



# The Emergence of Human Monkeypox Amid the COVID-19 Pandemic: Fears of a New Pandemic

Rasoul Raesi<sup>1,2,\*</sup> 

<sup>1</sup>Department of Nursing, Torbat Jam Faculty of Medical Sciences, Torbat Jam, Iran

<sup>2</sup>PhD in Health Services Management, Mashhad University of Medical Sciences, Mashhad, Iran

© 2024 The Author(s). Published by Bentham Open.

This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International Public License (CC-BY 4.0), a copy of which is available at: <https://creativecommons.org/licenses/by/4.0/legalcode>. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

\*Address correspondence to this author at the PhD in Health Services Management, Mashhad University of Medical Sciences, Mashhad, Iran; Tel: 9157105007; E-mail: [raesi.br881@gmail.com](mailto:raesi.br881@gmail.com)

Cite as: Raesi R. The Emergence of Human Monkeypox Amid the COVID-19 Pandemic: Fears of a New Pandemic. Open Public Health J, 2024; 17: e18749445320367. <http://dx.doi.org/10.2174/0118749445320367240610093311>



Received: March 31, 2024

Revised: May 25, 2024

Accepted: May 31, 2024

Published: June 13, 2024



Send Orders for Reprints to  
[reprints@benthamscience.net](mailto:reprints@benthamscience.net)

## To The Editor,

Monkeypox is a newly emerging viral disease that has recently affected the lives of many people in various countries and has sparked widespread concern. One of the worries regarding this virus is that it will trigger a new pandemic during the COVID-19 outbreak. In this article, we will investigate the concerns surrounding the outbreak of human monkeypox during the COVID-19 pandemic.

On December 31, 2019, China notified the World Health Organization (WHO) of the outbreak of a disease with acute pneumonia presentations in Wuhan, China [1]. Within a short while, the disease caused by the new coronavirus (COVID-19) spread from China to other countries, posing a variety of health, socioeconomic, and political challenges to the world population [2, 3]. After the increase in cases and global spread of the virus, on January 30, 2020, the WHO declared the new coronavirus outbreak a pandemic and a public health emergency, with threats not only to China but to all nations [4]. According to the latest data, the total number of COVID-19 cases in Iran is 7,627,863, and the total number of deaths is 146,837 as of April 13, 2024. Globally, as of May 25, 2024, there have been 750,000,000 confirmed cases of COVID-19 and 6,500,000 deaths reported to WHO [5-8].

While the world continues to struggle with the COVID-19 pandemic, monkeypox first appeared in the United Kingdom amid the coronavirus outbreak on April 29, 2022 [9]. The monkeypox virus was first identified in 1958 in a research facility studying apes. In 1970, the first human case was reported in the Republic of the Congo

[10]. Monkeypox is a zoonotic disease caused by the Monkeypox virus (MPXV), an Orthopoxvirus, with two genetic clades: clade I (more pathogenic) and clade II. Human cases have historically been reported from rural, forested areas in central and west African countries, countries reporting cases related to population migration or travel of infected people, and exposure to imported infected mammals [11-13]. The annual number of cases in Africa has risen since 2014, surpassing reports from the previous 40 years for most countries, likely due to a combination of environmental and ecological changes, animal or human movement, the cessation of routine smallpox vaccination since its eradication in 1980, improvements in disease detection and diagnosis, and genetic changes in the virus [13-15].

During 2018-2021, human cases were recognized and confirmed in six African countries, with most detected in the Democratic Republic of the Congo (DRC) and Nigeria [16-18]. In eight instances, patients with monkeypox were identified in four countries outside of Africa after traveling from Nigeria [18, 19]. The global outbreak that began in May 2022 has further highlighted the need for improvements in laboratory-based surveillance and access to treatments and vaccines to prevent and contain the infection, including in areas of Africa with endemic monkeypox [11-14].

The prevention of monkeypox is regarded as one of the most crucial aspects of controlling this infectious disease. Among the essential measures for preventing monkeypox are avoiding contact with sick animals or animal

carcasses, avoiding direct contact and cleaning the area where sick and suspicious animals are kept, quarantining people with symptoms and suspicious contact, washing hands with soap and water or alcohol-containing solutions after suspected contacts, and prophylactically vaccinating individuals who have contact with livestock [20, 21]. The WHO convened an emergency meeting on May 20, 2022, to discuss the outbreak and assess the severity of the monkeypox threat. Hans Kluge, the regional director of the WHO in Europe, expressed concern that infections may spread worldwide as people gather for summer parties and festivals [22, 23]. According to the available information, the monkeypox virus is the most significant orthopox virus affecting human populations. Clinical recognition, diagnosis, and prevention remain challenging in poor, endemic areas where monkeypox is found. The epidemiology of monkeypox has been characterized by studies conducted at the end of smallpox eradication; however, new assessments are required now that routine smallpox vaccination has ended and herd immunity is waning.

Additionally, fundamental ecological studies are required to better comprehend the animal species involved in the transmission and maintenance of the virus and to inform preventative measures. After the COVID-19 pandemic and subsequent restrictions, the fear of a new pandemic has caused a great deal of anxiety among a large number of individuals [24, 25]. However, it is still questionable whether we should be concerned about a new pandemic. Although cases of this disease have been reported in many non-endemic countries of the world, and a recent suspected case has been reported in Iran, the necessary steps should be taken for early diagnosis and, if confirmed, appropriate treatment. Nevertheless, given that the disease is transmitted primarily through coarse respiratory particles (much lower transmission rate), the likelihood of a new pandemic is much lower than that of COVID-19.

In conclusion, although it is recommended that relevant institutions initiate the proper and thorough training of physicians and the general population regarding the symptoms and mode of transmission of this disease as soon as possible, it is illogical to create fear and panic among the populace. Moreover, this disease appears to be considerably more manageable and preventable than COVID-19 if the health principles are observed.

#### AUTHORS' CONTRIBUTIONS

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

#### ACKNOWLEDGEMENTS

Declared none.

#### REFERENCES

- [1] Alavi-Moghaddam M. A novel coronavirus outbreak from Wuhan City in China, rapid need for emergency departments preparedness and response; a letter to editor. *Arch Acad Emerg Med* 2020; 8(1): e12. PMID: 32185368
- [2] Al-Mandhari A, Samhouri D, Abubakar A, Brennan R. Coronavirus Disease 2019 outbreak: Preparedness and readiness of countries in the eastern mediterranean region. *East Mediterr Health J* 2020; 26(2): 136-7.
- [3] Lai CC, Wang CY, Wang YH, Hsueh SC, Ko WC, Hsueh PR. Global epidemiology of coronavirus disease 2019 (COVID-19): disease incidence, daily cumulative index, mortality, and their association with country healthcare resources and economic status. *Int J Antimicrob Agents* 2020; 55(4): 105946. <http://dx.doi.org/10.1016/j.ijantimicag.2020.105946> PMID: 32199877
- [4] Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents* 2020; 55(3): 105924. <http://dx.doi.org/10.1016/j.ijantimicag.2020.105924> PMID: 32081636
- [5] COVID-19 pandemic in Iran. Available from: [https://en.wikipedia.org/wiki/COVID-19\\_pandemic\\_in\\_Iran](https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Iran)
- [6] Iran. Available from: <https://www.reuters.com/graphics/world-coronavirus-tracker-and-maps/countries-and-territories/iran/>
- [7] Islam MA. A review of SARS-CoV-2 variants and vaccines: Viral properties, mutations, vaccine efficacy, and safety. *Infect Med* 2023; 2(4): 247-61. <http://dx.doi.org/10.1016/j.imj.2023.08.005> PMID: 38205179
- [8] Number of novel coronavirus (COVID-19) deaths worldwide as of May 2, 2023, by country and territory. Available from: <https://www.statista.com/statistics/1093256/novel-coronavirus-2019cov-deaths-worldwide-by-country/>
- [9] Zumla A, Valdeiros SR, Haider N, *et al.* Monkeypox outbreaks outside endemic regions: Scientific and social priorities. *Lancet Infect Dis* 2022; 22(7): 929-31. [http://dx.doi.org/10.1016/S1473-3099\(22\)00354-1](http://dx.doi.org/10.1016/S1473-3099(22)00354-1) PMID: 35636447
- [10] Ladnyj ID, Ziegler P, Kima E. A human infection caused by monkeypox virus in Basankusu Territory, Democratic Republic of the Congo. *Bull World Health Organ* 1972; 46(5): 593-7. PMID: 4340218
- [11] McCollum AM, Shelus V, Hill A, *et al.* Epidemiology of human mpox—worldwide, 2018–2021. *MMWR Morb Mortal Wkly Rep* 2023; 72(3): 68-72. <http://dx.doi.org/10.15585/mmwr.mm7203a4> PMID: 36656790
- [12] Thakur M, Das P, Sobti RC, Kaur T. Human monkeypox: Epidemiology, transmission, pathogenesis, immunology, diagnosis and therapeutics. *Mol Cell Biochem* 2023; 478(9): 2097-110. <http://dx.doi.org/10.1007/s11010-022-04657-0> PMID: 36626099
- [13] Zahmatyar M, Fazlollahi A, Motamedi A, *et al.* Human monkeypox: History, presentations, transmission, epidemiology, diagnosis, treatment, and prevention. *Front Med* 2023; 10: 1157670. <http://dx.doi.org/10.3389/fmed.2023.1157670> PMID: 37547598
- [14] Ali E, Sheikh A, Owais R, Shaikh A, Naeem U. Comprehensive overview of human monkeypox: epidemiology, clinical features, pathogenesis, diagnosis and prevention. *Ann Med Surg* 2023; 85(6): 2767-73. <http://dx.doi.org/10.1097/MS9.0000000000000763> PMID: 37363539
- [15] Islam MA, Mumin J, Haque MM, *et al.* Monkeypox virus (MPXV): A Brief account of global spread, epidemiology, virology, clinical features, pathogenesis, and therapeutic interventions. *Infect Med* 2023; 2(4): 262-72. <http://dx.doi.org/10.1016/j.imj.2023.11.001> PMID: 38205182
- [16] Ngom R, Gueye AS, Lassieur S, *et al.* Five decades of infectious

- diseases outbreaks in the African region (1970–2018) a geographic snapshot. *Soc Sci Humanit Open* 2023; 8(1): 100625. <http://dx.doi.org/10.1016/j.ssaho.2023.100625>
- [17] Marks F, Im J, Park SE, *et al.* Incidence of typhoid fever in Burkina Faso, Democratic Republic of the Congo, Ethiopia, Ghana, Madagascar, and Nigeria (the Severe Typhoid in Africa programme): A population-based study. *Lancet Glob Health* 2024; 12(4): e599-610. [http://dx.doi.org/10.1016/S2214-109X\(24\)00007-X](http://dx.doi.org/10.1016/S2214-109X(24)00007-X) PMID: 38485427
- [18] Besombes C, Mbrennga F, Malaka C, *et al.* Investigation of a mpox outbreak in Central African Republic, 2021-2022. *One Health* 2023; 16: 100523. <http://dx.doi.org/10.1016/j.onehlt.2023.100523> PMID: 36950196
- [19] Yinka-Ogunleye A, Aruna O, Dalhat M, *et al.* Outbreak of human monkeypox in Nigeria in 2017-18: A clinical and epidemiological report. *Lancet Infect Dis* 2019; 19(8): 872-9. [http://dx.doi.org/10.1016/S1473-3099\(19\)30294-4](http://dx.doi.org/10.1016/S1473-3099(19)30294-4) PMID: 31285143
- [20] Kenner J, Cameron F, Empig C, Jobes DV, Gurwith M. LC16m8: An attenuated smallpox vaccine. *Vaccine* 2006; 24(47-48): 7009-22. <http://dx.doi.org/10.1016/j.vaccine.2006.03.087> PMID: 17052815
- [21] Saijo M, Ami Y, Suzuki Y, *et al.* LC16m8, a highly attenuated vaccinia virus vaccine lacking expression of the membrane protein B5R, protects monkeys from monkeypox. *J Virol* 2006; 80(11): 5179-88. <http://dx.doi.org/10.1128/JVI.02642-05> PMID: 16698998
- [22] Assessment RR. European Centre for Disease Prevention and Control. Monkeypox multi-country outbreak - 23 May 2022. 2022. Available from: <https://www.ecdc.europa.eu/en/publications-data/risk-assessment-monkeypox-multi-country-outbreak>
- [23] Jamil H, Tariq W, Tahir MJ, Mahfooz RS, Asghar MS, Ahmed A. Human monkeypox expansion from the endemic to non-endemic regions: Control measures. *Ann Med Surg* 2022; 79: 104048. <http://dx.doi.org/10.1016/j.amsu.2022.104048> PMID: 35860124
- [24] Drake K. COVID-19 anxiety syndrome: A pandemic phenomenon. *Medical News Today* 2021.
- [25] Mertens G, Lodder P, Smeets T, Duijndam S. Pandemic panic? Results of a 14-month longitudinal study on fear of COVID-19. *J Affect Disord* 2023; 322: 15-23. <http://dx.doi.org/10.1016/j.jad.2022.11.008> PMID: 36372124

**DISCLAIMER:** The above article has been published, as is, ahead-of-print, to provide early visibility but is not the final version. Major publication processes like copyediting, proofing, typesetting and further review are still to be done and may lead to changes in the final published version, if it is eventually published. All legal disclaimers that apply to the final published article also apply to this ahead-of-print version.