

Internet Searches for Over-the-Counter Analgesics During the COVID-19 Pandemic Outbreak in Italy

Giuseppe Lippi , MD* and Camilla Mattiuzzi, MD[†]

*Department of Neuroscience, Biomedicine and Movement, Section of Clinical Biochemistry, University of Verona, Verona, Italy;

[†]Service of Clinical Governance, Provincial Agency for Social and Sanitary Services, Trento, Italy

Funding sources: None.

Conflict of interest: The authors have no conflicts of interest to declare.

Dear Editor,

We read with interest the recent article of Do and Do [1], who reported that the volume of Google searches for two very common over-the-counter analgesics such as ibuprofen and acetaminophen has considerably increased during intensification of COVID-19 pandemic outbreak in the United States. To provide support to these findings, we carried out a separate analysis, in order to explore whether similar evidence could be found in Italy.

Briefly, we interrogated Google Trends using the Italian keywords “aspirina” (i.e., “aspirin”), “ibuprofene” (i.e., “ibuprofen”), “paracetamolo” (i.e., acetaminophen), and “naprossene” (i.e., “naproxen”), between January 2016 and November 2020 (weeks 1–46), with country search set to “Italy.” The volume of Google searches for each of these over-the-counter analgesics, expressed as weekly Google Trends score, was averaged between the years 2016 and 2019 and then compared to that of the corresponding week of the year 2020, being finally expressed as ratio of Google Trends score (i.e., [2020]/[2016–2019]). The number of new weekly diagnoses of COVID-19 in Italy was contextually retrieved from the official website of the Italian National Institute of Health (Istituto Superiore di Sanità; ISS). Spearman’s correlation was used to test the possible association between the ratio of weekly Google Trends score and the number of new weekly COVID-19 cases in Italy. The statistical analysis was performed with Analyse-it (Analyse-it Software Ltd, Leeds, UK). The study was conducted in accordance with the Declaration of Helsinki, under the terms of relevant local legislation. This analysis was based on electronic searches in the unrestricted,

publicly available national repository of the ISS, and thereby no informed consent or Ethical Committee approvals were required.

The results of our analysis are shown in Figure 1. In keeping with US data, a peak of Google searches for all the four over-the-counter analgesics was found between the 10th and 14th week of the 2020 in Italy, anticipating by approximately 1–2 weeks the first peak of new weekly COVID-19 cases in our country. More specifically, the ratio of Google Trends scores throughout these 5 weeks was the highest for ibuprofen (7.7 ± 8.0), followed by acetaminophen (2.6 ± 1.5), while the increase of Google searches for naproxen (1.6 ± 0.7) and aspirin (1.2 ± 0.4) was found to be cumulatively lower. Notably, a significant correlation was found between new COVID-19 weekly diagnoses in Italy and volume of Google searches during the same week for ibuprofen ($r = 0.41$; 95% confidence interval [CI], .10 to .84; $P = .010$), acetaminophen ($r = 0.59$; 95% CI, .34 to .77; $P < .001$) and aspirin ($r = 0.38$; 95% CI, .07 to .62; $P = .018$), but not for naproxen ($r = 0.13$; 95% CI, $-.20$ to .43; $P = .433$), throughout the study period of 46 weeks, between February and November.

In conclusion, the results of our analysis of Italian data mirror straightforwardly the findings of Do and Do in the United States [1]. Nonetheless, we provide additionally important evidence that, throughout the first Italian outbreak (i.e., between February and November 2020), the volume of Google searches for over-the-counter analgesics such as acetaminophen, ibuprofen and aspirin has been significantly associated with the epidemic trend, thus reinforcing the concept that

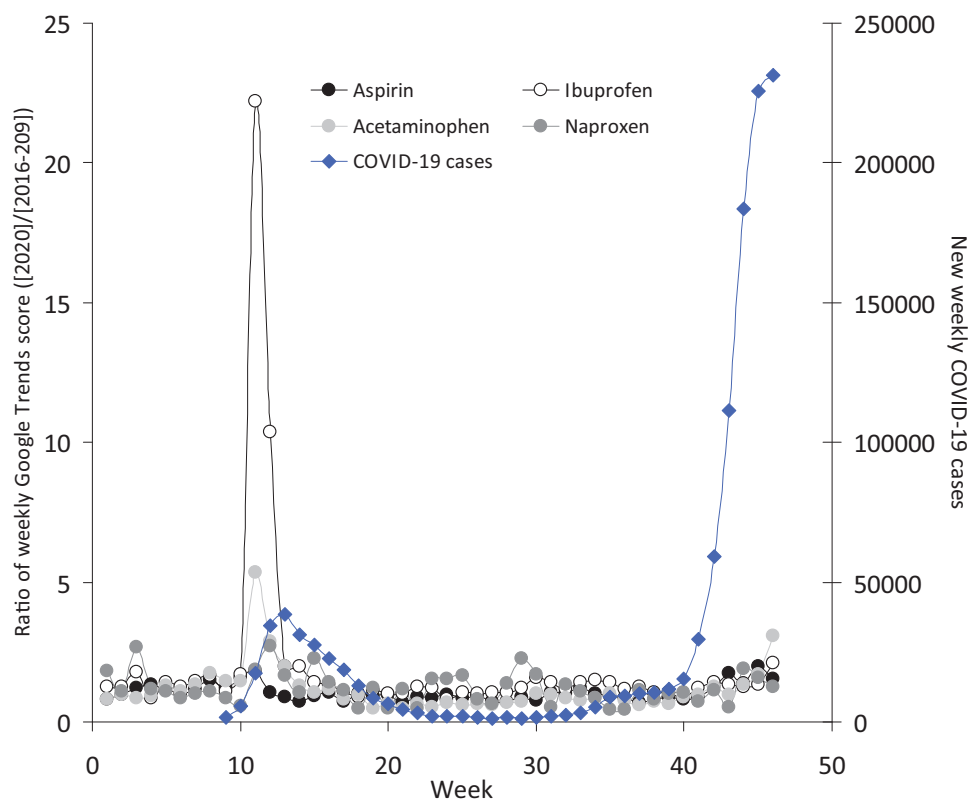


Figure 1. Number of new weekly diagnoses of coronavirus diseases 2019 (COVID-19) and ratio of weekly Google Trends score (i.e., [2020]/[2016–2019]) for “aspirina” (i.e., “aspirin”), “ibuprofene” (i.e., “ibuprofen”), “paracetamolo” (i.e., acetaminophen) and “naprossene” (i.e., “naproxen”) between the weeks 1–46 in Italy.

governments and public health authorities shall be proactive in preventing possible shortage of these types of drugs. This is especially important considering that myalgia, arthralgia, sore throat and headache may be rather common symptoms in patients with COVID-19 [2].

References

1. Do TP, Do HQ. Internet search interest for over-the-counter analgesics during the COVID-19 pandemic. *Pain Med* 2020; pnaa434 (doi: 10.1093/pm/pnaa434).
2. Drożdżał S, Rosik J, Lechowicz K, et al. COVID-19: Pain management in patients with SARS-CoV-2 infection-molecular mechanisms, challenges, and perspectives. *Brain Sci* 2020;10(7):465.