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Research Article

The Influence of Rheumatoid Arthritis on Work Productivity among a Sample of Iraqi Patients

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Abstract

Background: Rheumatoid Arthritis (RA) is a chronic inflammatory disorder that impact daily life activities. The impact on work productivity is critical because of persistent work disability. ***Aim***: To evaluate work productivity in RA patients compared to healthy controls, and to assess the impact of socio-demographic characteristics on work productivity. ***Methods***: This was a case-control study conducted at the Rheumatology Unit of Baghdad Teaching Hospital, Medical City during the period from August 2020 to the end of March 2021. Seventy-two patients with RA were selected and compared with 72 healthy subjects as a control group. All patients were diagnosed according to ACR/EULAR 2010 RA classification criteria. The socio-demographic and clinical features, lifestyle practices, and disease activity of the patients and controls were all recorded during interviews. A standardized Arabic version of the Workplace Activity Limitation Scale (WALS) and the Job Limitations Questionnaire were used to assess the impact of RA on work productivity (WLQ-25). ***Results***: The vast majority of patients were females (58.1%). Positive rheumatoid factor was reported in 94.4% of the patients. The patients showed a significantly lower WALS total score and higher WLQ-25 total score median (IQR) compared with controls. ***Conclusion***: Active RA impairs the work productivity which was influenced by CDAI score and negatively associated with the use of DMARDs.

Keywords: Rheumatoid arthritis, work productivity, disease activity, WALS, WLQ-25 score

تأثير التهاب المفاصل الرثوي على إنتاجية العمل بين عينة من المرضى العراقيين

الخلاصة

الخلفية: التهاب المفاصل الرثوي (RA) هو اضطراب التهابي مزمن يؤثر على أنشطة الحياة اليومية. واثره على إنتاجية العمل بالغ الأهمية بسبب استمرار الإعاقة في العمل. **الهدف**: تقييم إنتاجية العمل لدى مرضى RA مقارنة بالأصحاء، وتقييم تأثير الخصائص الاجتماعية والديموغرافية على إنتاجية العمل. **الطرائق**: هذه دراسة على حالات RA أجريت في وحدة الروماتيزم في مستشفى بغداد التعليمي، المدينة الطبية خلال الفترة من أغسطس 2020 إلى نهاية مارس 2021. تم اختيار 72 مريضا مصابا ب RA ومقارنتهم ب 72 من الأصحاء كمجموعة تحكم. تم تشخيص جميع المرضى وفقا لمعايير تصنيف ACR/EULAR 2010وتم تسجيل السمات الاجتماعية والديموغرافية والسريرية وممارسات نمط الحياة ونشاط المرض للمرضى والضوابط خلال المقابلات. واستخدمت نسخة عربية موحدة من مقياس الحد من النشاط في مكان العمل (WALS) واستبيان القيود على الوظائف (WLQ) لتقييم تأثير RAعلى إنتاجية العمل. **النتائج**: كانت الغالبية العظمى من المرضى من الإناث (58.1٪). تم الإبلاغ عن عامل الروماتويد الإيجابي في 94.4٪ من المرضى. أظهر المرضى درجة إجمالية أقل بكثير من WALS وأعلى متوسط نقاط WLQ-25 الإجمالي (IQR) مقارنة بالأصحاء. **الاستنتاج**: يضعف نشاط RA إنتاجية العمل التي تأثرت بنتيجة CDAI وارتبطت سلبا باستخدام الأدوية المضادة للروماتزم.

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INTRODUCTION

Rheumatoid arthritis (RA) is a multisystem chronic inflammatory autoimmune disease that most typically affects the tiny joints of the hands and feet. The patient has pain, stiffness, increasing joint degradation, and deformity, as well as significant disability, which can lead to depressive symptoms and functional impairment [1]. It is linked to the consequences of auto-reactivity in the blood [2]. In 2013, Alkazzaz reported an increase in RA incidence from 1.60% in 2001 to 3.02% in 2011 in Iraq [3], while Al-Rawi *et al*. (1978) reported a 1% incidence rate in Iraq [4]. Work productivity is a key to understanding health burden and cost associated with work-related musculoskeletal disorders (WMSD). However, work productivity has been defined in various ways and perspectives, including disease and occupational settings, and personal and environmental contextualization [5]. Work disability management strategies, such as employee wellness and ergonomics programs, as well as rehabilitative interventions in WMSD, require careful evaluation of work productivity [6]. Work productivity is established as an outcome metric for capturing and evaluating WMSD-related socioeconomic burden and WMSD management strategies [7]. Working or productive activities assist people with disabilities because they increase their well-being, community inclusion, and quality of life. It also has far-reaching implications for case management and long-term care planning. The role of job productivity in society and the repercussions of deprivation if rehabilitation interventions do not address the workplace implications of disability are important aspects of this dilemma [8]. By producing persistent inflammation and development in the synovial tissue of the joints, Rheumatoid Arthritis (RA) causes cartilage degradation and joint damage [9]. Irreversible injury occurs early in a patient's life and lasts their entire lives [10]. The goal of treatment for RA is to attain disease remission or reduced disease activity because the disease is incurable [11]. Early aggressive RA treatment has been shown to reduce functional impairment and improve employment results in the long run [12]. A lack of sufficient control leads to joint degradation and loss of physical function, work impairment, and finally permanent work incapacity. Continuous joint injury and irreversible loss of physical function will have a detrimental influence on patients' work performance and/or employability. Rheumatoid arthritis (RA) is a chronic inflammatory disease that affects daily life, including employment [13]. The impact on employment could be severe because prolonged job incapacity (the inability to continue working) is common in RA patients [14]. In addition, the patient's repercussions, such as reduced living quality and job insecurity, result in higher costs. For RA patients, production losses account for about 30% of overall costs [15]. The aim of this study was to compare work productivity in RA patients to that of healthy controls, as well as to look at the impact of socio-demographic factors on work productivity.

METHODS

Study design

This was a prospective case-control study conducted at the Rheumatology Unit, Baghdad Teaching Hospital, Medical City during the period from August 2020 to March 2021.

Ethical approval

Informed consent was obtained from each participant included in this study according to the declaration of Helsinki. The Research Ethics Committee of the College of Medicine, University of Baghdad, approved the research plan, based on the administrative order form for the Rheumatology and Medical Rehabilitation Unit (ID: 802 on Oct 21st 2020).

Inclusion and inclusion criteria

Patients with RA were included based on: diagnosed with RA as defined by the ACR/EULAR 2010 rheumatoid arthritis classification criteria; aged 20-60 years of either sex, disease duration >1 year; currently treated with steroids, NSAIDs, DMARDs (methotrexate, leflunomide, sulfasalazine, hydroxychloroquine, and azathioprine) with or without biological agents; and patients have not changed their medication in the last three months. Meanwhile, the exclusion criteria include: patients with hearing, speech, or cognitive deficits that would impair understanding of the questions; patients taking antidepressant drugs or receiving treatment for any neurological or psychological disease; pregnant women; patients with serious co-morbidity such as malignancies and end-stage organ failure; and patients providing incomplete or contradictory information during the questionnaire completion. Patients with other autoimmune diseases (SLE, IBDs, and psoriasis), other skin diseases or allergies, inflammatory or infectious diseases, cardiovascular disease, hematological disorders, liver and kidney damage, malignant diseases, diabetes mellitus, and females with a 6-month postpartum period were also excluded.

Sample selection and study tools

The current case-control study compared 72 RA patients to 72 healthy subjects as the control group, using a convenient sample of 72 patients who had already been diagnosed with the disease. The ACR/EULAR 2010 rheumatoid arthritis classification criteria for RA were used to diagnose patients with RA [16]. The patients and participants were asked to complete an interview in which they were asked questions regarding their socio-demographic and clinical features, lifestyle habits, and disease activity. The Workplace Activity Limitation Scale (WALS) and the 25-Item Work Limitations Questionnaire were used to assess the influence on workplace productivity (WLQ-25). All of the standardized questions were translated correctly into Arabic. The final versions of these two instruments have already been authenticated, either by prior publications or by their copyright holders [17,18]. Within the course of the study, the remaining questionnaires and versions were validated using standard field methodologies. The output of the workplace WALS is a 12-item questionnaire with no recollection period that analyzes patients' work restrictions. Answers are on a 4-point Likert scale ranging from 0 (no difficulty) to 3 (unable to do). Getting to and from work, lifting, working with hands, crouching, bending, kneeling, reaching, work tempo, concentration, standing or sitting for lengthy periods of time, and meeting job needs are all factors to consider. The total score ranges from 0 to 36, with higher numbers indicating greater constraint [17]. The WLQ-25 is a 25-item questionnaire that focuses on presentism and the proportion of work time spent with limitations, rather than the difficulty or severity of restrictions. Physical demands, time management, mental-interpersonal demands, and output expectations are the four components of workplace presentism assessed. A 5-point Likert scale ranging from 0 (never) to 4 (always) was used to answer questions on job productivity and performance during the previous 2-4 weeks (all of the time). Each scale was rated independently, with values ranging from 0 to 100, with higher ratings indicating greater limits [18].

Data collections and outcome evaluation

Patients and controls' data was collected via interviews and questionnaires on a paper clinical research form. The questionnaires were divided into two sections: The first section includes information such as age, gender, smoking status, drugs used, height in centimeters, and weight in kilograms. Body mass index (BMI) was calculated using the formula BMI=weight/height^2. Since the commencement of symptoms and diagnosis by the physician, the duration of RA has been tracked. All controls were asked for their age, sex, smoking status, height, and weight. Clinical characteristics data of the patients include: disease duration, Clinical Disease Activity Index (CDAI), active disease, medications (NSAIDs and DMARDs), WALS total score, and WLQ-25 total score are included in the second half. The researchers also looked at rheumatoid factor, anti-citrullinated protein antibodies (ACPA), and ESR. Hemoglobin (Hb), red cell distribution width (RDW), and mean platelet volume (MPV) were measured in blood samples taken under aseptic venipuncture. WBC count, neutrophil count, lymphocyte count, monocyte count, platelet count, ESR, and CRP were all measured. In the hospital laboratory, ESR was determined using the classic Wintergreen method. Each participant's platelet-lymphocyte ratio was manually computed by dividing the platelet count by the lymphocyte count. The lymphocyte-monocyte ratio in the blood was manually estimated by dividing the lymphocyte count by the monocyte count.

Statistical analysis

For quantitative variables, descriptive analysis was performed using standard deviation, while for qualitative variables, frequency and percentages were used. The Shapiro-Wilk and Kolmogorov-Smirnov tests were used to see if the data had a normal distribution. Variables with a normal distribution were studied using the Student's t-test, whereas those with a non-normal distribution were evaluated using the Mann-Whitney test. The non-normally distributed variables were represented by a median with interquartile range. Data can be presented using box plot charts as well. The relationship between job productivity and the patient's basic clinical features was studied using multiple linear regression. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to check for normal distribution in standardized residuals in order to rule out any interactions. Significant was defined as a P value of less than 0.05.

RESULTS

In Table 1, patients' median age (46.5(40-50) years) was considerably higher (P<0.05) than healthy participants' (42.5(38-48)) years. In the patient group, females were the majority (58.1% *vs*. 28.2%, P<0.05). When compared to RA patients, healthy people smoked more cigarettes (78.3% *vs*. 21.7%, P<0.05). The median CDAI score was 13(10-15), with 79.2% of RA patients in the active stage. Patients took NSAIDs in 29.2% of cases, DMARDs in 34.7% of cases, and biologic drugs in 91.7% of cases. In 94.4% of the patients, the rheumatoid factor was positive. Meanwhile, the WALS total score in RA patients was

substantially lower (20.3±4.06) than in controls (2.7±1.95, *P*<0.01), and the median WLQ-25 total score was likewise higher in RA patients (*P*<0.01) (Table 1).

Table 1: Baseline characteristics of RA patients and controls

Variables	Study group		*P*-value
	RA patients	Controls	
Age (years)	46.5(40-50)	42.5(38-48)	0.02
BMI (kg/m^2)	26.1(24.1-29.4)	26(24-27.7)	0.4
Gender n(%)			
Male	11(28.2)	28(71.8)	0.001
Female	61(58.1)	44(41.9)	
Smoking n(%)			
Smoker	5(21.7)	18(78.3)	0.003
Non smoker	67(55.4)	54(44.6)	
Marital status n(%)			
Single	8(66.7)	4(33.3)	0.228
Married	64(48.5)	68(51.5)	
Education n(%)			
Illiterate	2(50)	2(50)	0.922
Primary	14(5)	11(44)	
Secondary	23(45.1)	28(54.9)	
College	32(51.6)	30(48.4)	
Postgraduate	1(50)	1(50)	
CDAI Median (IQR)	10(8-14.7)		
Active disease n(%)	57(79.2)		
Medication n(%)			
NSAIDs	21(29.2)		
Steroids	25(34.7)		
DMARDS	66(91.7)		
Biologics	66(91.7)		
RF	68(94.4)		
ACPA	22(30.6)		
ESR (Median (IQR)	35(23-50)		
WALS total score (mean ±SD)	20.3±4.06	2.7±1.95	0.0001
WLQ-25 total score Median (IQR)	64(55.3-73)	27.5(25-29)	0.0001

BMI: Body mass index; CDAI; Clinical Disease Activity Index; NSAIDs: non-steroidal anti-inflammatory drugs; DMARD: Disease-modifying antirheumatic drug; RF: Rheumatoid factor; ACPA: Anti-citrullinated protein antibodies; ESR: Erythrocyte sedimentation rate.

Regarding the WALS scoring items, the mean score of Q1= Get to and from work and preserve timeliness was greater than that of controls (1.49±0.5 *vs*. 0.11±0.32, *P*<0.05). In RA patients, the mean score for Q2= Getting to Work (1.57±0.6) was significantly greater than in controls (0.1±0.3). Meanwhile, the mean score for Q3= Sitting for long periods of time at your job (2.53±0.67 *vs*. 0.46±0.5, *P*<0.05) was higher in RA patients than in controls (0.54±0.5), and the mean score for Q4= Standing for long periods of time at your job (2.63±0.64) was significantly higher in RA patients than in controls (0.54±0.5) (Table 2). Table 2 also shows that the mean score for Q5= Lift, carry, or move objects was significantly higher than the control group (2.17±0.75 *vs*. 0.45±0.5, *P*<0.05). The mean score of Q6 (Working with your hands) was 1.57±0.77 in RA patients and significantly higher than controls (0.06±0.23, *P*<0.05). Regarding Q7 (Crouching, bend, kneel or working in awkward positions), the mean score in RA patients was significantly higher than that of controls (1.67±0.62 *vs*. 0.22±0.42, *P*<0.05). The mean score of Q8 (Stretch out) was 1.67±0.63 in RA patients, which was significantly higher than that in controls (0.24±0.43). The mean score of Q9 (With the schedule of hours of work that your job requires) in the RA patients was also higher than that reported in controls (1.53±0.63 *vs*. 0.19±0.4, *P*<0.05). Table 2 also shows that the mean score of Q10 (With the pace of work that your job requires) was significantly higher than that in controls (1.53±0.58 *vs*. 0.15±0.36). Meanwhile, the mean score of Q11 (Meet your current job demands) of RA patients was 1.43±0.65 which was significantly higher than controls (0.14±0.35, *P*<0.05). The mean score of Q12 (To concentrate and keep your mind on your work) was higher than that reported in the control group (0.96±0.78 *vs*. 0.04±0.2, *P*<0.05). Regarding the WLQ25 total score, Table 2 shows that the percentage of work impairment due to physical demands among RA was higher than that in controls (18.53±3.21 vs. 7.33±1.59, *P*<0.05). The percentage of work impairment due to time demands in RA patients was 15.32±2.49 which was significantly higher than that reported in controls (5.74±1.13). Meanwhile, the percentage of work impairment due to output demands was also higher in RA patients compared with controls (11.25±2.93 *vs*. 5.18±0.51, *P*<0.05). The percentage of work impairment due to mental-interpersonal demands in RA patients was significantly higher than that of the control group (19.4±5.48 *vs*. 9.25±0.71, *P*<0.05) (Table 2). In Table 3, linear regression analysis of the work productivity analyzed by WALS total score represented 35% of the data (r^2=0.35), and the standardized residuals were normally distributed using Kolmogorov-Smirnov and Shapiro-Wilk tests. Meanwhile, the work productivity loss was significantly associated (β=0.459, 95% CI=0.123; 0.470) with the CDAI score, and significantly negatively associated (β= -0.295, 95% CI: -7.799; -0.799) with DMARDs (Table 3). In Table 4, the linear regression of 35% of the WALQ25 score was represented by linear regression (r^2=0.35). Work productivity loss was significantly associated (β=0.493, 95% CI: 0.461; 1.410) with the CDAI score. The standardized residuals were normally distributed for the rheumatoid arthritis patients using Kolmogorov-Smirnov and Shapiro-Wilk tests (Table 4).

Table 2: Comparison of work productivity between patients and controls according WALS total score and WLQ25 total score.

Work productivity	RA patients Mean±SD	Controls Mean±SD	*P*-value
WALS score			
Get to and from work and maintain punctuality	1.5±0.5	0.11±0.32	<0.01
Getting to the workplace	1.6±0.6	0.1±0.3	<0.01
Sitting for long periods of time at your job	2.5±0.67	0.46±0.5	<0.01
Standing for long periods of time at your job	2.6±0.64	0.54±0.5	<0.01
Lift, carry or move objects	2.2±0.75	0.45±0.1	<0.01
Working with your hands	1.6±0.7	0.06±0.23	<0.01
Crouching bend, kneel or work in awkward positions	1.8±0.6	0.22±0.42	<0.01
Stretch out	1.7±0.6	0.24±0.43	<0.01
With the schedule of hours of work that your job requires	1.5±0.6	0.19±0.4	<0.01
With the schedule of hours of work that your job requires	1.5±0.6	0.15±0.36	<0.01
Meet your current job demands	1.4±0.7	0.14±0.35	<0.01
To concentrate and keep your mind on your work	1.0±0.8	0.04±0.2	<0.01
Overall score of WALS (0–36)	20.3±4.6	2.69±1.95	<0.01
WLQ-25			
% work impairment due to physical demands	18.5±3.2	7.33±1.59	<0.01
% work impairment due to time demands	15.3±2.5	5.74±1.13	<0.01
% work impairment due to output demands	11.3±2.9	5.18±0.51	<0.01
% work impairment due to mental- interpersonal demands	19.4±5.5	9.25±0.71	<0.01
WLQ-25 index (%) (Median (IQR)	64(55.3-73)	27.5(25-29)	<0.01

WALS: workplace activity limitations scale; WLQ-25: work limitations questionnaire-25

DISCUSSION

The age median (IQR) of the patients in this study was 46.5 (40-50) years, which was substantially higher than the general population. However, it is greater than the findings of Hussein *et al*., who reported that the average age of the patients in the study was 41.0±14.3 years, with the majority of patients (42%) in the range of 40-59 years [19]. This differs from van Vilsteren *et al*., who discovered that the study population's average age was 49.7 years [20]. Females were found to have considerably greater rates of RA than males. Ahmed *et al*. observed a higher frequency of 88% among Iraqi females with RA, with a mean age of 49.5±13.9 years [21]. It also contrasts from the findings of Hussain and colleagues [22]. Smoking was found to be present in 21.7% of RA patients in the current study, which is higher than the 17.4% reported by Mathkhor *et al*. [23]. The smoking rate in this study was 78.3%, which is greater than the smoking rate reported in several studies, including Namas *et al*. study in the UAE [24], and Ros *et al*. study in Equador [25]. Tobacco usage has long been associated with RA etiology and severity [26]. In this study, 48.5% of the patients were married, 51.6% were college graduates, 88.4% were females, and the majority of them were non-smokers. In this context, Faiq *et al*. discovered that patients had a higher mean age (50.8±13.1), 89.6% were married (89.6%), and 35.6% were illiterate [1]. According to the current study, the average sickness duration was ten years.

Table 3: Multiple linear regression analysis of the Impact of baseline characteristics on work productivity score WALS total score in RA patients

Variables	β	95% CI for β	*P*-value
Age	0.157	-0.07-0.24	0.286
Sex	0.0003	-3.01-3.02	0.998
BMI	-0.128	-0.41-0.17	0.396
Smoking	-0.138	-6.78-2.40	0.344
Education	-0.02	-1.29-1.10	0.876
Marital status	-0.095	-4.49-2.06	0.459
disease duration (year)	-0.054	-0.25-0.17	0.684
CDAI score	0.459	0.12-0.47	0.001
Disease activity	0.165	-0.62-2.05	0.286
NSAIDs	-0.081	-3.26-1.82	0.572
Steroids	-0.011	-2.58-2.39	0.94
DMARDs	-0.295	-7.80 - -0.80	0.017
Biologics	-0.125	-6.08-2.44	0.395
RF	0.222	-0.23-8.05	0.063
ACPA	0.031	-1.89-2.43	0.803
ESR	-0.166	-0.08-0.07	0.19

β: Regression coefficient; BMI: Body mass index kg/m^2; CDAI: Clinical Disease Activity Index; NSAIDs: Non-steroidal anti-inflammatory drugs; DMARD: Disease-Modifying Antirheumatic Drug; RF: Rheumatoid Factor; ACPA: anti-citrullinated protein antibodies; ESR: Erythrocyte Sedimentation Rate.

Table 4: Multiple linear regression analysis to find the Impact of baseline characteristics on work productivity score WLQ-25 total score in RA patients.

Variables	β	95% CI for β	*P*-value
Age	0.124	- 0.24-0.63	0.364
Sex	-0.088	- 11.15-5.35	0.484
BMI	-0.018	- 0.84-0.74	0.895
Smoking	0.003	- 12.43-12.68	0.984
Education	-0.021	- 3.56-2.99	0.862
Marital status	0.027	- 7.99-9.95	0.823
disease duration (year)	-0.248	- 1.14 - -0.01	0.047
CDAI score	0.493	0.46-1.41	0.000
Disease activity	-0.127	- 5.26-2.03	0.378
NSAIDs	0.056	- 5.50-8.41	0.677
Steroids	0.149	- 3.10-10.52	0.280
DMARDs	-0.100	- 13.86-5.29	0.373
Biologics	-0.094	- 15.69-7.62	0.491
RF	0.211	- 0.39-22.24	0.058
ACPA	-0.101	- 8.50-3.30	0.381
ESR	-0.014	- 0.14-0.12	0.902

β: Regression coefficient; BMI: Body mass index kg/m^2; CDAI: Clinical Disease Activity Index; NSAIDs: Non-steroidal anti-inflammatory drugs; DMARD: Disease-Modifying Antirheumatic Drug; RF: Rheumatoid Factor; ACPA: anti-citrullinated protein

Furthermore, 79.2% of the patients had a high CDAI score, indicating substantial disease activity. Faiq *et al*. observed similar results, stating that the average disease duration was 9.6±7.3 years and that 63.2% of the participants had no additional chronic conditions. Furthermore, 44.8% had a high CDAI score [1]. According to Faiq *et al*., the condition had a considerable impact on patients' health-related quality of life, particularly in those with high disease activity, older age, and lower education levels [1]. In terms of medication use, the majority of the patients in this study took NSAIDs, steroids, DMARDs, and biologic medicines. Kawai *et al*. reported that the usage of DMARDs, corticosteroids, and NSAIDs increased by 15%, 5%, and 6%, respectively, indicating a deterioration of the condition [27]. Monitoring the inflammatory state in individuals with RA has a lot of clinical relevance. ESR was found to have a positive association with the level of inflammation in the retrieved biopsy [28], and it may be used to track disease activity [29]. Van Vilsteren *et al*., on the other hand, found no link between ESR and at-work productivity loss in RA patients [20]. WALS total score was substantially lower in RA patients compared to controls in this study, but WLQ-25 total score was significantly higher. A small number of studies have identified the factors linked to decreased job productivity in RA patients [20]. Depending on the features of the investigated population, the overall work impairment caused by RA at baseline was similar to or lower than that seen in prior studies [30,31]. Work constraints associated to presentism that were assessed using WALS measures were categorized as having a high level of work place disability among RA patients, according to Gignac *et al*. [32]. Meanwhile, Tang *et al*. discovered that RA patients had severe presentism-related work constraints, which is characterized as a high severity of work place disability [18]. At baseline, all WLQ-25 subscales in this study were higher than those seen in RA patients in the United States. The physical demand scale shows a significant difference, showing that Latin American patients are more restricted in the workplace based on this scale [33]. Work productivity loss was shown to be positively associated with CDAI score and negatively associated with DMARDs in the current study, which is greater than the findings of del Moral *et al*., who observed that work impairment in working patients with RA was 45%. They also discovered a link between work impairment and RA activity, with 50% of patients with significant activity missing at least 8 work hours per week [34]. Geuskens *et al*., on the other hand, found no link between disease activity and job productivity in patients with inflammatory arthropathy that had been present for less than a year [35].

Study limitations

First, it is based on a tertiary referral center, which means that patients with more serious illnesses may be overrepresented. As a result, these findings may not apply to all RA patients in the community. Second, there is a time constraint and the inability to keep track of patients for long periods of time. Third, the COVID-19 pandemic has an impact on communication and hospital access.

Conclusion

Disease activity impairs the work productivity which was influenced by CDAI score and negatively associated with the use of DMARDs.

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Conflicting interests

Nothing declared.

Data sharing statement

Data will be available based on a reasonable request to the corresponding author.

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