


# How Much has COVID-19 Contributed to Increase the Worldwide Consumption of Paracetamol and Ibuprofen? Evidence From an Infodemiological Analysis

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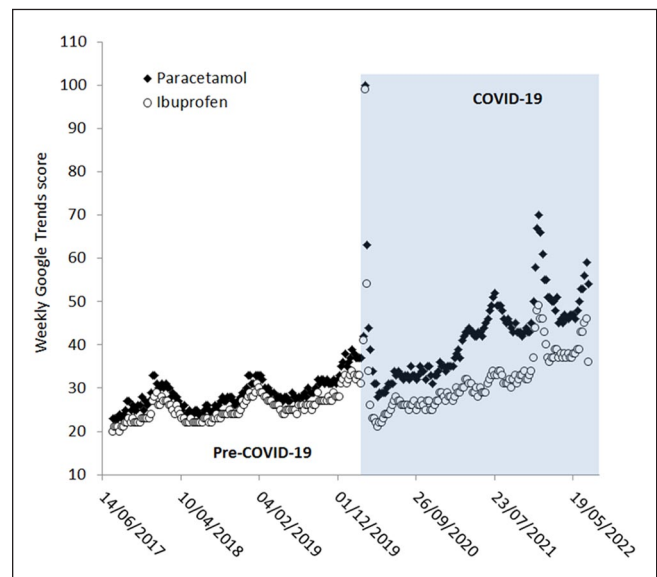
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To the Editor,

Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed for treating viral infections, and their usage is also widespread in patients with coronavirus disease 2019 (COVID-19), especially in those with milder illness.<sup>1</sup> Several lines of evidence demonstrates, in fact, that early anti-inflammatory therapy may prevent endothelial inflammation and the consequent risk of developing immunothrombosis, which would be associated with a substantially enhanced prescription of these drugs, potentially leading to medication shortage.<sup>2</sup> We have hence planned an infodemiological analysis to establish whether the consumption of some representative NSAIDs has increased all around the world after the spread of COVID-19.

We accessed Google Trends (Google Inc. Mountain View, CA, US) using the key words “paracetamol” (or acetaminophen) and “ibuprofen,” setting the geographical location to “worldwide,” and limiting our search to the past 5 years (ie, between July 2017 and July 2022). The weekly Google Trends score for both terms “paracetamol” and “ibuprofen,” thus mirroring their Web worldwide popularity, was divided into 2 different periods, that is, “pre-COVID-19” (from July 2017 to February 2020) and COVID-19 (from March 2020 to July 2022).<sup>3</sup> The relative volumes of Google searches for both terms over time was then analyzed with Spearman’s correlation and compared between the COVID-19 and pre-COVID-19 periods with Mann-Whitney test (Analyse-it Software Ltd, Leeds, UK).

The main results of this worldwide infodemiological analysis are summarized in Figure 1. A highly significant Spearman’s correlation was found between time and weekly Google Trends score of both paracetamol ( $r = .89$ ; 95% CI, 0.87-0.92;  $P < .001$ ) and ibuprofen ( $r = .78$ ; 95% CI, 0.73-0.83;  $P < .001$ ). Compared to the pre-COVID-19 period, the median (and interquartile range; IQR) weekly Google Trends score significantly increased by 54% for paracetamol (43 with IQR 34-47 vs 28 with IQR 26-31;  $P < .001$ ) and by 24% for ibuprofen (31 with IQR 27-37 vs 25 with IQR 23-27;  $P < .001$ ) during the COVID-19 pandemic, with Google



**Figure 1.** Worldwide weekly Google Trends score for “paracetamol” and “ibuprofen” before and after the emergence of the coronavirus disease 2019 (COVID-19) pandemic.

Trends score of paracetamol remaining constantly higher than that of Ibuprofen ( $P < .001$ ).

In conclusion, the results of this infodemiological analysis confirm that NSAIDs consumption may have dramatically increased on a worldwide scale after the emergence of the COVID-19 pandemic, thus needing strengthened efforts for monitoring appropriate prescription and limiting side effects, as well as for preventing potential drugs shortage.

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