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Research Letter

Trend in Industry Payments to Rheumatologists in the United States During the COVID-19 Pandemic Between 2013 and 2021

To the Editor:

The Open Payments Database (OPD), the legally binding database of payments made by pharmaceutical companies and device manufacturers to all physicians,[1] was launched in 2013 in the United States, in order to improve transparency in the financial relationship between healthcare professionals and industry. Meanwhile, a large number of the general public and physicians were not aware of the OPD[2,3] and there has been no reducing trend among rheumatologists so far.[4] Further, the coronavirus disease 2019 (COVID-19) pandemic might have restricted physician behaviors including promotional activities by industry. However, no study has evaluated the financial relationships between rheumatologists and industry during the COVID-19 pandemic.

This cross-sectional study examined the trend in financial relationships between industry and rheumatologists in the US during the COVID-19 pandemic. All general payments made to the rheumatologists whose primary specialty was categorized as rheumatology in the National Plan and Provider Enumeration System (NPPES) profile database were extracted from the OPD between August 2013 and December 2021. The NPPES and OPD were matched with the National Provider Identifier number.[4] Trends in payments before and during the pandemic were evaluated by the interrupted time series (ITS) analysis using population-averaged generalized estimating equation (GEE) models with panel data of monthly payments at the rheumatologist level. The detailed methodology was described in our previous studies.[5,6] As the national emergency concerning the COVID-19 pandemic was declared in the US on March 13, 2020, we considered the period before and after March 2020 as before the pandemic and after the pandemic for the analysis, respectively. Payments for acquisitions, ownership or investment interest, debt forgiveness, long-term medical supply or device loan, and royalty or license were excluded from the monthly ITS analysis, as these payments were newly added in 2021 or only a small number of physicians received substantial payment amounts. The payment trends were also evaluated annually with descriptive analysis and the GEE models.[5] Data collection was performed with Python 3.9.12 and reproducible code was described in the GitHub repository.[7]

There were 6047 rheumatologists who received ≥ 1 general payment totaling US $288,326,257 from industry between August 2013 and December 2021. The monthly payments and number of rheumatologists with payments decreased by 65.1% (95% CI 61.1-68.6, $P < 0.001$) and 39.8% (95% CI 38.3-41.2, $P < 0.001$) at the onset of the COVID-19 pandemic (Figure). The decrease in payments at the onset of the pandemic was

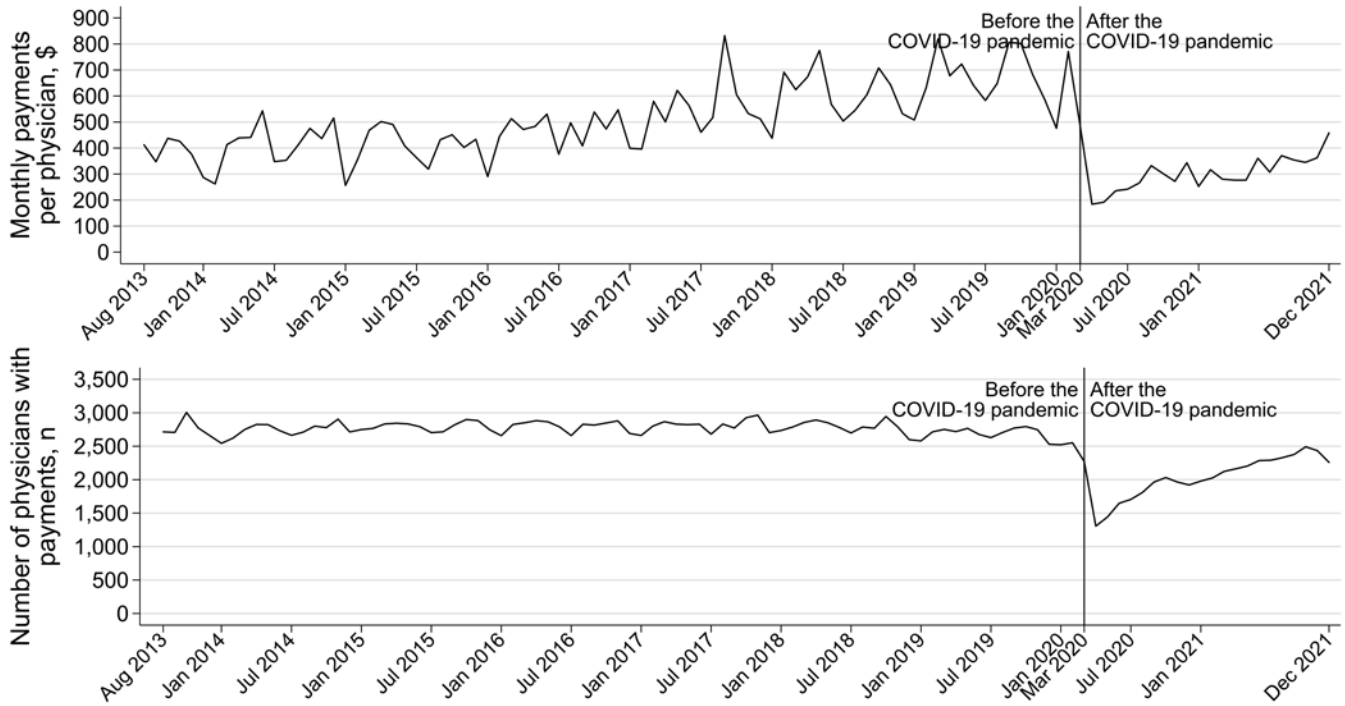

Figure. Monthly trend in general payments per rheumatologist and number of rheumatologists with payments between 2013 and 2021.

observed across all payment groups. However, the recovery trend in payments during the pandemic was higher among the rheumatologists with lower payments (Supplementary Material S1, available with the online version of this article). The rheumatologists with larger payments had increasingly received larger values during the pre-pandemic period, whereas there were decreasing trends in the payments per physician among rheumatologists with lower payments. Payments for travel and accommodation decreased by 98.2% (95% CI −98.5 to −97.8, $P < 0.001$) at the beginning of the pandemic, which was the most significantly. Speaking payments and meal payments also significantly decreased by 72.3% (95% CI −75.1 to −69.1, $P < 0.001$) and 72% (95% CI −73.1 to −70.8, $P < 0.001$), respectively. Meanwhile, consulting payments decreased by 23.3% (95% CI −36.9% to −6.9%, $P = 0.007$) but the decline was not as substantial as that of other payment categories (data not shown).

Regarding annual payments, the number of rheumatologists with payments ranged from $4215 in 2014 to $4444 in 2015, and there was no significant change between 2014 and 2019 (Table). Meanwhile, the payments per rheumatologist had increased by 11.7% (95% CI 8.9-14.6, $P < 0.001$) annually. Median total payments increased from $730 in 2014 to $812 in 2019. Both the number of rheumatologists with payments and payments per rheumatologist decreased by 21.7% (95% CI −24.1 to −19.3, $P < 0.001$) and 41.9% (95% CI −50.5 to −31.7, $P < 0.001$) in 2020 compared to those between 2014 and 2019, respectively. The general payments to rheumatologists were still at a lower level in 2021 compared to those between 2014 and 2019.

Despite several limitations such as no inclusion of rheumatologists without payments and unmeasured confounding factors as in other studies,[4,8] this study is the first, to our knowledge, to demonstrate that the COVID-19 pandemic had significantly reduced the financial relationships between the rheumatologists and industry in the US, by approximately one-third in payments per rheumatologist. Consistent with the findings from Putman et al,[4] the payment values had increased and there was no significant change in the number of rheumatologists accepting general payments since the inception of the OPD. Although there were recovering trends in general payments right after the onset of the COVID-19 pandemic, we observed general payments remaining at low levels between 2020 and 2021. Duarte-García et al found that general payments made to rheumatologists were significantly linked to increasing prescription of trade-name rheumatology drugs and increased Medicare spending between 2013 and 2015.[9] Future studies with longer-term observations are necessary to investigate whether this downward trend in general payments has contributed to reducing undue influence on rheumatologists' clinical practice.

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Table. Characteristics of annual general payments between 2013 and 2021.

	Year									Overall	Relative Change Rate (95% CI), %		
	2013	2014	2015	2016	2017	2018	2019	2020	2021		Annual Change, 2014-2019	Annual Change, 2020-2021	2014-2019 vs 2020-2021
Total payments, US $	12,103,145	29,789,830	29,521,090	33,719,907	39,432,238	44,349,257	49,134,550	26,150,230	24,126,009	288,326,257	12.2 (7.2 to 17.1)**	−18.0 (−23.0 to −13.1)**	−57.9 (−66.6 to −49.2)***
No. of rheumatologists with payments, n	3852	4215	4444	4372	4385	4347	4237	3547	3720	6047	−0.11 (−0.50 to 0.28)	5.0 (3.0 to 7.1)***	−21.7 (−24.1 to −19.3)***
Payments per rheumatologist, US $													
Median (IQR)	351 (99 to 953)	730 (181 to 2441)	688 (159 to 2290)	747 (157 to 2453)	745 (147 to 2500)	765 (150 to 2633)	812 (171 to 2765)	500 (102 to 2101)	600 (107 to 2242)	3447 (593 to 14,355)	11.7 (8.9 to 14.6)***	−17.4 (−24.2 to −9.9)***	−41.9 (−50.5 to −31.7)***
Mean (SD)	3142 (11,910)	7068 (28,905)	6643 (26,806)	7713 (32,467)	8993 (48,658)	10,202 (51,479)	11,597 (48,610)	7372 (34,721)	6485 (30,333)	47,681 (230,490)			

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

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ONLINE SUPPLEMENT

Supplementary material accompanies the online version of this article.

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