

Association of COVID-19 with lifestyle behaviours and socio-economic variables in Turkey: An analysis of Google Trends

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Abstract

This study aims to examine the relationship between COVID-19 cases/deaths and Google data on lifestyle behaviours and socio-economic variables in Turkey. The data of the research are composed of Google Trends search volume for various words related to socio-economic conditions, nutritional attitudes, indoor behaviour, outdoor activities and confirmed COVID-19 case and death data from the Ministry of Health from 31 December 2019 to 31 January 2021. Spearman correlation analysis was conducted to evaluate the relationship between the Google search volumes of selected keywords and COVID-19 case and deaths. In addition, repeated ANOVA and Bonferroni post-hoc tests were performed to compare the differences in search volumes of selected keywords before and during the COVID-19 outbreak. Correlation analysis showed that the strongest variables in each category were vitamin C, zinc, Zoom, online shopping, hotel, market, gym, unemployment and unemployment benefit. Compared to previous years, during the pandemic, there was a significant increase or decrease in the search volumes of almost all words. These results showed that the COVID-19 significantly changed people's online interests regarding lifestyle behaviours and socio-economic conditions. It is thought that the findings can guide health policies to be followed in reducing the effects of both behavioural changes and negative socio-economic consequences.

KEYWORDS

COVID-19, Google Trends, lifestyle behaviour, socio-economic variables

1 | INTRODUCTION

Cases of pneumonia of unknown aetiology appeared at 31 December 2019 in Wuhan, China. Further analysis revealed the involvement of a novel strain of virus named 'severe acute respiratory syndrome coronavirus 2' obtained from samples of the infected patients.¹ The disease caused by this virus, initially expressed as 2019-nCoV, was later named COVID-19 on 11 February 2020.² As a result of the worldwide increase in the number of cases, it was declared as a global pandemic by the World Health Organization (WHO) on 11 March 2020.³ It was announced that the first case of COVID-19 had been detected by the Ministry of Health in Turkey, on 11 March 2020. In Turkey as of 9 February 2021, the total number of cases reached to 2,548,195; while the total number of deaths has reached to 26,998.⁴

The COVID-19 pandemic has caused serious problems in many countries including in Turkey. It has profoundly affected economic and social life as well as public health.⁵ The pandemic has adversely affected the global economy and is estimated to continue to affect. It is thought that the economic stagnation and shrinkage that would arise with this situation will affect many sectors to a great extent and may cause many social problems. Subran et al.⁶ stated that global corporate bankruptcies are expected to increase by an estimated 14% in 2020. Considering that the epidemic continues, many people may lose their jobs as a result of these bankruptcies. It is also stated that especially developing countries will need financial support in the pandemic process.^{6,7}

The Turkish economy, like many other countries, had to struggle with negative economic growth and underemployment problems during the COVID-19 process. Bulut and Pinar⁸ compared the employment data for the period between April, when the COVID-19 measures peaked in Turkey, and September, the period when the latest TURKSTAT employment data were announced. According to TURKSTAT data, the unemployment rate was 13.2% in the July–August–September period of 2020, but this rate was 12.8% in March–April–May period, when the pandemic has the most impact on economic activities.⁸

Some measures have been taken in order to have a positive effect on the economic course in Turkey. Incentive packages for employment were prepared, the labour market was supported by the recruitment of personnel to the public sector, and limitations were imposed on dismissals. In this way, efforts were made to prevent the increase in unemployment rate. Although all these measures tried to curb the decline in employment rates, the unemployment rate increased by 0.4 points in the April–August 2020 period, and the number of unemployed increased by 419,000.⁸

COVID-19 has significantly affected not only economies and working life, but also lifestyle behaviours of individuals such as sleeping, dietary habits and physical activities. Many habits that have been acquired for many years may change or end due to COVID-19.⁸ During the pandemic, changes have occurred in the needs, activities and consumption behaviours.⁹ In a study in Turkey conducted with 433 participants, the majority of the respondents stated that they had restricted the expenditures deemed unnecessary during the pandemic period, postponed their future plans, increased Internet usage and changed their social lives.¹⁰

In another study, which aimed to examine the change in nutrition and lifestyle habits of Turkish people during the COVID-19 outbreak with a total of 432 volunteers, it was revealed that body weight, sleep time and social media use increased and activity level decreased during the initial stage of the pandemic.¹¹ Similarly, the results of another study show that there are changes in the diet, sleep and physical activity patterns of individuals after COVID-19 in Turkey.¹² In another study in Turkey conducted with among 3000 people, 56% of the participants stated that eating habits and sleeping patterns changed during the coronavirus period. According to the same study, people in Turkey have focused on family relationships, used social media, watched TV series/movies, cleaned up their homes and baked in the pandemic process. On the contrary, the least common activities were sleeping, reading books and doing sports.¹³

Moreover, the restrictive bans imposed by the governments and the measures to increase the social distance taken by public and private sector organizations to prevent the spread of the COVID-19 pandemic cause people to work from home. In order to prevent people from coming together, it was necessary to encourage or make it mandatory for people to work from home. Emerging literature tries to identify jobs that can be done from home in different economies and to calculate the proportion of the workforce that can work from home.¹⁴ In a similar study conducted for Turkey, it was calculated that nearly 70% of professional professionals can work from home, but this rate is below 10% in professions based on muscle strength and heavy workload.¹⁵ On the other hand, in a study in Turkey conducted with among 3000 people, 65% of the participants have to go out due to work, health problems, family care or general responsibilities.¹³

The effects of COVID-19 may arise after some time and determining the effects on both socio-economic and lifestyle behaviours may require longer term studies. However, the online search behaviour of individuals can provide an insight to evaluate these effects. Google Trends is one of the most efficient trend analysis tools focusing on the most searched keywords by individuals and it can be used to examine and estimate individuals' interests and behaviours.^{1,16} Various studies about impacts of COVID-19 on food security and diet-related lifestyle behaviours,^{16,17} and unemployment,¹⁸⁻²³ using Google Trends data, have been conducted. To our knowledge, no study has examined the impacts of COVID-19 on socio-economic variables and lifestyle behaviours, by using Google Trends data, comprehensively in Turkey. In this study, it was aimed to demonstrate the impacts of COVID-19 on some socio-economic variables and lifestyle behaviours in Turkey, by using Google Trends data.

1.1 | Socio-economic impacts of COVID-19

The rapidly spreading COVID-19 has caused many restrictions in economic and social life. Individuals are required to stay at home as much as possible and to maintain social distance that will prevent transmission of the disease. Many governments restrict access to restaurants, accommodation facilities, theatres, shopping centres and other non-essential businesses to reduce people's contact with each other. Some businesses close voluntarily to protect their employees and the public health. However, the closure of workplaces brings rapid and serious difficulties in the economic activities of businesses, bringing them to the brink of bankruptcy.¹⁴ In addition to the restrictions, many sectors have suffered due to the adverse conditions caused by factors such as significant decrease in demands, decrease in economic activities, problems in the supply chain, labour force absenteeism.^{24,25} Many workplaces in the service sector, especially in industry, trade and tourism, had to stop their activities. Along with the transportation and logistics, there have been disruptions in the agricultural sector, too. In this process, only businesses that provide basic services such as health, food, communication and produce basic products, provide online remote services and service to homes were able to continue their activities. All these developments have significantly affected the world and countries in terms of growth, foreign trade and employment on a global scale.²⁶

The economic difficulties experienced by countries and sectors due to the pandemic have reflected in the working and social lives of individuals. With the COVID-19 pandemic, the whole society and working life have entered an adaptation process.²⁴ Work patterns change during this period, but more importantly, labour markets are significantly affected. According to recent studies, especially those employed in sectors whose production activities were affected by the crisis face risks such as losing their jobs, being on unpaid leave and decreasing weekly working hours.¹⁴

In this period, states are trying to mitigate the harmful effects of the COVID-19 crisis on the overall economy and the labour market by taking various measures. Kara¹⁴ revealed that, although may differ from country to country, the measures taken for employment at the global level concentrates on seven categories. These categories are support for informal or self-employed workers, unemployment benefits, wage subsidies, new working schemes, subsidies for employee sick leave, cap on layoffs and increased labour training subsidies.

COVID-19, which began to be spoken since December 2019, severely affects life and causes changes that may be permanent in a long term, in Turkey as well as all over the world. With the measures taken to control the spread of the

pandemic, international supply chains, supply-demand balances, producer\consumer behaviour, business methods, working models, education-training methods and daily life are changing dramatically.²⁷ Bostan et al.²⁸ examined the effects of pandemics on Turkish society within the scope of Sensitivity to Pandemic, Protection against Pandemic and Social Trust dimensions and found that the people had high levels of sensitivity to the pandemic, exerted the maximum effort for protection and social trust was above the average.

Economic impact of the pandemic in Turkey as well as in many countries have begun to be felt.²⁴ Economic problems during pandemic and potential risks in the economy like employment problems which will emerge after the crisis both are of great importance in all countries including Turkey.²⁶ In this process, various studies have been conducted to examine the economic effects of COVID-19,²⁹⁻³¹ its effects on socio-economically disadvantaged groups,⁶ and its effects on employment and working life.^{14,24-26}

1.2 | Impacts of COVID-19 on lifestyle behaviours

The COVID-19 pandemic has significantly affected not only the working life but also the lifestyle of individuals. The COVID pandemic has led to life-changing challenges among people around the world. Terms such as 'social distance' and 'isolation' have settled in daily lives and staying at home has greatly affected the lives of individuals, causing sudden and radical changes in their daily routines and lifestyles.³² Lifestyle behaviours may include changes in sleep, alcohol consumption, physical activity, dietary habits and even the prevalence of domestic violence cases.³³

Various studies have been conducted to examine the effects of COVID-19 on lifestyle. Arora and Grey³³ discussed how COVID-19 can affect behaviours related to sleep, nutrition, physical activity and alcohol consumption. According to the survey conducted with over 1000 participants, the COVID-19 pandemic and measures to contain it have been found to have a significant impact on lifestyle-related behaviour in the population.³⁴ In another study of 995 participants in India,³⁵ COVID-19 significantly bettered eating behaviour. However, it was also determined that, because one-third of the participants significantly decreased physical activity with an increase in screen time and sitting time they gained weight. In addition, it was determined that the mental health of the participants was also negatively affected. As a result of the study, it was stated that a thorough understanding of these factors could help develop interventions to alleviate negative lifestyle behaviours that occur during COVID-19. Kilani et al.³⁶ studied the impact of staying home during the COVID-19 pandemic on lifestyle, mental well-being, nutritional status and sleep patterns. According to the study findings, factors such as physical activity, diet and sleep patterns were associated with mental health during COVID-19 incarceration among participants. As can be seen from the studies, there are many lifestyle behaviour elements and it does not seem possible to examine all of them. Therefore, in this study, some dietary attitudes, indoor behaviours and outdoor activities, which are thought COVID-19 and its limitations have the most effect on and which are included more in the most studies, were discussed.

COVID-19 pandemic has been identified as a global burden that significantly redefines and continues to define daily lifestyle-related habits. Expert recommendations and government actions taken to reduce the number of cases have affected food availability, dietary, daily activities, access to recreational public settings, social activities, work and financial security.^{35,37} It is stated that the short and long-term consequences of changes in life style on physiological and mental health should be taken into account.^{33,37-39} From the public health and preventive care perspectives, it is stated that there is an urgent need to provide information and interventions to individuals, communities and health institutions to maintain the healthiest lifestyle possible in the case of isolation.⁴⁰

1.3 | Google Trends and COVID-19

The COVID-19 pandemic, which has a great impact on the world and is full of uncertainties, has become the focus of many studies in order to obtain more information about it. The Internet is increasingly used as a healthcare information

resource. Monitoring and analysis of Internet data is the subject of infodemiology,¹ defined by Eysenbach⁴¹ as 'the science of the distribution and determinants of information in electronic media, especially on the Internet or in a population, whose ultimate aim is to inform public health and public policy'. Infodemiology is a basic public health informatics method used to analyse Internet search behaviour.⁴² The infodemiology and knowledge of epidemiological data is important to increase situational awareness and to implement appropriate interventions.⁴³

The use of Internet-based tools can play a vital role in early detection of infectious diseases and help health systems be ready in a timely manner.¹ Internet-based Big Data analysis is becoming increasingly popular for its potential to predict the distribution of infectious diseases.⁴⁴ Internet query platforms that enable interaction with Internet-based data are regarded as potentially useful and accessible resources, especially for detecting outbreaks and implementing response strategies.⁴⁵

One of the most popular Internet-based tools is Google Trends. Google Trends, the Google Inc. portal, is a web service that reports the frequency of Google search queries based on the number of searches worldwide and an information gathering tool with a very wide spatial area covering important regions of the world.⁴⁶ Google Trends is based on structure analysis focusing on the keywords most searched by individuals and one of the most effective trend analysis tools for determining Internet search behaviour.¹ It is an open-access tool used to track query volumes in a selected geographic area over a specified period⁴⁷ and allows researchers to examine the trends and structures of Google search queries.⁴⁸

Google Trends has been collecting and reviewing data since 2004. In this way, it provides a time series analysis that reflects the general reality of different search topics, or 'trends' as Google calls it, and takes into account geographic location, resource and language dimensions. This type of analysis provides a unique unified data source that combines search queries in different languages from different locations around the world.⁴⁹ Google search data is a more dynamic and accessible resource compared to traditional data sources. It can provide a representation of the population's thoughts, concerns, conditions and needs in multiple periods.⁵⁰

Analysis of Google Trends data is used by millions of users⁴² and also provides valuable information on health issues and community dynamics, especially in the field of infectious diseases.¹ For example, it can be used for disease control in cancer, HIV or stroke, but also for evaluations for various rare diseases.⁵¹⁻⁵⁴ In addition, it can be used to determine the success rates of awareness programmes.⁵⁵⁻⁵⁷ Many studies show that it is also invaluable for correlation assessments and prediction models of a range of infectious diseases, including Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS), H1N1, Ebola, Zika virus and more.^{45,58-62} Analyses of confirmed cases are particularly useful in uncovering key epidemiological parameters such as incubation periods, infectious periods and ongoing outbreaks or the likelihood of an outbreak. It is also stated that Google Trends data can be used to predict and prevent health-related problems and increase in cases.^{42,63}

Google Trends data have also become a valuable source of information for examining people's online interests and behaviours during certain periods such as epidemics.¹⁶ For example, Mayasari et al.¹⁷ examined the effects of the COVID-19 pandemic on food security and nutrition-related lifestyle behaviours in their study with Google Trends data. Ngoc and Kriengsinoyos¹⁶ examined the impact of COVID-19 on global nutritional behaviour. Caperna et al.¹⁸ evaluated the economic consequences of COVID-19 by examining Google Trends data and online searches on unemployment. Fajar et al.²⁰ used Google Trends data to estimate unemployment rates in Indonesia during the COVID-19 pandemic.

The use of Internet-sourced data of societies for epidemiological research has recently been recognized as an important tool. Considering that Internet-sourced data has become a valuable source of information for studying and predicting community interests, behaviour, it is assumed that Google search data can be used to determine the impact of the COVID-19 outbreak on the health behaviour of the population.

To our knowledge, there is no study on this subject in Turkey. The interaction of the importance of COVID-19 infection with different social, economic and cultural structures in determining the scope of changes in lifestyle-related behaviour may vary from country to country.³⁵ Also, the outbreaks can have different impacts on different societies depending on various features.²⁸ Therefore, it is important to examine the effects of COVID-19 in Turkey. This study

aims to examine the relationship between COVID-19 cases and Google data on healthy lifestyle behaviours and some socio-economic variables in Turkey.

2 | MATERIALS AND METHODS

2.1 | Aim

This study was carried out for three main purposes. First, it was aimed to compare the search volume for the term 'coronavirus' with the changes in the number of COVID-19 cases and deaths. Secondly, the relationships between lifestyle behaviours, socio-economic variables and COVID-19 cases, deaths and coronavirus term search volume were revealed. And finally, it was aimed to evaluate whether the online searches made during the epidemic period are determinative in the life behaviours and socio-economic conditions of the society compared to previous years.

2.2 | Data

2.2.1 | Google Trends data

Within the scope of this study, 'Google Trends' data, which is frequently used to investigate the epidemiological trends of diseases, were used (<https://trends.google.com/trends/>).⁶⁴ Google Trends, a Google Inc. portal, is an open access tool that includes the search pattern and volume of a key term in a selected geographic area over a specified time period. It analyses all web searches found on the Google website and other linked Google sites (news, finance, shopping, images, videos, etc.) and generates data for the specified key term. This tool gives a value of 100 to the highest number of online searches of the selected term in a time period, and offers a normalized scale from 0 to 100 in proportion to the search popularity of other time points. If the search volume for a term is '100', that term is the most searched in a certain period of time, '0' indicates that no search has been made for that term.

Google Trends search volume data sets related to the selected keywords for Turkey were examined on a weekly basis between 31 December 2019 and 31 January 2021. Google Trends' search was performed in Turkish language. Keyword categories include possible socio-economic conditions, dietary attitudes, indoor behaviours and outdoor activities during the COVID-19. These terms were selected based on popularity on the Internet and Google News and variables in similar studies in the literature.^{16,17} For dietary attitudes, 12 keywords were selected as 'vitamin, vitamin A, vitamin B, vitamin C, vitamin D, vitamin E, zinc, omega, garlic, onion, ginger and molasses'; for indoor behaviours, 11 keywords were selected as 'recipe, bakery, bread, takeaway, playstation, stock market, Zoom, meditation, Netflix, online shopping and diet'; for outdoor activities, 9 keywords were selected as 'cinema, theatre, hotel, restaurant, market, outdoor, gym, bicycle and hairdresser'; for socio-economic conditions, 6 keywords were selected as 'unemployment, unemployment benefit, payment, debt relief, Alo 170 and divorce'. Alo 170 is the number of Family, Labour and Social Services Communication Centre in Turkey. Fifty-six-week dataset related to these words was obtained.

In addition, 2018 and 2019 were selected as reference years in order to compare the online search volumes of the pandemic period and the period before the pandemic. For the selected keywords, data were collected for the years 2018, 2019 and 2020 between January 1 and December 31.

2.2.2 | COVID-19 case and death data

COVID-19 case and death data were obtained from Republic of Turkey Ministry of Health's COVID-19 information page (<https://covid19.saglik.gov.tr/>).⁴ Between 31 December 2019 and 31 January 2021, the daily-confirmed case and death data were arranged weekly to comply with Google Trends data. A total of 56-week dataset was obtained.

2.3 | Statistical analysis

In the scope of the research, primarily, Google Trend Search volume data related to the keyword 'Coronavirus' and the distribution of COVID-19 cases and deaths were examined through histograms and distribution charts. After that, Spearman correlation analysis was conducted to evaluate the relationship between the Google Trend search volumes of selected keywords related to lifestyle behaviours and socio-economic variables and the Google Trend search volume of the term 'Coronavirus', COVID-19 confirmed case and death numbers.

Descriptive statistics, including the average and standard error of the search volumes between 2018 and 2019, which were selected as reference, and the year 2020, when the pandemic occurred, were calculated, and the normality assumption of the measurements was evaluated with the Kolmogorov-Smirnov test. In cases where the assumption of sphericity was not met, repeated measures analysis of variance (ANOVA) with Greenhouse-Geisser correction was applied to evaluate the differences between years. Bonferroni post-hoc test was conducted to determine in which years the differences occurred. In addition, the search volumes of the selected keywords in 2018 and 2019 were averaged, and the increase or decrease in 2020 was shown with bar graphs as a percentage.

Statistical analyses in the study were evaluated using the Statistical Package for Social Science for Windows (SPSS) 20.0 package program. The level of significance for the analyses was accepted as $p < 0.05$.

3 | RESULTS

Graph on the distribution of the search volume of the 'coronavirus' term and the number of cases and deaths are given in Figure 1.

The first and highest peak of the 'coronavirus' term search volume was the week of March 15–21. Looking at the weekly distribution of the cases and deaths, it was seen that the time period when the number of cases peaked was the week of April 12–18 with the number of 30,162 cases; the time period when the number of deaths peaked was the week of April 19–25 with 816 deaths. It was determined that there was 4–5 weeks between the two peaks. The second and third weeks of March, when the first cases and deaths related to COVID-19 were seen in Turkey, coincided with the highest online searches people make for the word 'Coronavirus'. Although the death and case histograms and the search volume distribution graph show similar increases and decreases in different time frames, Google search volume did not increase as much as the time frame when the first case was detected (Figure 1).

The relationship between the search volumes of the terms related to possible lifestyle behaviours and socio-economic conditions during the COVID-19 period and the number of cases/deaths and 'coronavirus' search volume is included in Table 1 with Spearman correlation analysis.

Spearman's correlation analysis showed that the strongest variable in dietary attitudes category was 'vitamin C' ($r = 0.758$). There were also positive and moderate relationships between the terms 'vitamin ($r = 0.656$), zinc ($r = 0.627$), vitamin D ($r = 0.578$) and garlic ($r = 0.510$)' and the 'number of cases'. Similar correlation patterns were observed for number of deaths. In addition, there were positive and moderate correlations between the search volume of the terms 'coronavirus' and 'garlic and vitamin C'.

Looking at the search words related to indoor behaviour, it was seen that there was a positive and high correlation between the word 'Zoom' and both the number of cases ($r = 0.776$) and deaths ($r = 0.780$). Also, the words 'takeaway,

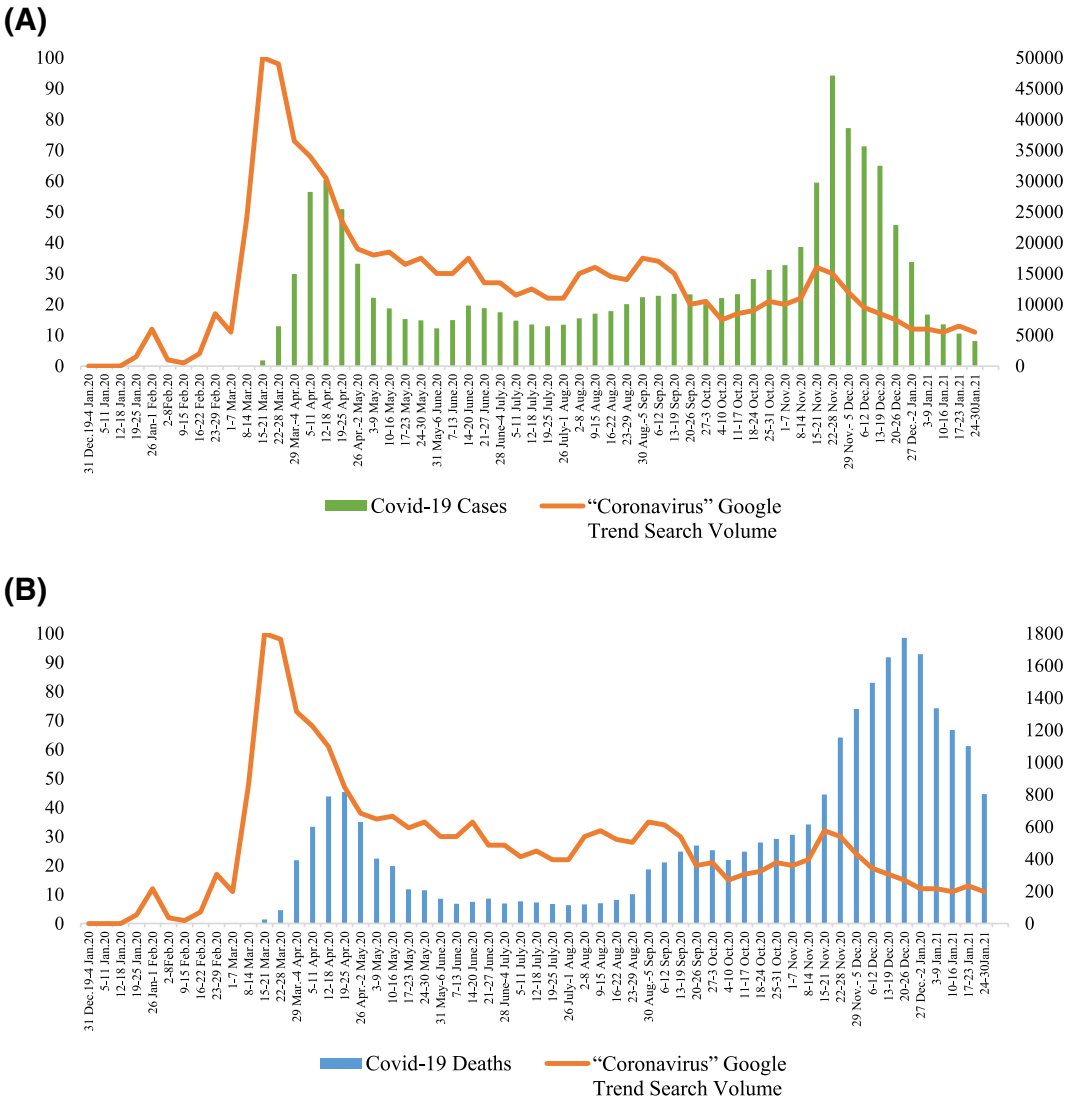


FIGURE 1 Distribution of the word ‘Coronavirus’ with Google search volume and number of COVID-19 cases (A) and COVID-19 death numbers (B) [Colour figure can be viewed at wileyonlinelibrary.com]

online shopping, playstation, Netflix, recipe and bakery’ had a positive and moderate correlation with the number of cases and deaths.

Among the search words related to outdoor activities, the words ‘gym, hotel, theatre and cinema’ had negative and moderate correlations with the number of cases and deaths. Additionally, there were positive and moderate correlations between the search volume of the word ‘coronavirus’ and the words ‘market, outdoor and bicycle’.

In socio-economic conditions category, the weak and positive correlations were observed in the number of cases and deaths with words ‘unemployment benefit, Alo 170, unemployment and debt relief’. Between the search volume of the word ‘coronavirus’ and ‘unemployment benefit’, there was a positive and medium correlation ($r = 0.637$). Further, positive and weak relationships were found between the search volume of the word ‘coronavirus’ and the words ‘unemployment, Alo 170 and debt relief’. On the other hand, there were weak and negative correlations between the word ‘divorce’ and both the number of cases/deaths and the search volume of the word ‘coronavirus’.

TABLE 1 Spearman's correlation coefficients of search volumes of terms related to possible lifestyle behaviours and socio-economic conditions and confirmed COVID-19 cases, deaths and 'coronavirus' Google Trends search volume, 31 December 2019 to 31 January 2021

Spearman's correlation						
Search query	COVID-19 cases		COVID-19 deaths		'Coronavirus' google Trend search volume	
	<i>r</i>	<i>p</i> -Value	<i>r</i>	<i>p</i> -Value	<i>r</i>	<i>p</i> -Value
Dietary attitudes						
Vitamin	0.656**	<0.001	0.540**	<0.001	0.401**	0.002
Vitamin A	0.390**	0.003	0.541**	<0.001	-0.078	0.569
Vitamin B	0.220	0.103	0.320*	0.016	-0.429	0.079
Vitamin C	0.758**	<0.001	0.589**	<0.001	0.502**	<0.001
Vitamin D	0.578**	<0.001	0.571**	<0.001	0.094	0.493
Vitamin E	0.170	0.211	0.246	0.068	0.109	0.424
Zinc	0.627**	<0.001	0.614**	<0.001	0.351**	0.008
Omega	0.030	0.824	0.181	0.182	-0.258	0.055
Garlic	0.510**	<0.001	0.373**	0.005	0.683**	<0.001
Onion	0.213	0.116	0.338	0.011	0.213	0.115
Ginger	0.235	0.081	0.234	0.083	0.003	0.983
Molasses	0.317*	0.017	0.371**	0.005	-0.240	0.075
Indoor behaviours						
Recipe	0.428**	0.001	0.492**	0.001	0.262	0.051
Bakery	0.506**	<0.001	0.595**	<0.001	0.404**	0.002
Bread	0.191	0.159	0.359**	0.007	0.318*	0.017
Takeaway	0.438**	<0.001	0.659**	<0.001	0.160	0.238
Playstation	0.570**	<0.001	0.461**	<0.001	0.531**	<0.001
Stock market	0.225	0.096	0.176	0.195	0.310*	0.020
Zoom	0.776**	<0.001	0.780**	<0.001	0.261	0.052
Meditation	0.121	0.375	0.177	0.192	0.416**	0.001
Netflix	0.358**	0.007	0.450**	0.001	0.457**	<0.001
Online shopping	0.568**	<0.001	0.591**	<0.001	0.521**	<0.001
Diet	-0.177	0.192	-0.014	0.919	0.007	0.959
Outdoor activities						
Cinema	-0.408**	0.002	-0.641**	<0.001	-0.016	0.908
Theatre	-0.399**	0.002	-0.640**	<0.001	0.029	0.834
Hotel	-0.528**	<0.001	-0.608**	<0.001	-0.392**	0.003
Restaurant	-0.281*	0.036	-0.414**	0.002	-0.220	0.103
Market	0.524**	<0.001	0.557**	<0.001	0.597**	<0.001
Outdoor	0.097	0.476	-0.055	0.689	0.363**	0.006
Gym	-0.678**	<0.001	-0.681**	<0.001	-0.545**	<0.001
Bicycle	0.046	0.736	-0.176	0.194	0.517**	<0.001
Hairdresser	-0.404**	0.002	-0.574**	<0.001	-0.123	0.366

(Continues)

TABLE 1 (Continued)

Spearman's correlation						
Search query	COVID-19 cases		COVID-19 deaths		'Coronavirus' google Trend search volume	
	<i>r</i>	<i>p</i> -Value	<i>r</i>	<i>p</i> -Value	<i>r</i>	<i>p</i> -Value
Socio-economic conditions						
Unemployment	0.350**	0.008	0.299*	0.025	0.400**	0.002
Unemployment benefit	0.400**	0.002	0.284*	0.034	0.637**	<0.001
Payment	-0.246	0.068	-0.092	0.499	-0.047	0.730
Debt relief	0.317*	0.017	0.223	0.099	0.342*	0.010
Alo 170	0.345**	0.009	0.358**	0.007	0.390**	0.003
Divorce	-0.297*	0.026	-0.323*	0.015	-0.283*	0.035

* $p < 0.05$, ** $p < 0.01$.

Table 2 describes the repeated measurements ANOVA and Bonferroni post-hoc test to compare the differences in search volumes of selected keywords before and during the COVID-19 outbreak.

Consecutive search volume averages for the year 2020 when the COVID-19 occurred and 2018 and 2019, selected as a reference for the pre-pandemic were compared with repeated-measures ANOVA test. The sphericity assumption, which means that the variance differences between the compared combinations are equal, was measured by the Mauchly Test of Sphericity. In cases where the assumption of sphericity was not met, *F* values obtained from Greenhouse and Geisser corrections as an alternative to the *F* value obtained from ANOVA were presented in the table.

When the differences in search volume by years were compared, it was determined that there were significant increases and decreases in almost all keywords. This demonstrated that the pandemic had significantly altered society's online interests. The search volumes of the words have increased as following:

- When dietary attitudes were examined, it was seen that there were significant differences in all variables except vitamin B. The word with the highest average difference was 'vitamin C'. This word increased significantly in 2020 compared to 2018 and 2019.
- In the indoor behaviour category, the search terms with the highest average difference in 2020 compared to 2018 and 2019 were 'Netflix, Zoom and stock market'. However, the rate of increase in the words 'diet' and 'online shopping' were lower than the others and the differences were not significant.
- In the category of outdoor activities, it was determined that the most difference was in the words 'cinema and gym'. The search volumes for these words decreased significantly in 2020 compared to 2018 and 2019. On the other hand, it was observed that the differences in the words 'outdoor and restaurant' were not significant.
- It was seen that the highest and significant mean differences from socio-economic conditions were in the words 'unemployment benefit and Alo 170'.

Figure 2 shows the bar graph comparing the percentage differences of search volumes of terms related to lifestyle behaviours and socio-economic variables before and during COVID-19.

The data in the graph showed that people were more willing to search for certain keywords during the pandemic period. Respectively, the words with the highest increase in search volume were Zoom (+1243%), unemployment benefit (+481%), vitamin C (+198%), takeaway (+175%), Netflix (+83%), Alo 170 (+77%), stock market (+67%) and debt relief (+64%). On the other hand, it was observed that the word category with the greatest decrease was in outdoor behaviour. Respectively, the words with the highest decrease rate were cinema (-62%), theatre (-50%), gym (-41%) and hotel (-36%).

TABLE 2 Repeated-measures ANOVA and Bonferroni post-hoc test results examined period: January 1 to December 31 (for the years 2018, 2019 and 2020)

	Google search volume Mean ± SE			Δ google search volume Mean ± SE (95% confidence interval)			Mauchly's sphericity test		Epsilon		Greenhouse-Geisser	
	2018	2019	2020	2020-2018	p-Value	2020-2019	p-Value	Mauchly's W	p-Value	Greenhouse-Geisser	F	p-Value
Dietary attitudes												
Vitamin	45.67 ± 7.57	48.25 ± 6.53	65.90 ± 14.26	20.23 ± 1.68	<0.001	17.65 ± 1.82	<0.001	0.493	<0.001	0.664	106.62	<0.001
Vitamin A	33.17 ± 14.40	36.83 ± 13.18	46.06 ± 15.46	12.89 ± 2.47	<0.001	9.23 ± 2.46	0.001	0.925	0.141	0.930		
Vitamin B	57.85 ± 12.57	57.19 ± 13.13	55.77 ± 15.56	-2.08 ± 2.66	1.000	-1.42 ± 2.66	1.000	0.977	0.558	0.977		
Vitamin C	11.94 ± 3.06	15.19 ± 3.59	45.29 ± 24.75	33.35 ± 3.33	<0.001	30.10 ± 3.32	<0.001	0.086	<0.001	0.522	90.40	<0.001
Vitamin D	23.71 ± 4.41	24.54 ± 5.94	36.46 ± 16.65	12.75 ± 2.27	<0.001	11.92 ± 2.30	<0.001	0.196	<0.001	0.554	28.23	<0.001
Vitamin E	34.44 ± 6.95	37.62 ± 8.62	43.23 ± 11.81	8.79 ± 1.73	<0.001	5.62 ± 1.98	0.020	0.825	0.008	0.851	13.59	<0.001
Zinc	24.02 ± 5.63	26.94 ± 4.75	42.15 ± 16.37	18.14 ± 2.19	<0.001	15.21 ± 2.26	<0.001	0.281	<0.001	0.582	54.65	<0.001
Omega	61.46 ± 7.81	66.52 ± 9.12	72.87 ± 8.64	11.40 ± 1.51	<0.001	6.35 ± 1.62	0.001	0.967	0.432	0.968		
Garlic	55.79 ± 8.02	52.60 ± 8.57	66.08 ± 13.16	10.29 ± 2.27	<0.001	13.48 ± 2.56	<0.001	0.468	<0.001	0.653	22.95	<0.001
Onion	59.21 ± 12.20	62.46 ± 10.34	72.27 ± 12.32	13.06 ± 2.61	<0.001	9.81 ± 1.82	<0.001	0.782	0.002	0.821	19.78	<0.001
Ginger	34.46 ± 11.30	34.02 ± 13.50	46.21 ± 16.89	11.75 ± 1.99	<0.001	12.19 ± 2.06	<0.001	0.597	<0.001	0.713	30.61	<0.001
Molasses	38.71 ± 13.80	40.83 ± 12.69	47.38 ± 1.82	6.56 ± 1.41	<0.001	8.67 ± 1.89	<0.001	0.879	0.040	0.892	13.48	<0.001
Indoor behaviours												
Recipe	32.94 ± 7.30	37.50 ± 6.99	46.60 ± 17.69	13.65 ± 2.59	<0.001	9.01 ± 2.26	0.001	0.390	<0.001	0.621	22.52	<0.001
Bakery	32.92 ± 5.35	38.87 ± 4.65	51.27 ± 16.56	18.35 ± 2.37	<0.001	12.40 ± 2.24	<0.001	0.199	<0.001	0.555	47.69	<0.001
Bread	16.67 ± 1.92	18.15 ± 1.74	26.85 ± 17.26	10.17 ± 2.42	<0.001	8.69 ± 2.45	0.003	0.044	<0.001	0.511	15.18	<0.001
Takeaway	5.48 ± 5.43	6.98 ± 6.98	19.17 ± 19.43	13.69 ± 2.90	<0.001	12.19 ± 2.84	<0.001	0.432	<0.001	0.638	18.83	<0.001
Playstation	40.19 ± 8.99	37.65 ± 8.06	54.00 ± 17.84	13.81 ± 2.71	<0.001	16.35 ± 2.65	<0.001	0.304	<0.001	0.590	30.55	<0.001
Stock market	34.65 ± 12.81	32.35 ± 4.52	53.94 ± 8.94	19.29 ± 1.50	<0.001	21.60 ± 1.38	<0.001	0.827	0.009	0.852	107.63	<0.001
Zoom	1.44 ± 0.50	1.87 ± 0.44	25.13 ± 24.00	23.69 ± 3.34	<0.001	23.27 ± 3.32	<0.001	0.003	<0.001	0.501	49.68	<0.001
Meditation	47.56 ± 9.28	55.98 ± 11.86	63.88 ± 15.35	16.33 ± 2.32	<0.001	7.90 ± 2.76	0.018	0.941	0.218	0.944		
Netflix	10.65 ± 4.09	26.60 ± 5.15	48.56 ± 17.71	37.90 ± 2.58	<0.001	21.96 ± 2.73	<0.001	0.165	<0.001	0.545	149.53	<0.001

(Continues)

TABLE 2 (Continued)

	Google search volume Mean ± SE			Δ google search volume Mean ± SE (95% confidence interval)			Mauchly sphericity test		Epsilon		Greenhouse-Geisser	
	2018	2019	2020	2020-2018	p-Value	2020-2019	p-Value	Mauchly's W	p-Value	Greenhouse-Geisser	F	p-Value
Online shopping	37.25 ± 10.63	26.19 ± 6.06	42.48 ± 19.68	5.23 ± 3.25	0.343	16.29 ± 2.90	<0.001	0.547	<0.001	0.688	19.29	<0.001
Diet	55.88 ± 10.86	55.63 ± 12.34	59.98 ± 11.94	4.10 ± 2.25	0.223	4.35 ± 2.34	0.206	0.617	<0.001	0.723	2.96	0.044
Outdoor activities												
Cinema	50.96 ± 18.08	47.94 ± 18.43	18.37 ± 20.99	-32.60 ± 2.48	<0.001	-29.58 ± 3.17	<0.001	0.607	<0.001	0.718	101.13	<0.001
Theater	45.79 ± 18.59	53.60 ± 17.74	26.94 ± 17.37	-18.85 ± 2.85	<0.001	-26.65 ± 2.69	<0.001	0.379	<0.001	0.617	68.05	<0.001
Hotel	48.90 ± 19.88	50.67 ± 19.81	32.19 ± 18.55	-16.71 ± 1.92	<0.001	-18.48 ± 2.00	<0.001	0.605	<0.001	0.717	71.22	<0.001
Restaurant	47.54 ± 8.52	59.56 ± 10.91	52.96 ± 20.71	5.42 ± 2.90	0.227	-6.60 ± 2.84	0.073	0.590	<0.001	0.709	11.23	<0.001
Market	41.79 ± 2.99	45.10 ± 3.40	60.75 ± 13.42	18.96 ± 1.92	<0.001	15.65 ± 2.08	<0.001	0.154	<0.001	0.542	74.835	<0.001
Outdoor	28.54 ± 20.61	39.85 ± 27.24	26.00 ± 10.23	-2.54 ± 2.06	0.668	-13.85 ± 2.87	<0.001	0.708	<0.001	0.774	20.217	<0.001
Gym	63.63 ± 10.59	68.02 ± 11.80	40.19 ± 19.22	-23.44 ± 2.59	<0.001	-27.83 ± 2.47	<0.001	0.659	<0.001	0.746	89.946	<0.001
Bicycle	31.94 ± 11.86	33.13 ± 12.07	43.77 ± 24.29	11.83 ± 2.27	<0.001	10.64 ± 2.01	<0.001	0.197	<0.001	0.555	26.516	<0.001
Hairdresser	56.38 ± 10.79	63.71 ± 14.83	50.56 ± 17.75	-5.83 ± 2.12	0.024	-13.15 ± 2.12	<0.001	0.682	<0.001	0.759	24.829	<0.001
Socio-economic conditions												
Unemployment	24.27 ± 6.99	27.87 ± 6.31	31.69 ± 17.39	7.42 ± 2.86	0.037	3.83 ± 2.65	0.462	0.463	<0.001	0.650	4.949	0.021
Unemployment benefit	2.67 ± 1.47	3.75 ± 1.52	21.77 ± 20.87	19.09 ± 2.92	<0.001	18.01 ± 2.91	<0.001	0.027	<0.001	0.507	40.467	<0.001
Payment	48.71 ± 9.28	54.21 ± 11.47	57.21 ± 7.53	8.50 ± 1.11	<0.001	3.00 ± 1.19	0.045	0.992	0.816	0.900		
Debt relief	3.65 ± 3.38	7.10 ± 5.42	11.65 ± 17.14	8.00 ± 2.51	0.007	4.56 ± 2.60	0.258	0.229	<0.001	0.565	7.091	0.008
Alo 170	22.77 ± 8.10	20.10 ± 8.50	35.67 ± 19.32	12.90 ± 3.07	<0.001	15.58 ± 2.99	<0.001	0.527	<0.001	0.679	20.323	<0.001
Divorce	48.96 ± 9.42	50.13 ± 6.53	47.00 ± 8.60	-1.96 ± 1.58	0.663	-3.14 ± 1.06	0.054	0.816	0.006	0.845	2.845	0.046

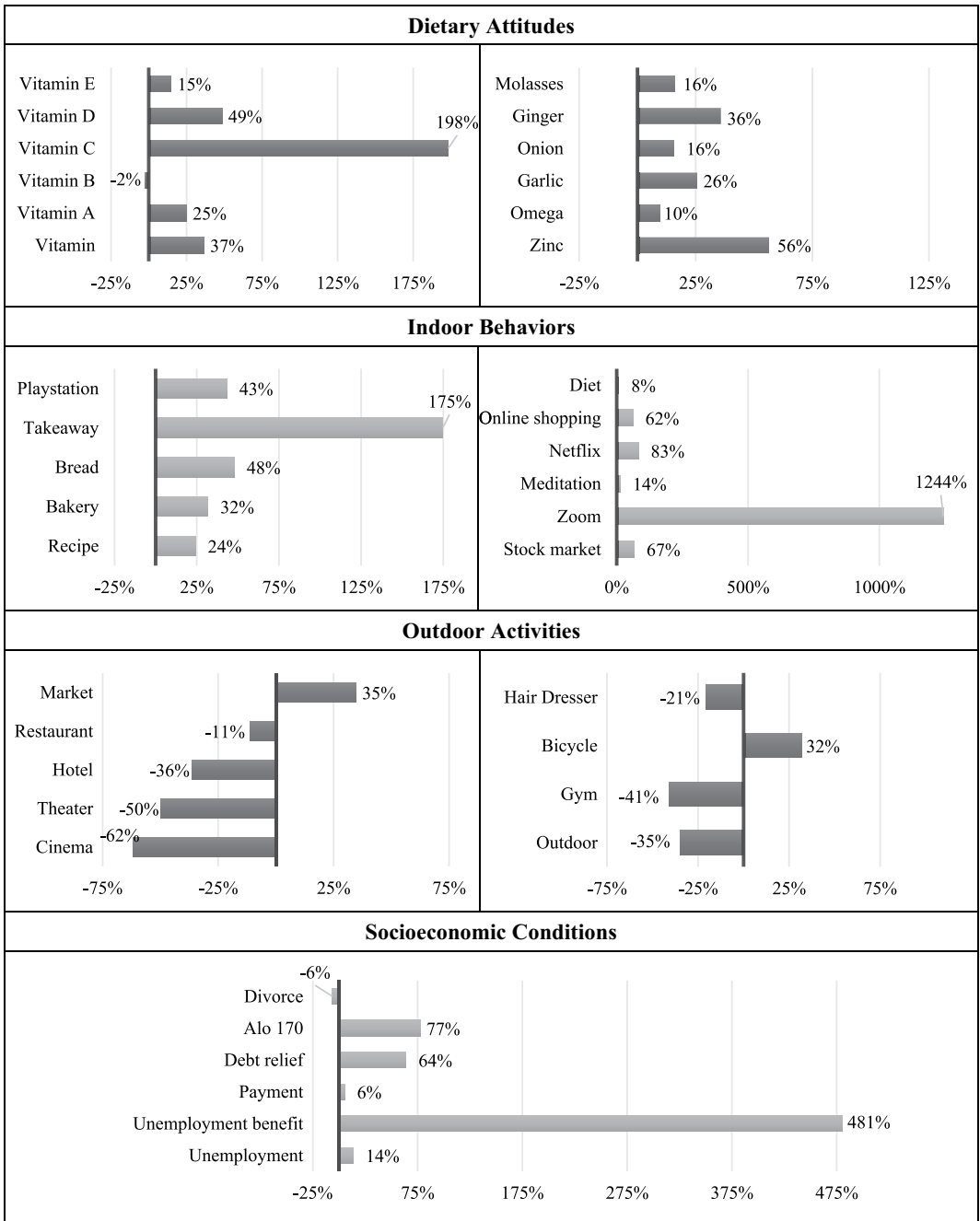


FIGURE 2 Bar graph comparing the percentage differences of search volume of terms related to lifestyle behaviours and socio-economic variables before (average mean of search volumes in 2018 and 2019) and during COVID-19 (mean of search volumes in 2020)

4 | DISCUSSION

In the current study, factors that might be associated with coronavirus were evaluated under the categories of 'dietary attitudes', 'indoor behaviours', 'outdoor activities' and 'socio-economic conditions'. Google Trends search volumes of

various words under these categories were found to be related with the coronavirus in various levels and directions.

In the study, under the dietary attitudes content, while a positive and high correlation was found between the search volume of 'vitamin C' and the number of coronavirus cases; a positive and moderate correlation was found between the words of 'vitamin', 'zinc', 'vitamin D' and 'garlic' and the number of cases. In addition, there was a significant increase in the search volumes of all variables of dietary attitudes except for 'vitamin B' during the epidemic period compared to the pre-epidemic period. Similar to our study, several studies^{16,17} in other countries reveal that Google Trends search volumes of 'vitamin C', 'vitamin D', 'zinc' and 'garlic' are associated with coronavirus and that their search volumes have increased during the pandemic process. It is stated that the public interest in vitamins and food supplements is quite high in Turkey.⁶⁵ It is thought that it increased due to the pandemic. According to the study conducted in Turkey with 800 participants in March–April 2020, the frequency of supplement use of consumers was determined as 45.1% 1–2 times a day. The reason for using 39.4% of consumers who use food supplements is that they strengthen the immune system. 44.3% of consumers stated that they took supplements from vitamins.⁶⁶ Çimke and Yıldırım Gürkan,⁶⁷ in their study of using Google Trends search volumes, revealed that interest in vitamins increased since the beginning of the pandemic both in Turkey and in the world. Also, in Turkey, 'Food Supplement Use and Measurement of Eating Habits' survey conducted by Food Supplements and Nutrition Association⁶⁸ revealed that usage of food supplements increased in the COVID-19 period. While 71% of the respondents stated that they used food supplements to increase their immunity during the COVID-19 period; 37% of them stated that they trusted food supplements more in this period. Similarly, in another study in Turkey, the use of supplements by individuals was found to be increased after COVID-19.¹²

These results could be due to the individuals' desire to protect themselves from the negative effects of COVID-19 by strengthening their immune systems. It is thought that, in addition to the recommendations of healthcare professionals, news and advertisements, which take place in the media increasingly, might have had a great effect on this. Individuals can use these types of supplements to support their self-care without consulting a healthcare professional. Food supplements are not evaluated in the 'medicine' category.⁶⁹ For this reason, there is no restriction for their advertisements. In Turkey, according to the 'Regulation on the Principles and Principles of Broadcasting Service' (2014),⁷⁰ which regulates the general principles of commercial communications on broadcasting services; health claims of food supplements, herbal products, various devices and any products other than these can not give rise to be perceived as a medicine. Çimke and Yıldırım Gürkan⁶⁹ stated that accurate determination of the need, accurate product selection, appropriate amount and correct use of vitamins will ensure maximum benefit and minimum potential side effects. Therefore, it is important that people are informed correctly and reach the right sources of information. At this point, the role of health professionals, and the media, which is highly influential in guiding people, is very important.

When looking at the search words under indoor behaviour content, it was seen that there was a positive and high level of correlation between the search volume of 'Zoom' and the number of coronavirus cases and deaths. Due to social distancing, people have had the need to communicate via social media accounts. Business, education and social life had to adapt to online systems instantly. The use of online meeting applications has become widespread.¹³ The increase in working at home during the pandemic period, holding meetings and lessons online, and even online interviews between family and friends explain this finding. Communication technologies like Zoom helped individuals to drive their businesses during quarantine and allow them to move their lives online while maintaining physical distance.⁷¹ According to BBC News, the usage of Zoom increased 30 times in April in 2020, with more than 300 million daily users.⁷²

Among other indoor behaviours, the words of 'takeaway', 'online shopping', 'playstation', 'Netflix', 'recipe' and 'bakery' were found to be positively and moderately associated with the number of coronavirus cases and deaths. In the process of COVID-19, not being able to go to cinema and theatre, not being able to shop from markets, not to eat at restaurants, and not to go to entertainment venues explain these findings. Since they spend almost most of their time at home, individuals have sought various activities that can be done at home. These include playing various games, watching movies and cooking. In addition, the closure of restaurants affected the eating habits and increased

the behaviour of cooking at home with the search for a 'recipe'. According to the *New York Times*, usage of Netflix has increased by 16% in the pandemic process.⁷³

Ngoc and Kriengsinyos¹⁶ also found that coronavirus cases are positively correlated with search volumes of 'recipe', 'cooking' and 'online shopping' words, supporting our study findings. Another study found that during the pandemic, individuals' food shopping habits changed and they tended to shop online.⁷⁴ A study of 7753 American participants found that during the pandemic, overall scores for healthy eating increased as a result of less eating out and increased home cooking behaviour.⁷⁵ The findings of another study show that during the pandemic, 61.6% of the participants reduced eating at restaurants, while 64.8% increased the amount of home cooking compared to the previous year.⁷⁶ Similarly, in another study, 62.1% of the participants cook more often at home.⁷⁷ On the other hand, in a study, which covers Asia, Africa and Europe and answered by 1047 participants, it was revealed that staying at home due to COVID-19 has a negative effect on dietary and physical activities.⁷⁸

Among the words under outdoor activities content, 'gym', 'hotel', 'theatre' and 'cinema' have been found to be negatively and moderately associated with the number of coronavirus cases and deaths, unlike indoor activities. In addition, the words that have decreased the most during the epidemic period compared to the post-epidemic period were 'cinema' and 'gym'. Mayasari et al.¹⁷ similarly found that search volumes of 'hotel', 'movie', 'theatre' and 'gym' were negatively correlated with coronavirus cases. Mayasari et al.¹⁷ concluded that individuals tend to change their outdoor activities towards indoor activities. During the COVID-19 process, this finding seems quite reasonable as gyms, hotels, theatres and cinemas were closed. A positive and moderate correlation was found between the search volumes of 'market', 'open air' and 'bicycle' and the search volume of 'coronavirus'. Ngoc and Kriengsinyos¹⁶ also found that search volume of 'bicycle' was in an increasing trend. In this period, individuals began to search for activities they could do in the open area, away from the crowd. Cycling can be considered as one of the most suitable sports activities that allow to take the air, away from the crowd.

When the results regarding the impact of the COVID-19 epidemic on socio-economic factors were evaluated, correlation between the search volumes of 'unemployment', 'unemployment benefit', 'Alo 170' and the number of coronavirus cases were positive and weak. On the other hand, it was found that there was a positive and moderate correlation between the search volumes of 'unemployment benefit' and 'coronavirus'. Also, during the epidemic period, the search for unemployment benefits increased 481%, Alo 170 calls increased 77%, and unemployment searches increased 14% compared to the pre-epidemic period. Consistent with these findings, according to the data of TURKSTAT,⁷⁹ the number of employed persons decreased by 975,000–27,554,000 persons in the period of August 2020 compared with the same period of the previous year and the employment rate occurred as 43.9% with 2.4 percentage point decrease. It was seen that the economic difficulties experienced due to the pandemic reflect on the working life of individuals in Turkey. Decreasing investments, due to the decrease in demand for goods and services, decrease in input supply, increase in liquidity squeeze and uncertainty in the market, not only cause difficulties for businesses. The fluctuation due to these developments in economies causes thousands of people to lose their jobs and income in many countries and leads to increases in unemployment on a global basis.¹⁴

On the other hand, complaints about normal working wages and overtime wages not paid by the workplace are received through the Family, Labour and Social Services Communication Centre number Alo 170. In addition, through this line, contracted divorce complaints are received.⁸⁰ The reason for the increase in search volume of 'Alo 170' may be unpaid wages and divorce requests due to the pandemic. Since the beginning of the pandemic in many countries, including Turkey, it is stated that an increase in divorce cases and the divorce rate.^{81–83} However, according to the data of TURKSTAT,⁸⁴ while the number of couples who got divorced was 156,587 in 2019, it was 135,022 in 2020 by decreasing 13.8%. Crude divorce rate was 1.62 per thousand in 2020. The reason for the decrease in divorce rate might be that the cases have been suspended or the divorce cases have not yet been completed, although the number of incompatibilities and the number of those who wanted to divorce increased during the pandemic process. As a matter of fact, in our study, a negative and weak correlation was found between the search volume of 'divorce' and the number of cases and deaths and the search volume of 'coronavirus'.

Similar to our findings, Ngoc and Kriengsinyos¹⁶ used Google Trends data to determine the impact of the COVID-19 on economic factors and found positive and high level of correlations between the search volumes 'unemployment' and 'coronavirus' and between search volume of 'unemployment' and number of cases. They also stated that unemployment searches increased 269% compared to the pre-pandemic period. Sotis²² found that as Google searches for coronavirus and its symptoms increased, searches for 'unemployment' increased too.

Tian and Goetz²³ found a positive and weak correlation between the number of cases and the search volume of 'unemployment' and found a moderate correlation between number of cases and the search volume of 'unemployment benefits'. In line with their findings, they stated that Google Trends could be used as a leading indicator for predicting real-time economic conditions and responses in labour markets. Caperna et al.¹⁸ concluded that unemployment-related Google Trends searches increased by approximately 30% during the pandemic period compared to the pre-pandemic period. Doerr and Leonardo Gambacorta,¹⁹ in their study examining the regional impact of COVID-19 in terms of employment rates, determined that regions with higher incidents are searching more for 'corona' and 'unemployment benefits'. Thus, they stated that Google Trends data could be used as a tool to reveal which region is most economically affected. Seçer and Seçer⁸⁵ emphasized that the Google search engine can contribute to the prediction of unemployment and that Google data can be used as an aid to official statistics in predicting unemployment.

The report of ILO²⁵ argues that COVID-19 will have wide effects on labour market outcomes. The report stated that the pandemic will affect working life in three basic dimensions: number of jobs (both unemployment and underemployment), job quality (e.g., wages, access to social protection), and impacts on certain groups that are more vulnerable to adverse labour market outcomes. ILO's estimate points a significant increase in unemployment and underemployment due to the virus. Labour supply decreases due to quarantine measures and decrease in economic activities. Employment impacts point to a large loss of income for employees. As a result, working poverty is expected to increase significantly. ILO (2020)²⁵ states that the policies to be followed to minimize the effects of COVID-19 on working life, should focus on two urgent objectives: taking health protection measures and providing economic support for both demand and supply.

5 | CONCLUSION

The study results showed that the COVID-19 pandemic significantly changed people's online interests regarding lifestyle behaviours and socio-economic variables. This study provides insight into human behaviour during the pandemic. Specifically, the study shows the effects of the pandemic on life behaviours, concerns about immune-enhancing foods and their socio-economic status.

It was observed that the findings obtained by Google trends analysis were consistent with the findings of other studies measuring behaviours through questionnaires. Therefore, it can be said that Google Trends can be used as an effective tool to examine the interests, concerns and behaviours of individuals. Thus, by having an idea about the current situation, necessary measures can be taken against possible adverse situations.

In this study, the effects of the pandemic were evaluated from a social and socio-economic perspectives. It is thought that the results of the study can raise awareness about the lifestyle changes caused by the pandemic and can be a guide for health policies to be followed in reducing the adverse effects of both these behavioural changes and negative socio-economic consequences.

While quarantine and social isolation are a necessary precaution during the pandemic, research results have also shown that physical activity, eating behaviours, health risks and lifestyle habits have also changed significantly. Therefore, understanding the COVID-19 impact behind restraint policies requires the development of interventions to alleviate negative lifestyle behaviours, new public health policies and management strategies to support and adapt to the new normal behaviour. Public health policies and measures to promote greater self-awareness and self-care in the home environment are needed to alleviate the burden on healthcare systems.

Health politicians and administrators should encourage healthy living behaviours as part of their messages to the public, encourage participation in indoor or outdoor physical activity while adhering to distance and hygiene recommendations, share nutrition recommendations, and involve influential stakeholders such as health professionals and the media in promoting such messages. All of these can be recommended as measures with the potential for both physical and mental benefits. On the other hand, e-health, mobile health interventions, technology and social media have the potential to offer technological solutions to the negative lifestyle habits of the pandemic. It is recommended to adopt management strategies that support innovative health behaviours such as online disease monitoring, web-based health promotion applications, video-assisted sports programs, lifestyle programs covering health care topics ranging from smoking cessation to disease diagnosis.

5.1 | Limitations

The limitation of this research is that Google Trends only provide data on people who have Internet access and use the Google search engine. Also, while online searches provide a good profile for the needs and concerns of the community, these searches do not accurately represent user opinions.

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CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in Google Trends at <https://trends.google.com/trends/>, reference number 64 and in the Republic of Turkey Ministry of Health's COVID-19 information page at <https://covid19.saglik.gov.tr/>, reference number 4.

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