A SOCIAL MEDIA-BASED SURVEY AMONG HEALTHCARE PROFESSIONALS TO EVALUATE THE INCIDENCE OF COVID19-LIKE PNEUMONIA FROM NOVEMBER 2019 IN INDIA

Medical Science

Dr Jagdish Chaturvedi*

Consultant ENT surgeon Fortis hospital BG Road, NIMHANS Quarters, Bengaluru 560029. *Corresponding Author

Pooja Kadambi

Consultant with HHH Innovation Private Limited, 157 Defence Colony, 4th Main, Indiranagar, Bangalore, India-38.

ABSTRACT

The COVID-19 pandemic has been responsible for over 500,000 deaths and 12 million infections as of July 2020. Though the number of cases in India is growing, the rate of rising infections and the relative mortality rate has been lower than predicted. While many hypotheses have been laid out as possible reasons, a few physicians noticed a significant peak in COVID19-like respiratory infections through November 2019 – January 2020. They attributed this as the reason behind the lower mortality rate as a result of some kind of pre-existing immunity to the virus. A social media survey instrument was used to gather inputs from doctors and other individuals in the healthcare industry to understand the volume of doctors who noticed rising COVID19-like viral URTI cases during November 2019 – January 2020. The survey specifically asked about symptoms associated with coronavirus infections and about any rise in cases noted by treating physicians. 174 individuals answered the survey (46% treating physicians and 54% other healthcare professionals). The survey covered 41 cities in India and reported a growth of cases from before November 2019 to a peak in January 2020. Physicians surveyed, reported a rise in upper respiratory cases up to 50% during that time. 91% of all individuals surveyed had some or all of the symptoms associated with coronavirus infection. These findings may indicate the presence of an earlier strain of coronavirus or similar virus and be a contributing factor to the slower initial spread and lowered mortality noted in India. Further epidemiological studies are needed to draw any definitive conclusions.

KEYWORDS

novel coronavirus, survey, infection

INTRODUCTION

In December 2019, adults in Wuhan, the capital city of Hubei province and a major transportation hub of China started presenting to local hospitals with severe pneumonia of unknown cause.[1] Common symptoms included fever, cough, sore throat, breathlessness and fatigue. The virus SARS-CoV-2 now known as COVID-19 originated in bats and was transmitted to humans through yet unknown intermediary animals.[2] As of August 09 2020, this virus has infected 19.1 million people globally and killed over 700 thousand people with the first reported case in china dates back to November 17 2019. [3,4]

Cumulative confirmed COVID-19 deaths per million people

Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.

Figure 1: Death per million comparison

Sources: <https://ourworldindata.org/coronavirus>

India reported the first confirmed case of COVID-19 on January 30, 2020, in Kerala. [4] Many models predicted the overwhelming breakdown of the healthcare systems and an increased mortality rate due to the population density and limited healthcare available. [5] However, today, in terms of deaths per million are considered, India ranks far lower than predicted models as well as compared to Brazil, USA and European countries like France. [3] Figure 1 shows the death per million rate comparison as of (update to date of submission) July 15, 2020, when India also crossed a million confirmed cases.

There is likely a multi-factorial reason for this observation. The role of BCG vaccine, the climate, widespread use of hydroxychloroquine (HCQ), the role of Vitamin D, the younger demographic and some genetically related immunity factors were all being considered as contributing factors. There was also a general theory around the

presence of other viruses or concurrent conditions impacting immunity in Indians. [6,7,8]

Limited testing or asymptomatic cases cannot account for the lack of COVID-19 deaths sufficiently. The young population, separation of rural and urban populations, hotter climate and presence of some immunity from concurrent or previous viral strains may be contributing factors.[7] A small group of physicians began discussions that were soon featured in the media around a rise in severe upper respiratory tract infections (URTIs) beginning around November 2019. This matches documented reports in the news of a rise in lung infections and related deaths around the same time. [9,10] Such discussions did not have any consensus and were being treated as isolated anecdotal evidence. The authors decided to use a healthcare target social media outreach as a way to gather independent reports from treating physicians and other healthcare professionals. The researchers aimed to gather and present the data point as a potential driver to further research around the theory of a COVID-19 like illness being present in India earlier than January 2020. Harvard recently published evidence from a rise in hospital admissions in Wuhan indicating that the virus may have been circulating even in August 2019.[11]

METHODS

General Methods

This study is not a traditional human subject research. A social media-based survey was sent to doctors and associate healthcare workers about symptoms they had themselves felt or observed in those around them. Doctors specifically were asked about a rise in upper respiratory illnesses similar to coronavirus. The survey was open from June 02, 2020, through July 06, 2020, and was shared on social media platforms and WhatsApp using the direct network of the corresponding author.

Survey Details

The questions are available as an appendix to this paper. These questions were asked in addition to general demographic and contact information to ensure no duplication or inappropriate responses.

Analysis Of Data

The data was de-identified and then taken up for analysis. Tables and graphs were generated in Microsoft Excel 2019, utilising necessary sorting and descriptive statistics.

Real-time data from WHO and National databases were reviewed to give some context to discussions.

Any missing data in any field was taken as not answered and not

considered for calculations.

RESULTS

A total of 174 valid responses were collected, of which 79 (46%) were clinically practising physicians, and 95 (54%) were other healthcare professions, including medical students and hospital staff and researchers. These responses reflected the data of an estimated total of 2580 cases with potential COVID19 or similar URTI virus between November 2019 through January 2021 (refer to calculation at the end of the document). Over 41 cities within India were represented in this survey and can be considered representative as moderate to densely populated areas of the country.

Figure 2 captures the noting of COVID symptoms by respondents in themselves and their patients.

Figure 2: COVID symptoms noted

Figure 3 represents the rise in the caseload of upper respiratory infection cases. Among doctors surveyed, 71.3% reported a significant rise in COVID-19 like cases in their patients before February 2020 with the maximum cases from across the group reported in January 2020 (2X from December)

Figure 3: COVID-Like Symptom Observation by

Table 1 represents the degree of rising in COVID-19 like cases reported by the respondents across all periods surveyed.

Table – 1 Reported Percent Rise In Cases

Response on Observed Rise	Responder %
0-10% Rise in Cases	12.66%
11-20% Rise in Cases	20.25%
21-30% Rise in Cases	16.46%
31-40% Rise in Cases	12.66%
41-50% Rise in Cases	1.27%
More than 50% Rise in Cases	3.80%
Unsure of Rise in Cases	32.91%

Out of the responses shared, no significant rise in mortality was noted except for a few anecdotal cases. The respondents have shared their experience managing the illness in their patients. They also reported seeing the illness in themselves and their families. The Appendix, in the end, shares ten experiences.

Figures And Tables

Figure 2 highlights how the majority of responders to the survey reported COVID-19 like symptoms in themselves and others around them. The fact that it was highly transmissible can be gauged from how many treating physicians and healthcare workers in contact with patients got infected. This question was mandatory, and all respondents answered.

Figure 3 is an analysis of what month responders indicated symptoms seen in themselves or their network. The respondents could choose all the options that applied. The figure represents the number of affirmative responses by the timeframe of the 128 respondents who answered this question. The curve is similar to a small wave of transmissible disease outbreaks. It is unclear what caused the reduction of cases in a time where COVID-19 was spreading in many areas in India. This finding may indicate a multi-factorial impact that the data is insufficient to discuss.

Table 1 highlights data related to the perceived rate of increase many respondents were unsure of the same as they were not directly interacting with a large group of symptomatic patients over many years to gauge. It was observed that this question (since by design relative questions) was commonly answered by those with a few years of clinical experience. 67% of all responders, however, reported an increase in cases. This question was mandatory for doctors and was answered by all 79 physician responders.

DISCUSSION

India is the second most populated country in the world after China, constituting 17% of the world's population. [12] In addition to the overpopulation, India also has a comparatively weaker healthcare infrastructure and higher poverty than most countries. One would imagine a country like India to be devastated by a viral pandemic such as COVID19. However, that was not the case. COVID19 in India grew to large numbers at a much slower rate compared to other countries and has kept a low mortality rate throughout. Even though presently in August 2020, India is world number 3 in the number of COVID19 cases, however, has a death/million population of 31, which is lower than most countries in the world. [3]

For a pandemic as rampant as Corona, it is crucial to understand what maintains India's low mortality? There may be clues to better curb the spread or virulence in other countries. There have been many theories put forward by experts on possible reasons for this. Popular ones being, BCG vaccination conferring immunity to the Indian population as all newborns in India receive the BCG vaccination. Randomised controlled trials have provided evidence that the BCG vaccine's immunomodulatory properties can protect against respiratory infections. [13]

The role of BCG vaccine and that of hotter and temperate climate on Coronavirus spread has been much debated. Monami et al., in a letter to the editor in the Journal of occupational and environmental medicine quote that in a linear regression model weighted for population size, the number of cases per million inhabitants, excluding China's People Republic, showed a significant inverse correlation ($r = -0.23$, $P = 0.001$) with average temperatures in February. The possible impact of climatic factors on the transmission of Covid-19 infection is potentially very relevant. [14]

Also, the role of widespread use of hydroxychloroquine (HCQ), the role of Vitamin D, the younger demographic population in India and some genetically related immunity factors have been presented through scientific literature across the world with supporting evidence (6,7,8). However, some theories have not been probed into further research. One of them being the presence of acquired immunity through pre-infection with coronavirus or a corona virus-like infection late last year. This theory is driven by some practising physicians who noticed a remarkable rise in viral URTI from November 2019 onwards, which corroborates with the timeframe of the emergence of cases in Wuhan, China. The presence of partial immunity to COVID19 along with other factors that confer protection may explain the low mortality rates in India.

Further, reports emerging from France & Britain share proof of COVID19 being outside of China since December 2019, indicating evidence of global spread before what is claimed by China - January 2020. [15,16] Furthermore, the recent study conducted by Harvard University claims COVID19 to be present since August 2019. This information prompted an online survey to gather further data on this hypothesis, to understand if there is a larger pool of physicians who saw similar patterns of rising viral URTI with Covid19-like symptoms in November 2019 – January 2020.

The results establish that there is a larger community of physicians who noticed a 20% rise in the number of viral URTI than what they would have usually seen in those months. It also established a sharp

peak in January 2010. The limited data, however, does indicate that there may have been an introduction of COVID-19 or similar coronavirus into the Indian population earlier than currently documented. The published data from the global community is also indicating that this is possible. [9,10,11]

Historically presence of multiple viruses or similar viruses in a population has shown some level of resistance or immunity to one or many of the diseases caused by said pathogens. Current studies are exploring this with relation to the BCG vaccine, HIV treatment drugs and the higher immunity of a youthful population. [7,8]

The results indicate that majority of those surveyed had themselves experienced or observed a close contact go through very severe symptoms associated with coronavirus. This result makes sense in highly populated urban areas with prevalent air travel. Pre COVID-19 awareness there were minimal precautions in India against the flu, and Delhi, Mumbai or other urban centres would likely be the first to be hit.

Limitations

There is selection bias as this survey would have been limited to the primary and secondary share circles of the author.

There is no physical or empirical verification of the data and thus cannot be treated as anything beyond anecdotal evidence of a possible trend. The surrounding information and narrative around the COVID-19 pandemic could have influenced the responders.

CONCLUSIONS

This explorative study does not make any claims about the origin and nature of COVID19. Nor does it make claims with regards to the presence of another novel coronavirus in India. This study is simply a compilation of data to help drive further research. Specifically research into the question of why India has not seen a rise or mortality curve as predicted by epidemiologic models, specifically seeking more data on pre-existing immunity in the population due to illnesses similar to COVID19.

One contributing factor discussed in this paper points to the presence of some resistance or innate immunity within the population that may be related to exposure to a similar or earlier version of COVID-19

Though this paper does demonstrate that in the network of one doctor, there were 174 positive responders, reflecting the data of 2580 patients. The numbers may be much more significant if a more extensive scale epidemiological study with antibody testing is carried out. The hypothesis appears to have merit to warrant formal studies to understand the pre-immunised status of the Indian population. Such studies will also help increase the pool of potential plasma donors that can aid in treatment.

APPENDIX

Calculations

52 docs actively see patients

7 doctors see > 50 cases per week = 350 cases/week
 6 doctors see 45 cases per week = 270 cases/week
 3 docs, 35/week = 95 cases/week
 3 docs, 25/week = 75 cases/week
 4 docs, 18/week = 72 cases/week
 6 docs, 13/week = 78 cases/week
 14 docs, 8 cases/week = 112 cases/week
 9 docs, 3/week = 27/week

Total average cases per week = 1079 cases per week

Avg case increase is an overall number of cases is approx. 20% as most docs saw an increase ranging from 0 to 40%

That is approx. an increase of 215 cases per week

Therefore, the estimated increase in the number of cases in November, December, January, i.e. 12 weeks is $215 \times 12 = 2580$ cases

Survey Questions

If you were unwell with persistent dry cough that lasted for weeks, throat pain, stuffy nose, fever, tiredness, body pain, difficulty breathing or experienced the WORST flu of your life between Nov 2019 & Feb

2020 or your patients had such symptoms, then please fill out this form. This data may be used to initiate formal clinical studies and may result in a larger pool of donors for plasma therapy if results are favourable. Patient data will be kept confidential.

The name and photo associated with your Google account will be recorded when you upload files and submit this form.

- Email Address
- City of Residence
- Are you a Doctor?
- If Yes, what speciality?
- Which of the following holds true w.r.t COVID 19 symptoms (Described in form introduction)? (Check all that apply)
 - I experienced some or all of the above symptoms
 - My patients experienced some or all of the above symptoms
 - I know someone who experienced some or all of the above symptoms
 - Other:
- The period of experiencing symptoms? (Check All that apply)
 - Before November 2019
 - November 2019
 - December 2019
 - January 2020
 - February 2020
 - After February 2020
- If you are a Doctor, did you see an increase in URTI between Nov 2019 & Feb 2020?
 - Yes
 - No
 - Other:
- If you are a Doctor, what was the increase in the number of URTI cases in your centre?
 - 0-10%
 - 11-20%
 - 21-30%
 - 31-40%
 - 41-50%
 - More than 50%
 - Other:
- If you are a doctor, what is the number of URTI cases you see in a week?
 - 0-5
 - 6-10
 - 11-15
 - 16-20
 - 21-30
 - 31-40
 - 41-50
 - Over 50
 - Other:
- If you are a Doctor, and you felt there was an increase in LRTI and resulting mortality, then please share that information here. If any?
- Please share any data if available that supports the increase in the number of URTI or LRTI during the time frame of November 2019 - February 2020. This could be EHR data or any numbers on excel sheet etc
- Would you be willing to be a part of discussions related to this or interested in being contacted by potential researchers for more information?
- Please share any information that you feel is necessary but was not captured in the form

Case Summaries

Cases: 1. As a working medical intern, I found a number of cases in Feb 2020 within the age group 50-70 years presenting with heart failure precipitated by pneumonia. Most of them had comorbidities like hypertension, diabetes and COPD. Most of the days, we went out of oxygen beds. The scenario was like among 50 admitted patients, more than 25 were having pneumonia.

2. Was posted in paediatrics at the time (Dec mid to Jan mid), there was a spike in admissions of children with severe LRTI which continued even after I changed the dept mid-Jan. Heard about a few deaths there. Swab samples were sent to ICMR for influenza at that time; most were negative as far as I know. One came positive. Many other doctors had really bad colds in the period of Nov to Feb, the worst in their lives, persisting symptoms for a long period.

3. I used to work at a psychiatric rehab consisting of ~130 inmates, so it was during September end and October 2019, we had many cases of URTI approx. 30-40% of them suffered including the staff. Mostly had c/o fever cold cough fatigue. And to our shock there were 2 sudden deaths during the same week, one of them had multiple comorbidities, and one did not have any. So I always thought to myself if we did suffer COVID during late 2019 itself.

4. My mother was admitted on December 12 20 due to breathlessness. She was first admitted to HDU and later shifted to ICU. 4 days later she was diagnosed with pneumonia as her lungs were filled with fluids. Her BP went down too low a couple of times. The strange thing is when I observed patients transferring from HDU or newly admitted patients or after recovering transferring to rooms, 90% of cases were pneumonia. I spoke to a few people about those COVID19 symptoms in Feb and March, but they didn't agree. And my base for argument was a lot of small entrepreneurs went to China. India and China had a good import and export ties. All computer hardware comes from Wuhan why COVID19 came to India after all over the world.

5. It all started with pain in the throat, the voice was intact, on December 11, the pain increased next day and fever 100. No cold but pain and uneasiness, I started augmentin and paracetamol, no relief fever shot up and went up 103, fever not coming down so took dolo 4 times. After taking 5 tablets augmentin, 2 each day, I changed and started taking Ziff 200, 2 tablets daily and continued 4 days minimum. The difficulty as something heavyweight on the chest, could sleep on stomach later 16 or 17th lot of mucus started coming out continued till first week January, surprisingly no blockage in nostrils. I ACTUALLY took a flight from terminal 3 for Chandigarh on December 06

6. I travelled from Saudi to Delhi on January 03 and stayed till February 03. My family and I started suffering COVID like symptoms a week after we arrived all the way till the end of Jan. It was what I assumed the worst viral/flu fever I've experienced.

7. Myself age 36, had two episodes of pneumonia with one month gap. First one in December end, the fever did not cross 98°F. I had severe body pain and cough & chest congestion. The fever went in a few days. But breathlessness was there for two weeks. Post occurrence I am still on wheezing medication as I get wheezing even if I two days of doses. But am stable now. Almost settled—similarly my father, age 72. Also, my wife 34, who was 6 months pregnant in January month.

8. After my International Travel in last week of December I had a very severe flu attack, never had such severe attack, fever, severe myalgia, took more than 10 days to recover. Similarly, my husband also in the first week of February had a very high fever and cough. Severe Weakness

9. So, this happened in Aug-Sep. My colleague started coughing and fell sick from the next day. 3 days later, I fell sick, started feeling terrible-shivering, cough, fever, severe body ache, headache, throat pain etc. My roomies fell sick with the same symptoms. I visited the doc and from there visited a couple of friends. They all fell sick with the same symptoms. The doc said it was flu. I was sick for 14 days, and then I resumed work. To my surprise, almost 30% of the office was sick with exactly the same symptoms. Like everyone was suffering around me with the same infection, it was crazy. It was so bad that I knew ppl who were chain smokers and they had quit smoking because of the flu.

10. In December last week and January first week, I had this chronic cough with low fever at night, body pain, headache and felt like there is a deep cut inside my throat. It was a condition which I never experienced. I visited the nearby clinic, and I omitted a cough several times after I took medicine for two days. I had breathing problems because of this chronic cough. One thing to notice is I got this illness when one of my friends came from Gujarat to visit my place. And he had similar symptoms. I instantly fell ill after one or days of his visit. One of my colleague sitting near me also felt ill when I went to office. He also had similar symptoms. I am not sure if this was Corona as all three of us got recovered within 3-4 days of medication.

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