


An Infodemiological Analysis of Google Trends in COVID-19 Outbreak: Predict Case Numbers and Attitudes of Different Societies

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ABSTRACT

A new type of coronavirus (COVID-19), detected at the end of December 2019 in Wuhan, China, can pass from person to person, spreading very quickly. The COVID-19 outbreak has created stress among societies. This study aims to evaluate the usability of Google Trends data in predicting and modeling the COVID-19 outbreak and the attitudes of different societies to it by using an infodemiological method. The authors collected the search words related to coronavirus and their relative search volume (RSV) from 11 different countries affected by the COVID-19 outbreak from Google Trends. A positive correlation was found between the trend rate of the words searched on the internet and the number of COVID-19 cases in countries related to the COVID-19 outbreak ($p < 0.05$). There was a significant difference between 11 country societies in the daily RSV for the COVID-19 outbreak ($p < 0.05$). The Turkish, South Korean, Iranian, and Swiss society have searched more intensely on the internet for COVID-19 than others. The research shows that Google Trends data can be used to build the forecast model for case numbers in the COVID-19 outbreak. Besides, Google Trends data provides information about different societies' attitudes in the COVID-19 outbreak.

KEYWORDS

Coronavirus, COVID-19, Google Trends, Infodemiology, Pandemic

INTRODUCTION

At the end of December 2019, new lung pneumonia was reported in Wuhan, Hubei Province, China (Wang et al., 2020). As a result of examinations on the cases, a new type of coronavirus has been detected in patients. Later, this disease has begun to spread rapidly from person to person in Wuhan province. In a short time, the number of people infected with novel coronavirus has quickly increased in Wuhan province and then spread to other parts of China in January. Scientists have not yet developed a definitive solution to this disease. As symptoms of the disease, dry cough, high fever, breathing

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difficulties, and lung filtrates are observed in humans (Sohrabi et al., 2020). The virus was named as 2019-nCov by the World Health Organization (WHO) on January 12 (Guo et al., 2020). On January 11, the first death occurred in China due to coronavirus. With the increasing number of cases in Wuhan on January 23, quarantine was launched in Wuhan (Du et al., 2020).

For the first time on January 13, a case was detected in a country other than China. In January, the first cases in America, Europe, and Australia were detected. The first case in France was observed on January 24, which was also the first in Europe (Bernard Stoecklin et al., 2020). On January 30, the World Health Organization (WHO) declared a global emergency (Sohrabi et al., 2020). On February 11th, the name of the coronavirus was changed to COVID-19 by WHO (Sahin, 2020). While the first fatal case in Iran occurred on February 19, the first fatal case in Italy occurred on February 21. On March 11, WHO declared the epidemic of COVID-19, which has spread to many countries in the world, as a “pandemic” (Layne et al., 2020). The first Covid-19 case in Turkey was reported on March 11 (WHO, 2020). As of March 31, 858,361 positive COVID-19 cases and 42,309 COVID-19 related deaths have been reported worldwide (Worldometer, 2020). Mortality due to COVID-19 is around 4.9% as of March 31. The COVID-19 pandemic reaching dangerous levels for the world in a short time has put all countries on alert.

The COVID-19 pandemic has exposed human and community health to serious risks. Country governments have taken a number of measures to minimize the risks to human and community health. Many country governments have launched different practices to combat coronavirus. Since the coronavirus outbreak, China has taken many measures to prevent the epidemic. First, quarantine was implemented on January 23 in Wuhan, where the outbreak started. Many sports organizations, celebrations, and intercity trips have been canceled. Educational institutions temporarily interrupted education. Measures have been introduced in the environmental, traffic, and social areas. Hospitals were built very quickly to serve patients with coronavirus (Chen et al., 2020). With the spread of the COVID-19 outbreak to other countries, they have also begun to take different measures. One of the countries most affected by COVID-19, Italy has taken strong measures against the COVID-19 pandemic. In Italy, the region of Lombardy was first, and then the entire country was quarantined. Activities such as cinema and theatre were canceled. Ceremonies, celebrations, and sports competitions were stopped throughout the country. Education was interrupted (Ovgu, 2020). The United States declared a national emergency on March 13 against COVID-19. Also, many additional measures have been taken in the USA, such as cancellations in concerts, festivals, large-scale meetings, and educational activities (Reality Check Team, 2020). Iran, one of the countries where the virus was first observed in the Middle East, took measures against COVID-19, including the cancellation of sports competitions, meetings, and celebrations as well as the interruption of educational institutions. South Korea has been successfully fighting against COVID-19 by maintaining low mortality and performing a large number of tests. Strong measures taken by countries against the COVID-19 pandemic are of great importance to stop its spread and minimize the number of positive cases and mortality (BBC, 2020).

The COVID-19 outbreak has caused stress in many societies around the world. Outbreaks in history caused sociological and behavioral changes in societies. The measures taken by country governments against outbreaks can affect societies sociologically. As pandemics rarely occur, many societies are inexperienced in what attitude they will take against pandemics. However, they aim to prevent the outbreak from reaching them by applying the measures taken (Rönnerstrand, 2013). People who do not want to be infected with the disease take a series of precautions. These measures taken can temporarily prevent people from their normal life. In times of epidemic, people switch to a different and limited way of life. Abandonment of social life, distance between people, spending a very short time outside, staying home for a too long time, partial or comprehensive quarantines, restrictions in business life, increased hygiene measures, travel restrictions, and cultural restrictions are circumstances that can be observed during epidemic periods. These restrictions can also cause differences in the sociological and behavioral attitudes of societies (Fong & Chang, 2011).

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