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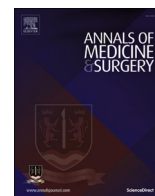
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Short Communication

The burden of monkeypox virus amidst the Covid-19 pandemic in Africa: A double battle for Africa



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ABSTRACT

The Coronavirus Disease - 19 (COVID-19) pandemic has put additional strain on Africa's fragile healthcare systems and has impacted the rise of emerging and re-emerging infectious diseases. Currently, there is a rise in cases of Monkeypox Disease, a zoonotic viral disease caused by the Monkeypox virus, which was first documented in 1970 in the Democratic Republic of the Congo. Most of the clinical symptoms of Monkeypox resemble that of smallpox, whose virus also belongs to the same genus. Initial symptoms include headache, fever, and fatigue, followed by lymphadenopathy and a rash. This study aims to provide more insight into Monkeypox by exposing its current burden and efforts to combat it amidst COVID-19 in Africa. Since Monkeypox disease is re-emerging and is less contagious than COVID-19, prevention and treatment are much more manageable. Still, African countries face several crucial challenges in responding to the Monkeypox in times of the covid-19 pandemic. These include lack of a well-functioning surveillance system for early detection of the disease, lack of awareness and knowledge of the monkeypox disease across the general population, lack of healthcare facilities already burdened by COVID-19 cases, and shortage of trained healthcare professionals.

On the other hand, one significant factor contributing to the minimized risk in Africa was the smallpox vaccination done before 1980. However, a declining cross-protective immunity is seen in those inoculated with the smallpox vaccine and the ever-increasing risk to the unvaccinated population. Thus, focusing on vaccination and disease surveillance operations and diligent monitoring, as well as cross-border collaborations with international sectors, including One Health, FOA, OIE, and WHO is critical to achieving the ultimate eradication of monkeypox in Africa.

1. Introduction

The Coronavirus Disease - 19 (COVID-19) pandemic has put

additional strain on Africa's fragile healthcare systems and has impacted the rise of emerging and re-emerging infectious diseases such as Monkeypox [1]. Monkeypox is a zoonotic viral disease caused by the

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Monkeypox virus of the genus *Orthopoxvirus*, family *Poxviridae*, and sub-family *Chordopoxvirinae*. In 1970, the first human Monkeypox case was recorded in the Democratic Republic of the Congo [2]. Currently, two genetic clades of the Monkeypox virus have been identified: the Western African and the Central African clades, with the West African clade causing a milder disease [3].

Although most human cases of human Monkeypox are acquired from infected animals such as rodents, transmission from person to person is also possible by close contact with an infected person. Even though the transmission path is unclear, a possible route of infection includes a bite from an infected animal and contact with infected bodily fluids or contaminated objects [4]. Most of the clinical symptoms of Monkeypox resemble that of smallpox, whose virus also belongs to the same genus. Initial symptoms include headache, fever, and fatigue, followed by lymphadenopathy and a rash. Lymphadenopathy, usually found around the neck and groin, is not a feature seen in smallpox. The rash usually starts on the face and spreads in a centrifugal distribution to other parts of the body [5]. In addition to the clinical data, laboratory tests such as Polymerase chain reaction (PCR) assay and Enzyme-linked immunosorbent assay (ELISA) can aid in the diagnosis using samples from skin lesions [6].

This study intends to give additional insight into monkeypox disease by exposing its present burden and approaches to eradicate it in the middle of the COVID-19 pandemic to assist in the prevention and effective preparedness for a future pandemic (Fig. 1).

2. Epidemiology

Since 1st January and June 15, 2022, 2103 laboratory-confirmed cases, one probable case, and one fatality were reported to WHO from

42 countries across five WHO Regions. From May 2022, the vast majority of cases have been recorded [28]. The majority of confirmed cases are from the WHO European Region. Of the 468 confirmed cases reported from 14 countries for which demographic information and personal characteristics are available, 99% are reported in men aged 0–65 years an average of 37 years, most of the identified as men who have sex with other men [28]. As of June 21, 2022, the UK government released an official report of the current number of infected and tested persons as well as those under investigation which amounted to 793 laboratory-confirmed cases in the UK. Of these, 18 were in Scotland, 3 were in Northern Ireland, 6 were in Wales and 766 were in England [28]. Monkeypox is transmitted through direct contact and it has predominantly afflicted males who have sex with men. It starts with flu-like symptoms and progresses to fluid-filled lumps or lesions on the skin, which can leave lifelong scars. According to health experts, the new epidemic has commonly resulted in genital rashes. While most instances are minor and patients recover in three weeks, the virus can be lethal and is particularly dangerous to pregnant women and those with compromised immune systems.

3. Prevention

Monkeypox virus is transmitted through close body contact, and contact with the body fluids of the infected individual, hence it is prevented by avoiding close contact with the rash of an infected person, sharing eating utensils, clothing, or bedding materials. It is paramount to wash hands with soap or alcohol-based hand sanitizers especially after coming in contact with suspected cases. It is also very beneficial to use personal protective equipment (PPE) when caring for people infected with the virus. Animal control or contact with unvaccinated animals



Fig. 1. Map showing the African countries battling Monkeypox in comparison with those without Monkeypox [4].

e.g rodents and primates is very important to prevent zoonotic transmission. Sick or dead animals should be avoided and all materials they touch should be disposed of immediately. Infected persons must be isolated at home, depending on the severity of their symptoms (Fig. 2).

3.1. The situation of fighting monkeypox virus before Covid-19 in Africa

Since monkeypox disease is re-emerging, prevention and treatment are much more manageable than coronavirus. First and foremost, Monkeypox is less contagious than coronavirus, which spreads much less quickly than COVID-19 (Table 1) [7]. Since it was initially discovered in humans over 50 years ago, monkeypox research has continued unabated. It can be treated in many ways as smallpox because of its similarities [7]. Hence, there is a wealth of knowledge, unlike the coronavirus. As a result, scientists are familiar with its route of transmission, clinical manifestation, diagnosis, treatment, and prevention, thereby providing public health officials with a significant advantage in managing it [7].

The fight against the monkeypox virus has been much easier than the struggle against the coronavirus since there are efficient disease control approaches in place to reduce both high case fatality rates and the frequency and scale of pandemics [7]. Tecovirimat is licensed to treat numerous poxviruses, including monkeypox, in the European Union and the United States [8]. If antiviral therapy is needed, BMJ Best Practice suggests tecovirimat or the smallpox medication brincidofovir, combined with supportive care, including oxygenation, fluid balance, and antipyretic. If subsequent bacterial or varicella-zoster infection is suspected, appropriate empirical antibiotic treatment such as acyclovir may be initiated [9].

The eradicated smallpox and monkeypox are closely related viruses, and the vaccine protects animals against experimental deadly monkeypox challenges, it is anticipated that smallpox vaccination will protect against human monkeypox infection [10]. After smallpox was eradicated, systematic smallpox vaccination ceased; this meant that the protective effect of the smallpox vaccine over the monkeypox virus had not been studied ever since [11]. In Africa, the smallpox vaccination has minimized the risk of monkeypox in previously vaccinated people. A decline in poxvirus immunity in exposed populations is influenced by Monkeypox prevalence. It is attributed to a declining cross-protective immunity among those who were inoculated before the end of the massive smallpox vaccinations in 1980, and an ever-increasing number of unvaccinated people [12].

Scientists researching monkeypox outbreaks or caring for infected people or animals should be vaccinated to protect themselves against the

Table 1
Comparison between COVID-19 and monkeypox virus [5,7,13–15].

	COVID-19	Monkeypox
Most common symptoms	Fever, cough, tiredness, loss of taste/smell	Fever, skin lesions and itching, headache, and lymphadenopathy
Similar symptoms	Headache, Fever, Exhaustion, Myalgia	
Unique symptoms	Loss of taste or smell, Nausea/Vomiting, Congestion, Runny nose	Back pain, Lymphadenopathy, Skin lesions on Face (95%), Palms and Soles (95%) and Genitals (30%)
Less common symptoms	Conjunctivitis, rash on skin	Cough, Conjunctivitis, Sensitivity to light, Hepatomegaly, Tongue sores
Incubation period (Days)	2–14	5–21
Mortality Rate	~2.1%	3–6%
Route of Transmission	Respiratory droplets from infected individuals	Animal-to-human through infected bodily fluids/blood/skin lesions and Human-to-human through respiratory secretions, skins lesions or contaminated objects

disease, according to the US Centers for Disease Control and Prevention (CDC). Vaccination is also recommended for anyone who has come into contact with monkeypox-infected people or animals [5].

3.2. Current efforts and challenges in response to monkeypox in Africa during the Covid-19 pandemic

In the face of the emergence of COVID-19, African countries face several critical challenges in responding to monkeypox. Many impacted countries lack a working disease monitoring system that allows prevention and early detection. Moreover, there is a significant lack of awareness and knowledge in some countries where animal surveillance is not systematically and adequately performed. Also, the increase in COVID-19 cases has led to a paucity of healthcare isolation spaces and guarded healthcare professionals, especially in rural areas where cases occur. In addition, the lab monitoring systems for disease testing and verification are insufficient. Periodic pastoral drifting, refugee migration, and cross-border commercial mobility within and across borders all work against the adoption of effective public health management measures. Furthermore, the high cost and lack of specific treatments constitute another great challenge [16].

Patients with monkeypox who have been stigmatized have refused to seek medical attention and are being quarantined to protect society. Some patients even resort to evading the health centers [5,16,17]. However, modest efforts are being made, which involve having a good comprehension of clinical manifestations delivered to physicians so they can concisely differentiate monkeypox from rash illnesses. Also, to improve healthcare quality, emotional assistance for patients and their families and communication counseling are being optimized [16].

Lastly, building cross-border collaborations with the veterinary sector through One Health, the Food and Agriculture Organization (FAO), and the World Organization for Animal Health (OIE) is necessary. The World Health Organization (WHO) and international partners should keep an eye on this phase in order to help nations with the prevention, case identification, research, and laboratory assistance [17]. Given the variety of problems described, double efforts are required to prevent the establishment and spread of monkeypox or control it in endemic areas of West and Central Africa, particularly during COVID-19 pandemic [17].

4. Future recommendations

Unlike COVID-19, monkeypox is endemic in Central and West Africa and is significantly less contagious than the coronavirus. The increasing re-emergence of outbreaks demonstrates that other infectious illnesses have been neglected since the COVID-19 pandemic. In addition, global

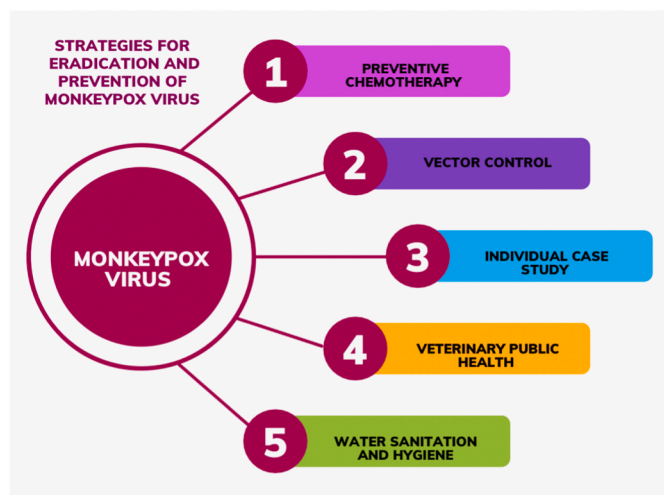


Fig. 2. Image showing the Strategies for Eradication and Prevention of Monkeypox Virus [21–24].

travel and easy access to rural, presumably monkeypox-endemic areas are reasons for increased global awareness [18]. Focusing on vaccination and disease surveillance operations and diligent monitoring of the impact of such programs is critical to achieving the ultimate eradication of monkeypox in Africa [19–21].

To safeguard individuals who are more vulnerable to contracting the virus, campaigns such as outreach programs in schools, marketplaces, and town hall meetings should be implemented, particularly in countries with inadequate access to proper healthcare facilities. Outreach also aids in debunking the myths that encourage vaccination rejection based on literacy, culture, and socioeconomic considerations. The importance of notable personalities and opinion leaders in public health issues cannot be overemphasized. Local risk assessments should be conducted and consistently included in immunization programs. Vaccination programs and other public health initiatives should be independent of political opinions [20,22–24].

The government must devise measures to prioritize financing for monkeypox research and previously identified zoonotic viruses by providing research grants specializing in drug/vaccine development that will lead to total disease eradication. Data coverage of specific features will also aid in greater understanding and eventual eradication of the virus, such as identification of hosts for these viruses in various parts of Africa. Better characterization of the spectrum of disease and clinical conditions, including asymptomatic carriage and acquisition risk factors, enhanced description of epidemic trends in terms of magnitude and duration, measurement of the risk of transmission is linked with various types of interaction with clinical cases [25–27,29].

5. Conclusion

The re-emerging and rising cases of monkeypox disease have further stressed the weakened healthcare systems brought about by the COVID-19 pandemic in African countries. That is why it is crucial to assess the gravity of the situation to guide effective prevention and preparation for a possible pandemic. Unlike COVID-19, monkeypox is not new to the scientific community since its first documented case in 1970 and has many similarities with its close relative, the eradicated smallpox. One factor contributing to the minimized risk in Africa was the smallpox vaccination. However, declining cross-protective immunity was seen in those inoculated with the smallpox vaccine before 1980 and the ever-increasing risk to the unvaccinated population. The challenges seen in African countries include lack of a well-functioning surveillance system for early detection; lack of awareness and knowledge of the monkeypox disease across the general population; lack of healthcare facilities already burdened by COVID-19 cases; and a shortage of trained healthcare professionals. Thus, building cross-border collaborations with international sectors, including One Health, FOA, OIE, and WHO is critical to preventing the emergence and spread of the monkeypox disease during the time of the COVID-19 pandemic.

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Author contributions

Olivier Uwishema: Conceptualization, Project administration, Writing-review, and Designing.

Manuscript writing: All authors.

Olivier Uwishema: Reviewed and edited the first draft.

Criselle Angeline Peñamante, MD, MA: Reviewed and edited the second draft.

Helen Onyeaka, PhD: Reviewed the final draft.

Declaration of competing interest

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