



Public interest in spa therapy during the COVID-19 pandemic: analysis of Google Trends data among Turkey

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Abstract

In Turkey, spas are widely used and preferred by patients who are seeking relief from their disability and pain. The spa therapy program is partly reimbursed by the national health insurance system. The objective of the present study was to leverage Google Trends to elucidate the public interest in spas in Turkey during the COVID-19 pandemic. Google Trends was queried to analyze search trends within Turkey for the Turkish term representing a spa (i.e., kaplıca) from January 01, 2016, to September 30, 2020. The relative search volume of “kaplıca” was statistically significantly decreased in the March 15–May 30, 2020 (− 73.04%; $p < 0.001$); May 31–July 25, 2020 (− 41.38%; $p < 0.001$); and July 26–September 19, 2020 (− 29.98%; $p < 0.001$) periods compared to similar periods of preceding 4 years (2016–2019). After June 1, 2020, the relative search volume was shown to have a moderate recovery, without reaching the level of 2016–2019. Public interest in spas showed an initial sharp decline between mid-March and May, with a moderate increase during the June–August period. This finding might be indicative of public preference in undertaking spa therapy during the COVID-19 period. In Turkey, spas might be used to increase places providing rehabilitation for both non-COVID-19 patients and survivors of COVID-19 with long-term symptoms during the pandemic.

Keywords Google searches · Internet · Spa therapy · Balneotherapy · Hydrotherapy · Rehabilitation · COVID-19 · SARS-CoV-2

Introduction

At the end of 2019, a new coronavirus outbreak appeared in China. It was later identified as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its illness identified as coronavirus disease 2019 (COVID-19). It has expanded from China throughout the world that led to the World Health Organization (2020) to declare COVID-19 a pandemic on March 11, 2020. On the same day, the health minister of Turkey has announced the first confirmed case of COVID-19 (Yağcı et al. 2020). Then, the number of cases increased resulting in 314,433 cases and 7997 deaths in Turkey by the 27th of September 2020 (Republic of Turkey Ministry 2020).

The field of medicine has begun to integrate Google Trends as valuable epidemiologic data to monitor outbreaks and public interest (Eysenbach 2009; Mavragani and Ochoa 2019; Lu

et al. 2018; Teng et al. 2017; Yang et al. 2017; Kardeş 2019a, 2019b; Kardeş and Kardeş 2019). It has been used to monitor several previous epidemics including influenza, Zika, and dengue (Lu et al. 2018; Teng et al. 2017; Yang et al. 2017) and public interest in several diseases including gout, bruxism, and psoriasis (Kardeş 2019a, 2019b; Kardeş and Kardeş 2019). In addition, during the COVID-19 pandemic, public interest in rheumatic diseases (Kardeş et al. 2020a) and several treatment modalities such as anti-rheumatic drugs (Kardeş et al. 2020b), surgical procedures of urology (Bhambhani et al. 2020), knee arthroplasty (Landy et al. 2020), and facial plastic surgery (Dhanda et al. 2020) has been evaluated through analysis of Google Trends data.

Current management of COVID-19 consists of rehabilitation both in the acute period (in intensive care units or wards) and long-term period (after discharging from hospitals) (Ceravolo et al. 2020; Gutenbrunner et al. 2020; Barker-Davies et al. 2020; Liebl et al. 2020; Siddiq et al. 2020; Kurtaiş Aytür et al. 2020; Wang et al. 2020; Lopez et al. 2020). In Turkey, spas are widely used and preferred by patients who are seeking relief from their pain and disability (Kardeş et al. 2019). In addition, a spa therapy program

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prescribed by physicians is partly reimbursed by the national health insurance system and balneological modalities are integrated into several hospitals (Kardeş et al. 2019). In Turkey, spa therapy programs include balneotherapy, peloid therapy, aquatic exercises, physical therapy modalities, and exercise (Kardeş et al. 2019; Kardeş 2020a). Turkish spas might be used to increase places providing the rehabilitation of long-term COVID-19 patients, and non-COVID-19 patients, along with the hospital rehabilitation units, which are currently overwhelmed with acute rehabilitation of COVID-19 (Maccarone et al. 2020; Masiero et al. 2020a, b; Antonelli and Donelli 2020; Kardeş 2020b).

Therefore, the objective of the present study was to leverage Google Trends to elucidate the public interest in spas in Turkey during the COVID-19 pandemic.

Materials and method

The Google Trends data and its use in the field of medicine have been detailed in the previous articles (Mavragani and Ochoa 2019; Kardeş 2019a). Briefly, Google Trends is an open tool, which provides the relative volume of terms that people search in the Google engine. Google Trends allows for the specification of queries with the filters of time period and region. It automatically normalizes the proportion of query to all search queries on a range of 0 to 100, in which higher scores represent more relative interest (Mavragani and Ochoa 2019; Kardeş 2019a).

The lay word of spa is “kaplıca” in Turkish, and in Turkey, the public commonly uses it to refer to spa settings. On September 30, 2020, Google Trends was interrogated for the search term “kaplıca.” It was searched within Turkey from January 01, 2016, to September 30, 2020, using the “all categories” filter. Google Trends weekly data were downloaded for analysis.

The 11-week period (March 15–May 30, 2020), which coincided with strict lockdown and quarantine policies including the closure of spas, was compared to similar periods of preceding 4 years (2016–2019). Also, two following 8-week periods (May 31–July 25, 2020; July 26–September 19, 2020) were compared to similar periods of 2016–2019 to evaluate the interest after lockdown and quarantine lifted including the opening of spas on June 1, 2020. These comparisons were performed using generalized estimating equations with a gamma distribution in the Statistical Package for the Social Sciences (SPSS) version 21.0 (IBM Corporation, Armonk, NY). A time series plot was performed to illustrate the trends of spa searches in 2016–2019 and 2020 in Microsoft Excel version 14.3.7 (Microsoft Corporation, Redmond, WA). Statistical data presentation was informed by a recent review (Misra et al. 2020).

Results

The relative search volume of “kaplıca” was statistically significantly decreased in the March 15–May 30, 2020 (– 73.04%; $p < 0.001$); May 31–July 25, 2020 (– 41.38%; $p < 0.001$); and July 26–September 19, 2020 (– 29.98%; $p < 0.001$) periods compared to similar periods of preceding 4 years (2016–2019) (Table 1).

Figure 1 shows that the relative search volume of “kaplıca” was lower in all weeks between March 15 and September 19, 2020, than the mean of the years 2016–2019. After June 1, 2020, the relative search volume was moderately increased; however, it did not reach to the level of 2016–2019 (Fig. 1).

Discussion

The study found a sharp decline in Google searches for the Turkish term representing spa between March 15 and May 30, 2020, period compared to similar periods in 2016–2019. After June 1, 2020, its relative popularity began to moderately increase; however, it was statistically lower during the May 31–July 25, 2020, and July 26–September 19, 2020, periods compared to similar periods of preceding 4 years.

The initial sharp decrease observed in the study was not surprising as this period coincides with strict lockdown and quarantine policies including the closure of spas. However, after lockdown/quarantine had lifted and spas had reopened on June 1, 2020, the public interest in spas has begun to gradually increase. This finding is interesting as it might be indicative of public preference in undertaking spa therapy during the COVID-19 period. In addition, it suggests that the safety measures implemented in spa resorts, which are issued by the Ministry of Health, ensured the trust of public in spa resorts to maintain COVID-19 infection control. These measures include checking body temperature/COVID-19 symptoms before entering the spas; the physical distancing of at least 1 m; mask-wearing (except steamy environments); hand hygiene; avoid touching the face, eyes, mouth, and nose; and specific rules for cleaning, disinfecting, and ventilation of spas.

Current management of COVID-19 should include rehabilitation both in the acute period (in intensive care units or wards) and long-term period (after discharging from hospitals) (Ceravolo et al. 2020; Gutenbrunner et al. 2020; Barker-Davies et al. 2020; Liebl et al. 2020; Siddiq et al. 2020; Kurtaiş Aytür et al. 2020; Wang et al. 2020; Lopez et al. 2020). Acute period rehabilitation focuses on supporting respiratory functions and preventing the complications of immobilization/bed rest (Gutenbrunner et al. 2020; Liebl et al. 2020; Siddiq et al. 2020; Kurtaiş Aytür et al. 2020; Wang et al. 2020). In this period, rehabilitation interventions include positioning, respiration treatment, and early mobilization (Gutenbrunner et al. 2020; Liebl et al. 2020; Siddiq et al.

Table 1 Relative search volume (RSV) of search term “kaplıca” in Turkey during March 15–September 19, 2020, and similar periods in 2016–2019

Period	2016–2019	2020	% Change	<i>p</i>
March 15–May 30				
RSV of kaplıca	37.80 (35.70 to 40.02)	10.18 (8.64 to 11.99)	– 73.04%	< 0.001
May 31–July 25				
RSV of kaplıca	49.47 (44.48 to 55.02)	29.00 (25.44 to 33.06)	– 41.38%	< 0.001
July 26–September 19				
RSV of kaplıca	57.13 (52.70 to 61.92)	40.00 (34.04 to 47.00)	– 29.98%	< 0.001

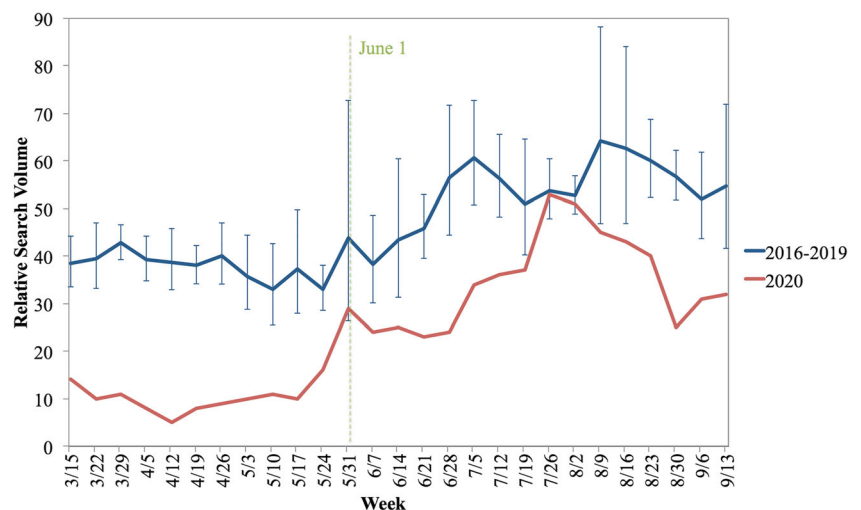
The word “kaplıca” is the lay word of spa in Turkish. Data are presented as means (95% confidence interval) (generalized estimating equations)

2020; Kurtaiş Aytür et al. 2020; Wang et al. 2020). Long-term period rehabilitation focuses on improving ongoing respiratory problems and restoration of physical disabilities either resulted by directly COVID-19 (its musculoskeletal/neurological manifestations) (Ceravolo et al. 2020; Gutenbrunner et al. 2020; Barker-Davies et al. 2020; Liebl et al. 2020; Kurtaiş Aytür et al. 2020; Wang et al. 2020; Lopez et al. 2020) or intensive care stay (post-intensive care syndrome) (Ceravolo et al. 2020; Gutenbrunner et al. 2020), addressing psychological issues (e.g., depression and anxiety) as well (Gutenbrunner et al. 2020; Barker-Davies et al. 2020). The symptoms following discharge and rehabilitation needs of survivors of COVID-19 have been investigated in the previous three studies (Carfi et al. 2020; Garrigues et al. 2020; Halpin et al. 2020). Their findings show a high proportion of survivors of COVID-19 reported fatigue, dyspnea, joint pain, and psychological distress indicating the needs of rehabilitation to improve these symptoms (Carfi et al. 2020; Garrigues et al. 2020; Halpin et al. 2020).

In Turkey, 262 spa resorts are approved by the Health Ministry and a spa therapy program in these approved spas is reimbursed—except accommodation costs. These spas have

experienced multidisciplinary rehabilitation teams (e.g., spa physicians, physical therapists, physiotherapists, and rehabilitation nurses) to provide and adjust the rehabilitation program to the individual patient’s needs. Although spa therapy has yet no evidence specific to COVID-19, it and its interventions (e.g., balneotherapy, peloid therapy, aquatic exercises, and exercise) have been demonstrated beneficial in improving fatigue, dyspnea, pain, and depression/ anxiety, and in increasing quality of life of patients who have these symptoms, in many reviews and numerous clinical studies (Kamioka et al. 2020; Khaltaev et al. 2020; Munteanu et al. 2019; Baldi et al. 2015; Fioravanti et al. 2010, 2018; Rapolienė et al. 2020; Király et al. 2020; Gay et al. 2020; Bernetti et al. 2020; Varzaityte et al. 2020; Dilekçi et al. 2019, 2020; Eröksüz et al. 2020; Yuan et al. 2019; Cozzi et al. 2020; Gálvez et al. 2020; Corvillo et al. 2020; Pérez-Fernández et al. 2019; Peultier-Celli et al. 2019; Hanzel et al. 2019; Yücesoy et al. 2019; Özkuk and Dilekçi 2019; Masiero et al. 2020c; Tenti et al. 2020; Koçak et al. 2020; Özkuk and Uysal 2019; Cantista and Maraver 2020; Cheleschi et al. 2020; Özkuk and Ateş 2020; Min et al. 2020; Prosegger et al. 2019; Persiyanova-Dubrova et al. 2019). Interestingly, hypothetical

Fig. 1 Relative search volume (RSV) of search term “kaplıca” in Turkey during March 15–September 19, 2020, and similar periods in 2016–2019. The word “kaplıca” is the lay word of spa in Turkish. Data of 2016–2019 are presented as means (95% confidence interval) (generalized estimating equations)



and theoretical backgrounds of using spas as rehabilitation facilities for post-COVID-19 patients have been discussed in several articles (Maccarone et al. 2020; Masiero et al. 2020a, b; Antonelli and Donelli 2020; Kardeş 2020b). Masiero et al. (2020a) and Kardeş et al. (2020b) provided clinical background and approach for spa therapy for post-COVID-19 patients. Antonelli and Donelli (2020) focused on spa therapy for respiratory rehabilitation for post-COVID-19 patients. Maccarone et al. (2020) and Masiero et al. (2020b) overviewed the effects of balneotherapy on human immune function during the COVID-19 era. Although all these previous articles explored the hypothetical and theoretical aspects and perspectives for spa therapy during the pandemic, clinical studies investigating the efficacy of spa therapy program in COVID-19 survivors with long-term symptoms are required to provide evidence regarding its use and benefits.

Limitations

This study has some limitations. Google Trends only provides data of Google searches; however, in Turkey, more than 75% of all internet queries are searched through the Google search engine. Therefore, its data are likely representative of all Internet queries. Moreover, Google Trends only provides population-level data, so the public interest could not be assessed by dividing the population into subgroups (i.e., age, sex). Additionally, the present study does not provide any evidence on the possible use of spas in the rehabilitation of long-term COVID-19 patients; therefore, the results should only be interpreted as the general public interest in spas during the pandemic.

Conclusion

Public interest in spas showed an initial sharp decline between mid-March and May, with a moderate increase during the June–August period. This finding might be indicative of public preference in undertaking spa therapy during the COVID-19 period. In Turkey, spas might be used to increase places providing rehabilitation for both non-COVID-19 patients and survivors of COVID-19 with long-term symptoms during the pandemic.

Compliance with ethical standards

Conflict of interest The author declares no competing interests.

Ethics approval Not applicable.

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