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A Scoping Review on Ethical Issues in the Mpox Outbreak

Afreen Jannath[1*], Revathy Elango[1,2], Ahila M Chidambaranathan[1,3]

[1] Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare, Government of India, Sector, 23, Sanjay Nagar, Ghaziabad, India.
[2] Pharmacopoial Commission for Indian Medicine and Homeopathy, Ministry of Ayush, Government of India, Kamla Nehru Nagar, Ghaziabad, India.
[3] Central Drugs Standard Control Organization, Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India, FDA Bhavan, ITO, Kotla Road, New Delhi, India.

***E-mail** ✉ Afreenjanntha@outlook.com

Abstract

Throughout history, epidemics have often been accompanied by stigma, prejudice, and xenophobic attitudes. This scoping review sought to examine and map the existing literature on ethical considerations related to monkeypox (mpox) and to identify gaps in research regarding stigma associated with the disease. A thorough search was conducted across multiple databases, including PubMed Central, PubMed Medline, Scopus, Web of Science, Ovid, and Google Scholar, covering the period from May 6, 2022, to February 15, 2023. Search terms included "monkeypox," "ethics," "morals," "social stigma," "privacy," "confidentiality," "secrecy," "privilege," "egoism," and "metaethics." The review followed the scoping framework outlined by Arksey and O'Malley (2005), with enhancements recommended by Levac *et al.* (2010). The search yielded 454 articles, of which 32 met the inclusion criteria. Among these, six were primary research studies. The review revealed that the current mpox outbreak is accompanied by a marked increase in misinformation and societal stigma. The findings emphasize the negative effects of stigma and ethical issues on individuals affected by mpox. The results highlight the urgent need to raise public awareness, engage civil society, and foster collaboration among policymakers, healthcare professionals, and social media platforms. These coordinated efforts are essential to reduce stigma, prevent human-to-human transmission, counteract racism, and correct misconceptions surrounding the outbreak.

Keywords: Moral issues, Monkeypox, Stigma, Discrimination, Ethics, Confidentiality

Introduction

Monkeypox (mpox) was first identified in humans in 1970 in the Democratic Republic of the Congo, when a nine-month-old infant became the earliest recorded case [1]. After this initial detection, the virus gradually spread across several African countries, predominantly within tropical rainforest regions, including Cameroon, Nigeria, Gabon, the Central African Republic, Ivory Coast, and South Sudan [2]. For nearly fifty years, these areas were considered endemic zones for mpox [3].

In response to a resurgence of mpox cases, the World Health Organization (WHO) declared a Public Health Emergency of International Concern (PHEIC) on July 23, 2022 [4]. By May 10, 2023, the International Health Regulation (IHR) determined that the outbreak no longer constituted a PHEIC [5], prompting the issuance of updated interim guidance to support a transition toward sustained disease management [5]. As of May 2023, the Centers for Disease Control and Prevention (CDC) reported 87,314 confirmed cases in 111 countries. Remarkably, over 90% of these cases occurred in regions previously unassociated with mpox, including Europe,

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North America, and Australia [6, 7], illustrating a notable geographic expansion of the virus [8].

The responsible pathogen, monkeypox virus (MPXV), is a double-stranded DNA virus in the Orthopoxvirus genus and shares close similarities with smallpox. MPXV can infect humans and certain animal species [9]. Despite its name, the virus was first detected in 1958 from skin lesions in monkeys imported to a Danish laboratory [10]. Transmission among humans occurs via direct contact with infected lesions or mucous membranes, inhalation of respiratory droplets, or contact with contaminated objects such as bedding, utensils, or clothing [11]. The 2022 outbreak showed unprecedented spread, with sexual contact emerging as a dominant mode of transmission, particularly through networks involving men who have sex with men (MSM) [12, 13]. Cases have also been documented in pregnant individuals [14], and household transmission remains a concern, putting children and other close contacts at risk. Healthcare workers are similarly vulnerable if infection prevention protocols are not meticulously followed [15]. Clinically, infection typically begins with fever, followed by a characteristic rash, often accompanied or preceded by swollen lymph nodes [16].

Emerging infectious diseases like mpox present complex ethical challenges. Outbreak response requires careful consideration of public health priorities alongside the protection of individual rights. Interventions such as monitoring, isolation, or quarantine, while necessary to contain disease spread, must be implemented in ways that respect personal dignity and human rights [17].

During the 2022 outbreak, 87.3% of cases involved gay, bisexual, or MSM individuals [18, 19], a fact that risks exacerbating social stigma and marginalization. This mirrors the early HIV epidemic of the 1980s and 1990s, which disproportionately impacted LGBTQ communities [20]. Assigning the spread of mpox to a particular group not only fuels discrimination but also obscures the broader population's susceptibility. As WHO Director-General Tedros Adhanom Ghebreyesus emphasized, "Stigma and discrimination can be as dangerous as any virus and can fuel the outbreak" [21]. Those affected by stigmatization may avoid reporting symptoms or seeking medical care [22], creating barriers to effective prevention, treatment, and containment [22, 23].

Healthcare professionals (HCPs) encounter numerous complex ethical challenges, including issues surrounding informed consent, patient autonomy, confidentiality, partner notification, and equitable access to care [24]. Ethical considerations extend to preventive strategies, clinical research, and experimental interventions. For instance, compulsory vaccination can conflict with individual autonomy, personal freedom, and perceived personal benefit. During clinical trials and the development of new antiviral treatments, researchers and medical practitioners must uphold the principles of beneficence, justice, and respect for all individuals [25, 26].

Striking a balance between protecting individual liberties—such as confidentiality and freedom of movement—and pursuing public health objectives in the context of highly contagious or severe diseases represents a particularly difficult ethical dilemma [27]. To date, there has been no comprehensive review synthesizing ethical concerns and stigma associated with mpox infection. Recognizing this gap, the present study aims to systematically review published research and reports, offering a detailed overview of ethical issues, stigma, and misinformation linked to the mpox outbreak. The findings are intended to inform future research directions, policy-making, and ethical guidance, thereby promoting responsible and equitable decision-making in response to mpox outbreaks.

Methodology

This scoping review was conducted following the framework developed by Arksey and O'Malley [28], with further enhancements based on recommendations by Levac *et al.* [29]. Additionally, the study adhered to the PRISMA Extension for Scoping Reviews (PRISMA-ScR), as formulated by Tricco *et al.* in 2018 and updated by Peters *et al.* in 2020 [30, 31] (Supplementary 1).

The objectives of the study included:

- Categorizing and describing ethical issues arising during the mpox outbreak, including challenges in patient care, public health interventions, and societal responses.
- Identifying and classifying the different forms of stigma related to mpox, examining how social attitudes, misinformation, and public perceptions contribute to stigmatization.
- Exploring the influence of misinformation on ethical decision-making and its role in perpetuating stigma during the outbreak, with attention to its effects on public health measures and individual experiences.

Database search

A systematic search for relevant English-language literature was conducted independently by two authors (AG, RMG) across PubMed Central, PubMed Medline, Scopus, Web of Science, Ovid, and Google Scholar. The search focused on publications dated from May 6, 2022, following the first reported case of mpox, through February 15, 2023. Search terms, synonyms, and abbreviations were adapted for each database (Supplementary 2). The PubMed search strategy included: ("Monkeypox virus"[MeSH Terms] OR "Monkeypox"[MeSH Terms] OR "Monkey Pox"[Text Word] OR "MPX"[Text Word] OR "monkeypox virus*"[Text Word] OR "monkey pox virus*"[Text Word]) AND ("Ethics"[MeSH Terms] OR "Morals"[MeSH Terms] OR "Social Stigma"[MeSH Terms] OR "Privacy"[MeSH Terms] OR "Confidentiality"[MeSH Terms] OR "stigma*"[Title/Abstract] OR "moral*"[Title/Abstract] OR "Secrecy"[Title/Abstract] OR "privileg*"[Title/Abstract] OR "confident*"[Title/Abstract] OR "priva*"[Title/Abstract] OR "ethic*"[Title/Abstract] OR "Egoism"[Title/Abstract] OR "metaethic*"[Title/Abstract]).

In addition to database searches, reference lists of included studies were examined, citation tracking was conducted, and related articles were screened to identify additional relevant publications. Gray literature sources, including medRxiv and Research Square, were also reviewed. Furthermore, a manual search of key journals—such as The Lancet, BMJ, BMC Tropical Medicine and Health, Bioethics, BMC Medical Ethics, and PLOS Neglected Tropical Diseases—was performed to ensure comprehensive coverage of literature pertinent to the study objectives.

Study selection

All retrieved citations were imported into an EndNote library, and duplicates were removed. The remaining references were exported to an Excel spreadsheet for a two-step screening process. First, two authors (A.G. and H.A.) independently reviewed titles and abstracts. Second, another two authors (H.E. and I.K.) conducted full-text screening. Studies were included if they addressed both mpox and related ethical issues, were published in English, and appeared after the first reported human mpox case on May 6, 2022. Reviewer agreement was calculated at 0.83, and any disagreements were resolved by a third expert reviewer (RMG).

The search strategy followed the Joanna Briggs Institute's PCC (Population, Concept, Context) framework [32]:

- Population: No restrictions were applied regarding age, sex, race, or sexual orientation.
- Concept: All studies addressing mpox in the context of ethical considerations, published in English after May 6, 2022, were included.
- Context: Various types of research publications were considered, including original research articles, commentaries, brief reports, letters to the editor, opinion pieces, short communications, and viewpoints.

Eligibility for Data Extraction

Included studies were required to provide sufficient detail on study design, methodology, and results to enable meaningful data extraction and synthesis.

Charting the data

Four reviewers (A.G., H.E., H.A.M., A.G.E.) independently extracted key information from eligible studies using a predefined data extraction form. Extracted data encompassed participant characteristics (e.g., gender, sexual orientation), study details (e.g., authors' names, publication year, country, objectives, study design), and ethical issues or stigma associated with mpox. The main objective was to identify and synthesize ethical themes across the included studies. These themes covered topics such as managing infected individuals, misinformation, stigmatizing language and policies, discrimination within communities, and other relevant ethical concerns. Any disagreements were resolved through consensus or consultation with the senior researcher (RMG). An expert panel with specialized knowledge in medical ethics, infectious diseases, and tropical health was consulted as needed to clarify complex contexts or terminology, enhancing the interpretability of the review.

Results

Search results

The literature search initially identified 454 articles, with 354 from databases and 100 additional records from Google Scholar. Using EndNote, 92 duplicates were

removed, leaving 362 records for screening. Title and abstract screening led to the exclusion of 239 articles, with 76 additional duplicates identified, resulting in 47 articles for full-text review. Of these, 15 studies were excluded due to irrelevant publication dates (3), unrelated content (11), or language (1 in Spanish). Ultimately, 32 studies met the inclusion criteria and were analyzed in the scoping review **(Figure 1)**.

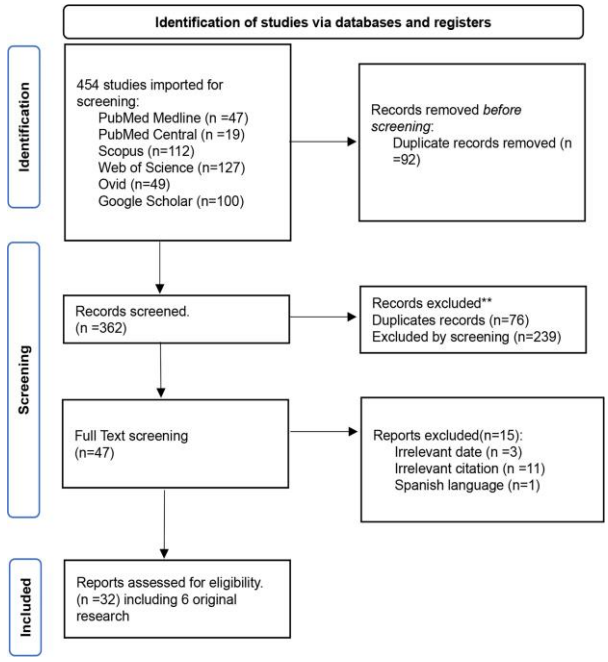

Figure 1. Flow chart of included studies

Study characteristics

As shown in Fig. S1, the scoping review included 32 studies, which were categorized as follows: 5 letters to the editor [33–37], 4 commentaries [38–41], four editorials [42–45], 3 research articles [46–48], 3 opinion pieces [49–51], 2 brief reports [52, 53], 2 short communications [54, 55], 2 viewpoints [56, 57], 1 article info [58], 1 clinical study [59], 1 correspondence [60], 1 mini-review [61], one news item [62], 1 open letter [63], and 1 perspective article [64]. Table S1 provides detailed characteristics of all included studies. The next section presents a discussion of the key ethical themes identified across these publications **(Figure 2)**.

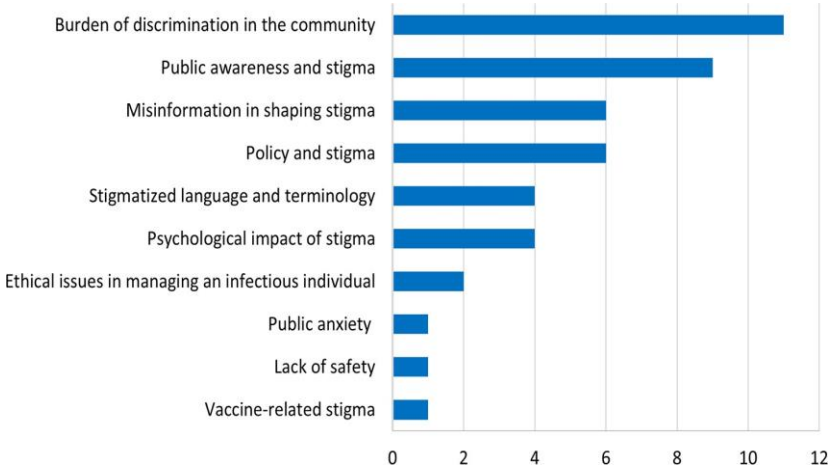

Figure 2. The main themes of the included studies that addressed stigma, discrimination, and ethical concerns related to mpox

Burden of discrimination in the community

Eleven studies explored the impact of discrimination associated with mpox infection. Mungmunpuntipantip [35] emphasized that addressing stigma is critical for effective disease control. Shukla *et al.* [37] highlighted the importance of tackling discrimination against the LGBTQ community, particularly in developing nations such as India. März *et al.* [39] examined the sociopolitical repercussions of the outbreak for gay, bisexual, and MSM individuals, as well as the wider LGBTQI+ community, noting how these groups face social isolation and marginalization. Dsouza *et al.* [48] analyzed tweets discussing mpox-related stigma among LGBTQ+ individuals, revealing that fear of stigma may discourage people from seeking medical care, leading to untreated infections.

Aquino *et al.* [40] discussed how public health communications and policies, while well-intentioned, can inadvertently centralize marginalized populations, creating conceptual ambiguities that risk reinforcing stigma. Yang *et al.* [41] suggested a structured approach based on three stages of stigma development to prevent the emergence and spread of stigmatizing attitudes related to mpox. Kenyon [52] used Spearman's correlation to examine the relationship between mpox incidence in European countries and the intensity of STD screening, along with the Rainbow Index measuring LGBTI rights. The findings suggested that stigmatizing attitudes toward homosexuality contributed to reduced uptake of STD screening, leading to underreported mpox cases in certain Eastern European countries.

Ng *et al.* [54] applied unsupervised machine learning to assess Twitter posts regarding mpox, identifying stigmatizing sentiments directed at minority communities. März *et al.* [56] reflected on the ethical challenges faced by the LGBTQI+ population during mpox outbreaks, highlighting health inequities, increased stress, and fear of further marginalization. Iglesias *et al.* [63] explored societal perceptions of mpox as a sexually transmitted infection, advocating for critical thinking in public communication and emphasizing the importance of addressing social inequalities through social science perspectives. Finally, Happi *et al.* [64] proposed a non-discriminatory and non-stigmatizing classification system for mpox that aligns with best practices in disease naming, aiming to minimize negative effects on countries, regions, economies, and affected populations while accounting for the virus's evolution and spread.

Public awareness and stigma

Nine studies addressed the role of public awareness and its relationship with stigma during the mpox outbreak. Lee and Morling [42] emphasized the importance of public education campaigns, targeted vaccination for high-risk groups, and strong surveillance systems as key strategies to reduce stigma. Similarly, De Sousa *et al.* [43] highlighted the necessity of inclusive surveillance and health education approaches, stressing that public health interventions should not single out specific populations to avoid reinforcing prejudice. They underscored the importance of engaging civil society, raising awareness, and fostering collaboration among policymakers, healthcare professionals, and social media platforms to ensure accurate and reliable dissemination of information about mpox.

Islam *et al.* [36] noted the critical role of public awareness in reducing the global health burden of mpox. Drawing parallels with previous outbreaks, Dzobo *et al.* [44] stressed that lessons learned from COVID-19—particularly in advocacy, education, and awareness strategies—can help mitigate stigma and promote coordinated global responses to infectious diseases. Gonsalves *et al.* [45] compared mpox with HIV, highlighting how both outbreaks suffered from delayed responses in Africa and insufficient public awareness, which contributed to stigmatizing attitudes. Chang *et al.* [49] argued that stigma is exacerbated by limited public knowledge and can be mitigated through widespread educational initiatives.

Ogunbajo [53] implemented a community vaccination initiative targeting Black sexual minority men in Washington D.C. and conducted surveys to assess participants' demographics and health beliefs. Findings revealed a strong anticipation of stigma among participants, underscoring the urgent need for educational campaigns. Raheel *et al.* [55] highlighted awareness initiatives such as the CDC's "Let's Stop HIV Together" program, which encourages preventive behaviors and healthcare engagement. Bergman *et al.* [59], through case-based discussions, emphasized the role of community outreach and nursing interventions in reducing stigma and enhancing awareness among both healthcare providers and patients.

Policy and stigma

Six studies focused on the intersection of public policy and stigma. Chang *et al.* [49] observed that policies can inadvertently reinforce discrimination unless supported by a national action plan to counter stigma during infectious disease outbreaks. März *et al.* [39] highlighted the critical need for policymakers to recognize the sociopolitical implications of mpox for gay, bisexual, MSM, and broader LGBTQI+ communities, proposing policy measures aimed at promoting health equity for these groups. De Sousa *et al.* [43] again stressed collaboration among policymakers, medical professionals, and social media platforms as a strategy to prevent stigma and ensure the dissemination of accurate information.

Ng *et al.* [54] used unsupervised machine learning to analyze Twitter posts, revealing widespread public skepticism toward government institutions. März *et al.* [56] discussed ethical challenges faced by the LGBTQI+ community, emphasizing policymakers' neglect of mpox as a key concern. Scheffer *et al.* [57] advocated for human rights-based approaches to epidemic response, urging policies and interventions grounded in equity, inclusion of vulnerable populations, and active participation of affected communities in decision-making processes.

Misinformation and its role in shaping stigma

Six studies examined how misinformation contributes to stigma surrounding mpox. Farahat *et al.* [33] highlighted that false information on social media undermines healthcare professionals' ability to communicate accurate messages. Ju *et al.* [46] analyzed media coverage, specifically by the Washington Post, showing how reporting on both COVID-19 and mpox framed stigma within communities—first stigmatizing China during COVID-19 and later shifting to Africa in the context of mpox, while indirectly portraying gay men as especially susceptible. Alsanafi *et al.* [47] evaluated Kuwaiti healthcare professionals' knowledge and attitudes regarding the virus, noting insufficient understanding of mpox diagnosis and management. They further observed that the erroneous belief that mpox primarily affects gay men fosters discriminatory attitudes and stigmatization. Chang *et al.* [49] stressed the importance of media accuracy in reporting research on mpox in non-endemic regions to prevent misinformation-driven stigma. Singla and Shen [60] noted that social media in most countries remain largely unregulated, allowing the widespread dissemination of false information, which can generate new forms of social stigma. Additionally, Singla *et al.* [61] reviewed literature on biased studies reporting mpox cases among LGBTQ populations, highlighting that limited data on sexual orientation is often sensationalized by the media, amplifying existing stigma.

Psychological impact of stigma

Several studies discussed the mental health consequences of stigma for affected individuals. Chang *et al.* [49] highlighted that internalized stigma can lead to anxiety, depression, and suicidal ideation, emphasizing the need for mental health support and awareness campaigns. Sah *et al.* [50] argued that mpox-related stigma can negatively affect differential diagnoses, overall health outcomes, and mental hygiene, pointing to a significant psychological burden. Infected individuals are more susceptible to disorders such as depression and anxiety. März *et al.* [56] examined ethical challenges within the LGBTQI+ community during mpox outbreaks, noting heightened stress and fear of further marginalization. Bergman *et al.* [59] described multiple stigma-related experiences, including shame, self-blame, fear of judgment, and lack of social support, which can result in depressive symptoms, psychological distress, social isolation, and financial difficulties.

Stigmatized language and terminology

Four studies addressed the impact of stigmatizing language on mpox communication. Islam *et al.* [36] emphasized the importance of avoiding discriminatory terms to reduce the global health burden. The term "monkeypox" itself became associated with stigma, often being labeled a "gay disease" or "monkey disease," which hindered timely detection and treatment. In response, the WHO officially changed the name to "mpox" on November 28 [38]. Taylor [62] also discussed the renaming, noting that a letter signed by over thirty scientists on June 10 called for revisions to correct terminology, reduce racism, mitigate stigma, and combat misinformation. Chang *et al.* [49] highlighted that discriminatory language can obstruct medical responses and discourage individuals from seeking care, drawing parallels with HIV, COVID-19, and Ebola. They stressed the need for the media to use precise, non-stigmatizing language to prevent misinterpretation of research in non-endemic regions.

Ethical issues in managing infected individuals

Two studies explored ethical concerns in the care of mpox patients. Shrewsbury [51] highlighted situations in which infected individuals were subjected to blame and shame. Regardless of whether infection occurred through sexual contact or contact with contaminated surfaces, all patients deserve respectful care. Healthcare professionals should remain mindful of circumstances where they might unintentionally stigmatize or assign blame, and should approach contagious diseases, including mpox, with empathy and a commitment to compassionate care. Iglesias *et al.* [63] examined the consequences of labeling mpox as a sexually transmitted infection, emphasizing the need for critical thinking to ensure effective and sensitive communication in healthcare settings.

Vaccine-Related stigma

Mazzagatti *et al.* [58] discussed stigma surrounding vaccination, particularly among bisexual individuals, drawing parallels with historical discrimination against people living with HIV. Targeting vaccination primarily toward high-risk populations, especially MSM, has contributed to "vaccine-related stigma" and limited vaccine access for those not regularly attending sexual health clinics. The authors recommended broadening vaccine availability to all sexually active bisexual individuals and assessing individual risk factors via interviews or questionnaires. Safeguarding personal information during vaccination and offering services outside sexual health clinics were also emphasized. The study concluded that timely, clear, and accurate communication is crucial to prevent stigma against LGBTQ+ communities.

Public anxiety

Lee and Morling [42] noted that unfamiliar emerging diseases can provoke public anxiety, triggering germ-related panic and stigma, which can negatively impact the mental well-being of both affected individuals and communities.

Perceived lack of safety

Ng *et al.* [54] analyzed Twitter posts using unsupervised machine learning to assess public sentiment during the mpox outbreak. Results revealed widespread safety concerns, with public fear amplified by the WHO's declaration of mpox as a PHEIC, reminiscent of early COVID-19 anxieties. Despite mpox being less transmissible than COVID-19 and the availability of vaccines, cross-border transmission remains a concern due to international travel and global interconnectedness. The study highlighted the need for accurate, timely information to alleviate public fears.

Only six studies were ultimately included for data extraction: three articles [46–48], two brief reports [52, 53], and one short communication [54]. Collectively, these studies examined 418,569 Twitter posts, 896 healthcare professionals, surveys of 127,000 European MSM, 188 sexual minority men in the USA, and 71 online news reports [46–48, 52–54]. The diversity of data sources provided a comprehensive understanding of the ethical issues associated with the mpox outbreak and offered multiple perspectives on the topic.

Table 1. Studies Addressing Ethical Issues Related to Mpox

Author and Year	Objective	Study Design	Country (Study Setting)	Sample Size	Findings
Ju W *et al.* (2023) [46]	To examine how the Washington Post portrays health crises like COVID-19 and mpox, focusing on its role in shaping stigma in affected communities.	Qualitative content analysis	USA	71 online news articles (15 on mpox, 56 on COVID-19)	Media coverage contributed to stigma during pandemics. Initially, COVID-19 stigma targeted China, then shifted to Africa for mpox. Coverage subtly framed gay individuals as more vulnerable to mpox, creating fear around COVID-19 spread in China but a milder response to mpox in the USA.
Alsanafi M *et al.* (2022) [47]	To evaluate healthcare professionals' (HCPs) knowledge, trust in diagnosing and	Cross-sectional study	Kuwait (Web-based survey)	896 HCPs (physicians, dentists, nurses, pharmacists, technicians)	HCPs showed limited knowledge of mpox diagnosis and management, with misconceptions that mpox is exclusive to homosexuals,

	managing diseases, and beliefs about emerging viral infections.				fostering discriminatory attitudes and stigmatization of affected individuals.
Dsouza VS *et al.* (2022) [48]	To explore and quantify mpox-related stigma within the LGBTQ+ community on Twitter.	Content analysis	India (Twitter-based online analysis)	66,387 tweets	Using a stigma communication model, the study identified significant mpox-related stigma targeting the LGBTQ+ community on Twitter, potentially deterring individuals from seeking treatment and leading to untreated infections.
Kenyon C (2022) [52]	To investigate the relationship between mpox incidence, STD screening rates, and LGBTQ rights across countries.	Ecological analysis (Brief Report)	40 European countries (Online survey of men who have sex with men)	127,000 European bisexual men	Countries with more discriminatory attitudes toward homosexuals reported lower STD screening rates and reduced mpox incidence, suggesting underreporting or limited detection.
Ogunbajo A *et al.* (2022) [53]	To examine demographics and health beliefs among Black gay, bisexual, and other sexual minority men vaccinated against mpox.	Cross-sectional study	USA (Community-based intervention)	178 Black African American gay/bisexual men (82% homosexual)	Participants, mostly of high socioeconomic status, reported significant anticipated mpox stigma and mistrust, driven by misinformation about the disease.
Ng QX *et al.* (2022) [54]	To use machine learning to analyze Twitter posts and assess public sentiment about the global mpox outbreak.	Content analysis	Singapore (Twitter modeling and thematic analysis)	352,182 Twitter posts	Analysis revealed three key themes: concerns about safety, stigmatization of minority groups, and widespread distrust in public institutions regarding the mpox outbreak.

Abbreviations: USA: United States of America; STDs: Sexually transmitted diseases; COVID-19: Coronavirus disease 2019; mpox: Monkeypox; HCPs: Healthcare professionals; LGBTQ: Lesbian, gay, bisexual, transgender, and queer.

Study design

Among the selected studies, two conducted content analyses of Twitter posts [48, 54], one analyzed content from The Washington Post's online news coverage [46], one performed a cross-sectional survey of healthcare professionals (HCPs) in Kuwait [47], one conducted an ecological analysis of a European men who have sex with men (MSM) internet survey across 40 countries [52], and one carried out a cross-sectional study of sexual minority men (SMM) in the USA [53].

Key ethical issues

Ethical concerns regarding human mpox have emerged at multiple levels, including national, institutional, community, and individual contexts.

- National Level: Countries with more stigmatizing attitudes toward homosexuality often report lower rates of STD screening and correspondingly lower mpox incidence [52].
- Institutional Level: Media outlets, such as The Washington Post, have contributed to differential stigmatization, framing gay men as more susceptible to mpox, labeling African countries as typical sources of the virus, and treating mpox cases in the USA as less alarming compared with COVID-19 in China [46].
- Community Level: Analyses of Twitter posts revealed that LGBTQ+ communities sometimes avoid public health measures related to mpox [48]. Broader content analysis also showed stigmatization of LGBTQ+ and racial minority groups, mistrust in institutions, doubts about governmental efforts, and the propagation of conspiracy theories regarding the virus [54].
- Individual Level: In Kuwait, certain demographic groups—including women, individuals with lower knowledge of mpox, and those who were unsure or agreed with the idea that mpox affects only gay men—

were more likely to believe in virus-related conspiracies [47]. In the USA, among bisexual respondents, 13–31% reported concerns about being judged if they contracted mpox, 35% feared being blamed for their infection, and 51% thought others would assume they were sexually promiscuous [53].

Discussion

Stigma and discrimination associated with any infectious disease, including mpox, are unacceptable and can negatively affect health outcomes. Such attitudes can deter individuals from seeking care, increasing the risk of virus transmission within and beyond affected populations [65]. This scoping review sought to identify and summarize the main ethical challenges posed by the mpox outbreak. A total of 32 studies were reviewed, of which six met the criteria for detailed data extraction, including three articles [46–48], two brief reports [52, 53], and one short communication [54]. These studies encompassed a range of sources, including Twitter posts, surveys of HCPs, MSM community surveys, and online news coverage. The study designs were diverse, comprising content analyses, cross-sectional studies, ecological analyses, and community-based approaches, collectively providing a comprehensive view of the ethical issues associated with mpox outbreaks.

Key findings of the study

The examination of the mpox outbreak and its associated stigma reveals a multifaceted situation. Social media misinformation has emerged as a major obstacle to effective communication among healthcare professionals, highlighting the importance of a coordinated, strategic response. Lessons from previous epidemics, analyses of media coverage, and policy recommendations collectively stress the necessity of clear communication, public education, and the use of sensitive, empathetic language. Ethical challenges arise at multiple levels, underscoring the need to monitor social media content, address biased or discriminatory language, and recognize the particular effects on marginalized communities. The WHO's decision to rename the virus from "monkeypox" to "mpox" represents a deliberate effort to mitigate stigma. Key themes identified include targeted testing, vaccination strategies, and initiatives to reduce stigma—particularly within the LGBTQI+ community—emphasizing the importance of a holistic, compassionate approach to managing the mpox outbreak.

Misinformation and social media during infectious disease outbreaks

Epidemics of infectious diseases frequently occur alongside scientific uncertainty, societal instability, and heightened fear and distrust. Media coverage often amplifies these reactions. Misinformation refers to inaccurate or misleading information that contradicts established scientific knowledge, while disinformation involves the deliberate spread of false information for ulterior motives, such as financial or political gain [66]. In the age of social media, both misinformation and disinformation present substantial challenges, particularly regarding public understanding of infectious diseases [67].

This study underscores the pervasive misinformation surrounding the mpox outbreak and highlights the urgent need for increased public awareness, engagement with civil society, and collaboration among policymakers, healthcare professionals, and social media platforms. Addressing these issues is crucial for reducing stigma, preventing human-to-human transmission, and combating racial discrimination. Similar concerns were observed during the COVID-19 pandemic, where unverified rumors compromised preparedness, promoted inappropriate treatments, and weakened healthcare workers' effectiveness [67–69]. Social stigma, in particular, can discourage active participation in public health measures [69].

Empowering the public through media literacy programs can help individuals discern credible sources from misleading information, while fact-checking initiatives provide timely corrections. Supporting healthcare professionals with training in managing rumors and stigma, combined with trust-building strategies, is essential. Furthermore, international cooperation and the application of lessons learned from COVID-19 can enhance the global response to misinformation. Promoting ethical communication, transparency in reporting, and responsible dissemination of information is vital to fostering a well-informed, resilient society capable of responding effectively to infectious disease outbreaks.

Enhancing public awareness and health literacy

Health literacy encompasses an individual's capacity to access, understand, and use health-related information to make well-informed decisions about their wellbeing. This involves the ability to navigate healthcare systems, engage in preventive practices, and apply health knowledge effectively [70]. Promoting public awareness, encouraging preventive measures, and avoiding stigmatized language in communications about mpox are essential strategies for reducing the global health burden of the outbreak [71]. By improving awareness, individuals are better equipped to adopt protective behaviors, thereby reducing transmission risk. Measures such as mpox testing and vaccination are particularly critical in interrupting the chain of infection.

Despite the proven efficacy of mpox vaccines [72], significant vaccine hesitancy exists among both the general population and healthcare professionals. This hesitancy often stems from mistrust of vaccines and gaps in health literacy [73, 74]. For instance, a 2022 study by Alsanafi *et al.* [47] found that 20.4% of healthcare professionals held inaccurate beliefs, such as assuming mpox only affects men who have sex with men (MSM). Knowledge levels were influenced by education and professional role, with medical technicians and allied health staff demonstrating lower awareness than physicians and pharmacists.

It is vital to emphasize that mpox should not be labeled a "gay disease," as sexual orientation does not dictate infection risk. A clear understanding of actual transmission routes is essential to dispel such misconceptions. Accurate health education can help correct misunderstandings and counter stereotypes related to mpox [75, 76]. Public health campaigns should prioritize information on transmission pathways, hygiene practices, early detection, and timely medical consultation. These initiatives not only reduce stigma and increase awareness but also empower communities to make informed health decisions regarding prevention and care.

Avoiding stigmatized language further fosters a supportive environment, encouraging individuals to seek guidance and healthcare without fear of judgment. Such efforts strengthen community engagement, combat misinformation, and diminish the adverse effects of stigma on affected populations. Overall, these advocacy measures are integral to a comprehensive global strategy for mpox outbreak management. Reducing stigma and discrimination requires ongoing reflection and action regarding individual language, behaviors, and intentions, as well as organizational policies and practices within healthcare settings and media platforms [65].

Stigma and discrimination as central ethical concerns

Outbreaks of infectious diseases frequently give rise to stigma [77]. Stigma occurs when individuals or groups are denied social acceptance due to a trait that is perceived by their community as discrediting. The concept of stigma proportionality refers to how justified or proportionate the stigma is relative to the actual risks or characteristics associated with a specific group or condition. This broad phenomenon encompasses cognitive or emotional endorsement of negative stereotypes (prejudice), adverse behaviors toward affected individuals (discrimination), and the unjustifiable avoidance or neglect of these individuals in healthcare settings [78].

The studies included in this review consistently highlight the ongoing challenge of stigma, discrimination, and social disapproval experienced by those affected by mpox. Such stigma has profound consequences not only for individuals living with the disease but also for those associated with them. Infectious disease-related stigma diminishes opportunities for affected individuals to achieve physical, psychological, and social well-being, thereby worsening existing social and health inequities [79]. One major negative impact is that stigma drives individuals to conceal their illness, which contributes to undetected transmission. Additionally, stigma can hinder outbreak control efforts by fostering fear, reducing participation in preventive measures (such as vaccination), discouraging health-seeking behaviors like testing and treatment, and lowering adherence to care [80].

Stigma also extends to partners, children, and caregivers, who may face unjust judgment or mistreatment simply due to their association with infected persons, exacerbating emotional and psychological distress [50]. Evidence from outbreaks of COVID-19 and Ebola has shown that stigma is a strong predictor of severe psychological distress, depression, anxiety, and post-traumatic stress symptoms [79]. Public health interventions, including quarantine, contact tracing, and vaccination campaigns, can further influence the stigma surrounding a disease [81–83]. Although such measures are critical for controlling outbreaks, it is essential to recognize and minimize any unintended social consequences whenever possible.

Historically, societies have repeatedly shown a tendency to isolate, stigmatize, or avoid groups perceived as carrying traits deemed undesirable or threatening [84–86]. Gonsalves *et al.* [45] aptly described the mpox-related stigma as "Déjà vu All Over Again?" drawing parallels between the discrimination associated with mpox and that seen in prior infectious disease crises. Similarities can be observed with the early HIV/AIDS epidemic, during which affected individuals—and particularly the "four Hs" identified by the CDC (homosexuals, heroin users, hemophiliacs, and Haitians)—faced widespread stigmatization [87]. Recognizing these recurring patterns can help break the cycle of stigma and foster a more inclusive and supportive environment for people affected by infectious diseases.

Addressing the ethical challenges posed by stigma requires a multidimensional approach. By promoting education, ensuring sensitivity in public health measures, fostering empathy, and advocating for equitable policies, society can better protect the rights and dignity of all individuals, mitigating the harmful effects of stigma during infectious disease outbreaks.

Strategies to address stigma and discrimination related to mpox

To tackle negative perceptions and harmful language targeting individuals with mpox, the WHO has implemented several measures. In December 2022, the organization released public guidance addressing stigma and discrimination, directed at governmental and non-governmental organizations, healthcare providers, authorities, and media outlets involved in the outbreak [88]. More recently, on July 23, 2023, a policy brief was issued providing recommendations on key ethical challenges in responding to the mpox outbreak. The brief highlighted three main areas of concern: stigma and discrimination, equitable access to healthcare services, and the importance of evidence-based practices [89]. Additionally, the WHO published guidance for understanding, preventing, and addressing stigma and discrimination linked to mpox, outlining strategies and recommended language to counteract stigmatizing behaviors and policies [89].

Strengths and Limitations

This scoping review is distinctive as it represents the first systematic effort to analyze existing literature on ethical dilemmas and discrimination associated with mpox. By mapping the identified ethical themes, the review offers valuable insights into current understanding and highlights gaps that require further research. Notably, the limited number of publications addressing mpox-related ethical issues underscores the importance of this review in identifying areas for future exploration.

Nevertheless, the study has limitations. Primarily, the review concentrated on stigma and discrimination, with other ethical principles receiving less attention, signaling a need for broader investigations into the ethical dimensions of mpox outbreaks. Future research should explore both community and healthcare providers' perceptions of ethical values and norms concerning mpox. Additionally, most studies originated from Western countries, while African regions, where the infection initially emerged, were underrepresented, indicating a geographic bias that limits understanding of context-specific ethical challenges. The composition of the expert panel also lacked representation from groups most affected by the outbreak, which may restrict the diversity of perspectives and fail to mitigate epistemological bias. Furthermore, research focusing on marginalized populations, including rural and resource-limited communities disproportionately affected by mpox, was noticeably absent.

Finally, while the scoping review employed a comprehensive search strategy incorporating relevant mpox and ethics terms, certain limitations exist. These include potential trade-offs between sensitivity and specificity, variations in terminology, publication bias toward indexed journals, language bias favoring English, conceptual complexity of terms like "egoism" and "metaethics," and inconsistent database recognition of search terms.

Conclusions

Although the multi-country mpox outbreak is no longer classified as a Public Health Emergency of International Concern (PHEIC), the virus may reemerge due to interconnected factors, with stigma and ethical challenges playing a critical role. Stigmatization can discourage individuals from seeking medical care, while ethical concerns—such as discrimination, privacy issues, equitable healthcare access, and the conduct of clinical and vaccine research—further complicate outbreak

management. Addressing these issues is essential for preventing resurgence and ensuring effective control measures. Promoting awareness, education, and understanding of the disease, alongside combating stigmatizing attitudes, can create an environment where individuals feel safe to seek timely care. Additionally, addressing ethical challenges through clear policies, guidelines, and interventions helps safeguard the rights and well-being of those affected by mpox.

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