



## Public Health Insights from Social Media Analysis during the COVID-19 Pandemic in South Korea

*Seungeun Park*<sup>1</sup>, *Taemin Song*<sup>2</sup>, *\*Jae-Hyun Park*<sup>3</sup>

1. *Dable, Hanam-si, Korea*

2. *Graduate School of Industry & Environment, Gachon University, Seongnam, Korea*

3. *Department of Social and Preventive Medicine, School of Medicine, Sungkyunkwan University, Suwon, Korea*

**\*Corresponding Author:** Email: [pjaehyun@skku.edu](mailto:pjaehyun@skku.edu)

(Received 12 Mar 2025; accepted 22 Apr 2025)

### Dear Editor-in-Chief

Monitoring conversations on social media can provide valuable data to reveal public concerns and discussions related to public health emergencies. It can also be used to estimate disease activities or predict public behaviors (1,2). Through social media platforms, government officers can communicate with the public regarding guidelines and recommendations and provide messages to mitigate actions responding to public health emergencies (3). An analysis of social media data can potentially extract pertinent situational insights. Such situational insights hold significant value for public health professionals and decision-makers, helping them devise more efficient crisis response strategies (4,5).

The COVID-19 pandemic highlighted the importance of understanding public discourse to inform effective public health interventions. Social media platforms like Twitter in South Korea can be essential tools for analyzing real-time public concerns. This study explored evolving public concerns during the COVID-19 pandemic, analyzing social media data from February 2020 to July 2021. By categorizing posts from three prominent social media channels —NAVER, Daum, and Twitter—into three pandemic phases,

we identified shifts in discourse, offering actionable insights for public health strategies.

A total of 2,095,015 posts about infection response measures were collected, with 63.1% from Phase 1 (February 1–July 31, 2020), 24.9% from Phase 2 (August 1, 2020–January 31, 2021), and 12.0% from Phase 3 (February 1–July 31, 2021). Key topics included COVID-19 diagnosis, treatments, healthcare professionals, cough, healthcare systems, drugs, case reporting, screening clinics, and severe and asymptomatic cases. Similarly, 2,095,015 posts regarding transmission response measures were analyzed, comprising 58.3% from Phase 1, 26.9% from Phase 2, and 12.0% from Phase 3. Frequently discussed topics included masks, isolation, death, vaccine supply, social distancing, the pandemic, fever, tracking, quarantine, and vaccination priorities.

In the early stages of the pandemic, public discussions centered on testing availability, healthcare infrastructure, and preventive measures such as mask-wearing. Keywords such as "screening clinics" and "healthcare professionals" were frequently mentioned, reflecting a high concern about diagnostic services and resource availability. Testing protocols and the establishment of screening centers captured significant



Copyright © 2025 Park et al. Published by Tehran University of Medical Sciences.

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license.

(<https://creativecommons.org/licenses/by-nc/4.0/>). Non-commercial uses of the work are permitted, provided the original work is properly cited

public attention (6). These measures highlighted the critical role of government action in mitigating initial outbreaks and alleviating public anxiety. The pandemic also emphasized the importance of healthcare professionals and robust systems to support them, as reflected in discussions about "healthcare systems" and "workforce shortages." As the pandemic evolved, the discourse shifted to vaccine supply, the types of vaccines, and managing adverse reactions. Mentions of death decreased significantly after vaccination began in Korea, reflecting reduced concerns about infection spread (7). This shift in focus highlights the need for adaptable strategies aligned with evolving public priorities and developments in the COVID-19 response (8).

The study emphasizes the evolving nature of public concerns throughout the pandemic. Early efforts focused on testing and containment, while later phases required adaptive communication to address shifting priorities. Policymakers can use these insights to design targeted interventions and effective communication strategies. For example, early recognition of vaccine-related anxiety can guide campaigns to counter misinformation and clarify vaccine benefits. Real-time discourse analysis enables public health professionals to align strategies with population concerns. Social media platforms play a key role in facilitating communication, assessing the impact of measures, identifying misinformation, and disseminating corrective information effectively (3).

In conclusion, our study demonstrates the value of analyzing social media discourse during public health crises. Social media's real-time nature provides unique insights into societal concerns that traditional methods cannot capture. Integrating these insights into public health planning enhances response effectiveness. Tracking public concerns across pandemic phases reveals shifts that align with evolving challenges, enabling adaptive interventions to address immediate needs and build future resilience. Investing in data analytics in digital platforms is crucial for advancing public health preparedness and communication in an increasingly connected world.

## Acknowledgements

We thank Miso Information Technology Co., Ltd. for supporting data collection and analysis.

## Conflict of interest

The authors declare no conflicts of interest.

## References

1. Signorini A, Segre AM, Polgreen PM (2011). The use of Twitter to track levels of disease activity and public concern in the U.S. during the influenza A H1N1 pandemic. *PLoS One*, 6(5):e19467.
2. Xue J, Chen J, Hu R, Chen C, Zheng C, Su Y, et al. (2020). Twitter discussions and emotions about the COVID-19 pandemic: machine learning approach. *J Med Internet Res*, 22(11):e20550.
3. Panagiotopoulos P, Barnett J, Bigdeli AZ, Sams S (2016). Social media in emergency management: Twitter as a tool for communicating risks to the public. *Technol Forecast Soc Change*, 111:86-96.
4. Wiegmann M, Kersten J, Senaratne H, Potthast M, Klan F, Stein B (2021). Opportunities and risks of disaster data from social media: a systematic review of incident information. *Nat Hazards Earth Syst Sci*, 21(5):1431-44.
5. Bertoni E, Fontana M, Gabrielli L, Signorelli S, Vespe M, editors (2023). *Handbook of computational social science for policy*. Cham: Springer International Publishing. Available from: <https://link.springer.com/10.1007/978-3-031-16624-2>
6. Jeong IW (2020). South Korea pioneers coronavirus drive-through testing station. CNN. Available from: <https://www.cnn.com/2020/03/02/asia/coronavirus-drive-through-south-korea-hnk-intl/index.html>
7. Nham E, Song JY, Noh JY, Cheong HJ, Kim WJ (2022). COVID-19 vaccination in Korea: past, present, and the way forward. *J Korean Med Sci*, 37(47):e351.
8. Buchy P, Buisson Y, Cintra O, et al. (2021). COVID-19 pandemic: lessons learned from more than a century of pandemics and current vaccine development for pandemic control. *Int J Infect Dis*, 112:300-17.