The Study of Google Search Trends for an Effective Communication during COVID-19 Pandemic

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Abstract

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Abstract

Internet could be effectively used by the media outlets for risk and outbreak communication in the current crisis. The news stories and videos must be tagged keeping the search terms of people in consideration. This audience-centric approach may be used to supply people with more credible information and guidelines time-to-time. This article analyses the keywords used by the public to search the content related to pandemic so that media outlets may produce and disseminate the related content accordingly via their digital platforms. A paired sample t-test was used to compare Google News and YouTube searches on selected keywords related to COVID-19.

Keywords: COVID-19, novel coronavirus, Google Trends, outbreak communication, pandemic

Background & Introduction

COVID-19 is one of the most emerging topics of research in the world now. The scientific community is yet to unveil many things about the new virus. The COVID-19 (Coronavirus infectious disease- 2019) is caused by SAR-CoV-2, a virus belonging to the family of Coronaviruses. Started from China, according to World Health Organisation (WHO) a "pneumonia of unknown cause detected in Wuhan, China was first reported to the WHO Country Office in China on 31st December 2019." (WHO, 2020). According to South China Morning Post, as per the Chinese Government data the first Covid-19 case in China can be traced to November 17, 2019.

Virus become a global problem on 13th January, 2020 after a case was recorded in Thailand before, South Korea and the United States (Amos, 2020). Since then the virus has been spreading like wildfire across the globe.

World Health Organisation announced COVID-19 a Public Health Emergency of International Concern on 30th January, 2020. The virus spread so fast that within less than month-and-a-half, the WHO declared COVID-19 as a pandemic on 11th March, 2020. Replacing Wuhan in China, Europe was declared as the new epicenter of pandemic on 13th March, 2020 by WHO (WHO, 2020)

The pandemic has been posing a direct threat to the entire science and technology-driven society. Since there is no antidote for the treatment of novel coronavirus for now, therefore there are only some important precautionary measures to be taken by authorities and the people across the globe which are time and again communicated through news media. Among them lockdown, physical distancing, self-isolation or quarantine, testing and hand wash are important to mention.

The COVID-19 pandemic has spread to all corners of the globe (McCarthy, 2020). With more than half-a-million cases recorded in United States till 12th April, 2020, the virus has spread to around 185 countries in the world. United States is followed by Spain, Italy, France, Germany, China, United Kingdom, Iran and Turkey. Further, according to the data retrieved from the Johns Hopkins University & Medicine Corona Resource Centre on 12th April, 2020 at 12 noon (according to Indian Standard Time), India ranked 22 in the world with 8446 positive cases and 288 deaths due to novel coronavirus.

The first positive case of COVID-19 in India was recorded on 30th January, 2020 in Kerala (The Economics Times, 2020). According to government data retrieved on 12th April at 11:40 A.M. Maharashtra leads in India with 1574 cases followed by Delhi with 903 cases of COVID-19. Nagaland is the only state in India where no case has been recorded so far ("Government of India", 2020). India has put in place many measures like lockdown, physical distancing measures and others to contain the spread of virus. Indian government announced a 21-day nationwide lockdown on 25th March, 2020. The lockdown was further extended for more than two weeks till 3rd May, 2020(The Indian Express, 2020). Despite taking all these majors across globe, the cases of novel coronavirus are intensifying each passing day.

Importance of Risk and Outbreak Communication

In view of absence of any antidote, the only and the most effective tool available with the authorities to contain the spread of virus is building trust for risk and outbreak communication. On the other side, apart from the direct threat of death, the virus has been posing an indirect threat to structure of the society. For example; according to the WHO, "social distancing" (actually "physical distancing") remains prevalent construct to contain the spread of virus(WHO, 2020). The sociological question is what it actually means by "social distancing". The misunderstanding of the idea of "social distancing" the way it seems to have been used may lead the world to the worst. In social psychology, "social distancing" has negative connotations.

In sociological perspective, the indirect threat is invisible but more grave challenging the whole idea of a society. The sociological problem is that humans have started spying each other as possible threat and carrier of virus and have started generalizing all the humans as Covidiots (a person who ignores the warnings regarding public health and safety).

Meanwhile, the other major problems faced by the authorities are that people have not been obeying the orders of lockdown and physical distancing strictly. As is evident from the research, public in major parts of the world is finding it very difficult to change its behviour towards accepting the new norms of lockdown, physical distancing and quarantine(Kumar, 2020).

Further, people have been concealing the travel history may be due to a trust deficit. Nothing but strategic communication may help in bridging this trust deficit, and effectively and consistently update the people about the do's and don'ts during the pandemic. Media plays an important role in information dissemination, social mobilisation and behavioural changes (UNICEF, 2005). The body of literature, according to its agenda setting function, suggests that media have a significant if not unlimited effect on the attitudes and behaviour of the audiences. (Neuman and Gugeheim 2009). As per the function of media is concerned according to this central theory of media effects, it becomes cardinal for media to produce and disseminate the digital content which could be successful in behavioural changes of the people related to the pandemic. It is media's responsibility to give utmost importance to the outbreak communication. The media has to provide significant time and space to the emerging health crisis. It has to prime the novel coronavirus news and repeat the same (McCombs& Shaw,1972).

We also assume that audiences in pandemic have been playing an active role in searching and reading the news content related to novel coronavirus. The study uses a bottom-up approach to understand how audiences are searching for particular information related to novel coronavirus. The article uses a audiences-centric approach for determining an agenda to be set by the media accordingly during the pandemic. The study evaluates how people are searching so that media could produce more news and videos using the same keywords which would be easily available and accessible digitally to the people across the globe.

History is evident that effective communication proved to be instrumental in containing the major risks posed to the society over time. The information dissemination to educate the public majorly depends on channels and methods of dissemination. (Crisis and Emergency Risk Communication: Communication Plan Implementation for a Sever Pandemic, (n.d.).

Pandemic has also effected printing and circulation of the newspapers in many parts of the world. Many newspapers across the globe have already stopped printing the hardcopies of their publications or editions. Many important newspapers have also stopped door-to-door delivery

of the newspaper across globe(Waterson, 2020). In such a case, the channels of information already have shrink due to the pandemic. In this regard, a new strategy to reach the public becomes imperative.

Using Thomas Abraham's (2011) tool of "understanding and effectively using Internet" for risk and outbreak communication, this article analyses the Google Trends for a better understating of people's search interest. The article analyses the most searched keywords related to the pandemic in the last four months beginning 17th November, 2019 to 10th April, 2020. 17th November, 2019 was treated as initial date as the first case in China is said to have been recorded on the same day(Ma, 2020).

Internet is an effective medium for transmitting the message to the public. It is an important channel connecting the communicators with audiences and vice-versa (Thomas Abraham, 2011). Web provides an 'alternate lines of knowledge' circulation where websites and blogs also challenged assessments by experts and authorities(Briggs & Nichter, 2009). The magnitude of a pandemic majorly depends on effectiveness of health risk communications(Vaughan & Tinker, 2009). Strategic communication is vital for behaviour change and trust building during a pandemic. The goals of communication during a pandemic should be "simple, straightforward and realistic". The responses and messages should be timely, relevant, accurate, credible, consistent, honest and appropriate, regular and relevant(Crisis and Emergency Risk Communication: Communication Plan Implementation for a Sever Pandemic, (n.d.).

Significance of the Study

Google News Trends have emerged as an importance source of information to study people's media usage behviour. The Google Trends also enables researchers to study users' information and health education needs. At the time of epidemics and pandemics, the audiences' information needs to gratify their requirements directly or indirectly can play an important role in containing the threats posed by the outbreaks.

What could be termed as cardinal during the outbreaks, Google Trends provides an opportunity to the authorities to understand the information needs of masses quickly and act accordingly. At a time when physical distancing is much needed, virtual networks and information through Internet plays an important role for a better informed public.

Keeping in view the above literature about the importance of mass media in informing the people through Internet about the pandemics, the study analyses the current trends and

keywords followed and searched by the people related to the current pandemic across the globe in general and India in particular. The study would help to analyse the tags and keywords, the online platforms across the world can use to optimize the search terms of their articles, news stories, videos and other content related to the novel coronavirus via search engines like Google and YouTube. The article would further help for a better understating of tags, keywords and SEOs for keeping the information related to the current pandemic readily available for the public via online platforms.

Optimization of all the communication tools and channels as per the search terms of netzines will be helpful in achieving the communication goals during the current pandemic. The Google Trends will be significant in revealing the effective usage of Internet to reach the people timely and provide people with health education.

Findings of the study will help to develop a broader understanding of people's perception as per their search terms about the current pandemic are concerned. This article analyses the keywords used by the public to search the content related to pandemic so that media outlets may produce and disseminate the related content accordingly via their digital platforms.

Such an attempt will be helpful for mass media, policy makers and facilitators to understand the information and education needs of public in a better way so that much needed social and behavioural changes are attained. The need to relook into the communication strategy of mass media to contain the pandemic is paramount.

This article will also help us to understand the current popular medium and tool used by the people to gratify their needs of health education in this time of crisis. It will help us to answer the questions related to people's choice that whether they are more likely interested in consuming textual information or visuals about the current global health crisis. The analysis of Google Trends will help mass media to produce the messages related to the outbreak accordingly.

Methodology

A series of news articles trending on news.google.com from different sources related to COVID-19 were downloaded. Out of a total of 30 news articles published digitally by major international news organisations across the globe, a list of 20 keywords related to novel coronavirus used in the news articles were selected with the help of content analysis.

The content validity of these keywords was further checked by six experts working in the field of virology, psychology, mass communication, and medicine. All the experts were approached

to rate these keywords for the relevance of the current situation. After analysis, seven keywords were discarded based on the experts' recommendation.

Hence, a total of 13 keywords related to COVID-19 were finally shortlisted by the authors. The keywords are as follows; Coronavirus, Lockdown, Quarantine, Social Distancing, Hand wash, Outbreak, Epidemic, Pandemic, Sanitizer, COVID 19, Coronavirus Testing, N95 mask and Novel Coronavirus.

Data source

Google Trends (https://trends.google.com/trends/explore#cmpt=q) have been used to collect the data. It shows how often search terms are entered in Google relative to the total search volume in a region as well as globally. The search term was delimited to the period and web search. The period for this study was selected from 17th November, 2019 to 10th April, 2020. The search terms were delimited to the Google News and YouTube searches. The data was collected from two geographical locations only - Worldwide and India.

Statistics

An appropriate statistic like mean, standard deviation, paired sample t-test, and line graphs were used to analyze the data. The data was analyzed through SPSS (Statistical Package for Social Sciences). A paired sample t-test was used to compare the mean difference between Google News and YouTube search on the keywords. A line graph was used to visualize the trend over the period of time.

Results and Interpretation

Initially, the aforementioned 13 keywords were used to analyse the global trend in order to understand audiences' preference in consuming the media messages related to novel coronavirus across the world.

Table 1 compares mean score of the Google News and YouTube searchers on the aforementioned 13 keywords – Coronavirus, Lockdown, Quarantine, Social Distancing, Hand wash, Outbreak, Epidemic, Pandemic, Sanitizer, COVID 19, Testing, N95 mask and Novel Coronavirus across the world. The analysis of data reveals a significant difference at .05 level of confidence between Google News and YouTube on "coronavirus", "lockdown", "social distancing", "hand wash", "epidemic", "pandemic", "sanitizer", "COVID 19", "coronavirus testing", "N95 masks" and "novel coronavirus". The mean score of YouTube searches is higher as compared to Google News searches on all keywords except "coronavirus",

"sanitizer," "COVID 19" and "coronavirus testing". These four mentioned search terms record a higher mean on Google News.

After analysing the world trend, Google Trends in India were analysed as whole, further followed by a state-wise analysis.

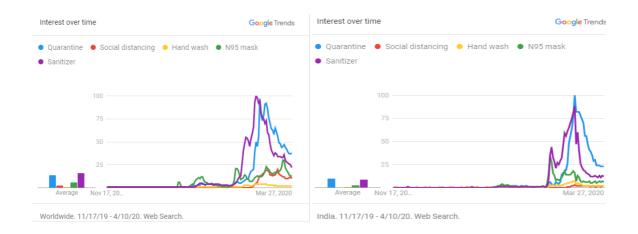
Table 1shows mean difference between Google News and YouTube on selected keywords across the world (World trend)

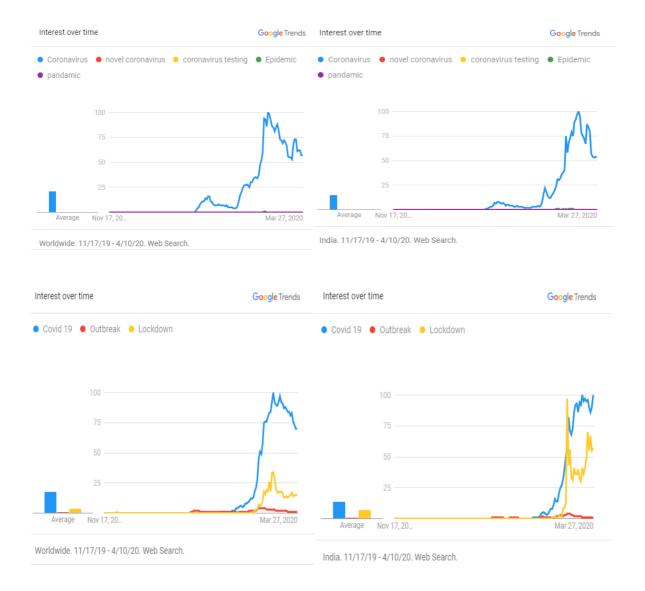
	Keywords			Statistics	df	p	Mean
							difference
1	Coronavirus	Google News	YouTube	5.322	117.0	< .001	5.322
2	Lockdown	Google News	YouTube	-4.106	145.0	< .001	-3.767
3	Quarantine	Google News	YouTube	-1.757	145.0	0.081	-2.836
4	Social Distancing	Google News	YouTube	-4.114	145.0	< .001	-4.411
5	Hand wash	Google News	YouTube	-6.667	145.0	< .001	-14.370
6	Outbreak	Google News	YouTube	-0.377	145.0	0.707	-0.473
7	Epidemic	Google News	YouTube	-12.638	145.0	< .001	-24.164
8	Pandemic	Google News	YouTube	-3.640	145.0	< .001	-6.384
9	Sanitizer	Google News	YouTube	3.984	99.0	< .001	7.230
10	COVID 19	Google News	YouTube	5.972	144.0	< .001	2.531
11	Coronavirus Testing	Google News	YouTube	2.801	145.0	0.006	3.377
12	N95 mask	Google News	YouTube	-2.259	145.0	0.025	-3.260
13	Novel Coronavirus	Google News	YouTube	-3.72	145.0	<.001	-5.520

Table 2 shows mean difference between Google News and YouTube on selected keywords across the India (India trend)

	Keywords			Statistics	df	p	Mean
							difference
1	Coronavirus	Google News	YouTube	8.029	144	<.001	9.938
2	Lockdown	Google News	YouTube	-1.206	145	0.230	-1.397
3	Quarantine	Google News	YouTube	5.081	145	< .001	7.527
4	Social Distancing	Google News	YouTube	2.584	145	0.011	4.288
5	Hand wash	Google News	YouTube	-8.599	145	< .001	-15.329
6	Outbreak	Google News	YouTube	-1.136	145	0.258	-2.651
7	Epidemic	Google News	YouTube	-3.060	145	0.003	-7.151
8	Pandemic	Google News	YouTube	0.656	145	0.513	1.212
9	Sanitizer	Google News	YouTube	0.410	145	0.683	0.507
10	COVID 19	Google News	YouTube	1.524	145	0.130	0.925
11	Coronavirus Testing	Google News	YouTube	2.440	145	0.016	3.842
12	N95 mask	Google News	YouTube	-0.337	145	0.736	-0.541
13	Novel Coronavirus	Google News	YouTube	0.912	145.0	0.365	1.590

Table 2 compares the mean score of the Google News and YouTube searchers on the aforementioned 13 keywords— Coronavirus, Lockdown, Quarantine, Social Distancing, Hand wash, Outbreak, Epidemic, Pandemic, Sanitizer, COVID 19, Coronavirus Testing, N95 mask and Novel Coronavirus. The analysis of data reveals a significant difference at .05 level of confidence between Google News and YouTube on "coronavirus", "quarantine", "social distancing", "hand wash", "epidemic", and "coronavirus testing". The mean score of Google News is higher than YouTube searches on "coronavirus", "quarantine", "social distancing" and "coronavirus testing". Whereas, YouTube searches are higher as compared to Google News on "hand wash" and "epidemics". It can be stated that people search more content and media messages related to these keywords on Google News and YouTube respectively. However, on the other side, a statistically insignificant difference was found between the two search engines on "lockdown", "outbreak", "pandemic", "sanitizer", "COVID 19", "N95 masks", and" novel coronavirus". The findings reveal that people are searching both for videos and news stories about the "lockdown", "outbreak", "pandemic", "sanitizer", "COVID 19' and "N95 mask".





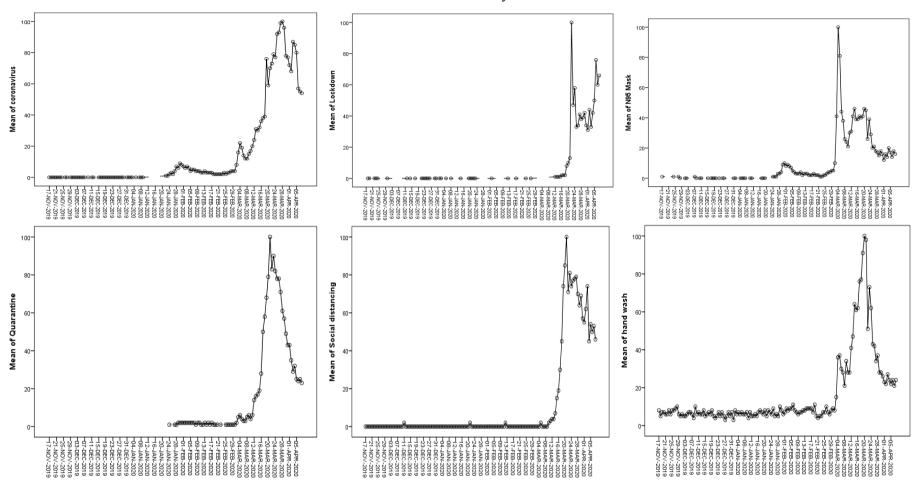
In Google Trends only five keywords could be compared with each other at a time. Keeping in view the limitations of Google Trends, an attempt was made to categories the selected 13 keywords into three different groups namely Group 1, Group 2 and Group 3. The group were created that so that keywords could be compared with each other.

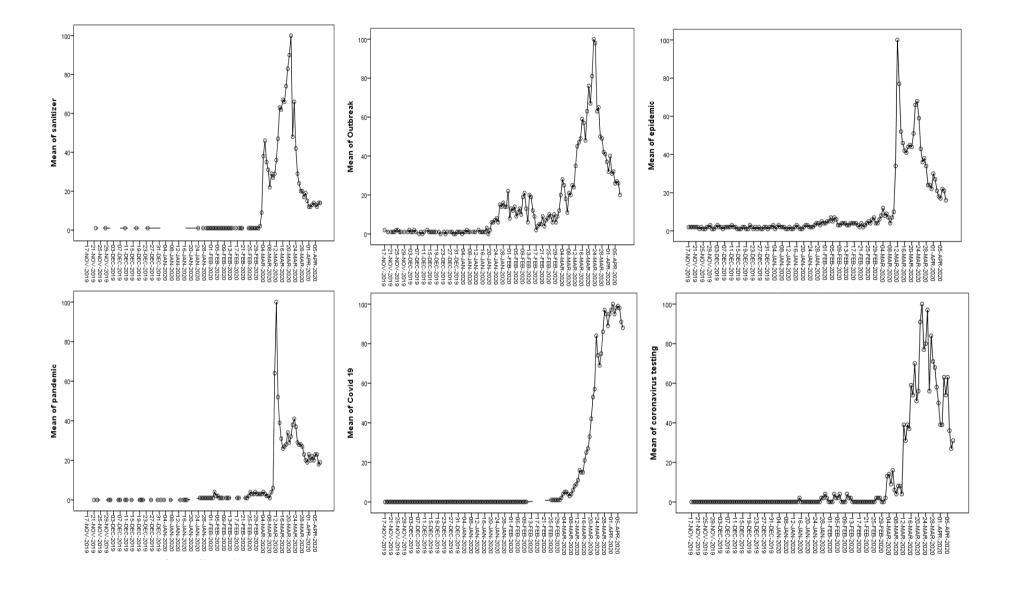
Group 1 includes "Quarantine", "Social Distancing", "Hand wash", "N95 Mask" and "Sanitizer". "Coronavirus", "Novel Coronavirus", "Epidemic", "Coronavirus testing" and "Pandemic" were listed in Group 2. Whereas Group 3 includes "Outbreak", "Lockdown" and "COVID 19".

The keywords listed in Group 1 when compared with each other, it was found that "sanitizer" and "quarantine" were the most searched keywords both in India and across the world. Among the keywords in Group 2, "coronavirus" was found to have been most searched in India and

across the world. "COVID 19" followed by "lockdown" were found to have been highest searched keywords in India and across the world in Group 3.

Mean of date-wise search of keywords across India



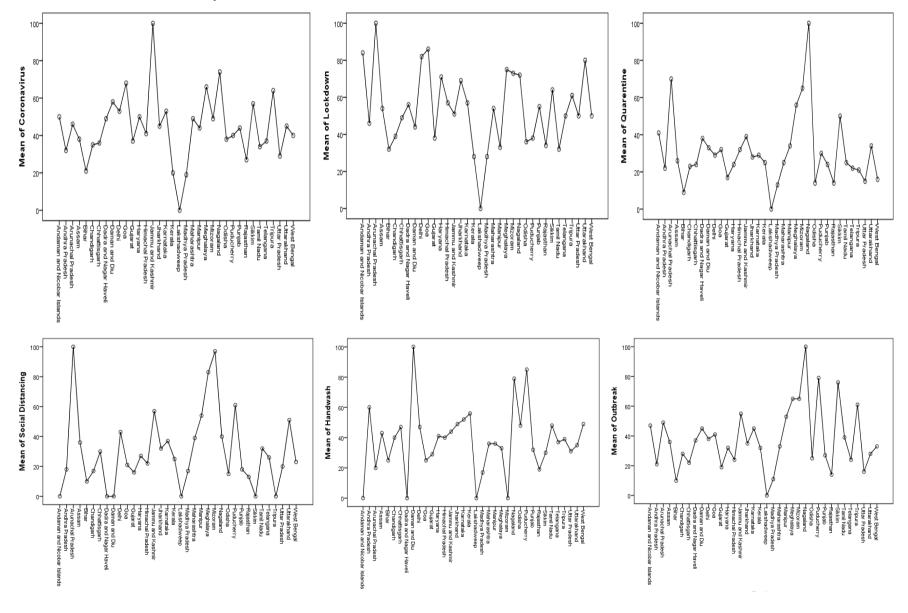


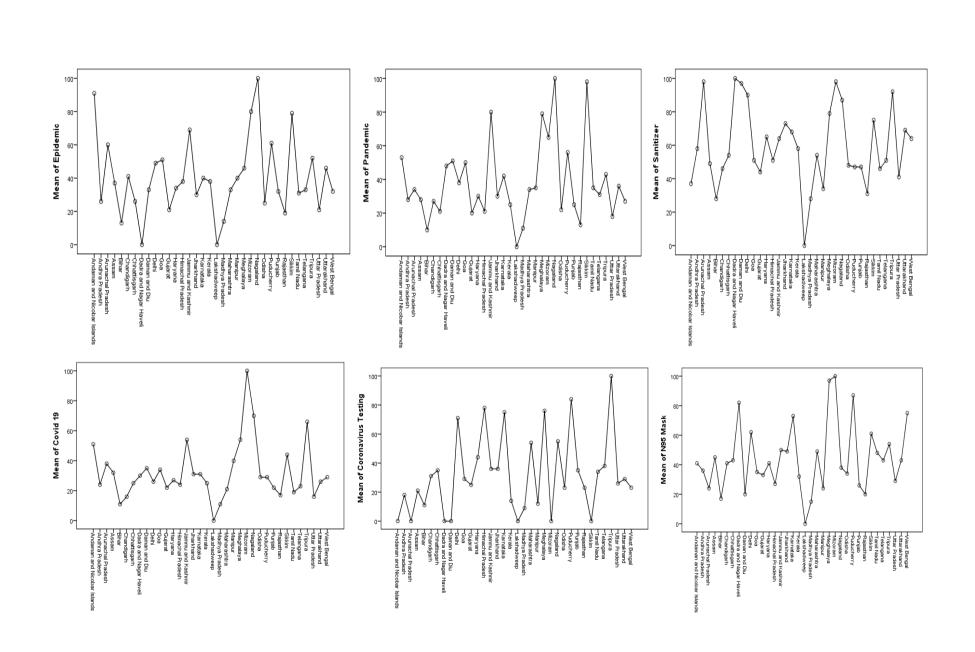
Line graph was used to exhibit the number of searches over the period. The X-axis represents the number of searches related to keywords from 17th November, 2019 to9thApril 2020. Whereas, Y-axis represents the number of days.

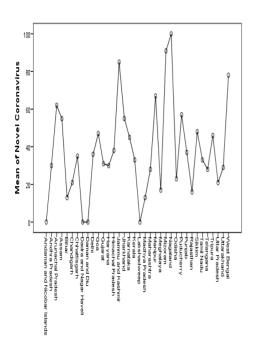
The above line graphs reveal that the search for keywords like "coronavirus" and "outbreak" in India was started between the last week of January, 2020 and the beginning of first week of February, 2020. This was the time when coronavirus was reported in India from Kerala on 30th January, 2020.

However, the searches about the keywords like "lockdown", "quarantine", "social distancing", "hand wash", "sanitizer", "epidemic", "pandemic", "COVID 19", "coronavirus testing" and "N95 mask" recorded a rise since the early March, 2020. Further, the search terms for these keywords recorded a significant increase in month of April, 2020.

Mean of state-wise search of keywords across India







To take a deeper look into the search trends in India, the Google Trends' data was further organised and analysed state-wise. The line graph has been used to display the same. Findings reveal that Jammu and Kashmir records highest searches about the "coronavirus" followed by Nagaland and Delhi. Among all the states and union territories, Lakshadweep and Bihar record least searches about the "coronavirus". The reason behind the Lakshadweep's low score may be its comparatively less population.

Result indicates that the people of Jammu and Kashmir and Nagaland seem to be more conscious/interested to know about the causes and consequences of the virus. Nagaland followed by Puducherry also records highest searches for the keyword "outbreak". Besides "coronavirus", the people in Delhi are more interested in keywords "hand wash" and "coronavirus testing".

The keyword "quarantine", "pandemic" and "epidemic" were most searched in Nagaland. Nagaland was followed by Sikkim, Jammu and Kashmir, Arunachal Pradesh, and Daman and Diu respectively on "pandemic" and "epidemic". "Quarantine" was least searched in Andhra Pradesh. In the same way, the people in Lakshadweep, Bihar and Rajasthan were least interested in searching "pandemic" and "epidemic".

Again, "sanitizer" and "COVID 19" related searches were highest from the Nagaland, Arunachal Pradesh, and Daman and Diu. Whereas Lakshadweep, Bihar and Madhya Pradesh recorded least number of searches about "sanitizer" and "COVID 19".

"Coronavirus testing" was mostly searched in Tripura, Puducherry, Himachal Pradesh, Delhi and Jammu & Kashmir. The search terms related to "N95 mask" were mainly recorded in

Nagaland, Mizoram and Daman and Dui. Whereas the people in Lakshadweep, Madhya Pradesh, Bihar, and Sikkim has least searched "N95 mask". The keyword "novel coronavirus" was searched majorly in Nagaland, Mizoram and Jharkhand.

Discussion and Suggestions

Google Trends reveal that there has been a significant increase in the search terms related to COVID-19 across the world. It is also evident from the result that trend for searching the Google News is significantly higher as compared to the YouTube search about COVID-19 in India.

It may be well established that people prefer Google News over YouTube for information and news related to novel coronavirus. Among all the 13 keywords, it was found that "sanitizer" "coronavirus" "COVID 19" and "lockdown" were the most searched keywords both in India and across the world. It becomes paramount for media outlets to produce media messages using these four most searched key terms for further mass dissemination.

Overall in India, Google Trends show that keywords related to coronavirus have been mostly searched in states likes Nagaland, Dadra and Nagar Haveli and Mizoram. It is important to mention that these states have recorded fewer cases of COVID-19. The keyword "coronavirus" itself was most searched from Jammu and Kashmir.

Therefore, it can be said that there is a relationship between the Google Trend searches and number of cases of novel coronavirus. With few exceptions, the findings reveal that states where most searches related to the current pandemic have been registered, only few cases of novel coronavirus have been recorded at those places. The findings suggest that people searching news and information related to COVID-19 may likely take the precautionary measures as advocated through the media messages.

The findings of the study suggest that new media can play an important role by producing more messages using the keywords studied during the course of research. The mass media could play a vital role in changing the behaviour and informing the people about this disease. The authors through this article encourages the editors of the news media and experts working in the field

to write news stories and articles with respect to keywords like Coronavirus, Lockdown, Quarantine, Social Distancing, Hand wash, Outbreak, Epidemic, Pandemic, Sanitizer, COVID 19, Coronavirus Testing and N95 mask as much as possible.

These keywords should be used frequently in the news articles and headlines to make them easily searchable and trending on news.google.com. It is suggested that experts and groups working on this issues should also optimise their information with search engines using these frequently used keywords. The editors should timely prefer the stories using these keywords as much as possible in order to update the public about this pandemic. The rumours and myths about the virus produced using such keywords may also be removed from the web at the earliest.

The study also listed (Appendix I) the other search terms related to selected keywords for a better understanding of the masses' preferences. From the analysis, we can suggest that the media outlets at national, regional and state-level in India should understand the search terms of people of their place and produce more information using those keywords accordingly. Media both national as well as state level can set an agenda according to the search terms of the country, city and state.

Internet could be effectively used by the media outlets for risk and outbreak communication in the current crisis after understating the philosophy of search terms of the people under study. The news stories and videos must be tagged keeping the search terms of people in consideration. This audience-centric approach may be used to supply people with more credible information and guidelines time-to-time.

References

- Abraham, T. (2011). Lessons from the pandemic: The need for new tools for risk and outbreak communication. *Emerging Health Threats Journal*, *4*, 7160. https://doi.org/10.3402/ehtj.v4i0.7160
- Amos, O. (2020, March 4). *Coronavirus: Where will be the last place to catch Covid-19? BBC News*. https://www.bbc.com/news/world-52120439.
- BBC. (2020, April 11). India "to extend" nationwide coronavirus lockdown. Available at https://www.bbc.com/news/world-asia-india-52255011.
- Briggs, C. L., & Nichter, M. (2009). Biocommunicability and the biopolitics of pandemic threats. *Medical Anthropology*, 28(3), 189–198. https://doi.org/10.1080/01459740903070410.
- Crisis and Emergency Risk Communication: Communication Plan Implementation for a Sever Pandemic. (n.d.) Available at https://www.paho.org/disasters/index.php?option=com_docman&view=download&cate_gory_slug=tools&alias=540-pandinflu-leadershipduring-tool-13&Itemid=1179&lang=en
- Government of India. (2020, March 28). MyGov.In. COVID19 statewise status. Available at https://mygov.in/corona-data/covid19-statewise-status/
- Johns Hopkins University & Medicine Corona Resource Centre (2020, April, 12). Available at https://coronavirus.jhu.edu/map.html.
- Kumar, R. (2020, March 24). Follow Coronavirus Lockdown Rules, Else Will Have to Give "Shoot-at-sight" Order: Telangana CM News18. News 18 India. https://www.news18.com/news/india/follow-coronavirus-lockdown-rules-else-will-have-to-give-shoot-at-sight-order-telangana-cm-2549765.html
- Ma, J. (2020, March 13). Coronavirus: China's first confirmed Covid-19 case traced back to November 17 | South China Morning Post. https://www.scmp.com/news/china/society/article/3074991/coronavirus-chinas-first-confirmed-covid-19-case-traced-back
- McCarthy, N. (2020, August, 4). Chart: Which Countries Have Escaped The Coronavirus So Far? | Statista. Https://Www.Statista.Com/. https://www.statista.com/chart/21279/countries-that-have-not-reported-coronavirus-cases/

- Neuman, W. and Gugeheim, L. (2009). The evolution of media effects theory: fifty years of cumulative research. The annual meeting of the international communication association, Marriott/Chicago: IL Online, 2009.
- The Economics Times (2020, April, 13). Coronavirus cases in India: State-wise break up of confirmed coronavirus cases. Available at https://economictimes.indiatimes.com/news/politics-and-nation/coronavirus-crisis-heres-total-number-of-confirmed-cases-in-india-as-per-health-ministry/articleshow/74589499.cms.
- The Indian Express. (2020, April, 14). Coronavirus India LIVE UPDATES: Amit Shah says stocks adequate as India extends lockdown till May 3. Available at https://indianexpress.com/article/india/coronavirus-india-lockdown-live-updates-pm-narendra-modi-speech-today-live-news-covid-19-tracker-india-cases-latest-updates-6361107/
- UNICEF. (2005). Strategic Communication for Behviour and Social Change in South Asia.

 Available at https://www.unicef.org/cbsc/files/Strategic_Communication_for_Behaviour_and_Social_Change.pdf.
- Vaughan, E., & Tinker, T. (2009). Effective Health Risk Communication About Pandemic Influenza for Vulnerable Populations. *American Journal of Public Health*, 99(Suppl 2), S324–S332. https://doi.org/10.2105/AJPH.2009.162537
- Waterson, J. (2020, March 25). UK towns lose local newspapers as impact of coronavirus deepens. *The Guardian*. https://www.theguardian.com/world/2020/mar/25/uk-towns-lose-local-newspapers-as-impact-of-coronavirus-deepens.
- WHO. (2020, August 4). *COVID-19: events as they happen*. Available at https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen.

Below is the list of other keywords related to 13 selected search term over the period. (Appendix I) Other keywords related to selected Keywords

S.No	Coronavirus	Lockdown	Quarantine	Social distancing	Hand wash
1	india coronavirus	india lockdown	Quarantine	social distancing meaning	hand wash dettol
2	coronavirus in india	lockdown in india	Meaning	social distancing coronavirus	dettol
3	coronavirus update	lockdown news	Definition	social distancing meaning in hindi	hand wash sanitizer
4	coronavirus cases	coronavirus lockdown	Quarantine	social distancing quotes	hand sanitizer
5	coronavirus news	corona lockdown	Quarantine	social distancing synonym	sanitizer
6	corona	lockdown meaning	Home	what is social distancing	hand wash price
7	coronavirus tips	coronavirus lockdown india	Pronunciation	social distinction meaning	hand wash liquid
8	india coronavirus update	lockdown in hindi	Pandemic		alcohol hand wash
9	coronavirus world	lockdown extended	Isolation		dettol hand wash price
10	coronavirus india cases	who			dettol hand sanitizer
11	coronavirus symptoms	lockdown date			hand wash sanitizer price
12	coronavirus live	who lockdown			handwash
13	coronavirus in india cases	lockdown delhi			dettol sanitizer
14	corona virus	corona india			hand wash steps
15	china coronavirus	corona lockdown india			savlon hand wash
16	china	lockdown india news			best hand wash
17	coronavirus death	lockdown meaning hindi			hand wash bottle
18	italy	lockdown update			lifebuoy hand wash
19	italy coronavirus	lockdown extension			hand wash basin
20	coronavirus news india	lockdown meaning in hindi			hand wash images
21	coronavirus in india	lockdown in india			
	update	coronavirus			dettol liquid
22	coronavirus in world	lockdown india extended			dettol liquid hand wash
23	latest coronavirus news	india lockdown date			alcohol sanitizer
24	coronavirus count	lockdown extend			alcohol based hand wash
25	worldometer coronavirus	up lockdown			godrej hand wash

S.No.	Outbreak	Epidemics	Pandemic
1	coronavirus outbreak	epidemic meaning	pandemic meaning
2	corona	pandemic	epidemic
3	corona outbreak	pandemic meaning	epidemic pandemic
4	outbreak meaning	epidemic meaning hindi	coronavirus pandemic
5	corona virus	coronavirus epidemic	pandemic meaning hindi
6	corona virus outbreak	epidemic in hindi	corona pandemic
7	corona outbreak india	epidemic vs pandemic	epidemic meaning
8	india coronavirus outbreak	corona epidemic	pandemic in hindi
9	covid outbreak	epidemic and pandemic	endemic
10	china outbreak	epidemic meaning in hindi	pandemic meaning in hindi
11	coronavirus outbreak in india	endemic	meaning of pandemic
12	covid 19 outbreak	epidemic act	epidemic and pandemic
13	coronavirus in india	epidemic disease	coronavirus pandemic india
14	corona outbreak in india	epidemic in india	covid 19
15	disease outbreak	epidemic and pandemic difference	covid 19 pandemic
16	outbreak of coronavirus	meaning of epidemic	pandemic disease
17	china virus outbreak	epidemic meaning english	who
18	china virus	pandemic meaning hindi	pandemic vs endemic
19	pandemic	difference between pandemic and epidemic	epidemic vs pandemic
20	plague outbreak	pandemic in hindi	pandemic meaning in english
21	plague	epidemic meaning in english	what is pandemic
22	outbreak movie	what is epidemic	epidemic and pandemic difference
23	corona virus india	epidemic diseases	corona pandemic india
24	china coronavirus outbreak	pandemic meaning in hindi	difference between epidemic and pandemic
25	ebola	epidemic vs pandemic meaning	coronavirus pandemic in india

S.No	Sanitizer	Covid 19	Coronavirus testing	N95 Mask	Novel Coronavirus
1	sanitizer hand	covid 19 india	india coronavirus testing	online n95 mask	novel meaning
2	alcohol sanitizer	covid india	india coronavirus	mask online	novel coronavirus meaning
3	sanitizer dettol	covid 19 tracker	coronavirus india	mask n95 price	coronavirus india
4	alcohol	covid 19 in india	coronavirus in india	mask price	novel coronavirus india
5	dettol	covid 19 cases	coronavirus testing in india	n95 mask india	novel corona virus
6	sanitizer price	covid 19 tracker india	coronavirus testing kit	n95 mask coronavirus	corona virus
7	sanitizer online	covid 19 india cases	coronavirus testing near me	coronavirus mask	novel coronavirus in india
8	alcohol hand sanitizer	covid 19 world	coronavirus symptoms	n95 mask amazon	coronavirus in india
9	dettol hand sanitizer	covid 19 india.org	coronavirus update	n95 face mask	why called novel coronavirus
10	spray sanitizer	covid 19 update	testing kit for coronavirus	face mask	what is novel coronavirus
11	hand sanitizer online	covid 19 news	coronavirus vaccine	3m mask	coronavirus symptoms
12	how to make sanitizer	covid 19 live	corona testing near me	n95 mask 3m	why is coronavirus called novel
13		covid 19 cases in			
	hand sanitizer india	india	coronavirus tips	corona mask n95	novel coronavirus symptoms
14					novel coronavirus meaning in
1.5	sanitizer meaning	covid 19 symptoms		corona mask	hindi
15	hand sanitizer price	covid 19 virus		n95 mask buy	novel meaning in hindi
16	1:01	:110		n95 mask for	
1.7	sanitizer lifebuoy	covid 19 map		coronavirus	novel coronavirus update
17	sanitizer alcohol based	covid 19 india live		mask for coronavirus	coronavirus update
18	lifebuoy	covid 19 org		buy n95 mask online	covid 19
19	best sanitizer	covid 19 meaning		n95 masks	novel coronavirus map
20	himalaya sanitizer	covid 19 update india		n95 respirator mask	novel coronavirus 2019
21	himalaya	covid full form		n95 mask online india	meaning of novel coronavirus
22	sanitizer in hindi	covid 19 full form		n95 mask price india	novel coronavirus wiki
23				mask n95 price in	
	mask	covid 19 vaccine		india	novel coronavirus disease
24	hand sanitizer with				
	alcohol	who covid 19		corona virus mask	novel coronavirus treatment

25	alcohol based hand			
	sanitizer	covid 19 india org	best mask	corona virus india