



Evaluating the risk factor of novel public health disaster “Omicron” variant: an Indian prospective

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Abstract

COVID-19 epidemic is destroying world health and gradually increasing the mortality rate. The economy was also affected due to the spreading of the newly developed virus. The named COVID-19 progressively develops and affecting in the human body. The new Delta variant Omicron is first noticed in South Africa. After that many cases are recorded worldwide and finally India has recorded the first case of Omicron on 24 November 2021 from Karnataka. This study is to identify the Omicron variant affected states and UTs in India. The graphical results indicate the geographical location-wise spreading of the Omicron virus in India. The distribution of confirmed and death cases indicate the speed of spreading this health disaster in India. After that total of 781 cases were registered and 241 people were discharged from this. Mostly affected states and UTs are Delhi, Maharashtra, Karnataka, Telangana, Kerala, and Rajasthan, where Tripura, Bihar, Jharkhand, Assam, and Sikkim have not any Omicron recorded. Delhi (238), Maharashtra (167), Gujarat (73), and Kerala (65), where Himachal Pradesh, Goa, Manipur, and Ladakh have recorded one case each. The correlation between total cases and discharge is very high and the R² value is strong positive (0.80). This situation is indicating that Omicron is gripped by public health. If we don't maintain the social distancing and WHO notified guidelines, this condition may more harmful for human livelihood and increase the health emergency very soon.

Keywords Health emergency · Rapid infraction disease · Health challenge · Omicron variant · India

Introduction

The SARS-CoV-2 is the most deadly infraction disease, which is totally destroyed the world's public health and increased the health emergency (Filetti 2020). Worldwide increase of mortality rate, massive economic losses, several health emergencies, oxygen deficiency, environmental degradation, and gross domestic product (GDP) were affected (Sarkodie and Owusu 2021; Ravens-Sieberer et al. 2021). Similarly, due to worldwide lockdown, management and planning also reduced the air quality index (AQI), which is indicating the health environment but the spreading of COVID-19 was damaged the health system in most of the centuries (Gautam 2020; Singh and Chauhan 2020; Shakkor et al. 2020; Anil and Alagha 2021). The SAR-CoV-2 or COVID-19 (WHO 2019) is the most affected and influencing

infraction disease which is mainly affected in the human chest and flu-like illness, shortness of breath, dizziness, and most of the cases death (Bayram et al. 2020; Gautam and Hens 2020; Khan et al. 2022).

The new closely related Delta variant of SAR-CoV-2 is identified by World Health Organisation (WHO), which is spreading gradually and affected human health (Cameroni et al. 2022; Schmidt et al. 2022). On 26 November 2021, the Technical Advisory Group of Virus Evaluation (TAG-VE) was detecting the newly evaluated SAR-CoV-2, which is particular mutations and combinations of mutations modified of the new virus (VanBlargan et al. 2022). The TAG-VE export committee was named this new SAR-CoV-2 as B.1.1.529, which is first detected on 24 November 2021 in South Africa (WHO 2021a). After that many countries such as South Africa, the United Kingdom, Germany, Canada, Australia, Botswana, Belgium, Japan, Brazil, Israel, and China have detected the omicron virus (Quarleri et al. 2022). The researchers of South Africa (Pulliam et al. 2022) and many others countries are tried to build a proper idea and new findings of

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the Omicron virus and rapidly update the information for public security (WHO 2021c). Scientists and researchers are still trying to build a proper idea about the Omicron, such as spreading speed, health impact, and other necessary information.

In Omicron, two supplementary mutations in nucleocapsid (N) protein R203K and G204R are situated in the newly identified Omicron variant (Hodcroft 2021; Leary et al. 2021). The two proteins are an ancestral mutation which is changes subgenomic RNA appearance (Leary et al. 2021) and developed epidemiologic masses (Mourier et al. 2021). Many variant were detected of SAR-CoV-2-like 20I (Alpha, V1), 20H (Beta, V2), 20J (Gamma, V3), 21A (Delta), 21I (Delta), 21J (Delta), 21K (Omicron), 21B (Kappa), 21D (Eta), 21F (Iota), 21G (Lambda), 21H (Mu), 20B/S: 732A, 20A/S: 126A, 20E (EU1), 21C (Epsilon), 20A/S 439K, S: 677H. Robin1, S: 677P. Pelicon, 20A.EU2, 20A/S: 98F, 20C/S: 80Y, 20B/S: 626S and 20B/S: 1122L (CoVariants 2021). The PCR test is used to detect the variant of the SAR-CoV-2 and includes the rapid antigen test for COVID-19 and Omicron test.

India is the most populated country, which is mostly affected by the COVID-19 and gradually increased the cases also. WHO warns that Omicron is a very high-risk activity and increased gradually worldwide (WHO, Update on Omicron 2021c). Omicron is also transmitted into the people and worldwide this Delta variant is triggering the health emergency (WHO 2021b). WHO intelligence that initial confirmation advises that aforementioned infection might propose low fortification against the Omicron virus in assessment to additional alternatives of apprehension, for example, Delta. The information on newly developed diseases is still incomplete though (UICEF 2021). Omicron is increased daily by around 35% and around 5 states of India have record 100 cases of Omicron (Hindustan times 2021). The Mumbai Police is stopped visiting the parks, sea areas, and any public areas from 5 PM to AM till the 15th January 2022. Worldwide around 2800 flight was cancelled and 12,000 are delayed due to COVID-19 and Omicron cases. Sikkim was arises a new rule regarding the Omicron spreading till 10th January 2022 (Coronavirus Omicron India Highlights 2021). On the 15th December 2021, a 73-year-old man was tested positive with COVID's Omicron, who is dies after COVID-19 death. First, two Omicron cases are registered in the Indian state of Karnataka. 24 November 2021, two people are tested positive who are 66 and 46 years. 66 years is a South African national and a 46-year-old doctor tested positive with no travelled record (BBC 2021). The Omicron cases may increase if the people are not given any protocol or guidelines. This condition may havoc very soon in India due to overwhelming population pressure.

Materials and methods

Data used

The affected data was given from the Ministry of Health and Family Welfare, Govt. of India (MoHFW 2021) and different sources, where the details Omicron data sets were derived and calculated the confirmed and discharge cases of the Omicron. The affected and discharge data were graphically represented in the Indian state map. Two maps such as total cases and discharge were finalized in ArcGIS v10.5 software and the correlation of total cases and discharge was estimated in MS Office, where the thematic, and choropleth maps were prepared. These new results may be helpful for the planning, management, and health emergency-related advantages in India.

Omicron data analysis

The omicron data sets were derived from different websites and the states and UTs wise data were joined in the ArcGIS software, where the thematic, and choropleth maps were prepared. The discharge and Omicron confirmed cases are used for bar graph analysis, which is measuring the relationship between confirmed cases and discharge cases of Omicron virus in India. The choropleth map was widely used for investigating the distribution of data sets with significant levels. The state and UT-wise data were divided into different phases and calculated the distribution of the Omicron variant affected people.

The correlation analysis is more important in estimating the relationship between two or more variables. In this study, two different variables such as Omicron confirmed cases and discharge cases were used for correlation analysis. The following formula is used for correlation analysis using the following equation:

$$R^2 = \frac{SSR}{SST} = \frac{\sum_{i=1}^n (\hat{y}_i - \bar{y})^2}{\sum_{i=1}^n (y_i - \bar{y})^2} \quad (1)$$

where R^2 indicates the correlation of coefficient, SSR is represent sum of square regression, SST indicates sum of square error, y is denoted the number.

Results

The COVID-19 epidemic is totally destroying the world's public health and the variation of the COVID-19 is more harmful to human life. Most of the health systems are affected due to this epidemic. In December 2019, this virus

was first identified in Wuhan, China. After that, most of the countries are affecting this virus and the results are huge life losses and massive economic damage. Many countries were tried to establish and developed the vaccine but they failed. After that many vaccines were developed but this pandemic is not controlled by most of the countries. The most affected countries are the USA, India, Brazil, UK, Russia, France, Turkey, Germany, Spain, and Italy (Worldometer 2021). This epidemic also changes the variation and increases the health emergency world (Viana et al. 2022).

Omicron is a Delta variant of COVID-19 which is first detected in South Africa and in India it was registered on 24 November 2021 in Karnataka. Around 781 people were affected and 241 people were discharged or recovered from these newly develop scenarios. The most affected states and UTs are NCT of Delhi (238), Maharashtra (167), Gujarat (73), Kerala (65), Telangana (62), Rajasthan (46), Tamil Nadu (34), and Karnataka (34), where the low affected States and UTs are Haryana (12), West Bengal (11), Madhya Pradesh (9), Odisha (8), Andhra Pradesh (6), Himachal Pradesh, Goa, Manipur and Ladakh have one record (Table 1).

Table 1 States and UT wise Omicron total and discharge cases in India

SL. no.	State/UT	Total cases	Discharged/recovered
1	NCT of Delhi	238	57
2	Maharashtra	167	72
3	Gujarat	73	17
4	Kerala	65	1
5	Telangana	62	10
6	Rajasthan	46	30
7	Tamil Nadu	34	16
8	Karnataka	34	18
9	Haryana	12	2
10	West Bengal	11	1
11	Madhya Pradesh	9	7
12	Odisha	8	0
13	Andhra Pradesh	6	1
14	Uttarakhand	4	0
15	Jammu & Kashmir	3	3
16	Chandigarh	3	2
17	Uttar Pradesh	2	2
18	Himachal Pradesh	1	1
19	Goa	1	0
20	Manipur	1	0
21	Ladakh	1	1
	Total	781	241

The discharged cases are NCT of Delhi (57), Maharashtra (72), Gujarat (17), Kerala (1), Telangana (10), Rajasthan (30), Tamil Nadu (16) and Karnataka (18), Haryana (2), West Bengal (1), Madhya Pradesh (7), Odisha (0), and Andhra Pradesh (1). Figure 1 indicates the Indian states and UTs names which is more helpful for identifying the most affected states and UTs in India. Total numbers of Omicron cases are visualized in Fig. 2, where six scale divisions are located which are nil, 1–10, 11–30, 31–50, 51–80, and above

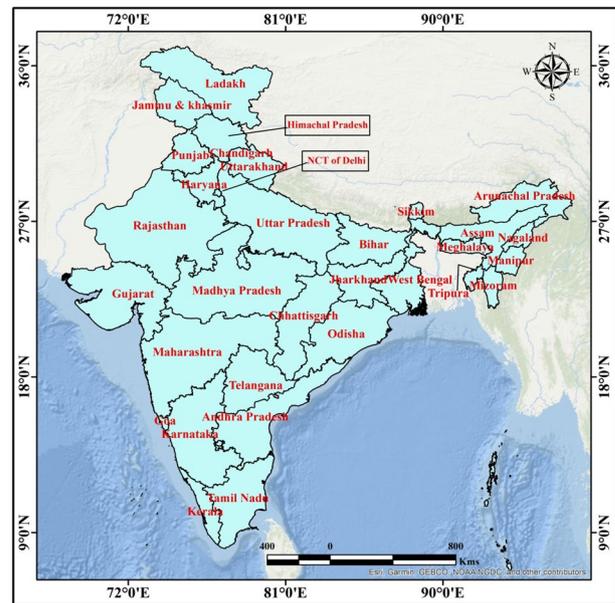


Fig. 1 Locational map of this study area

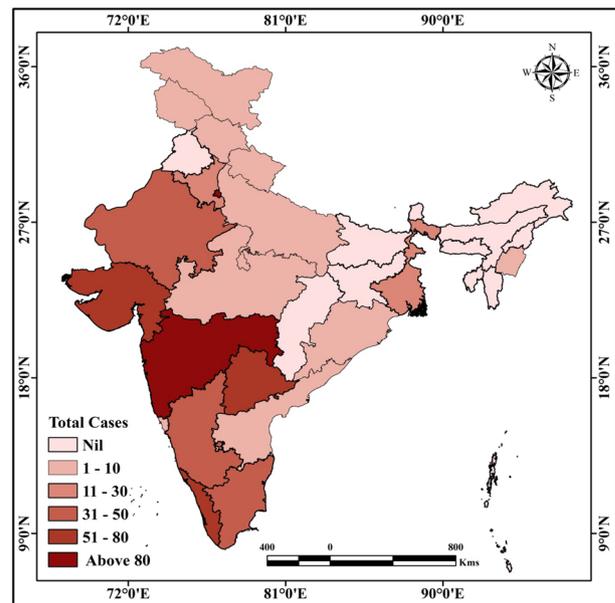


Fig. 2 States and UT wise total Omicron cases in India

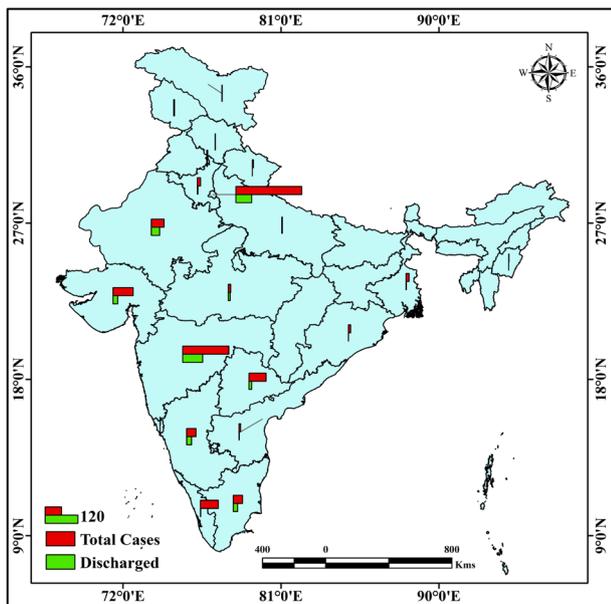


Fig. 3 States and UT wise discharge Omicron cases in India

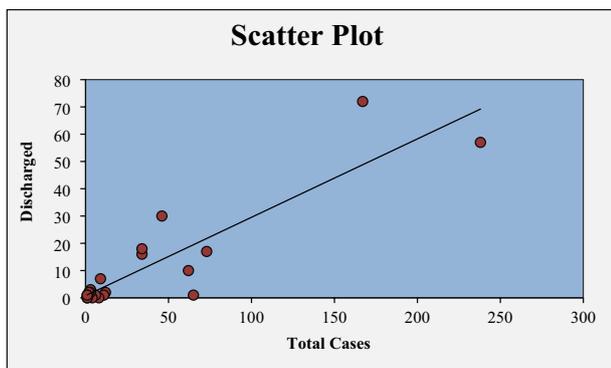


Fig. 4 Correlation between total cases and discharge

80. The Capital city of Delhi and business state Maharashtra are mostly affected by Omicron (Fig. 2). However, Punjab, Tripura, Bihar, Jharkhand, Assam, and Sikkim do have not any Omicron recorded. The total cases and discharge data were graphically represented in Fig. 3, where located Delhi and Maharashtra were mostly affected areas.

The scatter plot between total cases and discharged is strongly positive and the R^2 value is 0.80, which is indicate the actual scenarios of Omicron affect in India (Fig. 4). The Mumbai Police is stopped visiting the parks, sea areas, and any public areas from 5 PM to AM till the 15th January 2022. West Bengal government declared that schools, colleges, and Universities are remaining close still 15th January and 50% of people are allowed in offices, administrative areas, malls, public locations. The guidelines are stated on 3rd January 2022. Worldwide around 2800 flight

was cancelled and 12,000 are delayed due to COVID-19 and Omicron cases. Sikkim was arises a new rule regarding the Omicron spreading till 10th January 2022.

Discussion

Those scenarios are indicating the spreading of the Omicron variant in the Indian context. Many authors are studying the Omicron variant-related investigation in India, where the spreading of the new variants is affected the human body (Ettaboina et al. 2021; Ranjan 2022). The global threat epidemic gradually built new sequences and variants which are affected the human body. The old-age people were mostly affected by the Omicron virus. This variant doesn't identify separately and around 60 plus aged people were mostly affected by this COVID-19 variant. The flu-like symptoms are identified due to this variant. In India, this varies was continuously spreading and affected the social, cultural, economic, and political importance. The schools, colleges, educational sectors, business sectors, and administrative sectors are closed again due to Omicron spreading. Many areas are open online-based coaching, a study centre for educational purposes. This pandemic was destroying the world's health gradually some environmental issues are located, such as fresh air quality, water quality, and many other environmental conditions.

The Omicron variant was first detected in South Africa, where the newly developed COVID-19 variant was developed and notified. In India, these conditions are identified and located that the spreading times are more than COVID-19, where confirmed cases are recorded a huge amount. This epidemic is destroying the world's economic balance and educational system. Many states and some containment zonewise areas are lockdowns from 10 PM to 5 AM and restrictions on the restaurant, malls, cinema halls, and public places. Many areas in India have limited numbers of entry are available, whereas cinema hall has 75% of the total seat, Public places have 50% of the total capacity, and restaurants has a limited number of customer availability. This study results were investigating the actual scenarios of the COVID-19 newly developed Omicron variant in India, where confirmed cases, discharged and correlation analysis data and information are more helpful for future outbreaks of the deadly virus-like COVID-19.

Conclusions

The COVID-19 epidemic is totally destroying the world's public health and enlarging the health emergency globally. The epidemic is progressively developing and the different variants are affecting global public health. Most of the

countries were recorded massive life losses and economic disasters. In addition, gradually air quality index (AQI) is decreased due to lockdown. However, health disaster is more serious, which is increase the mortality rate. Many developed countries such as Italy, USA, UK, and Canada also noticed the huge amount of life losses. However, this epidemic is reducing due to the development of vaccine-like COVIDSHILD, Covaxin, Sputnik V, and CoronaVac. However, the Delta variant Omicron cases are increasing public health emergency globally. The Omicron delta variant is spreading rapidly and affected persons are high on the basis of the recorded data sets. This condition is indicating health departments need proper planning and management to protect the public health disaster due to different variants of COVID-19. Proper planning, awareness, health disaster monitoring, and maintaining the WHO guidelines are more important for fighting against this health emergency. Social distancing, wear masks to protect the virus, washing hands, and maintaining the proper management are necessary to protect the Omicron virus. This study has some limitations such as lack of data availability, distribution of the recorded confirmed and discharge cases in different states and UTs in India.

India has recorded the first case on 24 November 2021 in Karnataka. After that many cases are recorded in India and gradually registered. Mostly affected states and UTs are Delhi, Maharashtra, Karnataka, Telangana, Kerala, and Rajasthan, where Tripura, Bihar, Jharkhand, Assam, and Sikkim have not any Omicron recorded. This study result may helpful for the policy-makers, planners, disaster management teams, health administrators, health workers, and general people for awareness. This situation needs proper planning and awareness for destroying the epidemic chain; otherwise, Omicron may return the story of massive life losses.

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Declarations

Conflict of interest The corresponding author states that there is no financial or non-financial interest in this research.

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