



JN.1: The Present Public Health Concern Pertains to the Emergence of a Novel Variant of COVID-19

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Dear Editor,

JN.1 is an emerging variant of the COVID-19 virus. Does it have the capacity to pose a substantial threat to public health worldwide? The first confirmed case of the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) virus was detected in December 2019 in the city of Wuhan, China. The virus swiftly disseminated worldwide, resulting in a COVID-19 pandemic.¹ SARS-CoV-2 has undergone genetic alterations, which have led to the development of distinct traits and changes in how the disease transmits and its severity.² Consequently, this has resulted in increased rates of infection transmission. The World Health Organization (WHO) and the Centre for Disease Control Prevention (CDC) have found several variants, specifically Variants of Concern (VOCs), which are referred to as alpha, beta, gamma, and delta. The most recent addition to this list is the Omicron variant. The BA.2.86 variant of the Coronavirus, which is a sub-variant of Omicron, was first identified in Denmark in August 2023.³ The detection of JN.1 in the United States occurred in September 2023,⁴ subsequent to its initial divergence from the parent strain, BA.2.86. JN.1 bears resemblance to BA.2.86, but, it exhibits a unique mutation (L455S) in the spike protein. The JN.1 variant is responsible for a growing proportion of infections and is currently the predominant variety in circulation in the United States.⁵

According to WHO, until December 17, 2023, there have been more than 772 million confirmed COVID-19 cases and approximately 7 million fatalities recorded worldwide. By December 16, 2023, a total of 7344 JN.1 sequences had been submitted to GISAID from 41 countries. These sequences accounted for 27.1% of all available sequences worldwide for epidemiological week 48 (November to December 2023). The nations with the highest percentage of JN.1 sequences are France (20.1%, 1552 sequences), the United States of America (14.2%, 1072 sequences), Singapore (12.4%, 934 sequences), Canada (6.8%, 512 sequences), the United Kingdom (5.6%, 422 sequences), and Sweden (5.0%, 381 sequences).⁶ By December 24, 2023, the Health Ministry of India had recorded 63 instances of the JN.1 COVID-19 variant.⁷

JN.1 was previously monitored within BA.2.86, the primary lineage categorized as a variation of interest (VOI). Nevertheless, there has been a surge in the number of reported cases of JN.1 in various countries during the past several weeks. This variant is now becoming increasingly common worldwide and accounts for the majority of BA.2.86 lineages reported to

GISAID. Because of its rapid and widespread transmission, the World Health Organization (WHO) is categorizing JN.1 as a distinct variation of interest (VOI) separate from the original lineage, BA.2.86.⁶ The ongoing proliferation of JN.1 indicates that the variant is perhaps more contagious or possesses a higher ability to evade our immune defenses compared to other variants already in circulation. There is a growing proportion of infections caused by JN.1 in travelers, wastewater, and most regions worldwide. Currently, it is premature to determine the potential impact of JN.1 on the rise of infections or hospitalizations.⁵ The transmission of COVID-19 occurs through the exhalation of droplets and minuscule particles containing the virus by an infected individual. These droplets and particles can be inhaled by others, or they can come into contact with their eyes, nose, or mouth. Under certain circumstances, these tiny liquid particles have the potential to pollute the surfaces they come into contact with.⁸ The potential variance in symptoms caused by the JN.1 infection remains uncertain at present. Usually, symptoms of COVID-19 exhibit similarities across various variants.⁵ Individuals afflicted with COVID-19 have exhibited a broad spectrum of symptoms, ranging from minor manifestations to severe pathology. The onset of symptoms can occur within a timeframe of 2 to 14 days following the onset of the virus. Individuals may experience symptoms ranging from moderate to severe. The potential symptoms encompass: pyrexia or shivering, respiratory distress, exhaustion, muscular or bodily discomfort, cephalalgia, recent anosmia or ageusia, pharyngitis, nasal congestion or rhinorrhea, nausea or emesis, and diarrhea.⁹ The JN.1 variation is expected to lead to an increased prevalence of SARS-CoV-2 cases, particularly in nations experiencing a surge in viral and bacterial diseases as they enter the winter season.⁶ Therefore, vaccination should be extended to exclude other respiratory infections in order to safeguard people around the globe. Further investigation is essential in order to identify the disease severity and the rapid transmission of this variant since JN.1 poses a risk to public health.

The prevention of COVID-19 is contingent upon several factors, including vaccinations, good hand and respiratory hygiene, surveillance, avoidance of poorly ventilated enclosed areas, adequate indoor ventilation, isolation of COVID-19 patients, avoidance of close contact with patients exhibiting respiratory symptoms, and wearing a mask.¹⁰ The numerous changes and differences identified in BA.2.86 closely resemble the distinctions observed between the initial Omicron variant



(BA.1) and the Delta variant (B.1.617.2), as documented previously. There are concerns about the potential for increased evasion of existing immunity from vaccines and previous infections compared to other recent variants. Additionally, there is a possibility that this variant could lead to a significant number of infections and deaths, similar to the first wave of the Omicron variant in early 2022.¹¹ Researchers should prioritize investigating whether JN.1 also has the potential for immune escape. Nevertheless, low and middle-income countries (LMICs) are at a higher risk of failing to identify a novel variant and experiencing severe public health consequences compared to high-income countries. This is mostly due to their limited resources for COVID-19 testing, vaccination, and medical care.¹² Therefore, it is imperative to have robust research and development capacity to expedite the delivery of adequate vaccinations. Moreover, meticulous and methodical planning and implementation are crucial to ensuring equitable distribution of vaccinations across high-income, middle-income, and low-income countries.

Author Contributions

SAK conceptualized and wrote the article draft. MAB revised the article. SMRD conceptualized, revised the article, and supervised the project. All the authors agreed to submit the article in its current form.

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Ethics Statement

Not applicable.

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