

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Global Monitoring of Public Interest in Preventive Measures against COVID-19 via Analysis of Google Trends: An Infodemiology and Infoveillance Study
AUTHORS	ITO, TOMOO

VERSION 1 – REVIEW

REVIEWER	Gianfredi, Vincenza Vita-Salute San Raffaele University
REVIEW RETURNED	15-Feb-2022

GENERAL COMMENTS	<p>The manuscript covers an important topic: the long term effect of internet search regarding COVID-19 preventive measures. The manuscript is well written and well organized. My minor suggestions are:</p> <ol style="list-style-type: none">1: How did the authors overcome the issue related to the different languages of search? Authors did not focus only on English-based countries, however, they reported only the keywords in English. Did they take into account that internet search of English terms may be lower in countries where English is not the main language? If yes, please add it to the text.2. In the limits section, the Authors should also consider that internet access is not equally distributed globally. Moreover, the language should be also considered.3. In the discussion, the Authors should better explain the public health impact of their results. Why are they important and in which terms they can be used by policymakers.
-------------------------	---

REVIEWER	Strzelecki, Artur University of Economics in Katowice, Informatics
REVIEW RETURNED	17-Mar-2022

GENERAL COMMENTS	<p>The subject of the paper "Global Monitoring of Public Interest in Preventive Measures against COVID-19 via Analysis of Google Trends: An Infodemiology and Infoveillance Study" is timely and valuable to the audience of the BMJ Open. The researcher presented results from Google Trends, checking five topics ("coronavirus", "wash hand", "social distancing", "hand sanitizer", and "mask") in 196 countries.</p> <p>Overall, the paper is well structured, reads quite well, and covers the existing literature quite well. The analysis of the data is interesting and well documented. However, in my view, some minor amendments are required prior to publication.</p> <p>On page 3, line 41, the author states "this year" and then describes five studies from the 2020 year about Google Trends and coronavirus data. It is not clear to which year the author refers. Referring to the 2020 year, it supposes to cover also the very first studies on coronavirus/covid-19 and Google Trends data. To name a few: DOI: 10.1016/j.bbi.2020.04.042 , DOI: 10.1016/j.bbi.2020.05.005 , DOI:</p>
-------------------------	--

	<p>10.3991/ijoe.v16i04.13531</p> <p>I'm not sure how the data was collected? Did the author make a query every week with a setting for all countries? Standard Google Trends settings return one value for one country in a period of time.</p> <p>Figures 1 to 3 presented in the end have the following notice "Powered by Bing, Australian Bureau of Statistics, GeoNames, Microsoft, NavInfo, TomTom, Wikipedia". Yet, on page number 5, line 28 is information that all figures were created with the use of Microsoft Excel. Please be more precise, what was where created and whether graphs belonging to the companies as mentioned earlier are used with permission.</p>
--	--

VERSION 1 – AUTHOR RESPONSE

Comments from Reviewer Dr. Vincenza Gianfredi, Vita-Salute San Raffaele University

Comments 1: How did the authors overcome the issue related to the different languages of search? Authors did not focus only on English-based countries, however, they reported only the keywords in English. Did they take into account that internet search of English terms may be lower in countries where English is not the main language? If yes, please add it to the text.

Response: Thank you for pointing this out. I used the topic search results because of their impact on the search frequency in countries where English is not the native language. The topics are a group of terms that share the same concept in any language, and they are displayed below the search terms. For example, when we searched for the topic "London," the search included results for topics such as the "Capital of the UK" and "Londres," which is "London" in Spanish. Results of the topic search are reported as the frequency of searches for all included keywords that refer to the same concept, regardless of the language in the specific countries. This method allowed us to understand the situation on a global level, including in countries where English is not the native language.

I have made the following changes on pages 7, lines 127-135, to clarify this comment.

“For international comparisons among countries using different languages, topic searches are useful. Topics are a group of terms that share the same concept in any language, and they are displayed below search terms. For example, when we searched the topic "London," the search provided results for topics such as the "Capital of the UK" and "Londres" (Spanish), which is "London". This study used topic searches using keywords in 196 countries, and the results of the topic searches are reported as the frequency of searches for all included keywords that refer to the same concept, regardless of the language in the specific countries. This method allowed us to understand the situation on a global level, including in countries where English is not the native language.”

Comment 2: In the limits section, the Authors should also consider that internet access is not equally distributed globally. Moreover, the language should be also considered.

Response: Thank you for your important comment. Differences in internet access must be taken into consideration. Therefore, that is a limitation of this study. However, the sustainability of the search term "coronavirus" was uniform in almost all countries. It reflects

the widespread use of the Internet, which allowed for a worldwide consideration. The problem of differences in languages was solved by using topic search, which detects the search volume for the same concept, regardless of the language differences.

I have included the following explanation in the limitation section, page 23, lines 394-404.

“This study had some limitations. First, differences in the levels of internet availability may have affected the results. Second, the percentage of Google users may have affected the global-level evaluation of public interest using Google Trends. A typical example is the extreme low share of Google as a web search engine in China, given that they may have used other search engines and hence did not use Google.[41] Therefore, Google Trends is not a suitable tool for understanding trends in countries such as China; the results of these countries should be interpreted based on this prior knowledge. Although it is necessary to consider these differences to interpret the results globally, the sustainability of the search term “coronavirus” was uniform in almost all countries because of the consistent volume of internet searches from almost all countries and regions throughout the study period. This suggests that the global spread of the tools used in this study was sufficient to grasp global trends.”

Comment 3: In the discussion, the Authors should better explain the public health impact of their results. Why are they important and in which terms they can be used by policymakers.

Response: I agree with this important comment. The addition of a public health impact adds very important value to this paper. I have incorporated your suggestion on Pages 22, lines 389-393, as follows:

“The COVID-19 pandemic caused damage and impacted people’s lives worldwide. The study results showed that people’s interest in preventable measures against infectious diseases increased in most countries. This unprecedented opportunity should be maximized by policymakers, and appropriate policies should be implemented to maintain the increased interest in preventable measures, which will lead to future infectious disease control.”

Comments from Reviewer 2: Dr. Artur Strzelecki, University of Economics in Katowice

Comment 1: On page 3, line 41, the author states “this year” and then describes five studies from the 2020 year about Google Trends and coronavirus data. It is not clear to which year the author refers. Referring to the 2020 year, it supposes to cover also the very first studies on coronavirus/covid-19 and Google Trends data. To name a few: DOI: 10.1016/j.bbi.2020.04.042 , DOI: 10.1016/j.bbi.2020.05.005 , DOI: 10.3991/ijoe.v16i04.13531].

Response: Thank you for pointing this out. I agree with this point. I have included some very first studies in the reference on page 5, line 92-93, including your suggestion. Additionally, I changed “this year” on page 5, line 91, to “Since the Pandemic Declaration by WHO in 2020” because the intention here was to cite papers published after the Pandemic Declaration by WHO.

Comment 2: I’m not sure how the data was collected? Did the author make a query every week with a setting for all countries? Standard Google Trends settings return one value for one country in a period

Response: Thank you for your important question. My explanation was insufficient. In this study, I obtained data on the trends in a defined period and calculated the sustainability of each topic within one country or region and then examined the differences in the trends and sustainability of the topics between countries and regions. A detailed description of the data acquisition process has been added on page 7, lines 138-143 as follows:

VERSION 2 – REVIEW

REVIEWER	Strzelecki, Artur University of Economics in Katowice, Informatics
REVIEW RETURNED	01-Jun-2022
GENERAL COMMENTS	Thank you very much. All of my previous comments were correctly addressed. Thank you very much for clarifying how the data was collected. I think that the manuscript has been significantly improved. I wish you good luck in your future work.