netherlands determined that AS patients with a paying job lost 5.0% of the total number of work days in a year, which accounted for a mean of 10.1 days of sick leave per patient per year.[7]

While several studies have been published regarding rheumatoid arthritis (RA) and its relationship to work absenteeism and its determinants, very little data exists in cases involving AS, although it is a known cause of job retention and instability.[8-13] Therefore, the aim of this study was to investigate work absenteeism and its associated risk factors, including job-related physical duties, as well as the psychosocial and disease-related factors in patients with AS who regularly visit our clinic.

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PATIENTS AND METHODS

We performed a cross-sectional monocenter study with patients who were admitted to the physical medicine and rehabilitation clinic at the Istanbul Sisli Etfal Training and Research Hospital. A total of 88 patients with AS were seen in our clinic between years of 2011 and 2012, but only the 46 patients who had full-time paying jobs were included in the study. In addition, the study participants also had a confirmed diagnosis of AS according to the Assessment of Ankylosing Spondylitis (ASAS) criteria, spoke Turkish, and were willing to fill out a questionnaire. Those who were part-time workers (n=16) and those who had retired due to health problems (n=14) or were temporarily disabled and were receiving benefits (n=12) were excluded from the study. Additionally, those patients scheduled to have orthopedic or neurosurgery and those with psychiatric disorders, an inadequate mental state, or other systemic diseases (i.e.. cardiovascular, respiratory, gastrointestinal, renal, or metabolic) were also not included. The study design, protocols, and procedures were approved by the hospital medical ethics committee, and after explaining the study objectives, written informed consent was obtained from each participant.

The patients' demographics (age, gender, marital status, educational level) were noted, and the causes of work absenteeism were analyzed, with particular attention paid to disease activity and job-related characteristics as well as the ergonomic and psychosocial risk factors. The measures of disease activity were evaluated by the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI),[14] the Bath Ankylosing Spondylitis Functional Index (BASFI),[15] disease duration (years), and morning stiffness (minutes). Furthermore, the patients' disease-related quality of life (QoL) was evaluated by the Ankylosing Spondylitis Quality of Life (ASQoL) questionnaire, a disease-specific, needs-based instrument in which higher scores indicate more active or severe AS.[16]

The details about the participants' occupational history were also recorded, including the type of work [(manual workers were defined as artisans, shopkeepers, and working class patients and sedentary workers as managers and salaried employees working in finance and business administration), drivers (transport and operators), liberal arts professionals, and intellectual professionals (e.g., teachers and lawyers)], degree of job-related physical activity (driving vehicles at least six hours per day, working with the trunk in an awkward position (i.e., a bent or twisted back), sitting and standing for long periods, lifting heavy weights (<10 kg), duration of work (years), average hours of work per week, and absences due to sickness.

Additionally, each patient filled out a questionnaire comprised of questions related to psychosocial risk factors. Some of the questions were partly based on the instrument proposed by Linton and Boersma[17] while others were specially designed for this study. The questions mainly focused on three areas: *(i)* job-related distress (''How much have you been bothered by feeling depressed, tense, or anxious in the past week?''), *(ii)* fear of returning to work (''In your estimation, what are the chances that you will be working in six months?''), and *(iii)* job satisfaction ("If you take into consideration your work routine, management, salary, promotion possibilities, and colleagues, how satisfied are you with your job?", according to visual analog scale between 0-100 cm). After examining all of the data, we then determined the amount of long-term absenteeism (>30 days per year) for each of the participants for the period of 12-month.

All analyses were carried out using the SPSS 10.1 for Windows (SPSS Inc., Chicago, IL, USA) software program, and a p value of <0.05 was considered to be statistically significant. The continuous variables were presented as mean ± standard deviation (SD), and the categorical variables were given as frequencies and percentages. We dichotomized the participants into two groups, with category I containing the patients with short-term absenteeism (<30 days per year), and category II having those with long-term absenteeism (>30 days per year). Before analyzing our data statistically, the normality was determined via a one-sample Kolmogorov-Smirnov test. However, this test proved not to be normal for our data ($z=0.398$; $p=0.041$ for category I and $p<0.05$ for category II), so we compared these two groups using the Wilcoxon signed-rank test. A series of stepwise regression analyses were also conducted to predict work absence as an outcome using job-related or disease-related characteristics as predictors, and a model was created which took into account whether the correlation analysis showed an individual or a combined correlation

Table 1. Demographic and disease-related characteristics of the study participants

	n	Mean±SD	Median	Min.-Max.
Age (years)		38.7±8.5		
Gender				
Female	20			
Marital status				
Married	87			
Educational level				
Primary school	75			
High school	14			
University graduate	11			
Duration of arthritis (years)		8.4±7.3		
BASDAI score		6.0±1.2	5.1	1.0-7.2
BASFI score		3.5±1.2	2.9	1.0-4.9
ASQoL score		6.7±3.8	7.5	1.0-18
Morning stiffness (minutes)		45.5±15.7		
Pain sites				
Neck	10			
Upper back	42			
Lower back	48			
Shoulders	0			
Legs	0			

SD: Standard deviation; Min.: Minimum; Max.: Maximum; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASFI: Bath Ankylosing Spondylitis Functional Index; ASQoL: Ankylosing Spondylitis Quality of Life questionnaire.

via Cox & Snell's R-square model (R^2=0.307; chi-square= 13.197; p=0.001).

RESULTS

The demographic and clinical variables of the patients are presented in Table 1, and all had the predominant axial form of AS.

The unemployment rate was 30%, with 16% (n=14) having retired for health reasons and 14% (n=12) being temporarily disabled (receiving a benefit allowance). In addition, 75.4% were manual workers [working class (49.2%), shopkeepers (19%), and artisans (7.2%)], whereas 24.6% were sedentary workers [managers and salaried employees in the business, finance, or administration fields (5%), drivers (transport, equipment operators) (9.6%), intellectual professionals (teachers and lawyers) (3%), and liberal arts professionals (7%)]. Furthermore, we determined that the mean number of sick leave days was 44.8±10.1. Other details related to their jobs are presented in Table 2.

Regarding the job-related physical risk factors, 31% (n=12) drove vehicles more than six hours a day, 30% (n=13) had to do heavy lifting (10-25 kg), 25% (n=11) worked with their trunks in an awkward position, and 23% (n=10) worked for prolonged periods in a sitting or standing posture. Moreover, the mean level of distress related to work was 32.0±12.1 cm, whereas it was 40.1±10.2 cm for fear of returning to work and 58.6±25.0 cm for job satisfaction (Table 3).

The results of the correlation analysis are shown in Table 4, and we found that the relationship between work absenteeism and the BASDAI (r=0.53; p<0.01) and the BASDAI combined with the level of job satisfaction (r= -0,460; p<0.01) were highly significant. In addition, the relationships between absenteeism and the ASQoL (r=-0.33; p<0.05),

Table 2. Employment characteristics of the study participants

Current work status	n	Mean±SD
Full time employment	46	
Average hours worked per week		48.3±7.5
Duration of work (years)		8.4±7.3
Occupational type		
Manual	75.4	
Workingclass	49.1	
Shopkeepers	19.1	
Artisans	7.2	
Sedentary	24.6	
Business, finance, administration	5	
Transport, equipment operators	9.6	
Liberal professionals	7	
Intellectual professionals	3	
Number of patients per days of sick leave		
0-30 days	56	
31-60 days	35	
61-180 days	19	
91-180 days	0	
Mean days of sick leave (over 12 months)		44.8±10.1

SD: Standard deviation.

Table 3. Job-related physical and psychosocial risk factors of the study participants

	n	Mean±SD	Median	Min.-Max.
Physical factors				
Heavy lifting (10-25 kg)	30			
Working with the trunk in an awkward position	25			
Prolonged sitting and standing	23			
Driving vehicles more than six hours a day	31			
Work-related distress (0-100 cm)		32.0±12.1	40	0-100
Fear of returning to work (0-100 cm)		40.1±10.2	48	0-100
Job satisfaction (0-100 cm)		58.6±25.0	44	0-100

SD: Standard deviation; Min.: Minimum; Max.: Maximum.

morning stiffness (r=0.32; p<0.05), the BASFI (r=0.34; p<0.05), heavy lifting (r=0.32; p<0.05), fear of returning to work (r=0.34; p<0.05), and work-related distress (r=0.34; p<0.05) were moderately significant.

We also determined that the mean amount of sick leave was 44.88±5.1 days. In addition, when the category I and category II were compared (Table 5), the BASDAI scores (p<0.01), level of job satisfaction (p<0.01), the BASFI scores (p<0.05), and the scores on the ASQoL questionnaire (p<0.05) were significantly lower in the patients in category II.

Because the outcomes were divided according to these two categories, stepwise logistic regression was used to analyze the predictive ability of the all factors (Table 6), and the only factors which predicted sick leave were job satisfaction (p<0.01) and the BASDAI (p<0.01). An increase of 1 point on the BASDAI would increase the chances of being in category II by 3.5-fold while the same increase in combination with job satisfaction would cause an increase of 1.13 fold (1/0.88) of being in category I (Table 6). Other than job satisfaction, no demographic characteristics, occupational type, job-related physical factors, or psychosocial risk factors proved to be significant determinants of long-term absenteeism.

Table 4. Correlation analysis between absenteeism and clinical parameters

	Correlation coefficients*	*p*
Work absenteeism (days)		
BASDAI score	0.532	0.001
BASFI score	0.340	0.039
Job satisfaction (0-100 cm)	-0.460	0.005
Morning stiffness (min)	0.329	0.041
ASQoL score	-0.336	0.047
Heavy lifting	0.325	0.049
Fear of returning to work	0.341	0.045
Work-related distress	0.345	0.043

* Pearson correlational analysis used for parametric data and Spearman analysis used for Likert-type data; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASFI: Bath Ankylosing Spondylitis Functional Index; ASQoL: Ankylosing Spondylitis Quality of Life questionnaire.

DISCUSSION

Our study revealed that 52% (n=46) of our patients with full-time employment were under the risk of long-term absenteeism, and the major determinants were the BASDAI and job satisfaction, regardless of the type of work. To our knowledge, this is the first study that has assessed the employment status and sought to determine the causes of work absenteeism by examining disease activity scores and job-related physical and psychosocial risk factors.

With regard to the number of days of sick leave for the patients with a paying job, our findings were similar to those of other studies as we determined that there were 44.8 days of sick leave per patient per year. Similarly, Urbánek et al.[18] reported 39.5 days of disease-specific sick leave per patient per year in a study in the Czech Republic, and Ramos-Remus et al.[19] in a cross-sectional study from Mexico determined that there were 45.8 days of sick leave per year. However, in a prospective study, the same authors found that only one day of sick leave per patient per month could be attributed to disease.[20] Although our findings were similar, it should be noted that because our study was cross-sectional in nature and not a follow-up study of an inception cohort, an overestimation of the mean number of sick leave days might have occurred. The most important reason for work absenteeism reported in other studies was that AS- attributable sick leave might not be related to only AS[19,20] because it is not clear whether these patients can

Table 5. The differences between category I (absent <30 days/year) and category II (absent >30 days/year)

	Category I		Category II		
	Median	Min.-Max.	Median	Min.-Max.	*p*
BASDAI	2.6	1.0-4.5	5.8	3.6-7.8	0.001
Job satisfaction	8.5	4.2-9.9	2.7	2.0-3.7	0.004
BASFI	2.6	2.0-2.9	4.3	3.0-5.0	0.046
ASQoL	6.5	2.5; 9.7	9.4	4.8-13.0	0.045

Min.: Minimum; Max.: Maximum; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASFI: Bath Ankylosing Spondylitis Functional Index; ASQoL: Ankylosing Spondylitis Quality of Life Questonnaire.

Table 6. The results of a stepwise logistic regression analysis

	B	SE	Wald	df	Sig	Exp(B)	95% CI
BASDAI	1.274	0.453	7.896	1	0.005	3.575	3.02-3.91
BASDAI + job satisfaction	-0.124	0.061	4.113	1	0.043	0.884	0.082-.094

BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; CI: Confidence interval.

really distinguish between illness due to AS and other causes. This is especially true for manual workers because they can also suffer from several chronic musculoskeletal disorders; hence, the amount of sick leave may be somewhat exaggerated. Furthermore, the proportion of manual workers (75%) versus sedentary workers (25%) was higher in our study, but we found no relationship between absenteeism and type of occupation. Moreover, none of the physical job-related factors, except for heavy lifting, had any correlation with work-related absenteeism. Therefore, we believe that the absenteeism in our study participants might be attributable to AS in our study, and this hypothesis is further supported by the results of our stepwise regression analysis which showed that the BASDAI and job satisfaction were the only causes of work-related absenteeism. Although we are somewhat reluctant to accept the relative proportions of disease-specific and non-specific sick leave presented here, it is clear that work-related absenteeism for patients with AS cannot be explained solely by the heavy lifting associated with manual work.

Early identification of those having a risk of long-term absenteeism by means of psychosocial prognostic factors has been increasingly advocated by investigators.[21] These include components such as the attitudes and beliefs of the patient (fear of returning to work), emotional problems at work (job-related distress), and job satisfaction.[21] These constructs, known as "yellow-flags", have also been identified as a primary determinant of pain and disability and are associated with longer periods of missed work.[21] To date, however, reports about psychosocial prognostic factors have only been available for patients with musculoskeletal pain problems and not for those with AS.[22-26] Since there is no instrument currently available to measure these prognostic factors in AS, the only way to identify clients who are at risk for long-term absenteeism is through a comprehensive self-report assessment that includes ergonomic and psychosocial risk factors. Since most of the factors included in this instrument were somewhat related to absenteeism associated with AS, these should be considered when attempting to identify patients at high risk for long-term absenteeism in clinical practice.

Among the clinical parameters that we used, the BASDAI was the strongest factor related to absenteeism, although there were somewhat weak correlations with morning stiffness, disease duration, and the BASFI. The association between the amount of sick leave and disease activity (the BASDAI, morning stiffness) or function (the BASFI) might indicate that our patients had higher disease activity; thus, those with early or mild disease severity were not included in our study. This could be considered by some to be a limitation of our study.

The most striking feature of our study was the presence of a significant correlation between absenteeism and the BASDAI and job satisfaction, and this relationship was strong enough to have a better predictive power for long-term absenteeism than the other risk factors in our study. Since there were multiple mechanisms that caused the increased amount of sick leave, including disease-related, work-related,

sociodemographic, and psychosocial factors,[27] all of them should be considered when trying to predict which patients are at risk for long-term absenteeism.

Our study also provided additional information related to work status, especially since this topic has not been previously studied in Turkey. Similar to our findings, according to a study by Boonen et al.,[28] work disability associated with AS in European countries was higher than expected. In addition, the same authors found that the risk for withdrawal from work in the Netherlands was about three times higher in patients with AS than for the general population.[29]

Although, we examined the occupations of our patients in detail, our data indicated that the type of job played no role in absenteeism. Furthermore, we found no differences regarding the type of occupation in categories I and II. This might be due to the fact that our patients' occupations did not show a balanced distribution since the majority did manual work. For the same reason, we could not find any connection between work-related absenteeism and physical factors. Therefore, prospective studies with a larger number of patients working in various areas of industry should be conducted including the factors that may influence work absenteeism for patients with AS.

Conclusion

The results of our study showed that the main determinants of work absenteeism in patients with AS were the BASDAI and the BASDAI combined with job satisfaction rather than any demographic or work-related physical characteristics. On an individual level, because persistent inflammatory musculoskeletal pain significantly disrupts a variety of functions and affects the patient's QoL, early identification and intervention for those at risk for long-term absenteeism would greatly reduce costs and limit personal suffering. Although we believe that our findings were significant, further prospective studies are needed to evaluate our conclusions and verify our data.

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