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## Correspondence

**The 2022 monkeypox outbreak and associated psychiatric morbidities**

Dear Editor,

On July 23, 2022, the World Health Organization (WHO) declared the current monkeypox outbreak as a Public Health Emergency of International Concern (PHEIC). At the time of this writing, there had been 41,000 laboratory-confirmed cases around the world. Even though monkeypox symptoms are often moderate and self-limiting, the disease can nonetheless lead to hospitalization and even fatalities in some cases [1]. It causes a smallpox-like illness and is transmitted through close physical contact with infected humans, animals, and materials contaminated with the virus.

Epidemiologists, social workers, and other community members all face challenges from the current monkeypox outbreak. It exhibits atypical transmission and different clinical presentations [2]. Though the reasons for the high transmissibility are not very clear, men having sex with other men (MSM) and engaging in risky behaviors and activities were identified as risk factor [3]. A recent study showed that 98% of people diagnosed with the monkeypox virus across 16 countries between April and June 2022 are gay or bisexual men [4], which leads to stigmatization of this people group. Patients and their families are marginalized and socially excluded, which causes a range of maladaptive psychological responses in them. Additionally, scarring and disfigurement from skin or genital lesions could worsen mental health problems like depression and anxiety that are linked to monkeypox [5].

Studies reporting psychiatric symptoms have revealed that low mood is one of the common features, followed by anxiety or depression, requiring counseling amongst those infected with monkeypox [6]. Though there is less evidence regarding the psychiatric sequelae, a case of suicide was also reported during the 2017 monkeypox outbreak [7]. Badenoch and colleagues [8] found that neuropsychiatric symptoms are prevalent in over 50% of monkeypox infections. These might have resulted from monkeypox exposure or from being in quarantine. Another cross-sectional study conducted in Iraq found that the general public has anxiety problems regarding the current monkeypox outbreak [9]. When a new illness appears and spreads swiftly, it produces a subconscious fear of an infectious disease called “germ panic”. Monkeypox infections can be transmitted undetected, they provoke psychological instability. The potential for panic to ensue owing to the spread of monkeypox should also be considered [10]. Monkeypox patients suffered from neurological and psychiatric complications such as headaches, myalgia, seizures, confusion, encephalitis, and fatigue [8]. Over 25% of hospitalized MPX patients reported anxiety or depression that required therapy [6].

Notably, the 2017–18 outbreak in Nigeria was accompanied by widespread fear, panic, and concerns about stigmatization and social exclusion of affected patients, survivors, and family members [11]. Besides stigmatization associated with monkeypox infection, incorrect infodemics have also been shown to drive fear, panic, and

misconceptions. Recently, the World Health Organization urged greater focus on issues related to mental health and suicide prevention during epidemics [12]. In the light of less information available on the mental effects of human monkeypox [8], the biopsychosocial model should be incorporated into the care protocols of primary care settings and outpatient clinics to reduce any likelihood of infection-associated depression [13]. Optimization of mental health care for monkeypox-infected patients and their families is crucial. Therefore, mental health services should be integrated into routine monkeypox response efforts [14].

There are limited studies available exploring the short-term psychiatric complications associated with monkeypox. But long-term prospective longitudinal studies evaluating the sequelae of the virus using standardized scales are not reported. In clinical psychiatry, the effects of monkeypox are rarely discussed. The connection between monkeypox and mental health issues remains unclear. More research is required to identify and address psychiatric morbidities associated with monkeypox infection. As the monkeypox outbreak perpetuates stigma worldwide, policymakers must build a good infrastructure to support effective free-stigmatization and non-discriminatory responses to all outbreaks. It is vital to have a system in place that provides psychological support for the general people.

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## Author agreement statement

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## Data statement

All data presented in the present review is available online and can be accessed from the appropriate reference in the reference list.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## References

- [1] S.K. Ahmed, E.A.A. Rashad, M.G. Mohamed, R.K. Ravi, R.A. Essa, S.O. Abdulqadir, A.A. Khdir, The global human monkeypox outbreak in 2022: an overview, *Int. J. Surg.* 104 (2022), 106794, <https://doi.org/10.1016/j.ijssu.2022.106794>.
- [2] C. Dye, M.U.G. Kraemer, Investigating the monkeypox outbreak, *Bmj* 377 (2022).
- [3] N.L. Bragazzi, J.D. Kong, N. Mahroum, C. Tsigalou, R. Khamisy-Farah, M. Converti, J. Wu, Epidemiological trends and clinical features of the ongoing monkeypox epidemic: a preliminary pooled data analysis and literature review, *J. Med. Virol.* (2022), <https://doi.org/10.1002/jmv.27931>.
- [4] J.P. Thornhill, S. Barkati, S. Walmsley, J. Rockstroh, A. Antinori, L.B. Harrison, R. Palich, A. Nori, I. Reeves, M.S. Habibi, Monkeypox virus infection in humans across 16 countries—April–June 2022, *N. Engl. J. Med.* (2022).
- [5] D. Ogoina, M. Iroezindu, H.I. James, R. Oladokun, A. Yinka-Ogunleye, P. Wakama, B. Otiike-Odibi, L.M. Usman, E. Obaze, O. Aruna, Clinical course and outcome of human monkeypox in Nigeria, *Clin. Infect. Dis.* 71 (2020) e210–e214.
- [6] H. Adler, S. Gould, P. Hine, L.B. Snell, W. Wong, C.F. Houlihan, J.C. Osborne, T. Rampling, M.B.J. Beadsworth, C.J.A. Duncan, Clinical features and management of human monkeypox: a retrospective observational study in the UK, *Lancet Infect. Dis.* 22 (2022) P1153–P1162.
- [7] D. Ogoina, A. Mohammed, A. Yinka-Ogunleye, C. Ihekweazu, A case of suicide during the 2017 monkeypox outbreak in Nigeria, *IJID Reg.* 3 (2022) 226–227.
- [8] J.B. Badenoch, I. Conti, E.R. Rengasamy, C.J. Watson, M. Buttler, Z. Hussain, A. G. Rooney, M.S. Zandi, G. Lewis, A.S. David, Neurological and psychiatric presentations associated with human monkeypox virus infection: a systematic review and meta-analysis, *eClinicalMedicine* (2022), <https://doi.org/10.1016/j.eclinm.2022.101644>. In press.
- [9] S.K. Ahmed, S.O. Abdulqadir, R.M. Omar, R.A. Essa, S.H. Hussein, D. Chandran, A.K. Sharma, K. Dhama, Z.K. Ahmed, R.A. Essa, A.Q. Abdulla, A.A. Khdir, Study of knowledge, attitude and anxiety in Kurdistan-region of Iraqi population during the monkeypox outbreak in 2022: An online cross-sectional study, 2022, <https://doi.org/10.21203/rs.3.rs-1961934/v2>.
- [10] M.R. Islam, M. Asaduzzaman, M. Shahriar, M.A. Bhuiyan, The spreading of monkeypox in nonendemic countries has created panic across the world: Could it be another threat? *J. Med. Virol.* (2022) <https://doi.org/10.1002/jmv.27919>.
- [11] A. Yinka-Ogunleye, O. Aruna, M. Dalhat, D. Ogoina, A. McCollum, Y. Disu, I. Mamadu, A. Akinpelu, A. Ahmad, J. Burga, Outbreak of human monkeypox in Nigeria in 2017–18: a clinical and epidemiological report, *Lancet Infect. Dis.* 19 (2019) 872–879.
- [12] World Health Organization, in: Mental Health, Suicide Prevention Needs Greater Attention during Pandemic, 2020. <https://www.who.int/Southeastasia/News/Detail/02-07-2020-Mental-Health-Suicide-Prevention-Needs-Greater-Attention-during-Pandemic-Who>.
- [13] A.A. Saied, J. Shah, Y.E. Dean, Y. Tanas, K.K. Motawea, W. Hasan, H. Aiash, Suicide prevention in Egypt, *Lancet Psychiatr.* 9 (9) (2022) e41, [https://doi.org/10.1016/S2215-0366\(22\)00242-5](https://doi.org/10.1016/S2215-0366(22)00242-5).
- [14] S.K. Ahmed, H.I. M-Amin, S.O. Abdulqadir, S.H. Hussein, Z.K. Ahmed, R.A. Essa, A. A. Khdir, A.Q. Abdulla, R.M. Omar, Timely mental health care for the 2022 novel monkeypox outbreak is urgently needed, *Ann. Med. Surg.* 82 (2022) 104579, <https://doi.org/10.1016/j.amsu.2022.104579>.

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