A Systematic Literature Review of the Epidemiology Associated with Human Monkeypox in Children and Adults in India

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BACKGROUND AND OBJECTIVES

- The incidence of Monkeypox is rising in Africa and has been reported sporadically in a few western countries[1,2]. We conducted a systematic literature review (SLR) to identify published literature on epidemiology associated with Monkeypox virus infection in India.

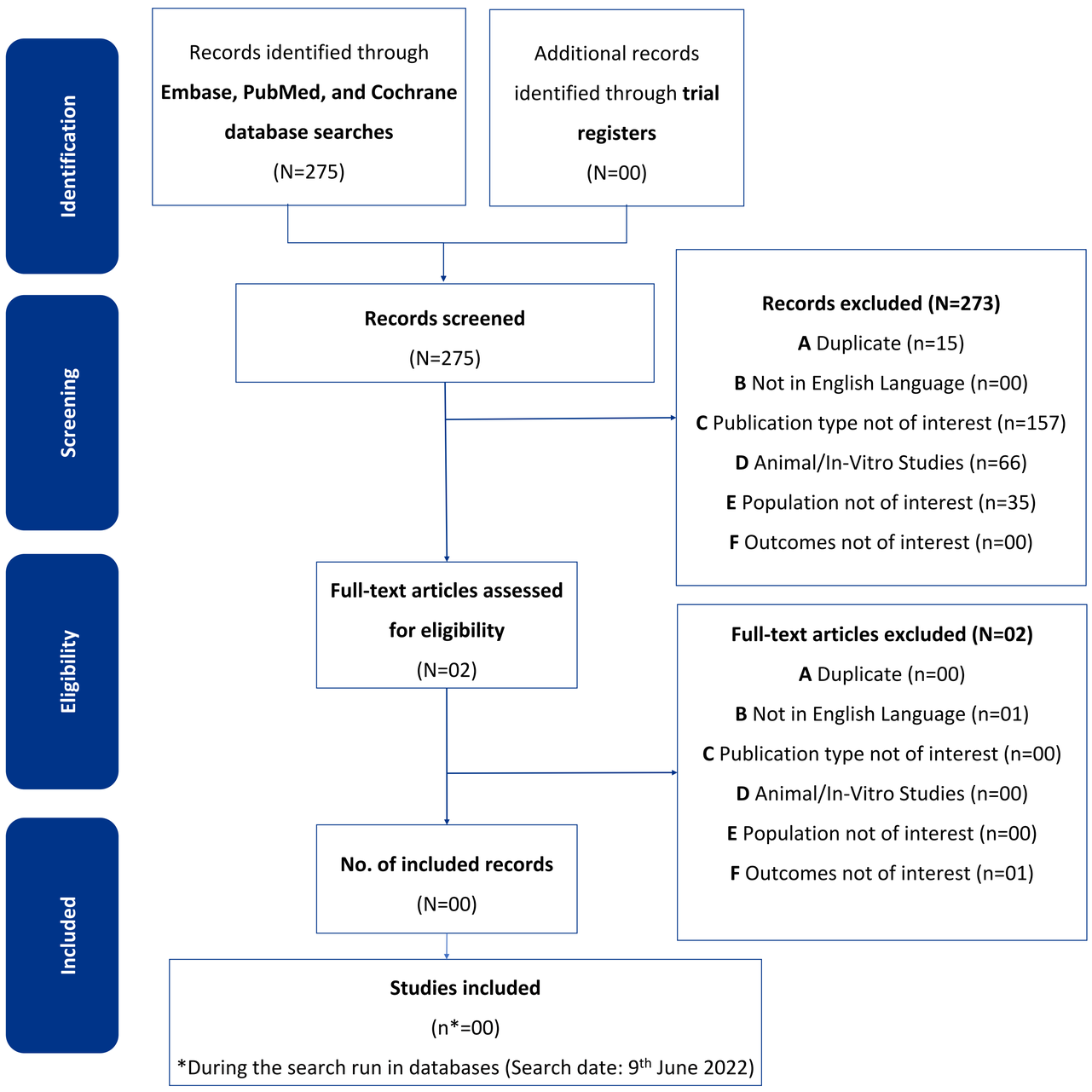
METHODS

- Using Cochrane methodology, a SLR was conducted in PubMed, EMBASE, and Cochrane library (Search Period: January 1947-June 2022).
- Studies on Epidemiology published in English and performed in the Indian context were included.
- A grey literature search was also conducted using the Google Scholar platform to identify relevant studies that were not captured by the database searches.
- Additionally, Indian news and health ministry websites were also searched to understand the incidence and prevalence of Monkeypox in India.

Table 1. PICOS criteria

PICOS criteria	
Population (P)	Children and adults with Monkeypox virus infection
Interventions (I) /Comparators (C)	Not applicable (NA)
Outcomes (O)	Incidence, Prevalence, Risk Factors, Mortality, Morbidity
Study Design (S)	Case reports, Observational study, Systematic reviews, Meta-analysis

Figure 1. PRISMA Flow Diagram[3]



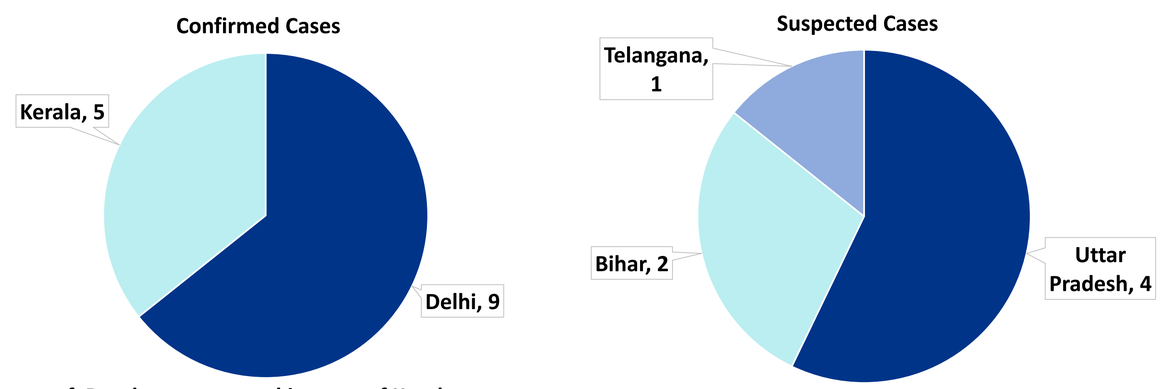
RESULTS

- The literature search yielded 275 citations, after reviewing the identified citations, none of the studies reported the data on epidemiology and risk factors of Monkeypox virus infection in the children and adult Indian population **(Figure 1)**.

EPIDEMIOLOGY

- The World Health Organization (WHO) reports that this is the first time that the chains of transmission in the current wave of infections in Europe have no known epidemiological ties to West or Central Africa[2,4].
- In various central and western African nations, including Benin, Cameroon, Central African Republic, Cote d'Ivoire, Democratic Republic of the Congo, Gabon, Liberia, Nigeria, Republic of the Congo, South Sudan, and Sierra Leone, Monkeypox, a rare viral illness, has been found to be endemic. Additionally, certain non-endemic nations including the United States and the United Kingdom have recorded cases of this[4].
- On 23rd July, the WHO declared Monkeypox as a Public Health Emergency of the International Concern (PHEIC) considering the global outbreaks in multiple countries[4]. At the time of the search run (9th June 2022), no cases were reported in India, however, since then until 27th Sept 2022, India has reported 22 cases (14 confirmed, 7 suspected cases, and 1 death) (Source: Indian health ministry)[5,6,7].

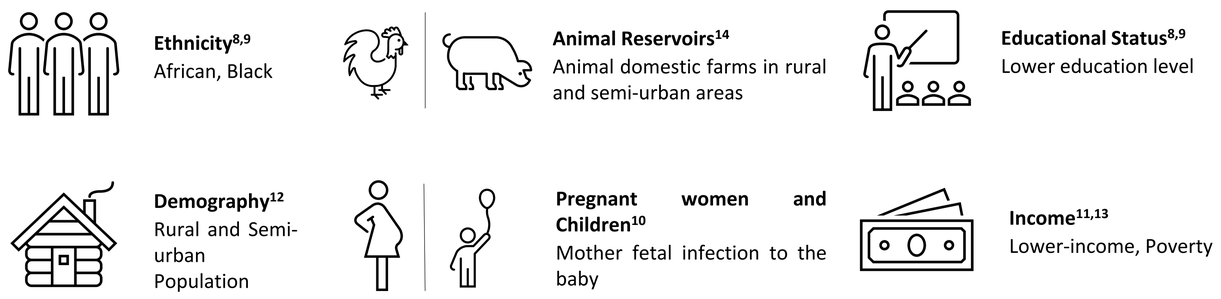
Figure 2. Spread of Monkeypox outbreak in India 2022 (State-wise cases)



*One case of Death was reported in state of Kerala

RISK FACTORS

Figure 3. Risk Factors associated with Monkeypox severity



Exposure[14,15]

- Contact with the person(s) with suspected/confirmed Monkeypox.
- Multiple or anonymous sexual partners.
- Contact with animals with suspected Monkeypox (Gambian pouched rats or prairie dogs, and some non-human primates) or their products (meats, creams, lotions, powders)
- Travel within 21 days to a region with endemic Monkeypox.

Symptoms[14,15]

- Bacterial skin and soft tissue infections such as cellulitis, abscesses, and necrotizing soft tissue infection.
- Subcutaneous fluid accumulation in the crusting phase leading to intravascular depletion and shock.
- Severe skin lesions, fever, myalgia, lymphadenopathy, sore throat, cough, asthenia, severe pneumonia, and respiratory distress.

Management[14,15]

- Consider Quarantine.
- Place the patient in airborne infection isolation.
- Initiate symptomatic and disease-specific treatments.
- Inform local and state health authorities.

CONCLUSIONS

- Monkeypox is a rare viral zoonotic disease endemic in certain areas and now spreading to other non-endemic areas. The identification of confirmed and suspected cases of monkeypox with no direct travel links to an endemic area represents an unusual event making surveillance an important activity.
- Human-to-human spread of Monkeypox virus can be controlled by public health measures including early case-finding, diagnosis, and care.
- Genomic sequencing, where available, may be undertaken to determine the Monkeypox virus clade(s) in this outbreak.

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