

COVID-19 Pandemic: Impact on Psychological State and Routine Activity of Patients with Rheumatic Diseases

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ABSTRACT

Background: Covid-19 might be considered “the illness that has changed the 21st century” and has become a major health problem. Patients with rheumatic diseases (RDs) are identified to be at higher risk of viral infections due to impaired immune regulation caused by the disease itself or immune modulating treatments linked to their comorbidities. **Objective:** This study aimed to assess the psychological condition and changes in the routine activity of patients with RDs during the COVID-19 pandemic. **Patients and methods:** This cross-sectional study included 217 patients who met the diagnostic criteria specific for each rheumatic disease. They were divided according to their rheumatic disease into: RA (60 patients), systemic lupus erythematosus (SLE) (37 patients), ankylosing spondylitis (AS) (30 patients), psoriatic arthritis (PsA) (30 patients) and degenerative arthritis (OA) (60 patients). Evaluation of the psychiatric symptoms was done by HADS and IES-R. **Results:** A significant difference was recorded in mean age, sex, educational level, employment status, marital status, household size, comorbidities, medication types used, and TV usage as primary information sources between these groups. An insignificant difference was recorded in clinic attendance, staying home, and medication adherence across the groups. There was no significant difference across groups regarding IES-R, HAD-anxiety, and HAD-depression scales. **Conclusion:** COVID-19 pandemic has adversely affected the psychological state and mental health of cases with RD in many ways such as distress, anxiety and depression. Due to the pandemic, the routine activity of patients with RD has been changed and decreased concerning the social activity with its varieties and the attendance to outpatient clinic for follow up.

Keywords: Covid-19, Rheumatic diseases, Media time spent, IES-R, HADS.

INTRODUCTION

In December 2019, COVID-19 was initially recognized in Wuhan, China, causing severe acute respiratory syndrome ^[1]. Since then, the number of cases has been increasing in an exponential manner, and the virus is spreading globally. The World Health Organization (WHO) declared COVID-19 as a global health hazard on January, 2020, and on March, 2020, it was recognized as a pandemic ^[2]. Covid-19 pandemic has become a major health concern. It is a public health emergency that is causing global concern. The pandemic has adversely affected all nations, races, and their socioeconomic condition. This has led to quarantining of entire communities, closing of schools, social distancing and all public gathering places were closed, which has abruptly changed normal daily life ^[3].

Patients with medical comorbidities are more liable to infection and have a worse prognosis ^[4]. Much research displayed that being over 60, smoker and having comorbidities, which include cardiac diseases, pulmonary diseases, HTN, DM, and obesity are the main participators for the extensive outcomes among cases with COVID-19 ^[5]. Throughout infection outbreaks, a broad spectrum of psychosocial effects is experienced by the entire population. The covid-19 outbreak has caused negative psychological outcomes for cases with RD for many reasons. These negative psychological outcomes may include loneliness, depression, anxiety, sleep disturbances, fear of falling ill, fear of death and feeling of desperation ^[6, 7]. Patients with RDs may have increased psychiatric illness throughout the COVID-19 outbreak. As a result, their psychiatric manifestations and changes in their usual activities and health related behaviors were assessed ^[1].

^{8]}. therefore this study aimed to assess the psychological state and changes in the routine activity of patients with RDs during COVID-19 pandemic.

PATIENT AND METHOD

This cross-sectional study was conducted through one year from January 2021 to January 2022 and included 217 patients recruited from The Outpatient Rheumatology and Rehabilitation Clinic. Patients were divided into three main groups according to their rheumatic disease. **Group 1** included 60 patients with rheumatoid arthritis (RA) and 37 patients with systemic lupus erythematosus (SLE), **Group 2** included 30 patients with ankylosing spondylitis (AS), and 30 patients with psoriatic arthritis (PsA) and **Group 3** included patients with degenerative arthritis (OA).

Inclusion criteria: Patients met the diagnostic criteria specific to each rheumatic disease and have been diagnosed a year or more ago, The 2010 EULAR/ACR classification criteria for rheumatoid arthritis ^[9]. The 2019 EULAR/ACR classification criteria for SLE ^[10], ASAS classification criteria for axial Spondyloarthritis ^[11], and CASPAR criteria for PsA diagnosis ^[12].

Exclusion criteria: Any patient known to have any psychiatric illness or had formerly used a psychiatric drugs before covid-19 pandemic. Also, any patient changed their routine activity due to other illnesses or other causes were not included in this study.

Methods: All patients will be subjected to full history taking including personal history (age, gender, residence, occupation, marital status, having child/children, and presence of special habits or dietary habits), complaint analysis in the patient's own words, present history (mode of onset, course and disease

duration), past history of medical conditions (endocrinal, renal, hepatic diseases, malignancies, autoimmune diseases and diabetes or hypertension), family history of similar conditions in the family or any other rheumatological disease and history of previous medications and long-term drug intake and side effects.

A specific designed sheet form was used to collect data about some risk factors related to the study: educational level, household size, their source of data about COVID-19 as types of social media or TV and daily hours of TV or social media exposure and previous diagnosis with covid-19 in the participant itself, or in a close friend/relative.

Clinical examination included assessment of vital signs, general appearance, body built, calculation of body mass index (BMI), systemic examination (including chest, cardiovascular, abdomen, neuropsychiatric, endocrinal, skin and scalp for any abnormality) and local musculoskeletal examination (including examination of all joints for any arthritis, effusion or deformity). Laboratory tests included rheumatoid factor (RF), antinuclear antibody (ANA), anti-citrullinated protein antibodies (Anti-CCP), human leukocytic antigen (HLA-B27), C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) and complete blood count (CBC). Radiological assessment included MRI on sacroiliac joint, and plane x-ray spine hand or knee joints.

Assessment of routine activity of the patients included adherence to stay home warnings, obligation to go outside for work, recreational & social activity affection such as social gatherings and events, going to mosque or church, shopping and sport activities, and attendance to the outpatient clinic (regularly as it was before, didn't want to; wanted to but couldn't contact anyone, or did not have a scheduled visit).

Evaluation of the psychiatric symptoms: HADS is a 14-item questionnaire. The answers to each question were added up to determine the anxiety and depression

scores. Anxiety and depression were quantified using cut-off points of ≥ 11 and ≥ 8 , respectively. In this study Arabic version of HADS scale was used.

Impact of Event Scale-Revised scale (IES-R) is a twenty-two item questionnaire. IES-R was used to evaluate intrusion, avoidance, and hyperarousal in three subdimensions and presents a total score for subjective stress. Additionally, sleep abnormalities were assessed using two questions of IES-R. In this study, Arabic version of IES-R scale was used.

Ethical approval: The study protocol was approved by Mansoura University Institutional Research Board code number: MS.21.02.1383. Informed written consent was obtained from each participant. Confidentiality and personal privacy were respected. The study adhered to the Helsinki Declaration throughout its execution.

Statistical analysis:

All data were collected and statistically analysed using SPSS 26.0 for windows. Qualitative data were described using number and percent. Quantitative data were defined using range, mean \pm SD and median. All statistical comparisons were two tailed with significance P-value ≤ 0.05 indicated significant difference. X²-test of significance was used to compare ratios between qualitative parameters and independent T-test was used to compare between two independent groups with parametric quantitative data.

RESULTS

This cross-sectional study analyzed a group of patients diagnosed with AS, osteoarthritis (OA), PsA, RA, and SLE. The distribution of patients was as follows: AS (N=30), OA (N=60), PsA (N=30), RA (N=60) and SLE (N=37). There was a significant difference in mean age, gender, educational levels, employment status, marital status, household size and comorbidities across the groups ($p < 0.05$) (Table 1).

Table (1): Socio-demographic data among studied groups

Item		AS N=30 (13.8%)	OA N=60 (27.6%)	PsA N=30 (13.8%)	RA N=60 (27.6%)	SLE N=37 (17.1%)	P-value
Age	Mean	33.7	54.4	38.7	39.8	36.2	<0.001
	\pm SD	± 10.7	± 6.2	± 12.2	± 13.0	± 9.8	
Gender	Male	21(70%)	8(13.3%)	16(53.3%)	10(16.7%)	1(2.7%)	<0.001
	Female	9(30%)	52(86.7%)	14(46.7%)	50(83.3%)	36(97.3%)	
Education	Yes	25(83.3%)	34(56.7%)	25(83.3%)	42(70%)	30(81.1%)	0.014
	No	5(16.7%)	26(43.3%)	5(16.7%)	18(30%)	7(18.9%)	
Work	Yes	15(50%)	14(23.3%)	13(43.3%)	11(18.3%)	3(8.1%)	<0.001
	No	15 (50%)	46(76.7%)	17(56.7%)	49(81.7%)	34(91.9%)	
Marital status	Single	12 (40%)	1 (1.7%)	7(23.3%)	16(26.7%)	1(2.7%)	<0.001
	Married	18(60%)	59(98.3%)	23(76.7%)	44(73.3%)	36(97.3%)	
Household size	Mean \pm SD	4.9 \pm 0.9	4.5 \pm 1.2	4.7 \pm 1.0	4.6 \pm 1.4	4.0 \pm 1.3	0.038
Comorbid disease	Yes	1(3.3%)	21(35%)	7(23.3%)	10(16.7%)	5(13.5%)	0.005
	No	29(96.7%)	39(65%)	23(76.7%)	50(83.3%)	32(86.5%)	

In a comparative analysis of the sources of information about COVID-19 among patients, significant variability was observed in the reliance on different media channels. Television was the predominant source of information across all groups, particularly among patients with OA, where 81.7% relied on TV. The least reliance on TV was observed among

patients with PsA (43.3%) and AS (50%). The overall p-value of 0.001 indicated a statistically significant difference in TV usage as a primary information source between these groups. Internet usage as a sole source of information varied significantly. The highest usage was noted among PsA patients (33.3%), followed by SLE (24.3%) and AS (26.7%) patients. The combination of TV and internet was a notable information source among RA patients (25%) and PsA patients (23.3%), with lower reliance in SLE (13.5%) and AS (20%) groups. Interestingly, a small percentage of AS patients (3.3%) reported having no source of information about COVID-19, which was unique among the studied groups. When assessing the time spent on media, there was no significant difference in the amount of media time spent across the different disease groups ($P > 0.05$) (Table 2).

Table (2): Sources of information about COVID between studied groups

Resources of information	AS	OA	PsA	RA	SLE	P-value
TV	15 (50%)	49 (81.7%)	13 (43.3%)	40(66.7%)	23 (62.2%)	0.001
Internet	8 (26.7%)	1 (1.7%)	10 (33.3%)	5 (8.3%)	9 (24.3%)	
TV & Internet	6 (20%)	10 (16.7%)	7 (23.3%)	15 (25%)	5 (13.5%)	
NO	1 (3.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Media time spent						
<=1 hour	21 (70%)	40 (66.7%)	19 (63.3%)	37(61.7%)	25 (67.6%)	0.935
>=2 hour	9 (30%)	20 (33.3%)	11 (36.7%)	23(38.3%)	12 (32.4%)	

This analysis explored the routine activities and health-related behaviors of patients with AS, OA, PsA, RA and SLE with social activity and phone/online medical consultations. There was no significant difference in clinic attendance, staying home, and medication adherence, across the groups. There were significant differences in medication types used. OA patients primarily used dietary supplements (100%), while 86.7% of AS patients relied on biological treatments. SLE patients predominantly used csDMARDs combined with steroids (100%) (Table 3).

Table (3): Routine activity and health related behavioral changes among patients

Routine Activity		AS	OA	Psa	RA	SLE	P-Value
Attend out-patient clinic	Regular as before	29 (96.7%)	57 (95%)	28(93.3%)	57 (95%)	36(97.3%)	0.945
	Didn't want to	1 (3.3%)	3 (5%)	2 (6.7%)	3 (5%)	1 (2.7%)	
Stay home	No	2 (6.7%)	2 (3.3%)	1 (3.3%)	5 (8.3%)	1 (2.7%)	0.793
	Sometimes	9 (30%)	14(23.3%)	11(36.7%)	18 (30%)	10 (27%)	
	Yes	19 (63.3%)	44(73.3%)	18(60%)	37(61.7%)	26(70.3%)	
Medication adherence	Continue	24 (80%)	53(88.3%)	28(93.3%)	55 (91.7%)	36(97.3%)	0.522
	Skipped	4 (13.3%)	5 (8.3%)	1 (3.3%)	4 (6.7%)	1 (2.7%)	
	Stopped	2 (6.7%)	2 (3.3%)	1 (3.3%)	1 (1.7%)	0 (0%)	
Used medications	Dietary Supplements	0 (0%)	60(100%)	0 (0%)	0 (0%)	0 (0%)	<0.001
	Symptomatic TTT	0 (0%)	0 (0%)	8(26.7%)	0 (0%)	0 (0%)	
	csDmards	4 (13.3%)	0 (0%)	11 (36.7%)	29 (48.3%)	0 (0%)	
	Csdmards+ Steroid	0 (0%)	0 (0%)	0 (0%)	13 (21.7%)	37 (100%)	
	Biology	26 (86.7%)	0 (0%)	7 (23.3%)	7 (11.7%)	0 (0%)	
	Combination	0 (0%)	0 (0%)	4 (13.3%)	11 (18.3%)	0 (0%)	
Social activity	Decreased	26 (86.7%)	53 (88.3%)	25 (83.3%)	55 (91.7%)	34 (91.9%)	0.750
	As Before	4 (13.3%)	7 (11.7%)	5 (16.7%)	5 (8.3%)	3 (8.1%)	
Phone/Online medical consultation	No	23 (76.7%)	55 (91.7%)	25 (83.3%)	50 (83.3%)	32 (86.5%)	0.402
	Yes	7 (23.3%)	5 (8.3%)	5 (16.7%)	10 (16.7%)	5 (13.5%)	

Table (4) compared the psychological impact among patients with AS, OA, PsA, RA, and SLE using the IES-R, HAD-anxiety, and HAD-depression scales. There was no significant difference across groups regarding IES-R, HAD-anxiety and HAD-depression scales. The psychological impact of these conditions was broadly similar across the different disease groups, with no statistically significant differences in distress, anxiety, or depression levels (Table 4).

Table (4): Comparison of IES-R, HAD-anxiety, HAD-depression scales' scoring among patients

SCORE		AS	OA	PsA	RA	SLE	P-value
IES-R	<33	20 (66.7%)	45 (75%)	19 (63.3%)	41(68.3%)	23 (62.2%)	0.688
	≥33	10 (33.3%)	15 (25%)	11 (36.7%)	19 (31.7%)	14 (37.8%)	
HAD-A	<11	24 (80%)	48 (80%)	24 (80%)	47 (78.3%)	28 (93.3%)	0.988
	≥11	6 (20%)	12 (20%)	6 (20%)	13 (21.7%)	9 (30%)	
HAD-D	<8	16 (53.3%)	41 (68.3%)	16 (53.3%)	29 (48.3%)	18 (48.6%)	0.195
	≥8	14 (46.7%)	19 (31.7%)	14 (46.7%)	31 (51.7%)	19 (51.4%)	

Table (5) evaluated the impact of various socio-demographic factors and risk factors on anxiety levels in patients, as measured by the HAD-A scale. There was significant difference regarding gender, education, covid-19 related media time spent and friend/relative having covid, but there was insignificant difference among groups concerning age, marital status, household size and comorbidities.

Table (5): Effect of socio-demographic data and risk factors on HAD anxiety scale among patients

Variable	Category	HAD <11	HAD ≥11	P-Value	OR (95% CI)
Age (Years)	Mean ± SD	42.3 ± 13.3	41.9 ± 12.0	0.834	0.998 (0.984-1.013)
Gender	Male	54 (31.6%)	2 (4.3%)	<0.001	3.32 (1.729-6.374)
	Female	117 (68.4%)	44 (95.7%)		
Education	No	51 (29.8%)	10 (21.7%)	0.044	1.274 (1.125-1.966)
	Yes	120 (70.2%)	36 (78.3%)		
Marital Status	Single	31 (18.1%)	6 (13.0%)	0.410	1.247 (0.738-2.109)
	Married	140 (81.9%)	40 (87.0%)		
Household Size	<4	27 (15.8%)	10 (21.7%)	0.349	0.795 (0.492-1.285)
	≥4	144 (84.2%)	36 (78.3%)		
Media Time Spent (Hours)	<1 Hour	136 (79.5%)	6 (13.0%)	<0.001	6.103 (3.836-9.709)
	>2 Hours	35 (20.5%)	40 (87.0%)		
Friend/ Relative Having Covid	No	118 (69.0%)	16 (34.8%)	<0.001	2.278 (1.543-3.364)
	Yes	53 (31.0%)	30 (65.2%)		
Comorbidities	No	136 (79.5%)	37 (80.4%)	0.892	0.968 (0.605-1.548)
	Yes	35 (20.5%)	9 (19.6%)		

Table (6) evaluated the impact of socio-demographic factors and risk factors on depression levels among patients, as measured by the HAD-D. There was significant difference regarding gender, education, covid-19-related media time spent and friend/relative having covid, but there was no significant difference among groups regarding age, marital status, household size and comorbidities.

Table (6): Effect of socio-demographic data and risk factors on HAD depression scale among patients

Variable	Category	HAD <8	HAD ≥8	p-value	OR (95% CI)
Age	Mean ± SD	42.9 ± 13.8	41.4 ± 12.0	0.395	0.994 (0.982-1.007)
Gender	Male	42 (35.0%)	14 (14.4%)	0.001	2.041 (1.36-3.063)
	Female	78 (65.0%)	83 (85.6%)		
Education	No	39 (32.5%)	22 (22.7%)	0.039	1.361 (1.034-1.985)
	Yes	81 (67.5%)	75 (77.3%)		
Marital status	Single	23 (19.2%)	14 (14.4%)	0.356	1.236 (0.788-1.939)
	Married	97 (80.8%)	83 (85.6%)		
Household size	<4	20 (16.7%)	17 (17.5%)	0.867	0.963 (0.617-1.501)
	≥4	100(83.3%)	80 (82.5%)		
Media time spent	<1 hour	105(87.5%)	37 (38.1%)	<0.001	4.407 (2.977-6.525)
	>2 hours	15 (12.5%)	60 (61.9%)		
Friend / relative having COVID	No	87 (72.5%)	47 (48.5%)	<0.001	1.902 (1.341-2.697)
	Yes	33 (27.5%)	50 (51.5%)		
Comorbidities	No	96 (80.0%)	77 (79.4%)	0.910	1.024 (0.676-1.552)
	Yes	24 (20.0%)	20 (20.6%)		

Table (7) explored how socio-demographic factors and risk factors impact distress levels, as measured by the IES-R. There was significant difference regarding gender, education, media time spent and friend/relative having covid, but there was no significant difference among groups concerning age, marital status, household size and comorbidities.

Table (7): Effect of socio-demographic data and risk factors IES-R scale among patients

Variable	Category	IESR <33	IESR ≥33	p-value	OR (95% CI)
Age (Years)	Mean ± SD	43.0 ± 13.3	40.6 ± 12.4	0.217	0.992 (0.978-1.005)
Gender	Male	51 (34.5%)	5 (7.2%)	<0.001	2.961 (1.791-4.893)
	Female	97 (65.5%)	64 (92.8%)		
Education	No	47 (31.8%)	14 (20.3%)	0.048	1.436 (1.061-2.148)
	Yes	101 (68.2%)	55 (79.7%)		
Marital status	Single	26 (17.6%)	11 (15.9%)	0.766	1.073 (0.673-1.710)
	Married	122 (82.4%)	58 (84.1%)		
Household size	<4	22 (14.9%)	15 (21.7%)	0.216	0.752 (0.479-1.181)
	≥4	126 (85.1%)	54 (78.3%)		
Media time spent (Hours)	<1 hour	128 (86.5%)	14 (20.3%)	<0.001	6.77 (4.469-10.256)
	>2 hours	20 (13.5%)	55 (79.7%)		
Friend/relative having COVID	No	105 (70.9%)	29 (42.0%)	<0.001	2.094 (1.462-3.000)
	Yes	43 (29.1%)	40 (58.0%)		
Comorbidities	No	119 (80.4%)	54 (78.3%)	0.715	1.083 (0.705-1.663)
	Yes	29 (19.6%)	15 (21.7%)		

DISCUSSION

During infection outbreaks including covid-19 pandemic, a broad spectrum of negative psychological outcomes are experienced by the entire population as well as patients with immunosuppression. These negative psychological outcomes may include loneliness, depression, anxiety, sleep disturbances and fear of falling ill or fear of death and the feelings of desperation ^{16, 71}. Patients with rheumatic disease are expected to be more vulnerable to these negative psychological outcomes as they are often immune-compromised due to their underlying disorders and therapy utilized to manage them ¹³¹. Patients with RDs may have increased psychiatric distress throughout the COVID-19 outbreak. As a result, their psychological manifestations and changes in their routine activities will be assessed. Hence, we conducted our study to assess the psychological condition and alterations in the usual daily activity of cases with RDs during the COVID-19 pandemic.

In our comparative analysis of the sources of information about COVID-19 among patients with different autoimmune and RDs, significant variability was observed in the reliance on different media channels. Television (TV) was the predominant source of information across all groups. In the study of **Seyahi et al.** ¹¹ TV and social media were the main sources of data concerning COVID-19 for all groups. Compared to the other study groups, cases with RDs appeared to utilize social media less frequently and to spend fewer hours on social media or watching TV. Also, During the COVID-19 outbreak, the majority of the cases with RDs couldn't attend outpatient visits.

Regarding attendance to outpatient clinic, we found that most patients (over 93%) regularly attended outpatient clinics, with SLE patients showing the highest adherence (97.3%) and PsA patients the lowest (93.3%). There was no significant difference in clinic attendance across the groups. In the study of **Seyahi et al.** ¹¹ a minor percentage of cases who had a scheduled

outpatient visit attended the outpatient-clinic 'as it was before' (14.4%) and this was similar among all subgroups. The remaining either 'didn't want to come' (42.7%), 'wanted to come but couldn't contact anyone in the hospital' (15.4%) or was advised to delay their visits (27.5%). In the study of **Garrido-Cumbrera et al.** ¹⁴¹ concerning access to healthcare during lockdown, 59.0% of subjects didn't have a follow-up appointment with their rheumatologist. Of those who did, 58.4% had their appointment cancelled. About 54.4% of these were offered telephone consultation, while 5.2% were given no alternative appointment. A further 9.2% of subjects didn't attend a scheduled appointment for fear of contracting COVID-19 and 1.2% didn't attend as they didn't have the financial means.

Regarding staying home, we found most patients frequently stayed home, particularly OA patients (73.3%), while PsA patients had the lowest rate (60%) as most of them need to work. Conversely, there was insignificant difference in staying home behavior. In the study of **Seyahi et al.** ¹¹ due to the male predominance and somewhat younger age, individuals with SpA and BS were less likely to strictly adhere to "stay at home" regulations and more likely to go out for employment.

Regarding medication adherence, we found high medication adherence across all groups, with SLE patients showing the highest adherence (97.3%) and AS patients the lowest (80%). The p-value of 0.522 indicated no significant difference in adherence rates. In the study of **Seyahi et al.** ¹¹ about one-fifth (22.4%) stopped their drugs. A considerable number of cases stopped their medications (77.6%), whereas 16.4% diminished or skipped their dosage and 6.0% stopped taking them.

Regarding types of medications used, we found significant differences in medication types. All OA patients used dietary supplements (100%), while 86.7% of AS patients relied on biological treatments. SLE patients predominantly used csDMARDs combined with steroids (100%). **Costantino et al.** ¹⁵¹ didn't detect

any relationship between anti-rheumatic treatments and the possibility of infections, which is in line with the novel recommendations confirmed by scientific societies to keep the current therapy. Almost 1/3 of the respondents diminished or stopped their ongoing therapy. **Fouad et al.** ^[16] showed that the commonest causes for non-adherence other than forgetfulness (13.1%) were the shortage of DMARDs drugs (42.5%), patients' fear of the increased possibility of COVID-19 infection secondary to the immunosuppressive action of DMARDs (19.2%), and patients' boredom and dissatisfaction with the daily medications (10%).

Regarding social activity, we found that most patients reported a decrease in their social activity fearing of contracting covid-19 infection, with SLE patients showing the highest decrease (91.9%) and PsA patients the lowest (83.3%) with no significant difference ($P=0.75$) in social activity changes across the groups. Regarding phone/online medical consultations, we found that the use of telemedicine was low, with the highest avoidance among OA patients (91.7%) and the lowest among AS patients (76.7%). The p-value of 0.402 indicated no significant difference in the use of phone or online consultations between groups. **Garrido-Cumbrera et al.** ^[14] showed that patients experienced a few behavioral alterations throughout the COVID-19 pandemic. An essential percentage of subjects reported an alteration for the worse in their lifestyle with physical exercise stoppage, increasing drinking and smoking, and weight gain. In contrast, certain subjects recorded a comparative reduction in their drinking and smoking. **Hassen et al.** ^[13] displayed that there was a significant correlation between the drop in the overall physical health and the increase in pain. In particular for the older female cases, who had a minimal physical function and established marriage, education, and employment? It indicated that during the pandemic, they struggled to manage their own illnesses, while balancing their everyday duties.

In our current study we found that the psychological impact of these conditions was broadly similar across different disease groups, with no statistically significant differences in distress, anxiety, or depression levels. Overall, we found that gender, education, media consumption, and having a friend or relative infected with covid were the most significant factors influencing depression, anxiety, and distress, while age, marital status, household size, and comorbidities showed no strong impact. Likewise, **Hassen et al.** ^[13] recorded that patients experienced mild anxiety and depressive symptoms. The mean anxiety and depression scores increased over time, but outcomes didn't reveal significant difference between the three-time periods. As a result, they concluded that the involuntary social isolation brought by the COVID-19 pandemic upon rheumatic cases may stimulate a vicious cycle of physical and mental distress causing a deteriorating perception of their RDs. In addition, age, sex,

comorbidities, and psychiatric illness worsen the condition.

Moreover, an Italian study of 507 patients conducted by **Ingegnoli et al.** ^[17] found that younger adults were demonstrated to be accompanied by greater levels of stress. Likewise, other Italian study reported the same in terms of the COVID-19 outbreak ^[18]. An additional possible clarification is that younger people may acquire greater stress degrees as they consume more time on the social media throughout the lockdown period. Furthermore, **Ingegnoli et al.** ^[17] revealed that female gender, being overweight, fear of income loss, and management for psychiatric illness were accompanied by worse degrees of stress. Insomnia was noticed in almost 74% of patients with arthritis and was accompanied by older age, preceding psychiatric illness, and having been infected by COVID-19.

Seyahi et al. ^[11] reported that there were non-significant differences between cases with RD and the teachers/academic staff anxiety, depression, and IES-R scores, while significantly lower in comparison with that of the healthcare workers (HCWs). The same is true for all IES-R subdimensions, with the exception of avoidance, which was somewhat greater among HCWs but equally distributed throughout the study groups. Although the HCWs had the highest scores in HADS and IES-R and the greatest ratios of anxiety (39.8%), depression (61.6%), and PTS (46.4%), they still believed significantly less that the outbreak was very dangerous. **Koppert et al.** ^[19] found that during the peak of the COVID-19 pandemic in 2020, compared to the control group, the index group was more anxious regarding getting infected with the virus (medium effect) and more stressed (minor effect). Degrees of psychological flexibility didn't moderate correlations of group or year with mental well-being. Overall, their results suggested that the psychiatric impact of the COVID-19 pandemic in cases with inflammatory RDs is modest. Also, **Duculan et al.** ^[20] showed that from all patients who had follow-ups, 83% were females, and mean age was fifty years. Cases who recorded stress at enrollment had improved PROMIS-29 scores, in particular for the anxiety subscale. At the follow-up, cases recorded persistent and new stresses and several self-identified coping strategies. In general, coping was rated as very well (30%), well (48%), and neutral-fair-poor (22%). Variables associated with worse overall coping were worse enrollment-to-follow-up PROMIS-29 anxiety, not recording excellent/very good disease condition at follow-up, pandemic-related persistent stress, and pandemic-related negative long-term effects on employment and health.

The correlation between physical dysfunction and impaired cognition linked to heightened stressors has been well-confirmed in RDs. This suggested that a prolonged worry brought by stringent COVID-19 measures may aggravate the disease and therapeutic results. As a result, efficient fatigue treatment education

must involve a neuropsychiatric assessment and stress-controlling plans ^[21].

CONCLUSION

COVID-19 pandemic has adversely affected the psychological state and mental health of patients with RDs in many ways such as distress, anxiety and depression. Coping with challenges due to the pandemic and the routine activity of patients with RD had been changed and decreased concerning the social activity with its varieties and the attendance to outpatient clinic for follow up.

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