



# Monkeypox deaths in 2022 outbreak across the globe: correspondence

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The Monkeypox virus which was always thought to be endemic in the African region jumped across continents and all the world taking thus the shape of a pandemic in the year 2022. Till 2003, only few sporadic outbreaks of the disease were seen outside the African continent, however this current pandemic broke all old rules and embarked on to nonendemic countries<sup>[1]</sup>. Europe and America were the two major continents affected and reported the most of cases. Though the number of new Monkeypox cases have showed a remarkable decline all around the world, as of November 7, 2022, there are 77 264 laboratory-confirmed cases of Monkeypox in more than 109 countries all over the world<sup>[2]</sup>. Of the total 77 264 cases the European and American continents contribute 77 264 cases which is ~98.3%<sup>[2]</sup>. With respect to total number of deaths due to this disease, till date 50 deaths have been reported<sup>[3]</sup>. Earlier to May 2022, when the outbreak had just commenced all the 72 deaths were reported from the African region with the Democratic Republic of Congo (DRC) alone having 64 of the total<sup>[4]</sup>. The first case of Monkeypox outside Africa was seen in the United Kingdom on May 8, 2022 and ~2 months later on July 29, the first death was reported outside Africa in South America exactly from Brazil. The sequence of deaths started after this and shortly, two deaths were reported from Spain which was the worst affected country in Europe with about 7000 confirmed cases. India also became part of this list when a 22-year-old man died on July 31 in Kerala.

Both the endemic and nonendemic countries reported deaths due to Monkeypox regularly during the course of the pandemic. Of the total 50 deaths reported till date, 37 have been surprisingly from the nonendemic regions of the American and European continents. Brazil tops the list with 12 deaths while the United States of America has had 11 deaths so far. Mexico lately had 4 deaths whereas the remaining three cases have been reported from Ecuador (2) and Cuba (1), respectively. After the American region, the endemic African region came close second with 14 deaths. Nigeria and Ghana have reported the maximum deaths in this region with 7 and 4 deaths respectively. Cameroon (2) and Mozambique (1) are the other two countries contributing to the death tally. Remaining 4 deaths were reported from Europe and 1 each from South-East Asia and Eastern Mediterranean region. In Europe, Spain has reported 2 deaths whereas 1 death each has occurred in Belgium and Czech Republic, respectively. In the Asian and Mediterranean region, India and Sudan have reported one death each (Fig. 1).

Most of the deaths have been seen in persons who are immunocompromised or have some underlying medical conditions. It was the cause of the first death seen in Brazil, where a 41-year-old man being treated for lymphoma after being tested for Monkeypox died due to septic shock<sup>[5]</sup>. Similar cases were also seen in the United States of America where the first death occurred in a person who had already pre-existing conditions, but the difficult part was to ascertain whether the patient died due to Monkeypox or because of the earlier co-existing illness. On the contrary deaths were also seen in individuals who were neither immunocompromised nor had any of the risk factors seen commonly in Monkeypox. This was seen in the two deaths reported from Spain. Both the deaths occurred in middle-aged men and the cause of death in both was encephalitis<sup>[6]</sup>. A similar finding was seen in India too, where the sole death was reported from an apparently healthy individual and it was only after the patient died that the test turned out positive for Monkeypox. Although children aged below 8 years are at high risk of either suffering from serious complications of the virus, no death so far has been reported in this age group. This age group was one of the most severely affected in the past outbreaks. In a Monkeypox outbreak in DRC in 1988, 33 deaths were seen in a total of 338 patients and all these 33 deaths occurred among unvaccinated children aged between 3 months and 8 years of age<sup>[7]</sup>. Similar findings were also observed in 2011 when all the three deaths among the total 216 confirmed monkeypox patients were seen in children aged below 11 years<sup>[8]</sup>.

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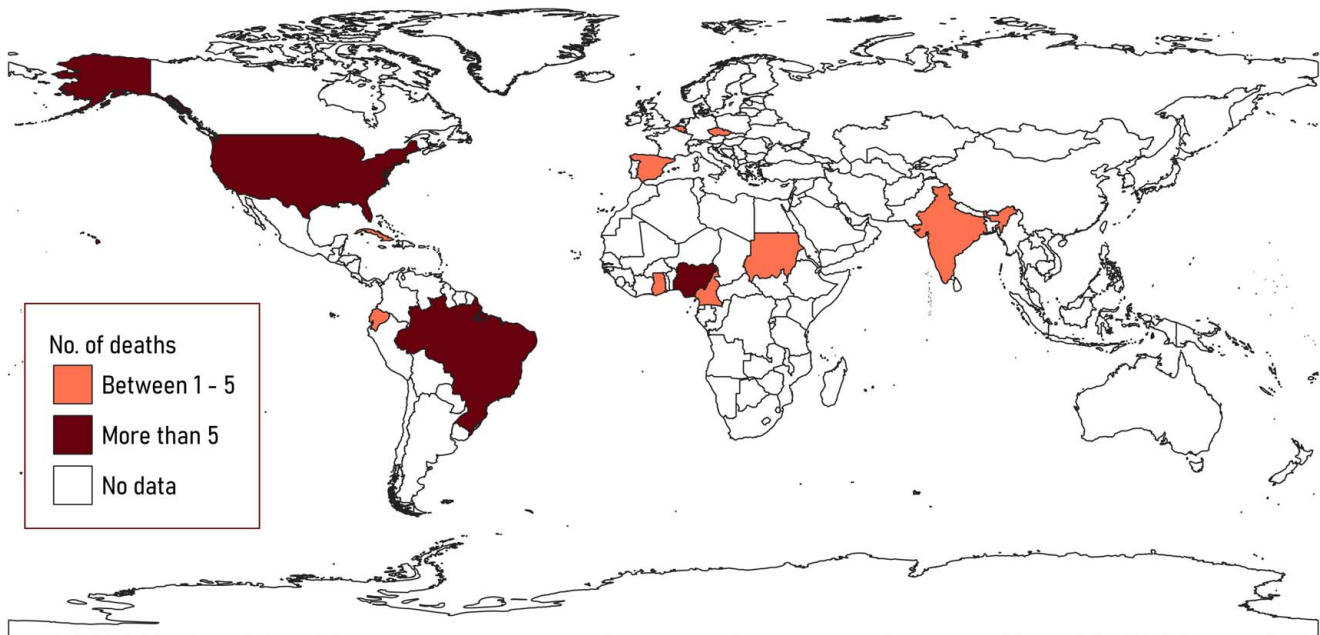
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**Figure 1.** Choropleth map showing the global deaths due to Monkeypox between January 1, 2022 and November 4, 2022 as reported by WHO, European CDC, US CDC, and Ministries of Health. The map was created using QGIS 3.28.0. The base layer map was used from arcGIS Hub.

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