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PATIENTS WITH INFLAMMATORY RHEUMATIC DISEASES HAVE HIGH CHRONOPHOBIA LEVELS DURING THE COVID-19 OUTBREAK

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Abstract

Aim: Coronaphobia during the Coronavirus disease-2019 (COVID-19) outbreak was commonly observed in the general population and in patients with chronic diseases. The study investigated chronophobia and its association with psychological parameters in patients with inflammatory rheumatic diseases.

Material and Methods: This cross-sectional study included 174 patients with rheumatic diseases, including fibromyalgia, connective tissue diseases (CTD) and spondyloarthropathies (SpA). Coronaphobia was evaluated using the COVID-19 Phobia Scale (C19P-S), and anxiety and depression were evaluated using the Hospital Anxiety and Depression Scale. One-way ANOVA was used to calculate differences between diseases, and Pearson's correlation test was used for correlation analysis.

Results: The study was completed with 171 patients with rheumatic diseases [91 of them with CTD, 57 of them with SpA, and 23 of them with fibromyalgia syndrome (FMS)]. Significant differences were found in all subscales of C19P-S among FMS and inflammatory rheumatic diseases (CTD and SpA) ($p<0.05$). Significant correlations were found among anxiety, psychosomatic, and social subscales of C19P-S in both patients with CTD and SpA. No significant correlation was found between C19P-S, anxiety, and depression in FMS patients.

Conclusion: Higher chronophobia levels were found in patients with inflammatory rheumatic diseases than in those with non-inflammatory rheumatic diseases. Because it may be an additional reason for psychological problems, chronophobia should be considered in the management of inflammatory rheumatic diseases.

Keywords: Coronaphobia, COVID-19, rheumatic diseases

INTRODUCTION

Coronavirus disease-2019 (COVID-19), which emerged in Wuhan, China in 2019, has taken hold of the world in a short time. COVID-19 was first observed on March 10, 2020 in Turkey, and the World Health Organization declared the disease as pandemic on March 11, 2020 (1,2). Many governments have implemented various precautions and restrictions to minimize the spread of the pandemic and the risk of transmission (3). The importance of hygiene was emphasized within the scope of precautions against COVID-19 in Turkey. It was stated that the mask, curfew,

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and social distance were applied in necessary situations (4). Unfortunately, despite these precautions, COVID-19 was not brought under control in the world and death odds increased. Data about the negative effects of COVID-19 expanded rapidly among the general population through written, visual, and social media and caused anxiety and fear (5,6).

Phobia is defined as an anxiety disorder that causes an excessive and persistent reaction to an object, person, animal, activity, or situation (7). Coronaphobia is an overreaction to the fear of contracting coronavirus that may cause serious stress that can lead to physiological symptoms such as palpitations and tremors, personal and professional losses, and behavioral disorders that affect daily life. Disruptions may present in routine tasks such as meeting people, leaving the house, traveling, following the daily news, or going to work because of the fear of contracting the virus (7). Washing hands constantly, controlling vital organs, and self-medication are the results of fear and anxiety. Therefore, chronophobia may affect all daily living activities (8). The unending uncertainties (9), unforeseen reality (10), acquiring new practices and avoidance behavior (10), statements from international organizations (11), failure of powerhouses and lack of faith in health care facilities, leaders and famous celebrities contracting COVID-19 (12) and the relentless iodemia taking the shape of an infidelic (13) were accounted for as risk factors for coronaphobia. Mertens et al. (14) emphasized that chronophobia developed during the COVID-19 process was associated with increased social media exposure, fear of losing loved ones, and anxiety about their own life.

Patients with rheumatic diseases have a higher risk of infection than the general population because of their diseases and iatrogenic effects of immunosuppressive drugs (15). The mortality odds associated with COVID-19 in patients with rheumatic diseases was found 10.5%, which is higher than that in the general population in many countries. In addition, high disease activity, older age, male gender, comorbidities, and the use of immunosuppressive drugs, rituximab, and sulfasalazine were shown to be associated with death in patients with rheumatic diseases as well as in the general population (16). The rapid and uncontrolled spread of the COVID-19 pandemic outbreak may cause patients with rheumatic diseases to be more concerned. Psychosocial and physical changes were reported in a pandemic outbreak due to quarantine (17). Patients with rheumatic diseases may exhibit more phobic behavior against the coronavirus, considering that the depression and anxiety of these patients are higher than those of the general population, even under normal conditions (18). It was found that patients with fibromyalgia syndrome (FMS) had higher chronophobia levels than healthy controls (19). Toprak Celenay et al. (20) concluded that coronaphobia was higher in individuals who stayed at home except for compulsory situations for three months than in those who continued to work during the pandemic. The possible association of chronophobia with psychosocial factors will negatively affect the progression of the disease and complicate the treatment process. Therefore, determining the presence of chronophobia and related factors in these patients will guide health professionals working in clinics. To the best of our knowledge, no study has investigated the fear of coronavirus and its association with anxiety and depression in patients with inflammatory rheumatic diseases. The study investigated the coronaphobia level in patients with inflammatory and non-inflammatory rheumatic diseases. The secondary aim of the study was to investigate the relationship between chronophobia and the psychological status of the patients.

MATERIAL AND METHODS

This study was approved by the Fırat University Clinical Research Ethics Committee (number: 2020/15-23, date: 05.11.2020). Informed consent forms were obtained from the patients.

A total of 174 patients with rheumatic diseases were included in this study. Patients who were aged between 18 and 65 years, followed up in the Fırat University Rheumatology Department, and were literate were included in the study. Patients who were previously diagnosed with COVID-19 and had a pregnancy were excluded from the study. Patients who applied to the Fırat University Rheumatology Department outpatient clinic for 4 months between March 2021 and June 2021 and met the inclusion criteria were included in the study. Evaluations were done on the phone for patients who had routine control appointments but could not come to the hospital because of pandemic or any other reason.

Demographics were recorded, including age, gender, weight, length, education, marital status, occupation, and presence of other chronic diseases. All patients were asked to complete the COVID-19 Phobia Scale (C19P-S) to evaluate chronophobia and the Hospital Anxiety and Depression Scale (HADS) to evaluate anxiety and depression.w

Coronaphobia was evaluated using the C19P-S developed by Arpaci et al. (21) (Appendix 1). It consists of 20 items and four subscales including psychological, psychosomatic, economic, and social. Each item is scored with a 5-point Likert scale, where 1 means “strongly disagree” and 5 means “strongly agree”. The minimal score is 20 points and the maximal score is 100 points, where a higher score indicates a higher level of chronophobia (21).

The HADS, developed by Zigmond and Snaith (22), was used to assess anxiety and depression. It is a self-reported questionnaire consisting of 14 items that half of which evaluate depression and the other evaluate anxiety. All items are rated on a 4-point scale from 0 to 3. High scores indicate severe anxiety and depression levels.

Statistical Analysis

Statistical analysis was performed using IBM SPSS 21.0. Categorical measurements were expressed as numbers and percentages, and numeric measurements were presented as mean ± standard deviation. One-way ANOVA was used to calculate differences between means. The Pearson correlation test was used for correlation analysis. The chi-square test was used to compare categorical variables. A p-value of 0.05 was considered statistically significant.

RESULTS

This study was completed in 171 patients with rheumatic diseases. Three patients were excluded from the study due to not fulfilling the questionnaires. Twenty-three of the patients were diagnosed with FMS, 91 of them were diagnosed with connective tissue diseases (CTD) (66 of them were rheumatoid arthritis, 11 of them were systemic lupus erythematosus, 7 of them were Sjögren's syndrome and 7 of them were scleroderma) and 57 of them were diagnosed with spondyloarthropathies (SpA) (48 of them were ankylosing spondylitis and 9 of them were psoriatic arthritis).

Demographic measurements of the groups are summarized in Tables 1 and 2. Significant differences were found in all subscales of C19P-S among FMS and inflammatory rheumatic diseases (CTD and SpA) ($p<0.05$). In addition, a significant difference was found in anxiety between FMS and inflammatory rheumatic diseases (SpA and CTD) ($p<0.05$). In addition, significant differences were found in depression among SpA, CTD and FMS ($p<0.05$). However, no significant differences were found in the C19P-S and HADS anxiety subscale between CTD and SpA ($p>0.05$) (Table 2).

Significant correlations were found among all subscales of C19P-S in all groups ($p<0.05$). In addition, significant correlations were found between anxiety and psychosomatic and social subscales of C19P-S in patients with CTD and between anxiety and psychological, psychosomatic, and social subscales of C19P-S in patients SpA ($p<0.05$). In addition, there was a significant correlation between depression and psychosomatic and social subscales of C19P-S in patients with CTD and between depression and psychosomatic subscale of C19P-S in patients with SpA ($p<0.05$). No significant correlation was found between C19P-S and anxiety and depression in FMS patients ($p>0.05$) (Table 3).

DISCUSSION

This study is the first to investigate coronaphobia levels in inflammatory rheumatic diseases. Based on the results of the study, patients with CTD and SpA had high levels of chronophobia and low levels of anxiety and depression according to FMS patients. There were no significant differences between CTD

Table 1. Demographics and characteristic features for patients with fibromyalgia, connective tissue disorder and SpA

Characteristic or measurement		FMS group (n=23) n (%)	CTD group (n=91) n (%)	SpA group (n=57) n (%)	Chi-square	p
Gender	Male	2 (8.7)	20 (22)	23 (40.4)	10.356	**0.006**
	Female	21 (91.3)	71 (78)	34 (59.6)		
Smoking	Yes	9 (39.1)	26 (28.6)	21 (36.8)	2.034	0.730
	No	14 (60.9)	65 (71.4)	36 (63.2)		
Education level	Primary school	12 (52.2)	57 (62.6)	30 (52.6)	4.501	0.609
	High school	6 (26.1)	18 (19.8)	16 (28.1)		
	University	5 (21.7)	16 (17.6)	11 (19.3)		
Occupation	Yes	5 (21.7)	30 (33)	23 (40.4)	2.611	0.271
	No	18 (78.3)	61 (67)	34 (59.6)		
Occupation at pandemic	Yes	1 (4.3)	17 (18.7)	17 (29.8)	6.915	**0.032**
	No	22 (95.7)	74 (81.3)	40 (70.2)		
Accompanied other chronic diseases	Yes	7 (30.4)	25 (27.5)	9 (15.8)	3.232	0.199
	No	16 (69.6)	66 (72.5)	48 (84.2)		

FMS: Fibromyalgia syndrome, CTD: Connective tissue disorder, SpA: Spondyloarthropathies

Table 2. Characteristic features and measurements of patients with fibromyalgia, connective tissue disorder and SpA

Characteristic or measurement	FMS group (n=23) mean ± SD	CTD group (n=91) mean ± SD	SpA group (n=57) mean ± SD	p
Age (years)	45.04±7.89	44.93±11.71	41.67±12.13	0.210
BMI (kg/m^2)	26.87±4.99	26.57±4.27	26.45±4.56	**0.932**
Disease duration	4.49±5.54^A	9.08±8.15^B	8.59±5.47^B	**0.024**
Psychological subscale (C19P-S)	11.00±5.33^A	17.96±6.47^B	17.23±6.81^B	**0.000**
Pscyhosomatic subscale (C19P-S)	6.30±2.18^A	9.08±3.56^B	9.46±4.56^B	**0.003**
Economic subscale (C19P-S)	4.65±1.34^A	7.04±3.08^B	7.49±3.38^B	**0.001**
Social subscale (C19P-S)	9.30±5.16^A	13.96±5.12^B	13.19±5.68^B	**0.001**
Anxiety (HADS)	11.13±5.67^A	8.96±4.79^B	7.88±4.80^B	**0.029**
Depression (HADS)	9.39±4.73^A	8.42±4.62^A	6.89±4.22^B	**0.043**

^{A,B}Different letters indicate a statistically significant difference ($p<0.05$)
FMS: Fibromyalgia syndrome, CTD: Connective tissue disorder, SpA: Spondyloarthropathies, BMI: Body mass index, C19P-S: COVID-19 Phobia Scale, HADS: Hospital Anxiety and Depression Scale, SD: Standard deviation

and SpA patients in chronophobia and anxiety levels. In addition, significant correlations were found between psychological evaluations and chronophobia in patients with inflammatory rheumatic diseases.

The COVID-19 pandemic outbreak engulfed the world rapidly. Unforeseen reality and acquiring new practices and avoidance behavior cause anxiety and fear in the general population (14). Sixty-six percent of the public in the United States of America reported that coronavirus was a serious danger, and 56% of those were seriously worried about the spread of coronavirus (23). It was reported that odds of severe anxiety was 0.9%, moderate level was 2.7%, and mild level was 21.3% in a study including 7143 university students in China (24). Post-traumatic stress symptoms were found as 37%, anxiety level was found as 20.8%, depression was found as 17.3%, sleep disturbances were concluded as 37%, and perceived stress level was found as 21.8% in 18.147 people from Italy in a study investigating psychosocial health during pandemic and quarantine (25).

Considerable attention to hygiene, obligation to stay at home, curfew, and news of death due to the pandemic caused an increase in anxiety and depression in the general population. Fear developed with a pandemic outbreak may also negatively affect relationships with other people. In addition, psychosomatic and economic problems were brought along due to fear and anxiety. Therefore, we used the Turkish version of the C19P-S questionnaire, in which all these problems were evaluated (26). The C19P-S was demonstrated to be one of the few questionnaires to evaluate in detail the mental health associated with COVID-19 in a systematic review (27). The C19P-S questionnaire was tested to evaluate chronophobia in the general population and FMS patients (19,20,28).

The results of our study demonstrated that all subscales of chronophobia, including psychological, somatic, economic, and social, were higher in inflammatory rheumatic diseases than in non-inflammatory rheumatic diseases. Tzur Bitan et al. (29) concluded that patients with chronic diseases had higher levels of chronophobia than those without. It also determined that the presence of chronic disease was associated with the risk of severity and death during the COVID-19 process (30,31). High chronophobia levels in rheumatic diseases is an expected result because rheumatic diseases are chronic. Patients with rheumatic diseases should be more careful in terms of disease activity, comorbidities, and the risk of infection due to immunosuppressive treatment according to the general population (15). The death rate originating from COVID-19 was found to be higher in inflammatory rheumatic patients than in the general population (16). High or moderate dosage of glucocorticoid in chronic usage was found to cause hospitalization of severe COVID-19 (32). In addition, it was observed that viral diseases can cause disease activity in inflammatory rheumatic diseases that are in remission (33). Although FMS is also a chronic rheumatic disease, our results showed that inflammatory rheumatic diseases had higher chronophobia levels. The fact that FMS is not an inflammatory rheumatic disease and not used immunosupressive treatment may be the reason for the result. In addition, disease duration was higher in patients with inflammatory rheumatic diseases than in patients with non-inflammatory rheumatic diseases in this study. These factors may lead to increased fear in inflammatory rheumatic diseases compared with non-inflammatory diseases. Higher coronaphobia levels were found in FMS patients compared with

Table 3. Correlations between coronaphobia and psychological measurements

			Psychological	Pscyhosomatic	Social	Economic	HADS (anxiety)	HADS (depression)
FMS	Psychological	r	1	0.675**	0.812**	0.504*	0.345	0.330
		p	-	0.000	0.000	0.014	0.107	0.124
	Pscyhosomatic	r	0.675**	1	0.701**	0.864**	0.085	0.160
		p	0.000	-	0.000	0.000	0.701	0.467
	Social	r	0.812**	0.701**	1	0.576**	0.299	0.267
		p	0.000	0.000	-	0.004	0.165	0.219
	Economic	r	0.504*	0.864**	0.576**	1	0.126	0.080
		p	0.014	0.000	0.004	-	0.566	0.716
	HADS (anxiety)	r	0.345	0.085	0.299	0.126	1	0.632**
		p	0.107	0.701	0.165	0.566	-	0.001
	HADS (depression)	r	0.330	0.160	0.267	0.080	0.632**	1
		p	0.124	0.467	0.219	0.716	0.001	-
CTD	Psychological	r	1	0.461**	0.802**	0.346**	0.123	0.108
		p	-	0.000	0.000	0.001	0.246	0.308
	Pscyhosomatic	r	0.461**	1	0.473**	0.705**	0.295**	0.298**
		p	0.000	-	0.000	0.000	0.005	0.004
	Social	r	0.802**	0.473**	1	0.262*	0.238*	0.238*
		p	0.000	0.000	-	0.012	0.023	0.023
	Economic	r	0.346**	0.705**	0.262*	1	0.124	0.054
		p	0.001	0.000	0.012	-	0.242	0.611
	HADS (anxiety)	r	0.123	0.295**	0.238*	0.124	1	0.653**
		p	0.246	0.005	0.023	0.242	-	0.000
	HADS (depression)	r	0.108	0.298**	0.238*	0.054	0.653**	1
		p	0.308	0.004	0.023	0.611	0.000	-
SpA	Psychological	r	1	0.628**	0.812**	0.492**	0.378**	0.190
		p	-	0.000	0.000	0.000	0.004	0.158
	Pscyhosomatic	r	0.628**	1	0.674**	0.568**	0.380**	0.289*
		p	0.000	-	0.000	0.000	0.004	0.029
	Social	r	0.812**	0.674**	1	0.460**	0.458**	0.225
		p	0.000	0.000	-	0.000	0.000	0.092
	Economic	r	0.492**	0.568**	0.460**	1	0.211	0.119
		p	0.000	0.000	0.000	-	0.114	0.380
	HADS (anxiety)	r	0.378**	0.380**	0.458**	0.211	1	0.636**
		p	0.004	0.004	0.000	0.114	-	0.000
	HADS (depression)	r	0.190	0.289*	0.225	0.119	0.636**	1
		p	0.158	0.029	0.092	0.380	0.000	-

*p<0.05, **p<0.01
FMS: Fibromyalgia syndrome, CTD: Connective tissue disorder, SpA: Spondyloarthropathies, HADS: Hospital Anxiety and Depression Scale

healthy controls. The authors showed psychosocial disturbances observed in FMS as a reason for the result (19). Studies concluded high chronophobia levels in the general population in Turkey. Toprak Celenay et al. (20) concluded that higher chronophobia levels were observed in people who stayed home compared with people who continued to work. Psychological problems due to staying home might lead to high levels of chronophobia. In addition, Karaaslan et al. (28) found an association between high chronophobia levels and female gender, being married, having chronic diseases, staying at home, and sleep disturbances.

Ozamiz-Etxebarria et al. (34) demonstrated that individuals with chronic diseases had more emotional disturbances such as stress, anxiety, and depression. anxiety and depression are commonly observed in rheumatic diseases (35). Patients with FMS had higher levels of anxiety and depression than those with inflammatory rheumatic diseases in this study. Although patients with FMS had higher levels of psychological parameters, they had lower levels of coronaphobia. In addition, there was a correlation between psychosomatic and social subscales of C19P-S and psychological parameters, whereas no significant correlation was found between these parameters in patients with FMS. psychological disturbances are commonly seen in FMS patients (36) which is parallel with our study. However, the fact that psychological disturbances were not correlated with chronophobia in FMS patients may be due to low disease duration or because anxiety and depression might be affected disease-related factors more than COVID-19. Considering these results, depression and anxiety were found to be effective on chronophobia in inflammatory rheumatic diseases. Studies have demonstrated that chronophobia is associated with psychological disturbances such as hopelessness, suicide attempt, and coping problems (7).

Study Limitations

This study has some limitations. The low number of patients with non-inflammatory rheumatic disease and not including healthy controls are limitations of the study. In addition, not evaluating disease activity may be a limitation. However, obtaining significant difference despite the low number of patients with FMS is remarkable.

CONCLUSION

This study concluded that higher chronophobia levels were determined in patients with inflammatory rheumatic diseases than in those with non-inflammatory rheumatic diseases, although patients with inflammatory rheumatic diseases had lower levels of psychological disturbances. In addition, a positive correlation was found between chronophobia and psychological parameters. It should be considered that external factors such as COVID-19 may be effective in the psychology of these patients. Coronaphobia may be improved by psychological interventions in patients with rheumatic diseases. It is thought that this study will contribute to the literature. Further studies should include healthy controls and factors affecting chronophobia in patients with inflammatory rheumatic diseases.

Ethics

Ethics Committee Approval: This study was approved by the Fırat University Clinical Research Ethics Committee (number: 2020/15-23, date: 05.11.2020).

Informed Consent: Informed consent forms were obtained from the patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: R.P.S., Concept: S.B.Y., Design: S.B.Y., Data Collection or Processing: S.B.Y., R.P.S., Analysis or Interpretation: R.P.S., Y.G., Literature Search: S.B.Y., Writing: S.B.Y.

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Appendix 1. COVID-19 Phobia Scale (C19P-S)
Below is a self-report questionnaire that is intended to measure individuals' different reactions during COVID-19 pandemic. Please read each item carefully and select the answer that best describe how you feel. Possible answers range from 1 to 5 (1 ¼ strongly disagree; 2 ¼ disagree; 3 ¼ agree; 4 ¼ generally agree; 5 ¼ strongly agree). Please answer all the questions honestly.
1. The fear of coming down with coronavirus makes me very anxious.
2. I experience stomach-aches out of the fear of coronavirus.
3. After the coronavirus pandemic, I feel extremely anxious when I see people coughing.
4. The possibility of food supply shortage due to the coronavirus pandemic causes me anxiety.
5. I am extremely afraid that someone in my family might become infected by the coronavirus.
6. I experience chest pain out of the fear of coronavirus.
7. After the coronavirus pandemic, I actively avoid people I see sneezing.
8. The possibility of shortages in cleaning supplies due to the coronavirus pandemic causes me anxiety.
9. News about coronavirus-related deaths causes me great anxiety.
10. I experience tremors due to the fear of coronavirus.
11. Following the coronavirus pandemic, I have noticed that I spend extensive periods of time washing my hands.
12. I stock food with the fear of coronavirus.
13. Uncertainties surrounding coronavirus cause me enormous anxiety.
14. I experience sleep problems out of the fear of coronavirus.
15. The fear of coming down with coronavirus seriously impedes my social relationships.
16. After the coronavirus pandemic, I do not feel relaxed unless I constantly check on my supplies at home.
17. The pace that coronavirus has spread causes me great panic.
18. Coronavirus makes me so tense that I find myself unable to do the thing I previously had no problem doing.
19. I am unable to curb my anxiety of catching coronavirus from others.
20. I argue passionately (or want to argue) with people I consider to be behaving irresponsibly in the face of coronavirus.
COVID-19: Coronavirus disease-2019