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Italian public interest in online and in-person psychological support during the COVID-19 pandemic: Insights from Google Trends

Giuseppina Lo Moro[1] | Scaioli Giacomo[1,2] | Conrado Francesco[1] | Linot Carola[1] | Bert Fabrizio[1,2] | Siliquini Roberta[1,3]

[1]Department of Public Health Sciences, University of Turin, Turin, Italy

[2]Health Local Unit "ASL TO3", Turin, Italy

[3]A.O.U. City of Health and Science of Turin, Turin, Italy

Correspondence
Conrado Francesco, Department of Public Health Sciences, University of Turin, Via Santena 5 Bis, 10126, Turin, Italy.
Email: francesco.conrado@unito.it

Abstract

Objective: This study aimed to investigate the interest in online and in-person psychological support services in Italy during the COVID-19 pandemic, stimulated by the implementation of the government-issued 'bonus psicologo' for psychotherapy sessions.

Methods and Measures: Public interest was measured using data from Google Trends, a resource that offers open access to actual search requests, within the time frame of 2 July 2017 to 13 November 2022. These data were stratified for Italian regions to explore regional differences. We conducted interrupted time series analyses to assess changes in interest before, during and after the lockdown.

Results: Results indicated a significant increase in interest in online psychological support during the lockdown, which was sustained over time and was positively correlated with the implementation of the 'bonus psicologo' ($p < .001$). Interest in in-person support decreased during the lockdown but began to rise post-lockdown ($p = .028$), with no notable impact from the economic incentive. High interest in online support continued in certain regions even 1 year post-lockdown, warranting further analysis.

Conclusion: The study underscores a heightened post-pandemic interest in psychological support, both online and in person, in comparison with pre-pandemic levels. Google Trends emerges as a valuable tool for monitoring public interest during specific events, though the findings must be interpreted with care, given the study's time frame and reliance on relative search volume as a measure. Future research is needed to validate these findings and to compare them against epidemiological data.

KEYWORDS
bonus psicologo, COVID-19, Google Trends, infoveillance, telepsychology, time series analysis

1 | INTRODUCTION

The World Health Organization (WHO) declared the COVID-19 outbreak a pandemic in March 2020 (WHO, 2022). To give a glimpse of the COVID-19 pandemic in the European Region, the number of confirmed COVID-19 cases reached over 270 million, along with over 2.1 million confirmed deaths since the pandemic started until January 2023 (WHO, 2022).

In this context, Italy was the first European country hit by the pandemic to adopt restrictive measures, incrementally introduced after the declaration of a state of emergency on 31 January 2020 (Decreto-legge n. 6, 23 February 2020). Given the increase in cases, the restrictive measures of physical and social distancing were implemented on 8 March 2020, with a nationwide stay-at-home order in place until 4 May 2020, as the epidemic curve slowed down. After a period of loosening restrictions, from June to August 2020, in October, new restrictions were imposed, which lasted until April 2021 (European Observatory on Health Systems and Policies, 2021; DPCM n.253, 13 October 2020). From then on, the restrictions were gradually lifted, until 24 March 2022, when Decree Law 24/22 declared the state of emergency had ended (Decreto-legge n.24, 24 March 2022).

Early studies suggested that restrictive measures could have been a risk factor for the development of psychological distress (Burhamah et al., 2020; Duan & Zhu, 2020; James Rubin & Wessely, 2020).

The psychological burden of the COVID-19 pandemic has since been deeply investigated (di Fazio et al., 2022). Numerous studies showed an increase in symptoms correlated with mental health-related issues (Mohler-kuo et al., 2021; Munk et al., 2020; Pisano et al., 2021). Relevant reviews reported that anxiety, depression and psychological distress were frequently experienced during lockdown periods, in association with changes in sleeping and eating habits (Bonati et al., 2022; Luo et al., 2020; Salari et al., 2020). In Italy, published data were consistent with this global trend (Amerio et al., 2021; Fiorillo et al., 2020; Lo Moro et al., 2022; Mazza et al., 2020).

Given the impact of social restrictions due to the COVID-19 pandemic on mental health, policymakers decided to address this public health challenge. The Italian Ministry of Health, in concert with the Italian Ministry of Economics and Finance, introduced an economic bonus called 'bonus psicologo', a contribution to support the expenses relating to psychotherapy sessions, a measure aimed at supporting people with conditions of anxiety, stress, depression and psychological fragility (Legge n. 15, 25 February 2022). The beneficiaries were identified according to two requirements: being residents of Italy and having a valid value of the Indicator of Equivalent Economic Situation (ISEE) not exceeding 50,000 euros (Istituto Nazionale di Previdenza Sociale, 2021). Thus, potential recipients represent almost the total number of citizens with a valid ISEE (DPCM n.159, 05 December 2013). This measure obtained massive public attention, as reported by various articles published in national journals (Google, 2022a, 2022b).

It is worth noting that, to continue providing the necessary care for the population while minimising the chances of spreading and contracting the virus, many states decided to adopt telemedicine, defined as a form of medicine that allows patients to receive the necessary consultations remotely via video, telephone, web platforms or apps (Alqahtani et al., 2021). This meant that even a field such as psychology, which has historically been more reluctant to rely on new technologies in providing its services, had to

Implications for Practice and Policy

- Embracing telepsychology: The significant increase in interest in online psychological support observed during the pandemic suggests that mental health practitioners should continue developing and expanding their remote services, even post-pandemic. Telepsychology can help reach individuals who may not have previously sought out therapy due to physical, geographic or social constraints.

- Hybrid model of care: The study results point towards the need for a hybrid model of psychological support that blends both face-to-face and online modalities, given that interest in both types of services have increased post-pandemic. This allows for more flexible and personalised care to cater to individual patient preferences and circumstances.

- Monitoring and outreach: Google Trends can be used by mental health professionals as a tool to monitor public interest in psychological support, especially during times of crisis. This could aid in timely outreach and provision of resources to those in need, as well as inform public awareness campaigns about mental health support services.

- Policy on financial incentives: The findings indicate that the 'bonus psicologo' had a significant impact on the interest in online psychological support services. This suggests that government policies offering financial incentives for psychological support can be effective tools to promote mental healthcare utilisation. Policymakers should consider developing and expanding such programmes, potentially extending them to include face-to-face sessions as well, to foster greater access to mental health services, especially in times of heightened stress like a pandemic.

adopt telepsychology measures to guarantee a necessary service (Alqahtani et al., 2021). In the face of these rapid changes, therapists' adaptation to online therapy during COVID-19 improved over time, despite ongoing challenges with emotional connection and distractions (Békés et al., 2021). This adaptation was crucial in maintaining continuity of care, especially considering that even before the pandemic, many studies identified the potential of video therapy to reach more isolated populations, such as those living in rural areas (Thomas et al., 2009) and those with difficulties attending in person due to illness or motor difficulties (Langarizadeh et al., 2017; Simpson, 2009), suggesting an efficacy comparable to that of traditional psychotherapy methods (Berryhill et al., 2019; Drago et al., 2016; Harerimana et al., 2019).

Among the main concerns of practitioners, however, was the lack of related knowledge or the inability of patients to access

technology (Simpson et al., 2021); the privacy, confidentiality and security issues; and the therapist's competence and the need for special training (Stoll et al., 2020).

Such obstacles have been reduced thanks to the unprecedented digital transformation forced by the pandemic, creating a substrate, ready-to-accommodate video therapy (Markowitz et al., 2020; Simpson et al., 2021).

The data collected during the pandemic confirmed the effectiveness of telepsychology: it would allow for results comparable with the traditional modality in terms of quality of care, reliability of clinical assessments, outcomes and adherence to treatment in conditions such as anxiety disorders, depression and post-traumatic stress disorder (Appleton et al., 2021; Strudwick et al., 2021). These studies also highlighted high levels of satisfaction, increased accessibility, reduced environmental impact, fewer cancelled or missed appointments, and an overall reduction in costs (Appleton et al., 2021; Barnett et al., 2021; Thomas et al., 2009). In the light of these findings, interest has been expressed in continuing to exploit these new technologies even though the requirements dictated by the pandemic have disappeared (Barnett et al., 2021; Daigle & Rudnick, 2020; Sheridan Rains et al., 2021).

Thus, given the impact of lockdown restrictions on mental well-being and the increased evidence for telepsychology as an alternative to in-person treatment, this study aimed to explore the public interest towards online psychological support among the Italian general population before the outbreak of the pandemic, during the lockdown and after lifting the restrictions. The primary aim was to describe and compare Italian public attention towards both online and in-person psychological support, examining the relationship with the lockdown. Secondarily, this work aimed to investigate the relationship between the interest in psychological support and restrictive measures, in addition to considering the above-mentioned economic bonus. Lastly, it aimed to evaluate potential differences in interest towards online or in-person support across Italian regions during and after lockdown measures. Therefore, this paper mainly addresses the following research questions:

1. Was the Italian population more interested in online therapy during the lockdown period?
2. Did the supposed change return to pre-pandemic levels once the restrictions were lifted?
3. Did the economic bonus have an impact on public interest in psychological support?
4. Were there differences in public attention towards online or in-person support among the Italian regions?

2 | MATERIALS AND METHODS

As a proxy for the public interest, we retrieved data using Google Trends, a free web tool by Google LLC that provides open access to a largely unfiltered sample of actual search requests. Data are anonymised, categorised and aggregated (Google, 2022a, 2022b). It has been proven to be an essential tool for investigating human behaviour towards health topics, primarily to monitor and predict disease occurrence (Mavragani & Ochoa, 2019). Various studies have used Google Trends to obtain data on online research by the general population over time and geographical regions, mainly to explore seasonal patterns through time series analysis or to produce cross-sectional studies (e.g., Nuti et al., 2014). Furthermore, it was the principal source of data in various studies regarding the relationship between mental health and the COVID-19 pandemic (Adam-Troian et al., 2022; Burnett et al., 2020; de la Rosa et al., 2022; Misiak et al., 2020; Monzani et al., 2021; Silverio-Murillo et al., 2021; Sinyor et al., 2020; Sycińska-Dziarnowska et al., 2021).

Google Trends data are expressed in relative search volume (RSV), defined with the following process:

1. Each data point is divided by the total searches of the geography and time range it represents to compare relative popularity. Otherwise, places with the most search volume would always be ranked highest.
2. The resulting numbers are then scaled on a range of 0–100 based on a topic's proportion to all searches on all topics.
3. Different regions that show the same search interest for a term do not always have the same total search volumes (Google, 2022a, 2022b).

Therefore, we used Google Trends to explore the trend of online and in-person psychological support queries before and during the pandemic. We conducted our search on Google Trends following the indications provided in the methodology framework by Mavragani and Ochoa (2019).

The search terms we analysed were 'psychologist online', 'psychological online' and 'psychotherapy online'. Given that Google Trends does not provide translation for the searched words, we choose to use the Italian language, as Italy was the context of our study. The Italian form was as follows:

psicologo online + psicologico online + psicoterapia online

Each term in the search string was added without quotation marks, because we decided to broaden the search of different combinations of words, given the use of those expressly inserted. The word 'online' was present in each input term to limit the research volume to any kind of psychological support as long as it was characterised by an online modality. Each combination of words was joined by the '+' operator to make the search as inclusive as possible.

Furthermore, we created a string of search terms that tried to include all terms related to searches for in-person psychological support, to compare with the previous string.

The string was composed of the terms 'psychologist near', 'psychological near', 'psychotherapy near' and 'psychologist local health unit'. We used the corresponding Italian words as follows:

psicologo vicino + psicologico vicino + psicoterapia vicino + psicologo asl

The words were written without question marks, to broaden the research. The term 'asl' refers to local health authorities, the regional services providing free healthcare support for the population. All words were connected with the '+' symbol, to obtain a single RSV representing the sum of each RSV for each word.

Regarding the time frame, given that Google Trends allows the user to personalise the dates of the research and provides weekly information, coherently with the objective of the study, we considered that:

1. the restrictions were adopted on 8 March 2020 (Week 8–14 March 2020);
2. the restrictions were abandoned entirely in March 2022 (Week 20–26 March 2022);
3. the study also aims to investigate the trend after the restrictions ended;
4. the last data available at the time of writing was updated for Week 13–19 November 2022; and
5. there are 140 weeks between 08 March 2020 and 13 November 2022.

Thus, we decided to download the data regarding all the weeks from 02 July 2017 to 13 November 2022. The key time frames were as follows:

1. Pre-pandemic period: We considered an equal period of 140 weeks before the lockdown (i.e., 8 March 2020), from 2 July 2017 to 7 March 2020, as a pre-pandemic comparison. This approach aligns with methodologies adopted in previous research (Hoerger et al., 2020; Misiak et al., 2020; Monzani et al., 2021; Silverio-Murillo et al., 2021; Sinyor et al., 2020; Sycińska-Dziarnowska et al., 2021), providing a robust pre-event trend analysis.
2. Start of the lockdown period: The restrictions were initiated on 8 March 2020 at a national level.
3. Time since the lockdown: We extended our investigation to capture the trend after the lockdown, with data leading up to Week 13–19 November 2022. The restrictions were abandoned entirely in March 2022 (Week 20–26 March 2022).

As mentioned before, regarding the same string of research, Google Trends allows access to data stratified by geographical location. We decided to acquire information on the RSV for both online and in-person psychological support for each Italian region during and after the lockdown to investigate possible regional differences. Due to Google Trends' inability to compare two different strings of research over time at a regional level, the selected time frames for regional analysis were as follows:

1. Lockdown period: from 1 February 2020 to 31 May 2020, representing the most stringent phase of lockdowns across regions. While the nationwide lockdown commenced in March and concluded in early May 2020, we found it necessary to modify our research time frame to precisely assess the comprehensive effects of the most stringent lockdown measures on the studied areas. This adjustment was required due to regional variations in the initiation and termination of these restrictions.
2. Post-lockdown period: from 1 February 2021 to 31 May 2021, representing the situation 1 year after the most stringent phase of lockdown.

2.1 | Statistical analysis

First, we performed a descriptive analysis of our data set that consisted of decomposing the time series for both the queries, showing the observed, the trend, the seasonality and the random component of each time series. The observed component consists of visualising the data as retrieved; the trend component identifies the long-term direction of the object; the seasonal component measures the periodical fluctuation due to the calendar-related movements, and the random component measures the unsystematic short-term fluctuations.

We visualised the time series through a scatter plot, and we performed Pettit's test, a nonparametric test that requires no assumption about data distribution. Pettit's test is an adaptation of the Mann–Whitney test that allows us to identify the time when the shift occurs.

To explore relationships between searches and events (lockdown and economic bonus), we decided to adopt an interrupted time series model, as the data obtained met the criteria to fit such a model: there is a clear difference between pre- and post-lockdown trends; the outcome rapidly changed once the restrictive measures were set in place; it was possible to retrieve data before the event.

Lastly, we detailed the data concerning regional variations during the lockdown and 1 year post-restrictions. Owing to the nature of Google Trends' geographical information, a statistical comparison of data from differing time periods was unfeasible. We conducted a descriptive analysis, emphasising the proportional difference between searches for online psychological support and those for traditional in-person services. A geographical map was created to visually show the differences between regions. We assigned a different colour to each query; the intensity of the colour assigned to the region shows the relative research volume in the period previously identified. If no data were available for a region, it was left with no colour.

The data retrieved from Google Trends were in .csv format; all the analyses were conducted with RStudio running R version 4.2.2.

2.1.1 | Detailed model description

First, the multiple interrupted time series model was designed as follows (1):

$$Yt = \beta 0 + \beta 1T + \beta 2D + \beta 3P + e \tag{1}$$

where Yt represents the dependent variables, identified with the RSV of each query, T is a continuous variable that indicates the time since the first observation was collected, D is a dummy variable indicating observations collected before (value = 0) and after (value = 1) the lockdown and P is a continuous variable indicating the time passed from the lockdown (set equal to 0 before the lockdown). Coefficients of each independent variable represent the baseline level of the RSV (β0), the slope of the line before the lockdown (β1), the immediate effect of the restrictions (β2) and the difference between the slope of the line before and after the lockdown (β3). Significance levels were set at $p < .05$.

The interrupted time series model can potentially lead to some issues regarding the time series themselves. First, we had to assess whether these data were autocorrelated. Indeed, we performed an autocorrelation test (ACF). Second, the time series can be affected by seasonality. To address the possible seasonality pattern, we adjusted the model for seasonality, subtracting the seasonality component from the decomposed time series for each query; then, we repeated the interrupted time series analysis with the data adjusted for seasonality.

As mentioned in the introduction of this study, in February 2022, the Italian government introduced an economic bonus for psychological support that attracted a lot of public attention (Legge n.15, 25 February 2022), and attention remained high for the following months, given the fact that the law did not come into effect until May (Ministero della Salute, 2022).

Therefore, we decided to update the interrupted time series model considering this public health intervention, in an attempt to perform a more accurate analysis. The new model was expressed as follows (2):

$$Yt = \beta 0 + \beta 1T + \beta 2D1 + \beta 3P1 + \beta 4D2 + \beta 5P2 + e \tag{2}$$

where D1 and D2 represent dummy variables, indicating observations collected before (value = 0) and after (value = 1) the lockdown and the public health intervention, respectively; for the D2 variable, we allocated a value of 1 beginning from 2 May 2022, marking the time frame when the bonus initiative entered the public's awareness. P1 and P2 represent continuous variables, indicating the time (in months) since the events occurred. The others were set as in the previous model.

To assess the robustness of the model, we performed the following sensitivity analysis: we created a scatter plot of deviance residuals vs. time, ideally showing a band of points with no specific pattern over time; we tested the model for partial autocorrelation of the time series, estimating the degree of correlation between nearby months, expecting no autocorrelation to remain.

3 | RESULTS

3.1 | Descriptive statistics

We assessed Google Trends data from the period between 2 July 2017 and 19 November 2022 for the selected search queries, as displayed in Figures 1 and 2.

It can be visually assessed that a shift occurred around March 2020, coinciding with the start of the restrictions. The RSV for psychological support through an online modality showed an increase while the RSV for psychological support through an in-person modality decreased. Coherently, Pettit's test for single-point detection confirmed the supposition that, at the time of the lockdown, a shift in data occurred, identifying the change between February 2020 and March 2020 (p-value < .001).

Next, we decomposed the time series identifying the trend, the seasonality component and the random component (Figures 3 and 4). A seasonality pattern for both queries was recognised, allowing us to perform a sensitivity analysis with models adjusted for seasonality.

3.2 | Interrupted time series analysis

The results of the first interrupted time series analysis are shown in Tables 1 and 2. Regarding searches for the online modality of psychological support, it was found that the lockdown had an immediate positive effect on the RSV (p-value = .039) and a sustained positive and significant effect over time (p-value < .001). On the contrary, the restrictions had an immediate negative effect on the RSV for the in-person modality (p-value = .001), but as time passed and the restrictions were lifted, the RSV started to increase by 0.51 points per month, faster than before the lockdown.

As the RSV for the online modality of psychological support showed a significant positive trend since the lockdown, we tried to
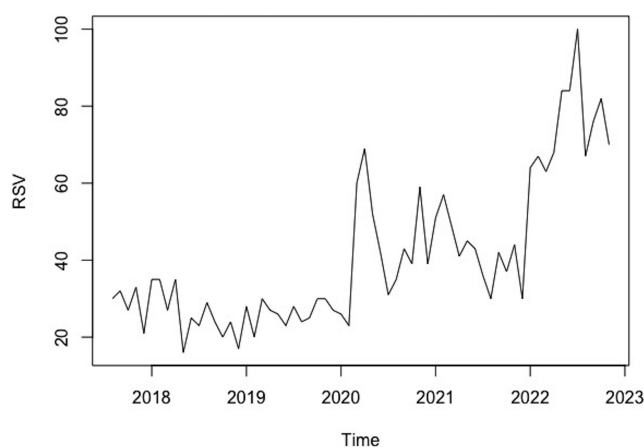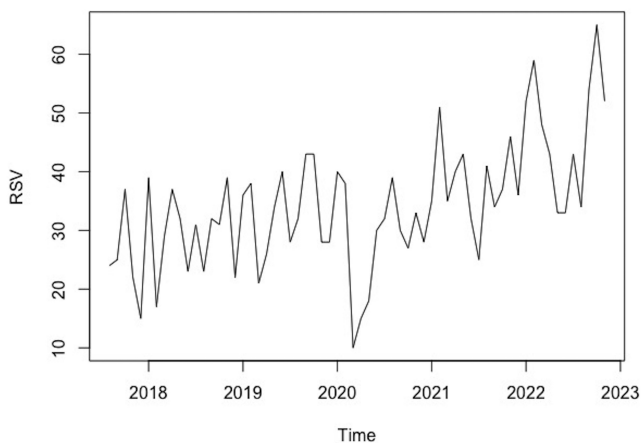

FIGURE 1 Relative search volume for the query 'psychologist online + psychological online + psychotherapy online' between 2 July 2017 and 19 November 2022 in Italy. *Source*: Google Trends.

investigate whether another event could have impacted the time series after the restrictions were lifted. As mentioned before, the public health initiative issued by the Italian government, commonly known as 'bonus psicologo', was considered in the updated version of the model.

Results of the interrupted time series analysis considering both events are shown in Tables 3 and 4.

The updated model showed that the lockdown still had a positive effect on the RSV for the online modality of psychological support (p-value < .001); the public health initiative adopted by the government also had a positive effect on the same RSV (p-value < .001). Regarding searches for the in-person modality of psychological help, the lockdown (p-value = .001) and the time since the lockdown (p-value = .028) significantly influenced the RSV as in the precedent

model, while the economic bonus for psychological support had no significant impact on the RSV.
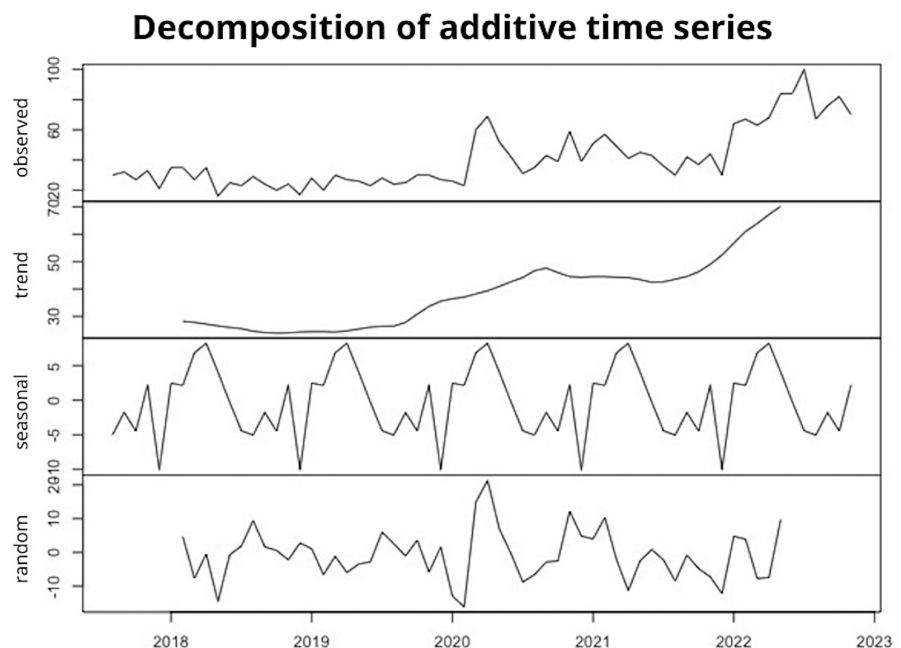
Next, we performed the same analysis adjusting data for seasonality. Results can be found in Appendix S1. Regarding the online modality of psychological support, the seasonally adjusted updated version of the model still confirmed both events, the lockdown (p-value < .001) and the public health initiative (p-value = .001), to be significantly positively correlated with the RSV. Moreover, the time since the economic bonus was declared was associated with a positive sustained effect of the measure on the RSV (p-value = .02). On the contrary, the seasonally adjusted interrupted time series analysis regarding the in-person modality of psychological support did not identify relevant differences with the non-adjusted model.

All the sensitivity analyses previously described were performed; complete results can be found in Appendix S2. The scatter plots of deviance residuals over time for both original queries did not appear to have a visually recognisable pattern, as we expected. Partial autocorrelation of both time series was plotted, failing to identify a significant partial autocorrelation between RSVs over time, as expected.

3.3 | Geographical differences

The regional differences in the RSV between searches relating to the online modality and the in-person modality of psychological support are shown in Figures 5 and 6.

Data showed that during the lockdown, the prevalence of searches for the online modality was higher in each Italian region where data were available. These data were consistent with the results of the interrupted time series analysis, which positively correlated the lockdown with an increased RSV for online psychological support. One year after the lockdown, the RSV for the in-person modality for psychological support increased in most regions in

FIGURE 2 Relative search volume for the query 'psychologist near + psychological near + psychotherapy near + psychologist local health unit' between 2 July 2017 and 19 November 2022 in Italy. *Source*: Google Trends.

FIGURE 3 Time series for psychological support query (online modality). Observed, trend, seasonality and random component displayed.
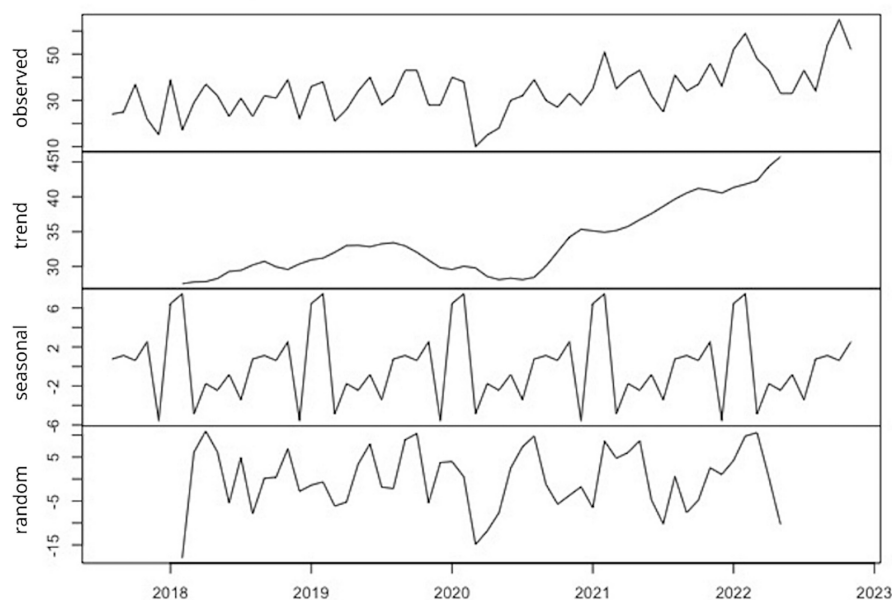
Decomposition of additive time series

FIGURE 4 Time series for psychological support query (in-person modality). Observed, trend, seasonality and random component displayed.

TABLE 1 Interrupted time series analysis for the online modality of psychological support.

Dependent variable: RSV for online psychological support			
	B	**95% CI**	**p-value**
Time	−0.13	−0.59; 0.33	.57
Start of the lockdown	12.00	0.61; 23.38	**.039**
Time since the lockdown	1.19	0.57; 1.8	**<.001**
(Intercept)	28.55	20.16; 36.93	<.001

Note: Bold denotes a signicant *p*-value (< 0.05).

Abbreviations: B, unstandardised beta; CI, confidence interval; RSV, relative search volume.

TABLE 2 Interrupted time series analysis for the in-person modality of psychological support research.

Dependent variable: RSV for in-person psychological support			
	B	**95% CI**	**p-value**
Time	0.36	0.04; 0.68	**.03**
Start of the lockdown	−13.65	−21.63; −5.67	**.001**
Time since the lockdown	0.51	0.57; 1.8	**.022**
(Intercept)	24.92	19.04; 30.80	<.001

Note: Bold denotes a signicant *p*-value (< 0.05).

Abbreviations: B, unstandardised beta; CI, confidence interval; RSV, relative search volume.

relation to the RSV for the online modality. In particular, in Puglia, Piemonte, Toscana, Sardegna and Lazio e Campania, searches for the in-person modality were higher than the online modality; in Emilia Romagna, Lombardia e Veneto, there has been an increase in the percentage of searches for in-person psychological support compared with the lockdown period, even though searches for the online modality were still the most prevalent at this time. On the contrary, in Abruzzo, Calabria and Sicilia, the online modality represented the preferred modality of web searches for psychological support in both periods. It was not possible to determine how the absolute number of searches for the two queries changed a year after the lockdown because RSVs were calculated by Google Trends for the time frame of each input on different total search volumes.

To better assess the differences among Italian regions, the geographical map provided by Google Trends allowed us to visually identify where searches for the online modality of psychological support were higher in comparison with the in-person modality (Figures 7 and 8).

4 | DISCUSSION

The objective of this study was to investigate how the COVID-19 pandemic impacted the level of interest among the Italian population regarding psychological support. The study aimed to compare the public interest in both online and in-person psychological support and analyse the relationship between interest in psychological support, the lockdown and the economic public health initiative known as 'bonus psicologo'. Moreover, the study aimed to explore potential differences in interest towards online or in-person modalities across Italian regions during and after the restrictions.

Using web-based search interest as a proxy for the public's attention towards a specific topic, we found that the lockdown impacted the search for psychological support. This is consistent with emerging evidence from the literature, which confirmed that mental health has been deeply affected by the restrictions (Bonati et al., 2022; di Fazio et al., 2022; Luo et al., 2020; Mohler-kuo et al., 2021; Munk et al., 2020; Pisano et al., 2021; Salari et al., 2020). Moreover, the

TABLE 3 Interrupted time series analysis for the online modality of psychological support, considering the economic bonus.

Dependent variable: RSV for online psychological support			
	B	**95% CI**	**p-value**
Time	−0.13	−0.47; 0.21	.444
Start of the lockdown	26.22	16.80; 35.64	**<.001**
Time since the lockdown	−0.33	−0.97; 0.30	.296
Economic bonus for psychological support	30.58	17.12; 44.03	**<.001**
Time since economic bonus for psychological support	1.46	−0.48; 3.41	.136
(Intercept)	28.55	22.31; 34.79	**<.001**

Note: Bold denotes a signicant *p*-value (< 0.05).

Abbreviations: B, unstandardised beta; CI, confidence interval; RSV, relative search volume.
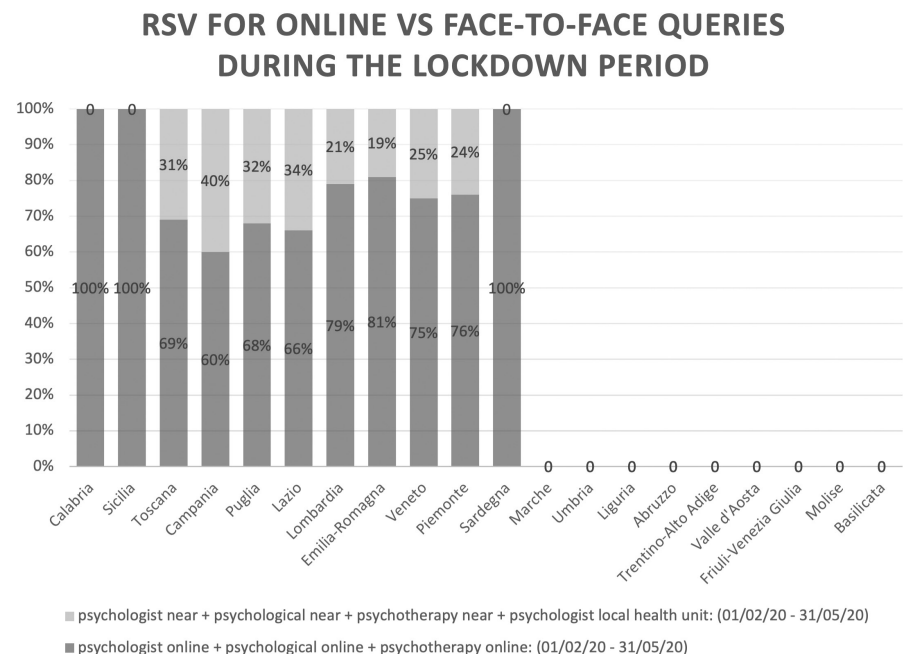
TABLE 4 Interrupted time series analysis for the in-person modality of psychological support, considering the economic bonus.

Dependent variable: RSV for in-person psychological support			
	B	**95% CI**	**p-value**
Time	0.36	0.04; 0.69	**.029**
Start of the lockdown	−15.27	−24.25; −6.29	**.001**
Time since the lockdown	0.68	0.08; 1.28	**.028**
Economic bonus for psychological support	−2.64	−15.46; 10.19	.682
Time since economic bonus for psychological support	−0.29	−2.14; 1.56	.754
(Intercept)	24.92	18.97; 30.87	**<.001**

Note: Bold denotes a signicant *p*-value (< 0.05).

Abbreviations: B, unstandardised beta; CI, confidence interval; RSV, relative search volume.

FIGURE 5 Relative search volume for online versus in-person queries during the lockdown stratified by region. *Source*: Google Trends.

RSV FOR ONLINE VS FACE-TO-FACE QUERIES DURING THE LOCKDOWN PERIOD

■ psychologist near + psychological near + psychotherapy near + psychologist local health unit: (01/02/20 - 31/05/20)
■ psychologist online + psychological online + psychotherapy online: (01/02/20 - 31/05/20)

limitations during the lockdown and the suggestion of limiting in-person interactions could have contributed to a decreasing interest of the general population in traditional in-person therapy, as shown by the rapid decrease in the RSV for the searches on in-person psychological support. When the restrictions were in place, we observed an emerging interest in the online modality of psychological support, which has also been reported by other studies (Alqahtani et al., 2021; Appleton et al., 2021; Barnett et al., 2021; de Albornoz et al., 2022; Strudwick et al., 2021). Even if these studies used a different approach to obtain information on the impact of telemedicine consultation regarding psychological support, telehealth does represent a potentially useful tool for psychological support.

During the significant shift towards telemedicine amid COVID-19, Italy rapidly adapted. Major Italian platforms, such as Unobravo,

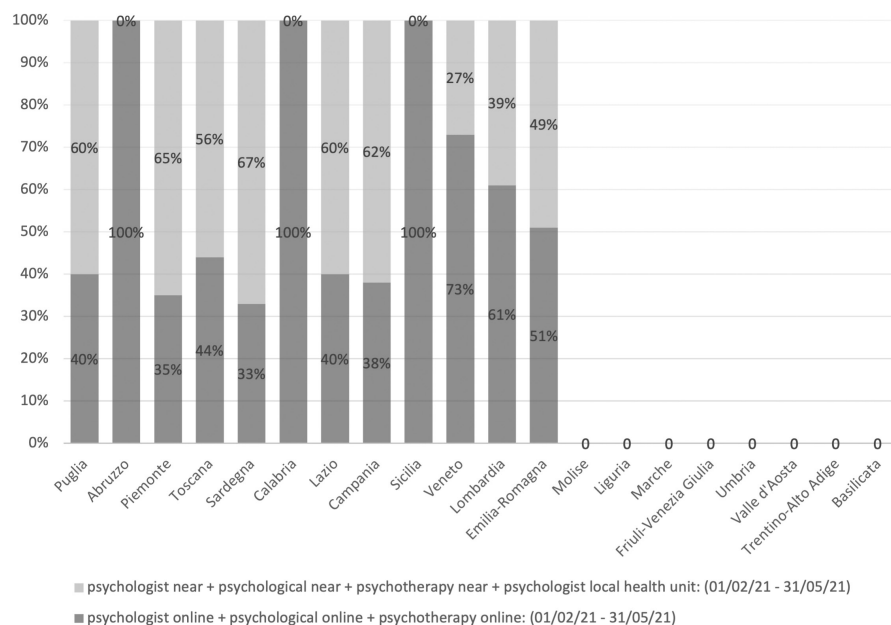**RSV FOR ONLINE VS FACE-TO-FACE QUERIES (1 YEAR AFTER THE LOCKDOWN)**

■ psychologist near + psychological near + psychotherapy near + psychologist local health unit: (01/02/21 - 31/05/21)
■ psychologist online + psychological online + psychotherapy online: (01/02/21 - 31/05/21)

FIGURE 6 Relative search volume for online versus in-person queries 1 year after the lockdown. *Source*: Google Trends.

FIGURE 7 Prevalence of relative search volume regarding the online modality (in blue) versus the RSV regarding the in-person modality (in red) of looking for psychological support during the lockdown (February 2020–May 2020). *Source*: Google Trend.
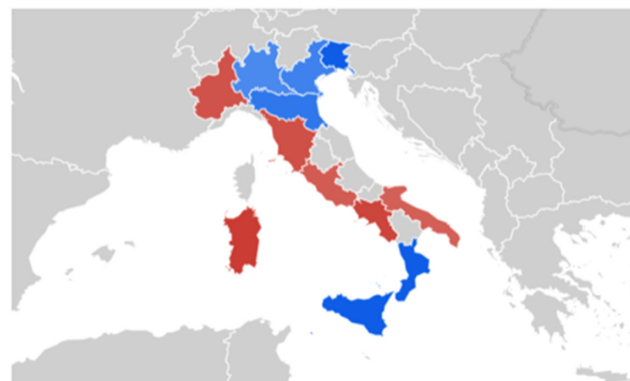

FIGURE 8 Prevalence of the relative search volume regarding the online modality (in blue) versus the RSV regarding the in-person modality (in red) of looking for psychological support a year after the lockdown (February 2021–May 2021). *Source*: Google Trend.

Serenis, Therapychat and Psicologo4u, emerged between 2019 and 2021. These platforms epitomise the swift global transition to digital mental health solutions. Their extensive promotion on social media and the internet played a critical role in shaping the public perception and acceptance of online psychological services and of the 'bonus psicologo' itself, supporting the patient through all the administrative procedures (Margherita et al., 2023).

Accordingly, our analysis showed that the trend of the RSV regarding searches for the online modality of psychological support has been positively affected not only by the restrictions but also by the public health economic measure issued by the Italian government to support the emerging need for psychological support in the general population, commonly referred to as 'bonus psicologo'. Our

study helped to assess the public interest towards this economic measure. Indeed, we cannot know from Google Trends data whether the increase in searches was due to the influence of online media (online newspapers, blogs and videos) or to an augmented need for psychological support, but the fact that the Ministry of Health received more than 390,000 requests to be eligible for the economic incentive (Gagliardi & Landolfi, 2022) strongly suggests a state of psychological distress in the population, therefore making our web search a valid proxy for the psychological interest of the population towards online therapy. Thus, this study helped to broaden the knowledge about the use of Google Trends, which has proven to be a valuable tool for monitoring interest in public health measures, in line with the literature evidence (Mavragani & Ochoa, 2019).

Interestingly, the absence of a significant effect of time since the lockdown on the RSV for the online modality in the updated model may suggest that the economic bonus had a greater impact on the RSV than the time factor. This evidence, however, did not apply to the in-person model which, in the updated version, did not identify a correlation between the RSV and the economic bonus. One explanation of this finding could be that in-person psychological support typically presents more issues in terms of accessibility and session availability, a problem that a bonus may not easily overcome. Hence, the economic bonus for psychological support may not have a significant impact on the RSV for in-person modality. On the contrary, online psychological support is more flexible and accessible, and the economic bonus may be a more influential factor in attracting individuals to use this modality.

Regarding the regional differences, this study provided a descriptive analysis of the RSV for both searches during the lockdown and a year after the restriction ended, showing a resurgence of searches related to in-person psychological support once the restrictions were lifted.

However, as highlighted in Figure 6, in some regions, the RSV for the online modality of psychological support remained prevalent even 1 year after the lockdown. This evidence cannot be explained only by Google Trends data; still, several possible theories explaining this finding can be considered. One reason could be that individuals in those regions may have found online support more convenient and accessible than in-person support. Online support can be accessed from anywhere with an internet connection, which could be particularly helpful for those who live in remote or rural areas, or those who have mobility issues or transportation barriers (Thomas et al., 2009). Another possible explanation could be found in regional differences in the quality of mental health services offered (Spandonaro et al., 2021). Additionally, some people may prefer the anonymity and privacy that online support can offer, especially if they feel more comfortable discussing sensitive or personal issues behind a computer screen rather than in person (Appleton et al., 2021; Strudwick et al., 2021). Finally, the ongoing COVID-19 pandemic may have also contributed to the continued prevalence of online support, as some individuals may still feel hesitant to attend in-person sessions due to concerns about the risk of infection (Bagarić & Jokić-Begić, 2022). Other studies should be encouraged with different sources of data to better explain these findings and delve into this issue.

It is pertinent to mention the evolving landscape of psychological care in Italy, particularly the introduction of 'primary care psychologists' across various regions (DDL n.1140, 08 May 2023, DDL n.102, 2022). While this development signifies a progressive step in bolstering mental health support within primary care settings, its impact remains to be quantitatively assessed. This initiative, implemented after our data collection phase, suggests a promising direction for future research. Subsequent studies could provide valuable insights by investigating the initiative's influence on public interest and attitudes towards seeking psychological support, potentially revealing shifts in preferences between online and in-person therapies. Such explorations would be timely, contributing to a deeper understanding of how systemic and policy changes in mental health care provision resonate with the public's needs and preferences, especially in a post-pandemic era.

There are several limitations to consider when interpreting the results, mainly regarding our data source. First, the study relied on data retrieved in a specific time frame. Different results might have been found if data from a longer period were considered.

Second, Google Trends' presentation of search interest is confined to relative terms, significantly restricting the depth of our analysis. This limitation hinders our ability to perform a more nuanced, context-rich interpretation of regional behavioural disparities and trends over the specified periods. Moreover, data cannot be stratified for sociodemographic factors, as Google Trends does not provide users' information, not even in aggregate form.

Third, the search queries were made using Italian terms, not allowing this study to be reproduced outside Italy. In the case of translation, a comprehensive understanding of each language is required to ensure the equivalence of critical concepts of the search queries. However, with the Italian population being the focus of our research, this limitation did not affect our conclusion.

Finally, this study relied only on Google Trends data in comparing the time trends regarding the modality of psychological support being searched for. Even though more than 90% of internet searches are made through the Google search engine in Italy (StatCounter, 2022), we recognise that other platforms, such as Twitter or other social media platforms, could have been used to monitor the public perception.

Given the observational design of our study, we cannot establish cause–effect relationships of the main events considered in the model, the lockdown and the public health economic incentive for those seeking psychological support, even if we did not identify other concurrent events. Hence, we left our conclusions at the association level.

5 | CONCLUSIONS

The present study was the first work that explored the public interest towards the online and in-person modalities of psychological support using Google Trends. According to our main results, the lockdown and the economic support for psychological needs had a positive impact on the RSV regarding the online modality of psychological support, while the lockdown had a negative impact on the RSV regarding the in-person modality. Moreover, our study highlighted the return to higher levels of interest towards psychological support, both online and in person, compared with the situation before the COVID-19 pandemic. It is worth noting that, coherently with our findings, Google Trends should be considered a valid data source to monitor changes in the interest of the general population when identifiable events, such as the lockdown and the economic incentive for psychological support, occur.

Our findings should be used alongside the evidence provided by different data sources, to better assess the quality of Google Trends

data in public health crises like the COVID-19 pandemic. Additional research should be encouraged to compare our findings with real epidemiological data and broaden the research queries adopted in this study.

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CONFLICT OF INTEREST STATEMENT

All authors certify that they have no affiliations with or involvement in any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

ORCID

Giuseppina Lo Moro https://orcid.org/0000-0002-9472-3263
Conrado Francesco https://orcid.org/0000-0001-7555-2449

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AUTHOR BIOGRAPHIES

Giuseppina Lo Moro is a research fellow in public health at the University of Turin. Her main research interests are public mental health, vaccine hesitancy and digital health.

Scaioli Giacomo is an assistant professor of public health at the University of Turin. His main research interests are digital health, health communication and healthcare organisation.

Conrado Francesco is a first-year medical resident in hygiene and public health at the University of Turin.

Linot Carola is a first-year medical resident in hygiene and public health at the University of Turin.

Bert Fabrizio is full professor of public health at the University of Turin. His main research interests are digital health, mental health, vaccinology and healthcare organisation.

Siliquini Roberta is full professor of public health at the University of Turin. Her main research activities are vaccine hesitancy, health communication and digital health, healthcare organisation and evaluation.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.