






## Academic publication activities and perspectives of rheumatology practitioners in the COVID-19 pandemic

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### ABSTRACT

**Objectives:** This study aimed to analyze the research, publication activities, and perspectives on clinical practices of rheumatology practitioners during the coronavirus disease 2019 (COVID-19) pandemic.

**Materials and methods:** The survey-based cross-sectional study was designed online and included 24 closed-ended questions. After performing a pilot test and validation of survey, it was conducted among clinicians between September 2021 and December 2021.

**Results:** One-hundred fifteen clinicians (54 males, 61 females; 78.1% in rheumatology practice for at least five years) responded to the survey. The respondents indicated that they worked in coronavirus-related departments, comprising inpatient service (50.4%), consultancy (42.6%), and outpatient clinic (27.8%). Around 40% of clinicians stated they spent less time on scientific research (43.1%) and clinical learning activities (43.2%), while almost the same proportion of them spent more (41.1% and 45.0%, respectively). This study revealed that 53.5% published at least one paper covering mostly COVID-19 in the scientific citation index (SCI) or SCI-expanded (SCI-E) indexed journals. However, nearly half of them did not have any papers published in the SCI/SCI-E (46.5%) or non-SCI/SCI-E indexed (44.6%) journals. Regarding the perspectives of clinicians about clinical practices, they considered fewer biological (57.0%) and nonbiological (55.0%) drug usage, reported fewer outpatient clinic visits (88.2%), more newly diagnosed rheumatic diseases (62.5%), and more disease exacerbations (31.2%). Most of the clinicians (range, 76.2 to 86.3%) thought they accurately managed their patients during the COVID-19 pandemic.

**Conclusion:** Clinicians published mostly coronavirus-related papers in the pandemic era, and in the self-assessment, clinicians thought that they correctly manage their patients. In addition, this study reflected the frequency of academic publications and clinicians' work routines during the pandemic.

**Keywords:** Academic publications, COVID-19, pandemic, perspective, rheumatology.

The coronavirus disease 2019 (COVID-19) pandemic significantly impacted the rheumatology field, affecting both clinicians and patients.<sup>1,2</sup> By the clinician perspective, clinical practice and academic publication processes were significantly interrupted in the early phases of the pandemic.<sup>3-5</sup> By the following months of the pandemic, the urgent need for data about COVID-19 to preserve public health led to an unprecedented increase in the number of publications.<sup>6,7</sup>

The increased workload of the clinicians/scientists owing to their service in the COVID-19-related departments negatively affected the scientific research and publication process.<sup>8</sup> Furthermore, the clinicians were infected with severe acute respiratory syndrome coronavirus 2 while working in the pandemic departments. Additionally, in the rheumatology field, clinical trials, particularly those involving immunosuppressed and elderly patients, were halted because of concerns about COVID-19 transmission risk.<sup>8</sup>

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Academic publications during the pandemic had a relatively accelerated peer-review process, and more availability for open access and observational papers were provided due to the need for rapid data gathering.<sup>9</sup> Furthermore, scientific information of these papers changing on a time-dependent basis might have a crucial reflection on clinical practice. More explicitly, a potential disruption in scientific research processes can lead to clinical malpractice.

From the onset of the pandemic to the present time, raising new scientific evidence led to changes in clinical practice. Although various guidelines and recommendations have been published, they could not entirely resolve the variations in clinical practice among clinicians.<sup>10-12</sup> The views of clinicians in several countries regarding academic publication during the COVID-19 pandemic were revealed through various editorial and cross-sectional studies.<sup>3,5-9,13-17</sup> Within this direction, the current study aimed to show the reflection of the pandemic on research and publication activities and clinical practice in the field of rheumatology in Türkiye.

## MATERIALS AND METHODS

This online cross-sectional survey was conducted by rheumatologists from the Ankara University Faculty of Medicine, Division of Rheumatology between September 2021 and December 2021. The survey addressed rheumatology practitioners to collect information about their research, publication activities, and perspectives on their rheumatology practices at the time of the COVID-19 pandemic.

The survey comprised three sections with 24 closed-ended questions (single-choice, multiple-choice, and 5-point Likert scale questions) and open-ended questions about unmet needs. The first section was composed of five questions, which were about clinicians' characteristics, including age, sex, institution, specialty, years in rheumatology practice, and departments attended during the pandemic. The second section was designed to assess research and publication activities during the pandemic with eight questions. The third section comprised 10 questions, which were

about clinicians' perspectives on their clinical approach and states. This section was designed with a 5-point Likert scale ranging from strongly disagree to strongly agree (Appendix 1, survey).

The survey was designed in Turkish, following the Checklist for Reporting Results of Internet E-Surveys guidelines.<sup>18</sup> In addition, another guideline that had recently been published was used in reporting of this survey study.<sup>19</sup> The pilot test of the survey was conducted with 24 respondents. After the pilot test, face and content validation was performed by independent clinicians, including two consultant rheumatologists and one fellow in rheumatology. The final version was accepted after a review of all coauthors. The completion time of the survey was estimated to be 10 min.

The survey included a cover letter providing the aim of the study, the research team, and how to fill in the survey. The survey was published on the internet using Google Forms (Microsoft Corp., Redmond, WA, USA). Rheumatology practitioners were invited to complete the survey by e-mail including a Google Form link. In September 2021, the survey was sent to members of the Turkish League of Against Rheumatism via e-mail. It was also sent to clinicians via social media (Facebook [Meta Inc., Menlo Park, CA, USA], Twitter [Twitter Inc., San Francisco, CA, USA], and WhatsApp [Meta Inc., Menlo Park, CA, USA]). The survey was sent episodically at certain intervals until December 2021 as a reminder.

### Statistical analysis

Data were analyzed using IBM SPSS version 25.0 software (IBM Corp., Armonk, NY, USA). The results of the study were analyzed by descriptive statistics. Descriptive statistics were presented along with numbers and percentages.

## RESULTS

Table 1 shows the respondents' demographic characteristics. A total of 115 clinicians (54 males, 61 females) responded to the survey. Of the participants, 78.3% (n=90) had been on rheumatology practice for at least five years. Most respondents were physical medicine and rehabilitation specialists (52.2%; n=60) and

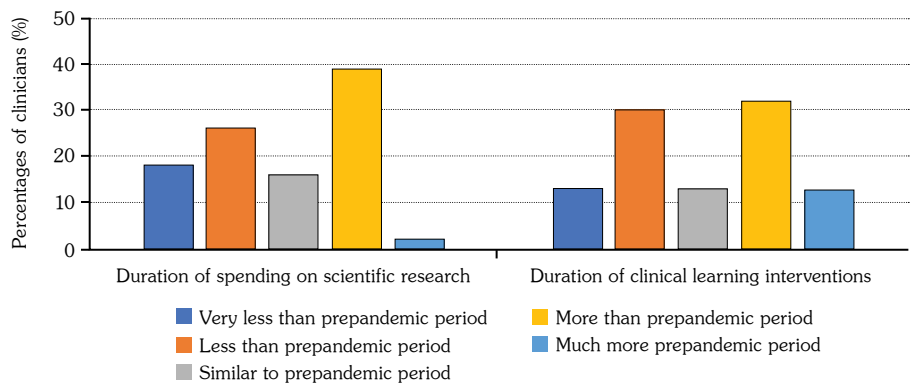
**Table 1.** Clinicians' characteristics (n=115)

| Characteristics   | n  | %    |
|---|----|------|
| <b>Age group (years)</b>  |    |      |
| 20-30   | 32 | 27.8 |
| 31-40   | 40 | 34.7 |
| 41-50   | 24 | 20.8 |
| 51-64   | 15 | 13.0 |
| ≥65   | 4  | 3.4  |
| <b>Sex</b>  |    |      |
| Male  | 54 | 46.9 |
| Female  | 61 | 53.1 |
| <b>Institution</b>  |    |      |
| University hospital   | 64 | 55.6 |
| State hospital  | 35 | 30.4 |
| Private hospital  | 10 | 8.6  |
| Private practice  | 6  | 5.2  |
| <b>Specialty</b>  |    |      |
| PM&R  | 60 | 52.2 |
| Rheumatology  | 54 | 46.9 |
| Internal Medicine   | 1  | 0.8  |
| <b>Years in rheumatology practice</b>   |    |      |
| <5  | 25 | 21.7 |
| 5-9   | 33 | 28.7 |
| 10-19   | 29 | 25.3 |
| >20   | 28 | 24.3 |
| <b>Served departments during the pandemic; (maybe more than one department)</b> |    |      |
| Outpatient clinic   | 32 | 27.8 |
| Inpatient service   | 58 | 50.4 |
| Intensive care unit   | 2  | 1.7  |
| Primary care  | 4  | 3.4  |
| Consultant  | 49 | 42.6 |
| Rehabilitation  | 2  | 1.7  |
| None  | 25 | 21.7 |

PM&R: Physical medicine and rehabilitation.

rheumatologists (46.9%; n=54). Approximately 85% of clinicians worked at a university (55.6%; n=64) or state hospitals (30.4%; n=35). During the pandemic, the first three COVID-19-related

departments in which responding clinicians attended were inpatient service (50.4%; n=58) and consultant (42.6%; n=49) and outpatient clinics (27.8%; n=32).



**Figure 1.** Clinicians' time spent on scientific research and clinical learning activities during the pandemic.

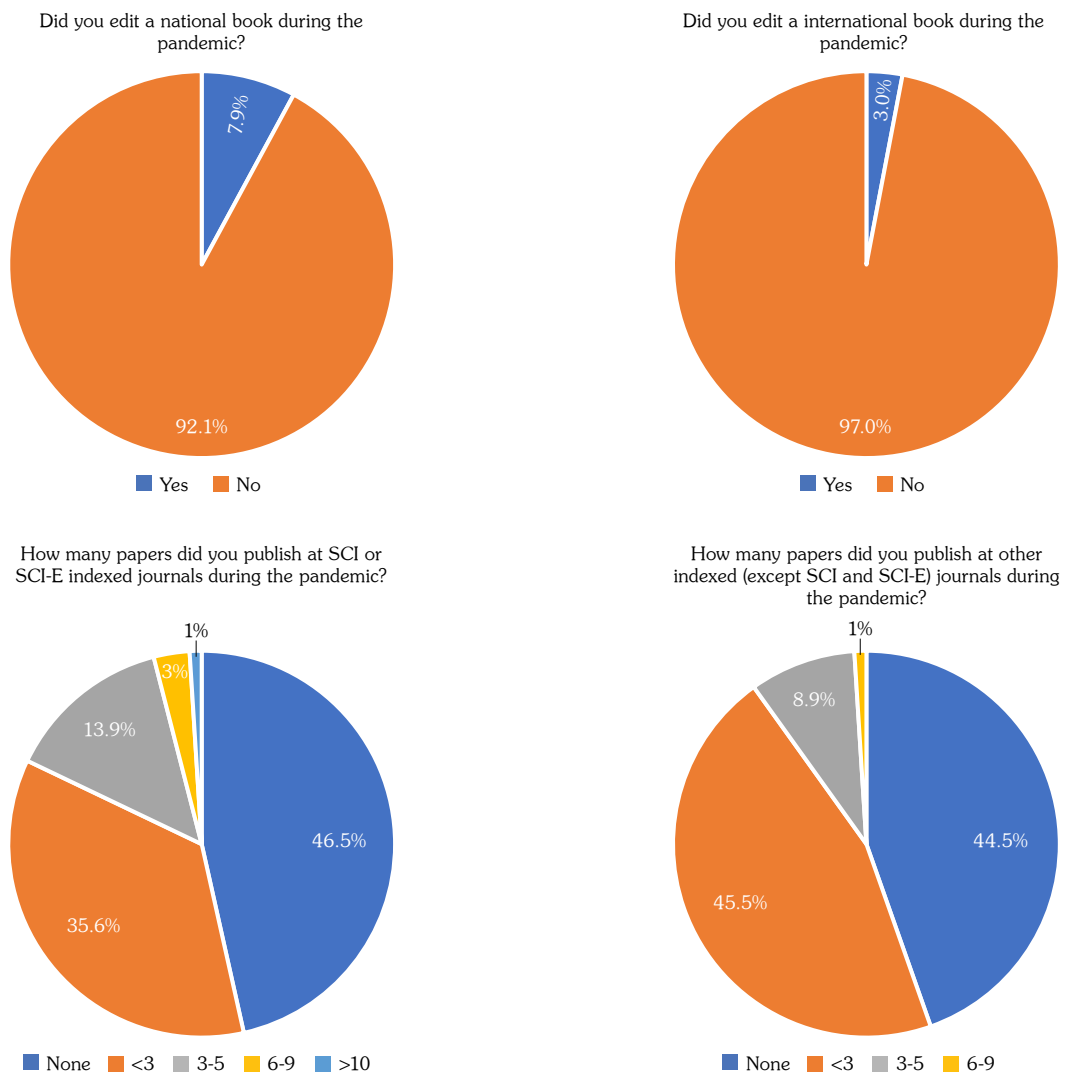
### Research and publication activities

Around 40% of the clinicians stated that they spent less time on scientific research (43.1%) and clinical learning activities (43.2%) during the pandemic. However, almost the same percentage of clinicians spent more time on scientific research (41.1%) and clinical learning activities (45.0%, Figure 1).

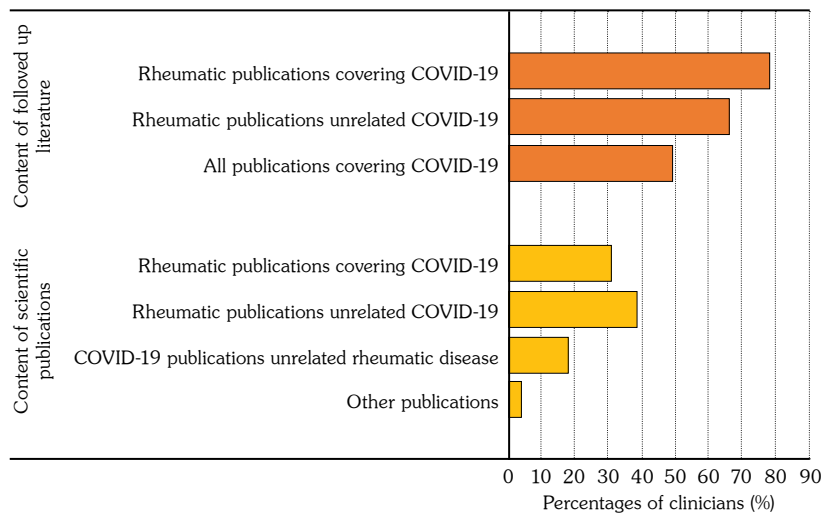
Regarding the research and publication activities, a very small number of respondents indicated editing a national (7.9%) or an international book (3%, Figure 2). While the percentage of clinicians who had three or more

publications in the science citation index (SCI) or SCI-expanded (SCI-E) indexed journals was 17.4%, the rate was 9.9% for non-SCI/SCI-E indexed journals. Around half of the participants had not published any paper in the SCI/SCI-E indexed (46.5%) or non-SCI/SCI-E indexed (44.6%) journals (Figure 2).

Figure 3 shows the content of the literature followed and published by clinicians during the pandemic. Clinicians mentioned that they mostly followed publications in the area of rheumatology covering COVID-19 (78.1%). They pointed out that they also followed the publications in the area of rheumatology unrelated to COVID-19



**Figure 2.** Clinicians' book and paper publishing during the pandemic period.  
SCI: Science Citation Index; SCI-E: Science Citation Index-Expanded.



**Figure 3.** The content of literature followed and published by clinicians during the pandemic.

(66.0%) and all publications covering COVID-19 (49.3%). The respondents stated that the content of their published literatures was about rheumatology area unrelated to COVID-19 (39.8%), rheumatology area covering COVID-19 (31.2%), and COVID-19 publications unrelated to the field of rheumatology (17.8%).

### Perspectives

Over 60% of the respondents perceived that the COVID-19 pandemic would increase the frequency of newly diagnosed rheumatic diseases. More than half of the respondents reported that patients adhered less to biological (57%) and nonbiological rheumatic drugs (55%) than the in pre-pandemic period. Nearly 30% of the clinicians thought that there were more disease exacerbations in patients during the pandemic, while the same proportion of participants contradicted this opinion. Almost 90% of the respondents indicated that patients attended fewer visits during the pandemic (Figure 4).

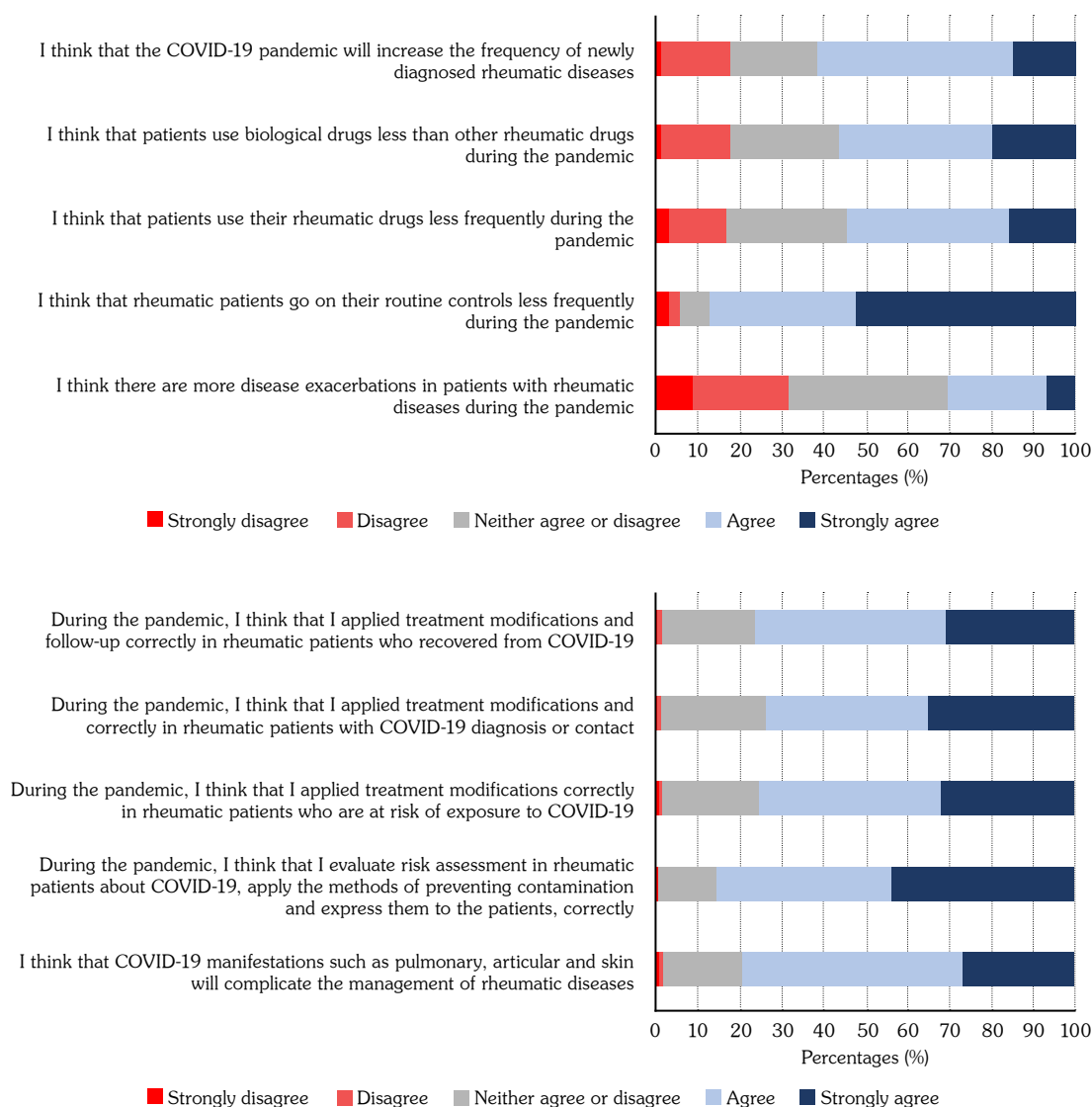
Concerning the clinicians' self-assessments about the management of rheumatic disease during the pandemic, most of the clinicians thought that they correctly applied to the assessment of COVID-19 risk, prevention methods against COVID-19, modification of treatment regimes in patients with diagnosis, and contact with COVID-19 (Figure 4).

## DISCUSSION

This survey study provided us with crucial information about research and publication activities in rheumatology and the clinician's perspective regarding their patients and practices during the COVID-19 pandemic. The prominent results of this study revealed that the academic publications were mostly covering COVID-19, and a very high percentage of clinicians thought that they managed their rheumatic patients accurately and that they experienced the significant effects of the COVID-19 pandemic (e.g., new onset rheumatic disease and more disease relapse) on the rheumatology practice.

Scientific publication and education had been adversely affected due to the pandemic.<sup>20</sup> This study revealed that rheumatology practitioners, like other clinicians, worked in many COVID-19-related departments, such as outpatient and inpatient service. This might have caused nearly 40% of clinicians to devote less time to scientific studies and educational activities. Contrarily, more than 40% of clinicians could devote more time to scientific study and educational activities. The reason for spending much time on scientific studies may be lesser hospital admissions.<sup>1</sup>

Although up to 40% of respondents stated that they spent plenty of time on scientific activity, almost half of them declared that they did not



**Figure 4.** Perspectives of clinicians about practices and patients.

COVID-19: Coronavirus disease-19.

publish any paper in the first 18 months of the pandemic. In the early pandemic, a significant decrease in the number of scientific publications was reported in the literature.<sup>3,13</sup> The reasons for the low number of publications might be increased COVID-19-related workload, inability to hold face-to-face meetings to avoid the contamination risk, psychological and motivational problems, and the decrease in international collaboration.<sup>3,5,9,15,21</sup>

However, the total number of publications in 2020 indexed by PubMed was 10% higher than those published in 2019.<sup>9</sup> In our study, more

than half of the respondents stated that they published at least one article in the SCI/SCI-E journals. The short timeline from data collection to publication, particularly for COVID-19-related papers, may be one of the reasons for higher publication rates.<sup>17</sup> The other reasons probably might be the accelerated reviewing process of COVID-19-related papers and more open-access papers in academic journals.<sup>5,6</sup>

In this survey, the clinicians published COVID-19 papers related to (31.2%) and not related to (17.8%) rheumatic diseases. Additionally,

39.8% of respondents wrote a paper in the area of rheumatology unrelated to COVID-19 (39.8%). In the first year of the pandemic, the number of COVID-19-related publications had increased dramatically.<sup>7</sup> A recently published paper showed that COVID-19 papers in the first months of the pandemic were mostly observational and low-quality research compared to the non-COVID-19 papers.<sup>14</sup> Additionally, the acceptance and citation rates of COVID-19 papers were higher than the non-COVID-19 papers.<sup>14,22</sup>

According to academic publishing during the pandemic era, the possible concerns regarding the publication process should be considered cautiously. These concerns were about the quality of research, methodological problems, and the peer review process.<sup>16</sup> Therefore, in the early phases of the pandemic, the importance of the early bird effect or accelerated publishing ought to be kept in view when interpreting the literature.<sup>8</sup>

In our previous study,<sup>1</sup> a decline in patients' routine outpatient clinic controls and a decrease in biological and other rheumatic drug usage were reported. This study further revealed an increase in newly diagnosed rheumatic disease and rheumatic exacerbations just from the clinicians' perspective. Currently, the literature also supports that the incidence of rheumatic disease and rheumatic exacerbations increased after the onset of COVID-19.<sup>2,23</sup>

Regarding rheumatology practitioners' self-perspectives, most of them thought that they accurately managed their patients during the pandemic. During the pandemic, scientific literature that was about the impact of COVID-19 on patients with rheumatic disease was rapidly changed based on time. Clinicians should be aware of up-to-date information to properly manage their patients. In this survey, the clinicians reported that they mostly followed the literature not only about rheumatic disease but also on COVID-19.

Apart from the literature follow-up, papers about how rheumatology education should be conducted during the pandemic have also been reported.<sup>20,24,25</sup> These include inpatient consultation service, outpatient procedures, telehealth clinics, virtual learning programs, and social media programs.<sup>20,24,25</sup>

The potential limitations of this study were time-dependent results, the relatively limited respondent number, and the absence of the number of papers published before the pandemic. These results described the publication activities and perspectives of rheumatology practitioners from the onset of the pandemic to December 2021. Consequently, if this survey was performed at the present time, different results might have emerged. The reason for the low respondent number might be an unwillingness of the respondents to respond to the survey, as they faced numerous online surveys and meetings throughout the pandemic. Lastly, because none of the current survey questions investigated the number of publications before the pandemic, we discussed our results of publications during the pandemic with literature. Nevertheless, the major strength of this study was that it was the first national clinician-based survey study including academic publications and perspectives of rheumatologists.

In conclusion, this study represented that the COVID-19 pandemic significantly impacted the scientific research, academic learning, and publication activities in this group of Turkish physical medicine and rehabilitation specialists and rheumatologists. From clinicians' perspectives, the pandemic significantly impacted the patients with rheumatic disorders and they accurately managed their patients during the pandemic.

**Ethics Committee Approval:** The study protocol was approved by the Ankara University Faculty of Medicine Ethics Committee (date: 04.03.2021, no: I2-172-22). The study was conducted in accordance with the principles of the Declaration of Helsinki.

**Data Sharing Statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.

**Author Contributions:** All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by KA, GA. The first draft of the manuscript was written by KA. All authors commented on previous versions of the manuscript. All co-authors read and approved the final manuscript.

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## APPENDIX 1.

### Section 1- Clinician characteristics

1. How old are you?
  - 20-30
  - 31-40
  - 41-50
  - 51-64
  - ≥65
2. What is your gender?
  - Female
  - Male
3. What is your specialty?
  - Rheumatology
  - Pediatric rheumatology
  - Physical Medicine and Rehabilitation
  - Internal Medicine
  - Pediatrics
  - Immunology
  - Other ...(please write)
4. What is your practice sector?
  - University hospital
  - State hospital
  - Private hospital
  - Private practice
  - Other...(please write)
5. How many years do you work in rheumatology practice?
  - <5 years
  - 5-9 years
  - 10-19 years
  - ≥20 years
6. Which departments did you served during the pandemic? (You can choose more than one option)
  - Outpatient clinic
  - Inpatient service
  - Intensive care unit
  - Primary care
  - Consultant
  - Rehabilitation
  - None

### Section 2- Academic publishing during the pandemic period

7. How much time do you spend on scientific research?
  - 1=very less than pre-pandemic period
  - 2=less than pre-pandemic period
  - 3=similar to pre-pandemic period,
  - 4=more than pre-pandemic period
  - 5=much more pre-pandemic period
8. How much time do you spend on clinical learning interventions?
  - 1=very less than pre-pandemic period
  - 2=less than pre-pandemic period
  - 3=similar to pre-pandemic period,
  - 4=more than pre-pandemic period
  - 5=much more pre-pandemic period
9. Did you edit a national book during the pandemic?
  - Yes
  - No
10. Did you edit a international book during the pandemic?
  - Yes
  - No

11. How many papers did you publish at SCI or SCI-E journals during the pandemic?
  - None
  - <3
  - 3-5
  - 6-10
  - >10
12. How many papers did you publish at other index (except SCI and SCI-E) journals during the pandemic?
  - None
  - <3
  - 3-5
  - 6-10
  - >10
13. In which fields did you follow the literature during the pandemic period? (You can choose more than one option)
  - All publications covering COVID-19
  - Rheumatic publications unrelated COVID-19
  - Rheumatic publications covering COVID-19
14. In which fields did you do scientific publications during the pandemic period? (You can choose more than one option)
  - Rheumatic publications covering COVID-19
  - Rheumatic publications unrelated COVID-19
  - COVID-19 publications unrelated rheumatic disease
  - Other publications
  - None

### Section 3- Perspectives

[For this section, please use the 5-Likert scale as follows; 1=strongly disagree, 2=disagree, 3=neither agree or disagree, 4=agree, 5=strongly agree]

(mark separately for each routine)

15. I think there are more disease exacerbations in patients with rheumatic diseases during the pandemic.
16. I think that rheumatic patients go on their routine controls less frequently during the pandemic.
17. I think that patients use their rheumatic drugs less frequently during the pandemic.
18. I think that patients use biological drugs less than other rheumatic drugs during the pandemic.
19. I think that the COVID-19 pandemic will increase the frequency of newly diagnosed rheumatic diseases.
20. I think that COVID-19 manifestations such as pulmonary, articular and skin will complicate the management of rheumatic diseases.
21. During the pandemic, I think that I evaluate risk assessment in rheumatic patients about COVID-19, apply the methods of preventing contamination and express them to the patients, correctly.
22. During the pandemic, I think that I applied treatment modifications correctly in rheumatic patients who are at risk of exposure to COVID-19.
23. During the pandemic, I think that I applied treatment modifications correctly in rheumatic patients with COVID-19 diagnosis or contact.
24. During the pandemic, I think that I applied treatment modifications and follow-up correctly in rheumatic patients who recovered from COVID-19.