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DETERMINING THE GLOBAL CORONA AGENDA VIA GOOGLE TRENDS

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Abstract: During the new coronavirus (COVID-19) pandemic, many fake news and misleading information that could cause fear and panic among the public spread around the world. In this study, we aimed to determine online search behavior and frequency of use of infodemic monikers regarding the COVID-19 outbreak. Searches were made between December 10th, 2019 and October10th, 2020. The top five infodemic and scientific COVID-19 terms trending (coronavirus/koronavirüs, corona/korona, COVID-19, SARS-CoV-2, novel coronavirus/) in Turkish and English in all categories (web, visuals, shopping, etc.) in Turkey and worldwide were searched. It was found that the highest search volume was related to the search term "koronavirus" in Turkey and worldwide. It was determined that the society used infodemic words instead of scientific terms. The word "korona" had highest search volume, while in the more developed regions (Istanbul, İzmir, Bursa, Ankara), "COVID-19", "SARS-CoV-2" search words were preferred. COVID-19 (value=3), SARS-COV-2 (value <1) and "novel coronavirus (value <1)" search terms were the least preferred search terms worldwide. It was determined that people mostly preferred infodemic monikers. Google Trends (GT) data can use to determine information needs of the public with respect to the disease, public approach and to plan suitable strategies.

Keywords: COVID-19, Google Trends, Infodemia, Pandemic

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1. Introduction

Coronavirus Disease 2019 (COVID-19) is a condition caused by a new strain of coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 was first identified on January 13th, 2020 (Bilimsel Danışma Kurulu, 2020; Novel, 2020; Wang et al., 2020, WHO, 2020).

The pandemic that was declared with the emergence of COVID-19 and fight of countries against the pandemic became an item on the global media agenda (Umar et al., 2021). Rapid spread and mortality of the disease caused concern and fear (Kelvin and Rubino, 2020). People have been doing online searches thousands of times every day with respect to this newly identified virus, the disease it causes, the reasons underlying its emergence, and protection methods (Abd-Alrazaq et al., 2020).

During a pandemic, social communication and behavior among the public is very important (Tausczik et al., 2012). People need to seek information in the unknown conditions they face. Today, the internet is one of the first options to search for information. The majority of society use the internet to quickly access the information they need. They want to learn as much as they need and not spend time with knowledge that requires expertise (Uçak and Al, 2000). People may access both useful information and misleading/false information online. Fake news, misleading and false information circulating the Internet are referred to as infodemics. During pandemics, another outbreak that turns illness anxiety into a psychological crisis and is more dangerous than the virus itself is infodemia (Yu et al., 2020). Misinformation can cause unnecessary panic and anxiety in the society (Üçer, 2016). Hence, it is very important to monitor internet activities and ensure that society has access to correct information sources to learn the right information. Use of internet data has become an integral part of health informatics over the past decade and can be useful for analyzing and predicting human behavior (Anonymous, 2020a). The search for data derived from the internet for epidemiological purposes is called "infodemiology" (Mavragani and Ochoa 2019; Eysenbach, 2011).

Internet search data are used to analyze information search activity by public with respect to infectious disease epidemics. These are the most widely used websites in Google internet searches (Nuti et al., 2014, Jun et al., 2018). Google trends, which gives analysis of Google search data, have been used in many studies to analyze search behavior of the public (Anonymous, 2020a; Dey and Zhao, 2020). Google Trends (GT), which consists of the search volumes of terms determined by users on the Google search engine, is the source of data most frequently used to analyze information search activity (Jun et al., 2018). Therefore, GT can be used with

respect to showing people's search tendency worldwide (Anonymous, 2020b; Higgins et al., 2020; Dey and Zhao, 2020).

It is thought that this study will contribute to obtaining information about the information seeking behaviors of the public and to the development of interventions that provide accurate health information seeking behaviors.

2. Material and Methods

Aim of this study is to evaluate internet search behaviour related to the global COVID-19 pandemic using Google Trends.

Study data was obtained using Google Trends. While the highest interest in searches was represented in Google Trends as 100, lack of interest or insufficient data was represented as 0. Searches were made between December 1st, 2019 and October 19th, 2020. The top five infodemic and scientific COVID-19terms (coronavirus/koronavirüs, corona/korona, COVID-19, SARS-CoV-2, novel coronavirus/yeni tip koronavirüs) in Turkish and English in all categories (health, web, visuals, shopping, etc.) were searched in Turkey and worldwide. Literature, scientific institutions providing data (WHO, CDC, the Republic of Turkey Ministry of Health) social media, hashtags, news bulletins were analyzed to decide search terms (Jun et al., 2018; Khan and Ramsahai 2020; Rios et al., 2020; Rovetta and Bhagavathula, 2020a). In the study, the searches made worldwide and searches in our country were presented in figures and graphs. The Google relative search volume was evaluated based on region and time. Additionally, searches and subjects showing increase in relation to the keywords were stated.

3. Results

The top five infodemic and scientific COVID-19terms trending in Turkey, according to inputs in Google search, were “koronavirüs", "korona”, “yeni tip koronavirüs”, COVID-19", “SARS-CoV-2” (Figure 1).

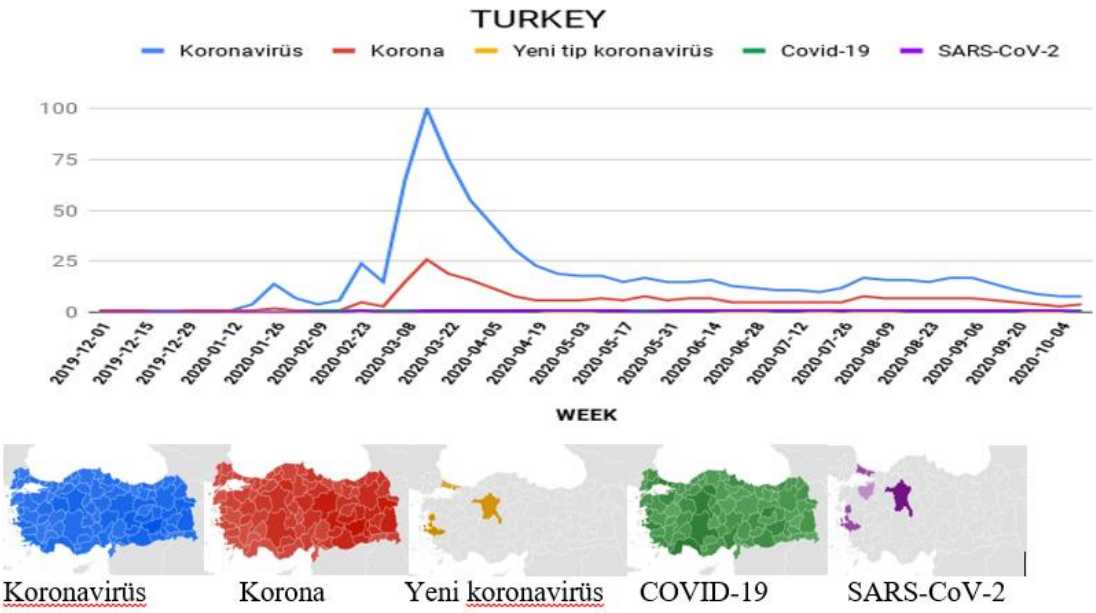

Figure 1. The top infodemic and scientific terms relating to COVID-19trending in Turkey.

From December 1st, 2019 to October 10th, 2020, the keyword that yielded the greatest search value was “korona”; it had a search volume of 100 on March 12th. "Koronavirüs" word had the second highest search volume with 31 search volume. "COVID-19”, “yeni tip koronavirüs” and “SARS-CoV-2” " search words were the least preferred words in Turkey (value=1).

Table 1 shows subjects and queries with the highest hits in Turkey related to the “koronavirüs” search word. Information about the spread of coronavirus in other countries, disease symptoms, and updates about the latest situation in our country were searched the most in Turkey in relation to coronavirus.

Table 1. Related queries with the greatest hits related to the searchword on Turkey and on World

Search word	Related queries	
"Koronavirüs" Turkey	Corona	What is coronavirus
	Turkey coronavirus	Coronavirus world
	Last minute coronavirus	Coronavirus italy
	Coronavirus symptoms	Coronavirus table
	Coronavirus map	Corona virus news
	Coronavirus end condition	Ministry of Health coronavirus
	Number of coronavirus	Coronavirus test
"Coronavirus" World	Coronavirus update	Corona virus deutschland
	Coronavirus case	What coronavirus
	Coronavirus italya	Covid19
	Coronavirüs chine	Corona virus death
	Coronavirüs usa	Coronavirus tips
	Coronavirus france	Coronavirus latest

The top five infodemic and scientific COVID-19 terms trending in the World, according to inputs from Google search, were "coronavirus," "corona", "COVID-19," "novel coronavirus", and "SARS-COV-2" (Figure 2). From December 10th, 2019 to June 1st, 2020, the keyword that yielded the highest search value was "coronavirus". It had a search volume of 100 on March 15th. COVID-19 (value=3), SARS-COV-2 (value <1) and "novel coronavirus (value <1)" search terms were the least preferred search terms worldwide. While SARS-COV-2 and novel coronavirus search terms were the most preferred terms in China, Italy became the most searched country using the "coronavirus" term. Upward trend of search results was similar to that in Turkey.

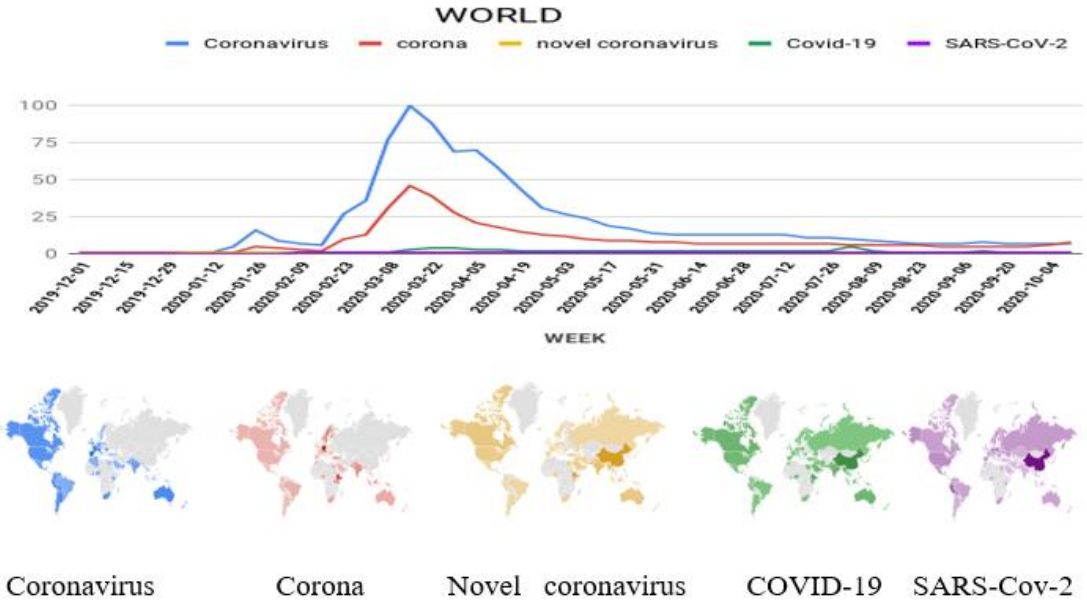

Figure 2. The top infodemic and scientific terms relating to COVID-19trending in worldwide.

4. Discussion

In the last two decades, the world has encountered numerous infectious diseases like Ebola, swine flu (H1N1), SARS, MERS, and the Zika virus (Bhadoria et al., 2021). Emergence of the novel coronavirus in China in 2019 led to a global pandemic and a major public health problem. The current pandemic we are experiencing causes a pressure on national and global health systems while also posing a global risk in terms of human health (Phelan et al., 2020). During this period, people have been trying to reach the information they need via the internet (Li, et al., 2020). According to results, it is seen that people prefer searching for infodemics rather than scientific words. "koronavirüs" keyword yielded the greatest search value in Turkey. "Korona" word had the second highest search volume."COVID-19", "yeni tip koronavirüs", and "SARS-CoV-2" " search terms were the least preferred words in Turkey (value=1). The words used in searches show regional differences in Turkey. In the eastern provinces (Ardahan, Muş, Siirt, Bayburt), the word "korona" had the highest search volume, while in more developed regions (İstanbul, İzmir, Bursa, Ankara),

‘‘COVID-19”, “SARS-CoV-2” search words were preferred. A similar study conducted in Italy identified “novel coronavirus,” “China coronavirus,” “COVID-19”, “2019-nCOV,” and “SARS-CoV-2” as the top trending infodemic and scientific COVID-19 terms. ‘‘China coronavirus’’ was the most frequently searched term in Italy (Rovetta and Bhagavathula, 2020b).

In the study, it is seen that searches differed according to time (Figure 1). COVID-19 epidemic was first revealed in China on January 13thand, as of this date, it became an item in the global agenda (WHO, 2020). Examination of Google Trends shows that searches related to COVID-19 in Turkey started to increase as of January 20th. While RSVs in Turkey were below 25 on January 20th, they reached 25 on January 31st. Regarding this increase, it is considered that people initially thought the pandemic would be limited to China, and when COVID-19 appeared in Italy on January 30th, the perception of personal threat increased and people started to do more searches to learn about the virus (WHO, 2020). According to Google Trends data, in searches made in Turkey until February 20th, the relative search volumes were below 25. Searches in Turkey rapidly increased with the appearance of COVID-19 case in bordering Iran on February 19th. As of this date, relative search volumes related to COVID-19 have shown rapid increase in our country. Appearance of the first case in our country was reported on March 11th. As of this date, relative search volumes related to COVID-19 reached about 75. The first COVID-19 death case in Turkey was reported on March 18th and relative search volume reached 100 on this date, with searches decreasing in the days after March 22nd (Bilimsel Danışma Kurulu, 2020). After April 23rd, the search volume for COVID-19 dropped below 25. According to results, public interest to COVID-19 continued for 35 days in Turkey. This search behaviour leads to the thought that people’s search activity increases with the tendency to panic. This situation may be caused by anxiety of being close to the border of a country severely affected by the pandemic. In addition, Internet access is low compared to other regions due to the lack of infrastructure and socioeconomic inadequacies resulting from the geographical characteristics of east Anatolian region. The relatively high search percentage of people that have internet access in this region compared to other cities may be the reason of this outcome. In the study of Husnayain et al. (2020), it was determined that searches were associated with risk perception.

Search trends around the world are similar to search trends in Turkey. The keyword that yielded the highest search value was “coronavirus” worldwide. “COVID-19”, “SARS-CoV-2” and “novel coronavirus” search words were the least preferred search words worldwide. But “SARS-CoV-2” and “novel coronavirus” search words were the most preferred in China. Search trends varied over time worldwide. Worldwide relative search volumes related to the search word “coronavirus” increased after the first case was revealed in China. Search trends started to rise for 7 days after the first case appeared in China (Figure 2). The World Health Organization announced on January 30th that an "International public health emergency" was declared regarding the new type of coronavirus (2019-nCoV) outbreak in China. Search volume reached 17 on this date and then dropped again. Search volume soared with deaths reported in many countries on February 19th and relative search volumes reached 100 on March 15th. Searches decreased in the days after March 18th. After May 1st, search volume for COVID-19 dropped below 25. According to this result, interest of the public to coronavirus continued for 42 days in the world. Another study found that searches showed strong correlations with real-world cases and deaths (Higgins et al., 2020; Cancharı et al., 2020; Badell-Grau et al. 2020).

With the inclusion of small search data, coronavirus-related searches were made in 252 separate countries or areas. According to WHO data, coronavirus was detected in 216 countries or areas (WHO, 2020).

5. Conclusion

In the study, it was seen that people used infodemic words to search. People's exposure to misinformation can cause fear and panic. For this reason, it is important to inform the public so that they can access the information they need.

In the case of health-threatening incidents, GT data can be used to determine information needs of the public with respect to the disease and to plan suitable communication strategies.

Author Contributions

All authors have equal contributions. All authors reviewed and approved the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Ethical Approval/Informed Consent

Ethical approval for this study was obtained from the University Ethics Commission (Decision number: 95799348-050.01.04-E.9915 and date: 15.04.2020). The study was conducted in accordance with the International Helsinki Declaration.

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