

# Impact of COVID-19 pandemic on rheumatology practice in Latin America

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## ABSTRACT

**Objectives.** To describe the impact of COVID-19 pandemic on Latin American rheumatologists from a professional, economic, and occupational point of view.

**Methods.** We conducted an observational cross-sectional study using an online survey sent to rheumatologists of each non-English-speaking country member of the Pan American League of Rheumatology Associations (PANLAR). A specific questionnaire was developed.

**Results.** Our survey included 1097 rheumatologists from 19 Latin American countries. Median (IQR) age of respondents was 48 (40-59) years and 618 (56.3%) were female. Duration of practice since graduation as rheumatologist was 17 years, and 585 (53.3%) were under 50 years of age. Most rheumatologists worked in private practice (81.8%) and almost half worked in institutional outpatient centers (55%) and in-patient care (49.9%). The median number of weekly hours (IQR) of face-to-face practice before the pandemic was 27 (15-40) but it was reduced to 10 (5-20) during the pandemic.

Telehealth was used by 866 (78.9%) respondents during the pandemic. Most common methods of communication were video calls (555; 50.6%), telephone calls (499; 45.5%) and WhatsApp voice calls (423; 38.6%).

A reduction in monthly wages was reported by 946 (86.2%) respondents. Consultation fees also were reduced and 88 (8%) rheumatologists stated they had lost their jobs. A reduction in patient adherence to medication was reported by nearly 50% of respondents. Eighty-one (7.4%) rheumatologists received a COVID-19 diagnosis and 7 (8.6%) of them were hospitalized.

**Conclusions.** COVID-19 pandemic has reshaped rheumatology practice in Latin America and has had a profound impact on rheumatologists' behaviors and clinical practice.

**Keywords:** COVID-19, rheumatology, telehealth, guidelines, practice

## INTRODUCTION

Coronavirus disease 2019 (COVID-19) is the name assigned to the condition caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus.<sup>1</sup> The disease broke out in Wuhan, China, on December 2019, and was declared a pandemic and a major global health threat by the World Health Organization (WHO) in March 2020.<sup>2-3</sup>

Globally adopted preventive measures focused on mitigating infection risk and the impact of COVID-19. These measures focus primarily on social distancing, hand hygiene, and wearing a mask in public settings. Social distancing emerged as a main strategy in public health aimed at preventing SARS-CoV-2 dissemination, which had implications for the management of rheumatology patients. Strategies to reduce physician-patient encounters in the outpatient setting were implemented as a means to prevent the spread of COVID-19 and to protect both patients and healthcare providers.<sup>4-6</sup>

Patients with rheumatic diseases are usually under chronic pharmacological immunosuppression, which could make them more susceptible to infections. There is biological plausibility to consider these patients at 'high risk' for SARS-CoV-2 infection and development of COVID-19. These vulnerable populations face a dilemma between potential exposure to the virus and the need for medical care. Therefore, a change in the behavioral patterns of rheumatic patients and of rheumatologists was expected.<sup>3,7-9</sup>

Infectious outbreaks that require a change in daily habits are not new. These behavioral patterns are mediated by perceived susceptibility, perceived severity, perceived benefits, barriers, and signals that impulse to take action.<sup>10</sup> Experience from previous outbreaks has shown in the general population and in healthcare workers as well a favorable tendency to comply with hygiene instructions and social isolation. Also, changes in daily habits, the adoption of preventive measures, and the economic uncertainty associated with quarantines are frequently reported.<sup>11-19</sup>

In addition to disruptions due to frequent lockdowns, the quarantine and the social distancing constraints, rheumatology practice had to face added challenges. There are some studies about change of habits and behaviors in healthcare workers during a pandemic.<sup>5-6,13,19</sup> Management of outpatients has been described as a potential difficult issue due to the lack of preparedness and plans that could be effective for these situations.<sup>20</sup>

Studies about attitudes and behaviors are used to research the response and behavior patterns in communities facing the development and prevention of a new disease.<sup>18-20</sup> Considering that rheumatic patients are a potentially vulnerable population, changes in behavior patterns are expected both in patients and their physicians. This situation has not been previously explored during the current COVID-19 pandemic in Latin American countries.

Therefore, we conducted a survey to explore behaviors, attitudes and changes in the practice of rheumatology during the COVID-19 pandemic in non-English-speaking countries of Latin America. The survey included rheumatic patients

and rheumatologists as well. In this paper, only results from physicians will be presented.

## METHODS

### Objectives

The objective of our study was to describe attitudes and practices of Latin American rheumatologists related to the management and follow-up of their patients during the COVID-19 pandemic. Our specific goal was to describe general characteristics of physicians, and the way that the COVID-19 pandemic affected rheumatologists from a professional, economic, and occupational point of view.

### Study design

We conducted an observational cross-sectional study using an online survey sent to rheumatologists of each non-English-speaking country member of the Pan American League of Rheumatology Associations (PANLAR).

### Sample

Convenience sampling was used, so the sample size was not calculated. A 30-day window was established for data collection throughout June and July 2020.

### Inclusion criteria

Rheumatologists from PANLAR affiliated countries with the ability and desire to complete the survey were included

### Exclusion criteria

Rheumatologists who were not caring for patients were excluded.

### Data collection and instruments

The link to the survey was sent to the leading rheumatologist of each country using the RedCap® platform. This rheumatologist was responsible for disseminating the survey among colleagues in his country through the local rheumatology association. The survey was developed in Spanish and later translated to Portuguese by a Brazilian researcher (SK).

The RedCap® platform was used for data storage.

A specific instrument was developed based on previous experiences<sup>12-15,17-19</sup> to assess demographic and clinical information, self-reported disease, use of medications, symptoms suggestive of COVID-19, confirmed diagnosis of

COVID-19, and request for medical consultation or hospitalization. Since data were self-reported, researchers did not have access to confirmatory evidence. The obtained information was anonymous.

The following subjects were evaluated using a set of answer options such as "Yes", "No", "Don't know / no answer", a Likert scale, or answers with specific values (for example, questions about income or the number of hours spent consulting).

-Attitudes: Questions evaluated the degree of agreement with the recommendations for individual and social care, perceived susceptibility, and the ease of communication through digital and remote means. The willingness to adopt alternatives to in-person medical care and the perceived importance of the rheumatologist in crisis management were evaluated.

-Practices: Physicians were asked about behaviors and alternatives to guarantee the continuity of medical care, biosafety procedures, participation in multidisciplinary groups for the design of institutional guidelines, strategies for patient management, and the need to offer medical service outside the subspecialty area.

An initial pilot survey was carried out with rheumatic patients and rheumatologists in Bogotá, Colombia, to confirm an adequate understanding of the questions and to define the application time. Its applicability was evaluated by digital means. The survey was tweaked according to identified difficulties before the generalized application of the instrument.

### Statistical analysis

Descriptive statistics were performed by calculating measures of central tendency for quantitative variables and using counts and percentages for qualitative and nominal variables.

### Ethics

This study is governed by the ethical principles of the Declaration of Helsinki and according to the scientific, technical and administrative regulations for health research stated by the Resolution 8430 of 1993 of the Colombian Health Ministry. By the same resolution, the study is considered a risk-free investigation. Confidentiality of the data was maintained through the use of secure databases. The study was approved by the Research and Ethics Committee of the Hospital Universitario San Ignacio and the Pontificia Universidad Javeriana (Approval 2020/106).

## RESULTS



Our study included 1097 rheumatologists from 19 Latin American countries. From these, 1052 (96%) managed adult patients while 45 (4%) were pediatric rheumatologists. The countries that contributed the largest number of rheumatologists were Brazil (276 respondents; 25.2%), Mexico (229; 20.9%), Colombia (140; 12.8%), and Argentina (120; 10.9%). Table 1 shows the number and percentage of respondents per country.

Median (IQR, interquartile range) age of respondents was 48 (40-59) years. There were 618 (56.3%) female respondents and the median (IQR) duration of practice since graduating as rheumatologist was 17 (7-28) years. Out of the total sample, 585 respondents (53.3%) were under 50 years of age and approximately two-thirds of respondents (n = 730; 69.5%) reported over 10 years of experience.

Most rheumatologists worked in private practice (897 respondents; 81.8%) while 603 (55%) worked in institutional outpatient centers, and 547 (49.9%) in in-patient care. Most practice time was spent in private practice (50 hours per week, IQR, 30-90 hours) and institutional outpatient centers (45 hours per week, 30-65 hours). Other practice scenarios and practice time distribution can be seen in Table 2. Noteworthy, the respondents could work in more than one environment of care delivery.

Eighty-one (7.4%) rheumatologists received a COVID-19 diagnosis. Seven (8.6%) of these 81 rheumatologists were hospitalized during a median of 11 days (IQR, 5-12 days). None of them required mechanical ventilation. Pharmacological treatment was varied (Table 3).

The median number of hours (IQR) of in-person practice before the pandemic was 27 (15-40) while the median number (IQR) of patients seen face-to-face per hour was 3 (2-4). During the pandemic, 598 (54.5%) rheumatologists continued offering in-person care, but the median number of hours (IQR) of in-person practice was reduced to 10 (5-20) and the median number (IQR) of patients seen face-to-face per hour was 2 (1-2.1).

Telehealth was used by 866 (78.9%) respondents during the pandemic. The most commonly used methods of communication were telephone calls (499; 45.5%) and WhatsApp voice calls (423; 38.6%). Other communication methods can be seen in Table 4.

The telehealth option was not offered by 231 (21.1%) of the respondents. Among others, reasons reported by the respondents were that they did not consider these alternatives as adequate for the patients and the lack of clarity regarding payment methods (Table 5).

The median number of hours (IQR) of telehealth care per week during the pandemic was 5 (2-10) while the median number (IQR) of patients virtually treated by the hour was 2 (1-3).

The type of rheumatology virtual visit delivered by respondents were first-time visits (8 respondents; 0.9%), follow-up visits (478; 55.2%), and both types of visits (380; 43.9%).

Aside from the face-to-face medical visit, rheumatologists reported using other communication channels with their patients such as WhatsApp, phone calls, and e-mails (Table 6).

The number of rheumatologists who agreed that telehealth was a valid strategy during the pandemic was 940 (85.7%) but only 546 (49.8%) considered that telehealth would hypothetically continue to be a valid option after the end of the pandemic.

The economic and occupational impact evaluation showed that 946 (86.2%) respondents perceived a reduction in monthly wages. The percentage reduction (IQR) in monthly wages was 50% (30-60). Respondents reported 70% (50-95%) of cancelled appointments and 88 (8%) rheumatologists stated they had lost their jobs. Consultation fee was reported to be reduced by 400 (46.2%) of the respondents and the percentage reduction (IQR) from baseline fee was 42.9% (25-60).

Regarding patient adherence to medication assessed by the physicians, results showed a reduction in patient adherence to medication reported by 504 (45.9%) rheumatologists in patients receiving synthetic drugs and 482 (43.9%) for those on biologics. Physicians who reported not having adjusted the doses to the patients due to the pandemic were 1070 (97.5%), 1029 (93.8%), and 704(64.2%) for synthetic drugs, biologics, and glucocorticoids, respectively. According to 974 (88.8%) of physicians, patients on antimalarials found difficulties to access to these drugs during the pandemic.

A change in the administration route for patients' medication was not considered by 917 (83.6%) rheumatologists, while 175 (15.9%) physicians considered for their patients a change from intravenous (IV) to subcutaneous (SC) route, and 5 (0.5%) considered a change from SC to IV route.

Regarding rheumatologists' participation in COVID-19 local guidelines development, 878 respondents (80%) considered they should be involved and 361 (32.9%) did actually participate in COVID-19 local guidelines development.

Rheumatologists were asked if they had been required to care for internal medicine patients. An affirmative answer was given by 192 (17.5%) respondents who stated that previously they did not care for this kind of patient while 247 (22.5%) declared that they used to see previously internal medicine patients. A negative answer was given by 658 (60%) respondents. Of those that answered affirmatively (n = 439), 177 (40.3%) stated that they cared for hospitalized patients, 144 (32.8%) worked with outpatients, 99 (22.5%) worked with both inpatients and outpatients, and 19 (4.3%) reported other types of care.



When those rheumatologists (n = 439) were asked if they had been required to care for internal medicine patients with a COVID-19 diagnosis, the question was affirmatively answered by 277 (63.1%) respondents, and of those, 212 (76.5%) stated they had adequate personal protective equipment (PPE).

In addition, rheumatologists were also asked if they had been required to care for rheumatology patients with a COVID-19 diagnosis. This question was affirmatively answered by 338 (30.8%) respondents, and of those, 265 (78.4%) stated they had adequate PPE.

At least one episode of discrimination as a healthcare worker during the pandemic was reported to be experienced by 124 (11.3%) of the respondents.

The self-perceived risk (IQR) of getting infected with SARS-CoV-2 during the pandemic was 50% (30-70) and the perceived risk (IQR) of their family members becoming infected with SARS-CoV-2 during the pandemic was also considered 50% (30-70).

## DISCUSSION

Change of medical practices due to the COVID-19 pandemic has been reported worldwide.<sup>4-7, 28-31</sup> Changes in general population behaviors, public health and medical practice have been reported previously associated with previous outbreaks or pandemics like Zika<sup>10</sup>, influenza A (H1N1)<sup>11-13, 15, 20</sup>, SARS<sup>16-19, 26</sup>, avian influenza (H5N1)<sup>14, 17, 25</sup>, and chikungunya.<sup>27</sup>

The emergence of COVID-19 led to unprecedented changes to rheumatology clinical practice worldwide, including the restructuring of hospitals and the rapid transition to virtual care.<sup>5, 21-24, 30-32</sup> Mehrotra et al also reported that in a very short time, COVID-19 has promoted a fast conversion from in-person care to telehealth in primary care practices. Changes that would take months of planning, pilot testing, and education have been performed in one or two weeks.<sup>5</sup> In our study, due to the COVID-19, in-person practice decreased from 27 hours a week prior to the pandemic to 10 hours a week during the pandemic.

During the pandemic, the rheumatology outpatient departments and hospital services turned to provide virtual care. As a norm, patients were recommended not to attend face-to-face visits if they had any symptoms of COVID-19. Adaptations included screening for COVID-19 symptoms, mask-wearing, physical distancing in waiting rooms, hand hygiene care, and the use of appropriate PPE.<sup>1-8, 21-23</sup>

In our sample, in-person care was continued by more than a half of respondents. Similar to our results, in a multinational recent survey that included 554 respondents from 20 countries, face-to-face appointments with the use of personal protective behaviors and equipment continued to be held in 52.9% rheumatologists' practices.<sup>24</sup>

The adoption of telehealth channels and methods was acknowledged by 80% of our respondents. Gkrouzman et al stated that the COVID-19 outbreak changed the activities of rheumatology services in many ways never seen before.<sup>28</sup> Nearly all respondents of our survey agreed that the use of telemedicine methods is a valid option during the pandemic, but this percentage decline to 50% for a hypothetically post-pandemic scenario. Considering that the risk of SARS-CoV-2 infection is likely to persist, the integration of telehealth into current models of care would become essential in rheumatology as in other areas of healthcare.<sup>7-8, 28-31</sup>

The most commonly reported telehealth methods in our study were telephone calls (45.5%), WhatsApp calls (38.6%), and video calls using platforms such as Skype, WhatsApp and Microsoft Teams (50.6%). Similarly, a recent multinational study reported that most common teleconsultation modalities were telephone calls (60.5%), WhatsApp calls (43.5%), emails (16.3%) and video calls (9.6%).<sup>24</sup>

Barriers to adopting virtual care methods were commonly cited by our respondents. More than 20% of our sample did not offer telehealth services to their patients. The lack of education or training on remote care methods and the lack of means to offer these alternatives were frequently cited. Video consultation through open and free access platforms (such as Skype, Facebook or Instagram) were sometimes objected by healthcare systems, providers or payers because they do not comply with privacy regulations.<sup>24,28-32</sup> A major reason to avoid offering teleconsultation option was the lack of clarity regarding payment methods.

Nearly half of respondents said they perceived a reduction in patient adherence to rheumatic drug therapies, with almost no difference between synthetic or biologic agents. In general, rheumatologists did not adjust doses due to the pandemic, and the route of administration was maintained the same in most cases. Almost 90% of respondents reported that their patients had some difficulties to access to antimalarials during the pandemic. According to an international survey about antimalarial drug shortages during the pandemic conducted by the COVID-19 Global Rheumatology Alliance, 6.8% of patients were unable to continue taking antimalarials because of inadequate supply in the region of the Americas.<sup>33</sup>

The pandemic had a profound economic impact on our respondents. More than 80% of rheumatologists said they experienced a reduction in monthly wages and the reduction was about 50% on average. Around 50% of rheumatologists also declared a consultation fee reduction, which on average ended being 40% less than the usual fee prior to the pandemic. In addition, 8% of respondents said they had lost their jobs. The employment and economic negative impact of the pandemic was commonly reported in other studies.<sup>28-29</sup> According to Keesara et al, the progress of remote care options requires the growth of adequate payment structures to sustain its development.<sup>29</sup>

In this new COVID-19 scenario, updated practice guidelines will help to improve access to health, reduce costs for patients, (e.g., less time away from work, less travels) and increase outreach to underserved populations, including those in rural and global communities.<sup>3, 22, 30-31</sup> The upcoming new guidelines will certainly reshape rheumatology practice in Latin America. Also, new considerations and regulations about privacy, disclosures, interoperability of electronic health records and data security will evolve and update as telehealth expands.<sup>30-32</sup> Rheumatologists' involvement in the elaboration of new guidelines was considered essential by 80% of our respondents and 32% were already collaborating in these efforts.

Healthcare workers are the first line of defense against COVID-19 and at the same time they are considered the highest risk occupational group. According to Betancourt-Sánchez et al, Italy statistics showed that 20% of health workers had been infected during the pandemic and in Colombia the percentage of infected health workers was 7.0%.<sup>34</sup> In our study, 7.4% of rheumatologists reported having received a diagnosis of COVID-19.

Some estimates suggest that frontline health workers could account for 10–20% of all COVID-19 diagnoses.<sup>35</sup> Therefore, it is not surprising that in our study, self-perceived risk of being infected with SARS-CoV-2 was 50%, with a similar perceived risk for family members.

Compared with healthcare workers who reported adequate availability of PPE, those with inadequate PPE had an increased risk of infection.<sup>22-24, 34-35</sup> In our study, nearly 80% of respondents reported to have adequate PPE.

Stigma and discrimination appeared as major issues during the COVID-19 pandemic. Healthcare workers had to face these challenges, including episodes of discrimination in their neighborhood or at workplace.<sup>34-36</sup> In our study, 11% of respondents experienced being through at least one episode of discrimination as a health worker during the pandemic.

We found that 81 (7.4% of the total sample) rheumatologists received a diagnosis of COVID-19, and 7 of them (8.6% of those with a COVID-19 diagnosis) were hospitalized, with a median hospital stay of 11 days. Different medications were administrated to these rheumatologists, being hydroxychloroquine and amoxicillin the most frequently reported. At the time we conducted our survey, the results of neither the RECOVERY trial<sup>37</sup> (dexamethasone) nor the SOLIDARITY trial<sup>38</sup> (lopinavir/ritonavir, antimalarials, etc.) were available, thus these medications were not the mainstay treatment in the region.

Drug therapies for COVID-19 reported in our survey are used worldwide.<sup>1,3-4,22</sup> Globally, the management for SARS-CoV-2 infection was initially extrapolated from previous epidemics of coronaviruses like SARS.<sup>16-19</sup> There are no globally approved treatments for COVID-19, and current management of symptomatic patients is based on symptomatic treatment, supplemental oxygen and supportive care. COVID-19 is asymptomatic or minimally symptomatic in more than 80% of patients and requires no additional management.<sup>1,3,21-22</sup>

Our study has some limitations. The questionnaire was developed *de novo*, based on the available literature and practice experience. However, it was validated by an independent scientific committee and previously tested for readability, acceptability and timing in a group of Colombian rheumatologists. The collected data were self-reported by physicians, which partly depends on recall ability and may generate subjectivity and recall bias. Nevertheless, the number of rheumatologists involved and the participation of specialists from 19 different countries seem to guarantee that our study reflects confidently the reality of the impact of COVID-19 pandemic on Latin American rheumatologists. Given that the survey was distributed by national PANLAR chairs rather than centralized distribution to all PANLAR members, selection bias may be present. Nonetheless, as PANLAR gathers the national societies of rheumatology of each of the member countries, and, based on the fact that the vast majority of rheumatologists in each country are endorsed by their national society, we consider that a small number of rheumatologists may have chosen not to answer our survey. Noteworthy, each national PANLAR chair is elected on a democratic basis in their national society.

## CONCLUSION

Our study provided new valuable information about the impact of COVID-19 on the rheumatology practice in Latin American countries. Our results described the consequences of the COVID-19 pandemic on rheumatology practice and the professional adaptation to this new scenario. During the pandemic, telehealth has had an important role in healthcare delivery, allowing for ongoing medical care while ensuring the safety of patients and physicians as well. Careful planning, outcome assessment, and adaptation of existing virtual care methods are future steps needed to achieve a successful integration of telehealth into routine rheumatology practice. In conclusion, COVID-19 pandemic has reshaped rheumatology practice in Latin America through a wide impact on rheumatologists' clinical practice.

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Table 1. Number and percentage of rheumatologists per country who responded to the PANLAR survey (N = 1097)

Country	Number (percentage)
1. Argentina	120 (10.9)
2. Bolivia	10 (0.9)
3. Brazil	276 (25.2)
4. Chile	23 (2)
5. Colombia	140 (12.8)
6. Costa Rica	12 (1.1)
7. Cuba	15 (1.4)
8. Dominican Republic	15 (1.4)
9. Ecuador	37 (3.4)
10. El Salvador	20 (1.8)
11. Guatemala	18 (1.6)
12. Honduras	9 (0.8)
13. Mexico	229 (20.9)
14. Nicaragua	12 (1.1)
15. Panama	16 (1.5)
16. Paraguay	31 (2.8)
17. Peru	30 (2.7)
18. Uruguay	26 (2.4)
19. Venezuela	58 (5.3)

PANLAR, Pan American League of Rheumatology Associations (PANLAR).

Table 2. Practices scenarios and practice time distribution.

Practices scenarios	Number of respondents (percentage)	Time distribution. Hours per week (IQR)
Private practice	897 (81.8)	50 (30-90)
Institutional outpatient center	603 (55)	45 (30-65)
In-patient care	547 (49.9)	15 (10-30)
Teaching	430 (39.2)	15 (10-23.6)
Research	276 (25.2)	15 (10-20.8)
Pharmaceutical industry	152 (13.9)	5 (5-10)
Other	46 (4.2)	50 (14.2-100)

Table 3. Pharmacological treatment received by rheumatologists with a diagnosis of COVID-19 (n = 81)

Received medication	Number of respondents (percentage)
Hydroxychloroquine (HCQ)	44 (54.3)
Chloroquine (CQ)	2 (2.5)
Lopinavir / ritonavir	2 (2.5)
Azithromycin	45 (55.6)
Amoxicillin	9 (11.1)
Colchicine	4 (5)
Other	42 (51.8)
None	17 (21)

Table 4. Methods for telehealth communication reported being used by respondents during the pandemic (n = 1097)

Method	Number of respondents (percentage)
The respondent reported the use of telehealth	866 (78.9)
Telephone call	499 (45.5)
Skype call	33 (3)
WhatsApp call	423 (38.6)
Skype video call	71 (6.5)
WhatsApp video call	397 (36.2)
Microsoft Teams video call	87 (7.9)
Other	217 (19.8)

Table 5. Reasons reported by rheumatologists to avoid offering telehealth options to their patients (n = 1097)

Reasons	Number of respondents (percentage)
Respondents that did not offer telehealth options	231 (21.1)
Do not know how to use telehealth alternatives	33 (14.3)
Do not have means to offer these alternatives	25 (10.8)
Lack of clarity with regarding payment methods	60 (26)
Do not consider telehealth alternatives as adequate for their patients	100 (43)
Patients did not accept these alternatives	27 (11.7)
Continued in-person visits	92 (39.8)
Other reasons	41 (17.7)



Table 6. Communication channels used by rheumatologists with their patients aside from the medical consultation (n = 1097)

Communication channels	Number of respondents (percentage)
Phone call	600 (54.7)
Text messages	324 (29.5)
E-mail	489 (44.6)
WhatsApp	739 (67.4)
Facebook	107 (9.7)
Instagram	44 (4)
Other	30 (2.7)