

# Mpox: “the stigma is as dangerous as the virus”. Historical, social, ethical issues and future forthcoming

DAVIDE ORSINI<sup>1</sup>, MARINA SARTINI<sup>2,3</sup>, ANNA MARIA SPAGNOLO<sup>2,3</sup>, MARIA LUISA CRISTINA<sup>2,3</sup>, MARIANO MARTINI<sup>2</sup>

<sup>1</sup> University Museum System of Siena (SIMUS), History of Medicine, University of Siena, Siena, Italy;

<sup>2</sup> Department of Health Sciences, University of Genoa, Genova, Italy; <sup>3</sup> Hospital Hygiene Unit, Galliera Hospital, Italy

## Keywords

Mpox • LGBTQ • Epidemiology • Public health • History of hygiene • Ethical issues

## Summary

**Objectives.** The authors aim to show the possibility of stigma that hits affected Mpox patients because of the statements of society involving their sexual sphere.

**Introduction.** 23 July 2022, the Director-General of the WHO, Tedros Ghebreyesus, issued an international public health alert regarding cases of Mpox (formerly known as Monkeypox). Although Mpox has been present in an endemic form for years in some Central African countries, the spread of the disease outside Africa has aroused considerable alarm in populations already sorely afflicted by the COVID-19 pandemic. Aside from the data, what is striking is that Mpox, like other infectious diseases, seems to have become a problem only when it began to cross the borders of Africa. Some may justify this attitude simply by ascribing it to the fear of an epidemic outside the areas where the virus is endemic. However, in such cases, and especially after the COVID-19 experience, other factors are also involved: lack of information and, even more so, the human capacity to utilise diseases to reinforce arguments against the tendencies, inclinations, orientations and behaviours of some social groups. Such information, albeit basically correct, is nevertheless incomplete. Moreover, it tends to prompt a view of this disease that may give rise to highly dangerous and embarrassing situations, engendering the risk of repeating the error that was made about AIDS. Mpox is

the latest in a series of epidemics that have struck humanity in the space of very few years.

**Material and methods.** Setting and participants: people and social groups who, due to sexual orientations and behaviours, are considered to be at risk of being infected with Mpox. Main outcomes measures: - outcomes directly related to mental health of Mpox patients: anxiety, fear and depression, emotional difficulties, feelings of loneliness and isolation; - well-being outcomes of people with Mpox; - risk of not being able to reduce the epidemic among those groups don't feel as though they belong to LGBTQ and therefore do not implement any kind of prevention.

**Results.** Limit the contagion from Mpox through specific health and communication campaigns. Remove any stigma related to Mpox disease.

**Conclusions.** In the face of this disease, it is absolutely essential that we do not needlessly isolate groups of people by feeding stigma, prejudice and discrimination, which can have devastating effects not only on individuals but also on society as a whole. As the full inclusion of persons of LGBTQ community is probably still a long way off, we must surely wonder when we will be ready enough to achieve the important objective of equality for all.

## Introduction

On 23 July 2022, the Director-General of the WHO, Tedros Adhanom Ghebreyesus, issued an international public health alert regarding cases of Mpox (MPX) [1]. He “declared that the multi-country outbreak of Mpox is a public health emergency of international concern (PHEIC)” [1].

According to the international health regulation, this declaration establishes the highest level of global alert for public health: in this way it ensures that there is better coordination of actions to be applied, greater cooperation and global solidarity.

In the majority of cases, the symptoms of Mpox, as skin infections, pneumonia, confusion and eye infections, disappear within a few weeks. However, in 3% to 6% of cases reported in countries where the disease is endemic, severe complications may ensue, leading even to death in immunodeficient subjects [2].

These data show that Mpox is in any case a serious

disease that requires particular attention from the scientific community, governments and all citizens.

## Background

Mpox is caused by a virus of the variola family that causes smallpox, now eradicated from World. Mpox is a zoonosis that, can also spread from animals to humans, and therefore from humans to other humans.

This disease has symptoms similar to those of human smallpox but milder and has an absolutely lower death rate. It has been clarified that Mpox is not related to chickenpox [3].

The most common symptomatology, recorded among those affected, is given by fever, headache, muscle aches, back pain, low energy and swollen Lymph nodes. These symptoms can be accompanied or followed by a characteristic rash that affects the face, palms, soles of the feet, groin, genital and/or anal

regions. It may also be found in the mouth, throat, or on the eyes.

The number of such sores is extremely varied and changes from person to person. Sores on the skin begin flat, then fill with liquid before they crust over, dry up and fall off, with a new layer of skin forming below [4]. Usually, Mpox resolves positively and the symptoms just listed, including fever, disappear within a few weeks. However, in some individuals Mpox can have a much more severe course and in some cases can lead to death. The period of infectiousness remains until all the sores have become encrusted, the crusts have fallen and a new layer of skin has formed below.

## Origin and history of Mpox

The discovery of the virus that causes Mpox is rather young: it was recognized in 1958 when two outbreaks of a smallpox-like disease occurred in monkey colonies kept for research [5]. Hence the name "monkey smallpox", although the source of the disease remains unknown. It is known that African rodents and non-human primates (such as monkeys) could host the virus and infect people.

The first known human case of monkey smallpox was recorded in 1970 in Zaire (now Democratic Republic of the Congo, DRC): it was a case of transmission of zoonotic MPV from animal to man in a 9-month-old child [6-9].

Prior to the Mpox outbreak detected in 2022, the disease rarely occurred outside the African continent, where over the years some cases have been reported in 11 African countries: Benin, Cameroon, Central African Republic, Democratic Republic of the Congo, Gabon, Ivory Coast, Liberia, Nigeria, Republic of the Congo, Sierra Leone and South Sudan [10].

When this happened, in most of the time it was linked to international trips to countries where the disease is

endemic, such as Nigeria, where Mpox has re-emerged in the last decade after a 40-year break.

In other cases, the transmission is linked to the import of animals from Africa: a major outbreak – with 47 confirmed or probable cases – occurred in 2003 in the US following introduction to infected pet prairie dogs, which had got Mpox virus from infected exotic animals imported from Ghana [11-13].

During recent years, there have been various travel-associated cases of Mpox, all following exposures in Nigeria. There was one case in Israel in 2018, three in the UK (two in 2018, one in 2019, and one in Singapore in 2019 [14, 15]. There was also another case in 2018, in the UK, nevertheless it was the result of nosocomial transmission to a healthcare worker (Fig. 1) [16].

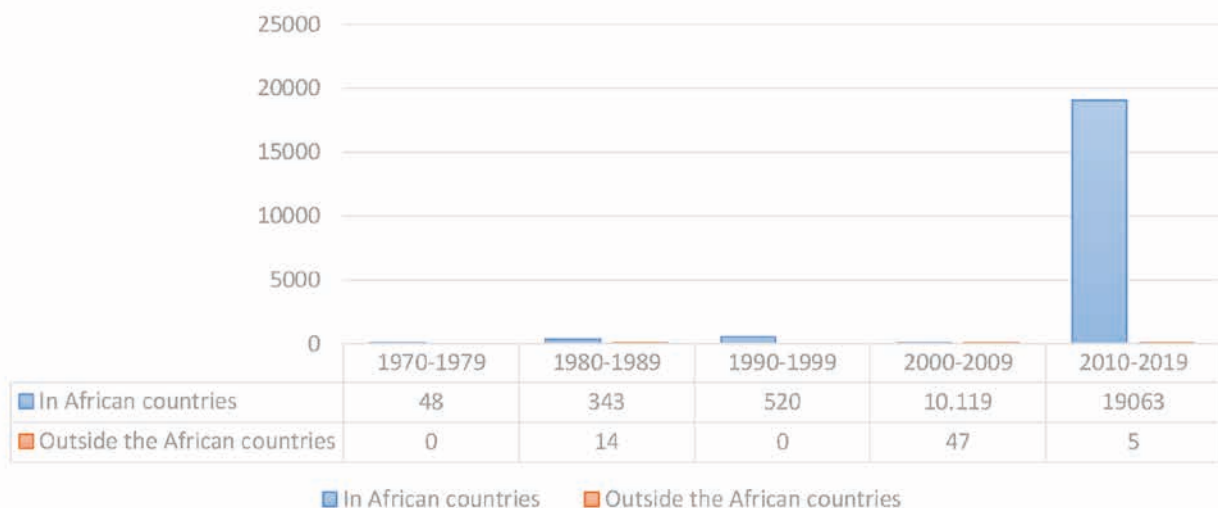
The WHO Bulletin reported over 6,200 and 9,400 confirmed and suspected cases in 2020 and 2021, respectively (probably underestimating data due to the lack of surveillance system in endemic regions) [17, 18]. Although Mpox has been present in an endemic form for years in some Central African countries, the spread of the disease outside Africa has aroused considerable alarm in populations already sorely afflicted by the COVID-19 pandemic.

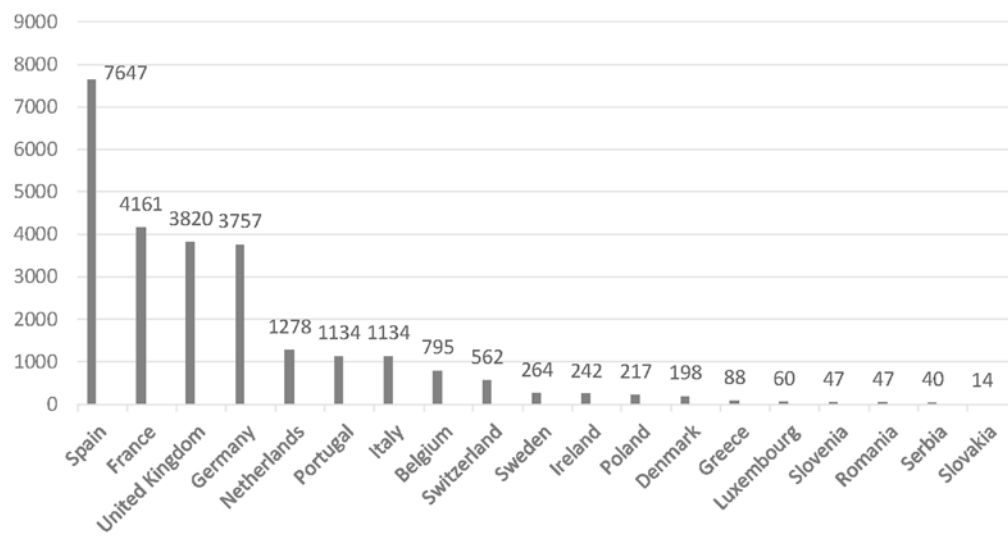
With 92,167 total cases (data issued by the Centers for Disease Control and Prevention on December 1, 2023), 90195 of which in countries where Mpox had never been reported, the virus has now reached 117 nations, 110 of which for the first time. The dead due to the Mpox are 170: 149 in locations that have not historically reported Mpox, 21 in locations that have historically reported Mpox [19].

In recent times, the case fatality ratio has been around 3-6%, with a rate of 1 percent around the West African clade, found in cases in Europe and America [10].

One of the main and possible causes of the increasing number of cases of Mpox is the interruption of vaccinations against smallpox in the population following the eradication of smallpox in 1980 [20-22].

Fig. 1. Number of confirmed, probable, and/or possible Mpox cases between 1970-2019 [11].



**Fig. 2.** Mpox Outbreak: cases reported in European countries as of December 1, 2023 [25].

According to some scholars, including Zhilong Yang, the current epidemic of Mpox “is still very unusual, mainly for two reasons”, as most infected individuals have never traveled to areas where Mpox is endemic, and the epidemic is developing at the same time in different countries [23]. The latter suggests that there are multiple sources of introduction.

In Europe, noticeable data can be recorded, especially in countries such as Spain, France, United Kingdom and Germany (Fig. 2). There are 31,277 cases registered in USA (December 1, 2023), 1,496 in Canada and 4,071 in Mexico. On the same date, in South America, we report and highlight 10,967 cases in Brazil, 4,090 in Colombia, 3,812 in Peru, 1,531 in China. Only two cases in Russia [19].

## Discussion

Current data suggests that Mpox may represent a long-term global threat. However, no particular attention we paid to this disease until July 2022 with the Public Health Emergency of international Concern (PHEIC).

We also add the public health conditions of African countries where the virus is endemic; they are developing countries, with little tools to monitor and report cases of Mpox and the clinical signs also have similarities with some other diseases that are widespread in the same countries, such as syphilis and chicken pox. This lack of rigorous and careful health surveillance can strengthen the spread of the epidemic.

Aside from the data, what is striking is that Mpox, like other infectious diseases, seems to have become a problem only when it began to cross the borders of Africa.

Some may justify this attitude simply by ascribing it to the fear of an epidemic outside the areas where the virus is endemic.

However, in such cases, and especially after the

COVID-19 experience, other factors are also involved: lack of information and, even more so, the human capacity to utilise diseases to reinforce arguments against the tendencies, inclinations, orientations and habits of some social groups.

While outbreaks of Mpox in African countries have been limited to populations who eat the meat of wild animals – so-called “bushmeat” –, which enables the virus to spread, cases that by May 2022 have been identified and reported through sexual health or other health services in primary or secondary health-care facilities in countries other than African ones are instead caused by sexual transmission. They have been detected in men who have sex with other men [24]. As a result, the disease was immediately accompanied by a stigma.

And this, even though in the meantime it has been shown that the virus can also be transmitted through direct contact with infected sores, scabs or bodily fluids, or by sharing underwear or clothing [25-27].

A body of evidence shows that from February 2023 some individuals may spread the disease one to four days before the onset of symptoms [28]. This is a possibility that has important and serious repercussions during the epidemic.

It is essential to keep the focus on the transmission of the Mpox virus alive. We believe that the constant attention and international support are essential for greater surveillance and that the detection of cases of smallpox monkeys are necessary tools for the continuous understanding and to change the epidemiology of this emerging disease.

## Ethical and social issues

Such information, albeit basically correct, is nevertheless incomplete. Moreover, it tends to prompt a view of this disease that may give rise to highly dangerous and embarrassing situations, engendering the risk of

repeating the error that was made with regard to AIDS. The current outbreak seems to be spreading mainly among men who have sex with other men a trend that has drawn parallels with the HIV/AIDS epidemic, which overly affected the LGBTQ community at its peak in the late 1980s and early '90s. Scientists are not completely sure why the disease is spreading this way, but early outcomes suggest and record a wide spread within the LGBTQ community, where it can spread more than the general population.

On this point, blaming a particular social group for the spread of Mpox has two deleterious consequences; not only does it stigmatise the gay community, it also underestimates the risk to the rest of the population.

"It must be clear to people that everyone can acquire Mpox, regardless of gender identity or sexual orientation, or age" [29].

In this regard, the WHO recommendation that "men who have sex with men should consider limiting their sexual partners to lower their risk of infection and reduce the spread", though based on good intentions, risks exacerbating the danger of stigma. And "The stigma and discrimination – as WHO chief Tedros Adhanom Ghebreyesus said – can be as dangerous as any virus and can fuel the outbreak" [30, 31].

In 1963, sociologist Erving Goffman, in his book *Stigma. Notes on the Management of Spoiled Identity* defined stigma as a social attribute that discredits an individual or group [32]. According to Goffman's conceptualization, the term stigma refers to a series of signs - physical, such as certain malformations of the body, or character, such as dishonesty, an attitude to violence, inordinate passions, or cultural, tribal or religious affiliation - which, within a society, refer to a difference perceived as deviance from a norm [33].

Expanding on Goffman's social interactionist definition of stigma, Link and Phelan [34] "conceptualize stigma as the co-occurrence of labelling, stereotyping, separating, status loss and discrimination. Their definition, with its focus on structural contexts in addition to relational contexts, has fostered stigma research in two additional areas: (a) the translation of stigmas into broader socio-cultural traditions and institutions, including social welfare policies and (b) the interaction of stigmas with other determinants of health advantage or disadvantage" [35-37].

People have always tended to blame outbreaks of disease on individuals who do not belong to their own social circle ("othering"), who are seen as intruders in their "walled garden".

Because of fear, prejudice and discrimination against Mpox sufferers is growing, "prescribing an "otherness" to disease to feel protected and ascribing blame to justify prejudicial rhetoric. This stigma has recurred throughout history: Jewish persecution during the Black Death, LGBTQ communities during the rise of HIV, and people of west African descent during the Ebola outbreak" [38]. Thus, while we may regard "othering" as a defence strategy, we can in no way endorse it.

Indeed, history clearly demonstrates that blaming

diseases or catastrophes on those who are different from us gives rise only to suffering and does not protect society against the incumbent evil [39].

For this reason, on September 27th CDC published "Reducing Stigma in Mpox Communication and Community Engagement" (updated October 18, 2022), with a series of recommendations to avoid stigma and give correct information, starting with the one according to which "Describe Mpox as a legitimate public health issue that is relevant to all people" [40].

On March 2, 2023, CDC reconsidered the issue of stigma in Mpox by publishing Mpox Equity and Anti-Stigma Toolkit. The document opens with this declaration of intents: "CDC is committed to health equity, which means everyone has fair and just opportunity to their highest level of health. For Mpox, this includes reliable access to accurate information and prevention education, as well as vaccine access" [41].

The ability to be properly informed and to have access to treatments and vaccines means that people can have all the necessary information and tools to prevent or treat the disease quickly, in their own and the community's interests.

Extreme attention must therefore be paid to the implementation and dissemination of information messages, which must be transmitted by trusted messengers recognized by the community to which they are addressed. These messages must be realized through communicative codes recognizable and shared by the community itself. Only in this way will they be able to reach and be effective "on the populations at greater risk of Mpox through racial, ethnic, sexual, socio-economic and geographical backgrounds" [41].

For this reason, the WHO changed the name of the disease from Mpox to Mpox, as the term Mpox may appear discriminatory, stigmatizing and misleading. In fact, this occurred in the early months of the monkey smallpox epidemic, due to the particular naming but especially the mode of sexual transmission in gay individuals. This led the WHO to the determination to change the name of the disease to Mpox. Both names will be used simultaneously for one year while Mpox is gradually phased out [42].

## Future forthcoming

The World Health Organization (WHO) declares that "It is fortunate that smallpox vaccines also provide solid protection against monkey smallpox, and the smallpox drug, TPOXX, is promising and probably effective for treating monkey smallpox" [24].

At least two vaccines approved by the US FDA can prevent Mpox. Similarly, it appears that other smallpox vaccines used in the era of smallpox should also be able to provide protection.

However, as monkey smallpox is spreading to many countries and affecting a significant number of people, further epidemiological studies are needed, "with particular reference to zoonotic hosts, transmission



potential and severity of human cases”, and the study and development of a new generation of vaccines [21]. From a social point of view, we need to focus on our attention on a fundamental point: Mpox is the latest in a series of epidemics that have struck humanity in the space of very few years, with recrudescence also of important diseases that were considered to be in the process of being eradicated or under control, such as poliomyelitis [43, 44], measles [45] or cholera [46].

In the face of Mpox, it is essential that we do not needlessly isolate groups of people by feeding stigma, prejudice and discrimination, which can have devastating effects not only on individuals but also on society as a whole [47, 48].

As has happened with other diseases in the past, Mpox patients have also suffered stigma and discrimination, and this is not only unfair from an ethical point of view but can cause significant harm, delaying access to treatment in most cases.

Faced with such incidents, the response of the community must be unambiguous and respectful of human rights, with particular attention to the inclusion and dignity of all individuals, without exception [49].

However, the full inclusion of persons who are lesbian, gay, bisexual or transgender (LGBTQ) is probably still a long way off, we must surely wonder when we will be mature enough to achieve the important objective of equality for all [50].

For these reasons we therefore need to be extremely careful when we refer to Mpox disease and people affected by it.

The CDC suggestions covered in the Mpox messaging framework can be extremely valuable [40].

It is enough to use an inclusive language, such as ‘us’ and ‘we’ pronouns. At the same time, the media should avoid using sensational language and images: they do not serve and can hurt [51].

Instead, you should use simple language that is easy to understand [52, 53].

Finally, even considering that people are very afraid after the COVID-19 pandemic, it is useful to use a communication aimed at emphasizing the possibilities of prevention, the quick recognition of symptoms and especially the treatable condition of Mpox.

## Funding

This research received no external funding.

## Informed Consent Statement

Not applicable.

## Data Availability Statement

Not applicable.

## Conflict of interest statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Authors' contributions

DO and MM: designed the study, conceived and drafted the manuscript; MLC and AMS: revised the manuscript; DO, MM and MS: performed a search of the literature; MLC, AMS: critically revised the manuscript; DO and MM: conceptualization, and methodology; MM, DO, MLC, AMS, MS: investigation and data curation; DO and MM: original draft preparation; MLC, AMS, MS, DO, MM: review; DO, MM, MLC: editing. All authors have read and approved the latest version of the paper for publication.

## References

- [1] World Health Organization (WHO). WHO Director-General declares the ongoing monkeypox outbreak a Public Health Emergency of International Concern. Available at: <https://www.who.int/europe/news/item/23-07-2022-who-director-general-declares-the-ongoing-monkeypox-outbreak-a-public-health-event-of-international-concern> (Accessed on: 10/12/2023).
- [2] UN News Global Perspective Human stories. Monkeypox: how it spreads, who's at risk - here's what you need to know. Available at: <https://news.un.org/en/story/2022/07/1123212> (Accessed on: 10/12/2023).
- [3] Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of High-Consequence Pathogens and Pathology (DHCPP). Available at: <https://www.cdc.gov/poxvirus/monkeypox/about/index.html> (Accessed on: 10/12/2023).
- [4] World Health Organization (WHO). Monkeypox. Available at: <https://www.who.int/news-room/questions-and-answers/item/monkeypox> (Accessed on: 11/12/2023).
- [5] von Magnus P, Andersen EA, Petersen KB, Birch-Andersen A. A pox-like disease in cynomolgus monkeys. *Acta Path Microbiol Scand* 1959;46:159. <https://doi.org/10.1111/j.1699-0463.1959.tb00328.x>
- [6] Cho CT, Wenner HA. Monkeypox virus. *Bacteriol Rev* 1973;37:1-18. <https://doi.org/10.1128/br.37.1.1-18.1973>
- [7] Breman JG, Kalisa R, Steniowski MV, Zanolto E, Gromyko AI, Arita I. Human monkeypox, 1970-79. *Bull World Health Organ* 1980;58:165-82.
- [8] Marennikova SS, Seluhina EM, Mal'ceva NN, Cimiskjan KL, Macevic GR. Isolation and properties of the causal agent of a new variola-like disease (monkeypox) in man. *Bull World Health Organ* 1972;46:599-611.
- [9] Jezek Z, Fenner F. Human monkeypox. In: Melnick JL, ed. *Monographs in Virology*, vol. 17. Basel, Switzerland: Karger 1988.
- [10] World Health Organization (WHO). Monkeypox. Available at: <https://www.who.int/news-room/fact-sheets/detail/monkeypox> (Accessed on: 11/12/2023).
- [11] Bunge EM, Hoet B, Chen L, Lienert F, Weidenthaler H, Baer LR, Steffen R. The changing epidemiology of human monkeypox-A potential threat? A systematic review. *PLoS Negl Trop Dis* 2022;16:e0010141. <https://doi.org/10.1371/journal.pntd.0010141>

- [12] Huhn GD, Bauer AM, Yorita K, Graham MB, Sejvar J, Likos A, Damon IK, Reynolds MG, Kuehnert MJ. Clinical characteristics of human monkeypox, and risk factors for severe disease. *Clin Infect Dis* 2005;41:1742-51. <https://doi.org/10.1086/498115>
- [13] Gross E. Update on emerging infections: news from the Centers for Disease Control and Prevention. Update: Multistate outbreak of monkeypox--Illinois, Indiana, Kansas, Missouri, Ohio, and Wisconsin, 2003. *Ann Emerg Med* 2003;42:660-2; discussion 662-4. <https://doi.org/10.1016/s0196064403008199>
- [14] Erez N, Achdout H, Milrot E, Schwartz Y, Wiener-Well Y, Paran N, Politi B, Tamir H, Israely T, Weiss S, Beth-Din A, Shifman O, Israeli O, Yitzhaki S, Shapira SC, Melamed S, Schwartz E. Diagnosis of Imported Monkeypox, Israel, 2018. *Emerg Infect Dis* 2019;25:980-3. <https://doi.org/10.3201/eid2505.190076>
- [15] Yong SEF, Ng OT, Ho ZJM, Mak TM, Marimuthu K, Vasoo S, Yeo TW, Ng YK, Cui L, Ferdous Z, Chia PY, Aw BJW, Manu CM, Low CKK, Chan G, Peh X, Lim PL, Chow LPA, Chan M, Lee VJM, Lin RTP, Heng MKD, Leo YS. Imported Monkeypox, Singapore. *Emerg Infect Dis* 2020;26:1826-30. <https://doi.org/10.3201/eid2608.191387>
- [16] Vaughan A, Aarons E, Astbury J, Brooks T, Chand M, Flegg P, Hardman A, Harper N, Jarvis R, Mawdsley S, McGivern M, Morgan D, Morris G, Nixon G, O'Connor C, Palmer R, Phin N, Price DA, Russell K, Said B, Schmid ML, Vivancos R, Walsh A, Welfare W, Wilburn J, Dunning J. Human-to-Human Transmission of Monkeypox Virus, United Kingdom, October 2018. *Emerg Infect Dis* 2020;26:782-5. <https://doi.org/10.3201/eid2604.191164>
- [17] World Health Organization. Regional Office for Africa. Weekly bulletin on outbreak and other emergencies: Week 4: 18-24 January. World Health Organization, Regional Office for Africa. Available online: <https://apps.who.int/iris/handle/10665/338891> (Accessed on: 10/12/2023).
- [18] World Health Organization. Regional Office for Africa. Weekly bulletin on outbreak and other emergencies: Week 4: 17-23 January. World Health Organization, Regional Office for Africa. Available at: <https://apps.who.int/iris/handle/10665/351164> (Accessed on: 10/12/2023).
- [19] Centers for Disease Control and Prevention CDC. 2022 Monkeypox Outbreak Global Map. Available at: <https://www.cdc.gov/poxvirus/monkeypox/response/2022/world-map.html> (Accessed on: 11/12/2023).
- [20] Simpson K, Heymann D, Brown CS, Edmunds WJ, Elsgaard J, Fine P, Hochrein H, Hoff NA, Green A, Ihekweazu C, Jones TC, Lule S, MacLennan J, McCollum A, Mühlemann B, Nightingale E, Ogoina D, Ogunleye A, Petersen B, Powell J, Quantick O, Rimoin AW, Ulaeto D, Wapling A. Human monkeypox - After 40 years, an unintended consequence of smallpox eradication. *Vaccine* 2020;38:5077-81. <https://doi.org/10.1016/j.vaccine.2020.04.06>
- [21] Martini M, Bifulco M, Orsini D. Smallpox vaccination and vaccine hesitancy in the Kingdom of the Two Sicilies (1801) and the great modernity of Ferdinand IV of Bourbon: a glimpse of the past in the era of the SARS-COV-2 (COVID-19) pandemic. *Public Health* 2022;213:47-51. <https://doi.org/10.1016/j.puhe.2022.09.012>
- [22] Bifulco M, Di Zazzo E, Pisanti S, Martini M, Orsini D. The nineteenth-century experience of the kingdom of the two Sicilies on mandatory vaccination: an Italian phenomenon? *Vaccine* 2022;40:3452-4. <https://doi.org/10.1016/j.vaccine.2022.04.052>
- [23] Yang Z. Monkeypox: a potential global threat? *J Med Virol* 2022;94:4034-6. <https://doi.org/10.1002/jmv.27884>
- [24] World Health Organization (WHO). Monkeypox outbreak 2022. Available at: <https://www.who.int/emergencies/situations/monkeypox-oubreak-2022> (Accessed on: 10/12/2023).
- [25] Centers for Disease Control and Prevention CDC. CDC and health partners responding to Monkeypox Case in the US. Available at: <https://www.cdc.gov/media/releases/2022/s0518-monkeypox-case.html> (Accessed on: 10/12/2023).
- [26] Rizk JG, Lippi G, Henry BM, Forthal DN, Rizk Y. Prevention and Treatment of Monkeypox. *Drugs* 2022;82:957-63. <https://doi.org/10.1007/s40265-022-01742-y>
- [27] Kumar N, Acharya A, Gendelman HE, Byrareddy SN. The 2022 outbreak and the pathobiology of the monkeypox virus. *J Autoimmun* 2022;131:102855. <https://doi.org/10.1016/j.jaut.2022.102855>
- [28] Centers for Disease Control and Prevention. Science brief: detection and transmission of Mpox (formerly monkeypox) virus during the 2022 clade IIb outbreak. Available at: <https://www.cdc.gov/poxvirus/Mpox/about/science-behind-transmission.html> (Accessed on: 10/12/2023).
- [29] Sah R, Mohanty A, Reda A, Kumar Padhi B, Rodriguez-Morales AJ. Stigma during monkeypox outbreak. *Front Public Health* 2022;10. <https://doi.org/10.3389/fpubh.2022.1023519>
- [30] World Health Organization (WHO). WHO Director-General's opening remarks at the COVID-19 media briefing--27 July 2022. Available at: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-COVID-19-media-briefing--27-july-2022> (Accessed on: 10/12/2023).
- [31] Kimball S. WHO recommends gay and bisexual men limit sexual partners to reduce the spread of monkeypox. Available online: <https://www.cnn.com/2022/07/27/monkeypox-who-recommends-gay-bisexual-men-limit-sexual-partners-to-reduce-spread.html> (Accessed on: 10/12/2023).
- [32] Goffman E. Stigma. Notes on the management of spoiled identity. London: Penguin Books 1963.
- [33] Andersen MM, Varga S, Folker AP. On the definition of stigma. *J Eval Clin Pract* 2022;28:847-53. <https://doi.org/10.1111/jep.13684>
- [34] Link BG, Phelan JC. Conceptualizing stigma. *Annu Rev Sociol* 2001;27:363-85. <https://doi.org/10.1146/annurev.soc.27.1.363>
- [35] Phillips R, Benoit C. Exploring stigma by association among front-line care providers serving sex workers. *Health Policy* 2013;9(SP):139-51.
- [36] Link BG, Phelan JC. Stigma and its public health implications. *Lancet* 2006;367:528-9. [https://doi.org/10.1016/S0140-6736\(06\)68184-1](https://doi.org/10.1016/S0140-6736(06)68184-1)
- [37] Stuber J, Meyer I, Link B. Stigma, prejudice, discrimination and health. *Soc Sci Med* 2008;67:351-7. <https://doi.org/10.1016/j.socscimed.2008.03.023>
- [38] Coates M. COVID-19 and the rise of racism. *BMJ* 2020;369. <https://doi.org/10.1136/bmj.m1384>
- [39] Martini M, Besozzi G, Barberis I. The never-ending story of the fight against tuberculosis: from Koch's bacillus to global control programs. *J Prev Med Hyg* 2018;59:E241-7. <https://doi.org/10.15167/2421-4248/jpmh2018.59.3.1051>
- [40] CDC Center for Disease Control and Prevention. Reducing Stigma in Monkeypox Communication and Community Engagement. Available at: [https://www.occhd.org/application/files/6616/6094/0398/Monkeypox\\_Stigma\\_508.pdf](https://www.occhd.org/application/files/6616/6094/0398/Monkeypox_Stigma_508.pdf) (Accessed on: 10/12/2023).
- [41] Centers for Disease Control and Prevention. Mpox Equity and Anti-Stigma Toolkit. Available at: [https://archive.cdc.gov/www\\_cdc\\_gov/poxvirus/mpox/resources/toolkits/equity.html](https://archive.cdc.gov/www_cdc_gov/poxvirus/mpox/resources/toolkits/equity.html) (Accessed on: 10/12/2023).
- [42] World Health Organization (WHO). WHO recommends new name for monkeypox disease. Available online: <https://www.who.int/news/item/28-11-2022-who-recommends-new-name-for-monkeypox-disease> (Accessed on: 10/12/2023).
- [43] Martini M, Orsini D. Armed conflict in the world threatens the eradication of Poliomyelitis: risks of humanitarian crises. *Pathog Glob Health* 2022;116:267-8. <https://doi.org/10.1080/20477724.2022.2081785>
- [44] Martini M, Orsini D. The fight against poliomyelitis through the history: past, present and hopes for the future. Albert Sabin's

- missing Nobel and his “gift to all the world’s children”. *Vaccine* 2022;40:6802-5. <https://doi.org/10.1016/j.vaccine.2022.09.088>
- [45] Orsini D, Martini M. Measles: a new danger for Ukraine’s children! The need for an effective and timely vaccination prevention campaign for an insidious disease that comes from afar. *J Prev Med Hyg* 2023;64:E204-8. <https://doi.org/10.15167/2421-4248/jpmh2023.64.2.2996>
- [46] Davide O, Martini M. The insidious return of cholera in the Eastern Mediterranean Region, Lebanon and Syria: a worrying signal! Past, present, and future forthcoming. *J Prev Med Hyg* 2023;64:E27-E33. <https://doi.org/10.15167/2421-4248/jpmh2023.64.1.2910>
- [47] Canetti D, Riccardi N, Martini M, Villa S, Di Biagio A, Codicella L, Castagna A, Barberis I, Gazzaniga V, Besozzi G. HIV and tuberculosis: the paradox of dual illnesses and the challenges of their fighting in the history. *Tuberculosis (Edinb)* 2020;122:101921. <https://doi.org/10.1016/j.tube.2020.101921>
- [48] Martini M, Gazzaniga V, Behzadifar M, Bragazzi NL, Barberis I. The history of tuberculosis: the social role of sanatoria for the treatment of tuberculosis in Italy between the end of the 19th century and the middle of the 20th. *J Prev Med Hyg*. 2018;59:E323-7. <https://doi.org/10.15167/2421-4248/jpmh2018.59.4.1103>
- [49] Irshad U. Overcoming stigma-contracting mpox as a minoritised trainee. *Lancet Infect Dis* 2023;23:400. [https://doi.org/10.1016/S1473-3099\(23\)00064-6](https://doi.org/10.1016/S1473-3099(23)00064-6)
- [50] Organisation for Economic Co-operation and Development (OECD). *Society at a Glance* 2019. Available online: <https://www.oecd.org/social/society-at-a-glance-19991290.htm> (Accessed on: 10/12/2023).
- [51] Rosselli R, Martini M, Fluaad Effect Working Group, Bragazzi NL, Watad A. The public health impact of the so-called “Fluaad effect” on the 2014/2015 influenza vaccination campaign in Italy: ethical implications for health-care workers and health communication practitioners. *Adv Exp Med Biol* 2017;973:125-34. [https://doi.org/10.1007/5584\\_2017\\_39](https://doi.org/10.1007/5584_2017_39)
- [52] Orsini D, Bianucci R, Galassi FM, Lippi D, Martini M. Vaccine hesitancy, misinformation in the era of COVID-19: Lessons from the past. *Ethics Med Public Health* 2022;24:100812. <https://doi.org/10.1016/j.jemep.2022.100812>
- [53] Mahroum N, Watad A, Rosselli R, Brigo F, Chiesa V, Siri A, Ben-Ami Shor D, Martini M, Bragazzi NL, Adawi M. An infodemiological investigation of the so-called “Fluaad effect” during the 2014/2015 influenza vaccination campaign in Italy: ethical and historical implications. *Hum Vaccin Immunother* 2018;14:712-8. <https://doi.org/10.1080/21645515.2017.1420448>

Received on December 12, 2023. Accepted on January 4, 2024.

**Correspondence:** Mariano Martini, Department of Health Sciences, University of Genoa, Largo R. Benzi, 10 - Pad. 3, Genoa, Italy. E-mail: [mariano.martini@unige.it](mailto:mariano.martini@unige.it); [mariano.yy@gmail.com](mailto:mariano.yy@gmail.com)

**How to cite this article:** Orsini D, Sartini M, Spagnolo AM, Cristina ML, Martini M. Mpox: “the stigma is as dangerous as the virus”. Historical, social, ethical issues and future forthcoming. *J Prev Med Hyg* 2023;64:E398-E404. <https://doi.org/10.15167/2421-4248/jpmh2023.64.4.3144>

© Copyright by Pacini Editore Srl, Pisa, Italy

*This is an open access article distributed in accordance with the CC-BY-NC-ND (Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International) license. The article can be used by giving appropriate credit and mentioning the license, but only for non-commercial purposes and only in the original version. For further information: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>*