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LETTER TO THE EDITOR

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The rising incidence of African swine fever during the COVID-19 pandemic in Africa: Efforts, challenges and recommendations

1 | INTRODUCTION

The African swine fever (ASF) is one of the most dreaded animal diseases that the world faces.[1] Despite being limited to Africa for a long, ASF has spread widely in Asia, Europe and South America in the past decade (Figure 1).

ASF, a contagious viral infection, triggers haemorrhage in domestic and wild pigs, leading to the death of nearly all infected animals.[2] What makes ASF more threatening is its high ability to infect other pigs through dead animals, pork products, and even non-living objects thanks to the ASF virus' resistance in the environment.[3] Furthermore, this virus neither has an approved vaccine nor an effective treatment to limit its effect and transmission to present day.[3]

Conversely, pig-keeping serves as an imperative source of food and wealth in low-income countries, especially in Africa.[4] However, ASF outbreaks resist such benefits, contributing to underdevelopment and poverty in the affected areas.[5] Previous outbreaks were exacerbated by poor prevention, lack of protective equipment, inexperienced individuals and the swineherd's priority of revenues over biosecurity measures.[3,4,6,7] Moreover, several outbreaks have been reported outside the so-called 'control zone'.[8,9]

The COVID-19 pandemic has laid an additional burden on an already-neglected disease[10] with respect to the availability and distribution of resources and invested attention toward mitigating ASF outbreaks. Although ASF does not pose any health threats against humans, its consequences on livestock—and subsequently poverty alleviation—is catastrophic.

Within the context of global threat, the World Health Organisation (WHO) and the World Organisation for Animal Health (OIE) are devoting their efforts to help control the spread of ASF through uniting public and private sectors' initiatives.[1]

To shed more light on this disease, this article discusses the situation of ASF before the COVID-19 pandemic, its burden and status during the pandemic, and the current efforts toward and challenges facing ASF mitigation.

2 | THE SITUATION OF FIGHTING AFRICAN SWINE FEVER BEFORE COVID-19 PANDEMIC IN AFRICA

In the past few years, there have been numerous ASF outbreaks within and outside of Africa.[11] Based on the OIE report of the ASF outbreaks, Africa suffered only 128 outbreaks in swine compared to 9928 in Asia and 4271 in Europe between 2016 and 2020.[12]

In controlling ASF outbreaks, culling sick animals from herds accounts for one style of mitigation of disease transmission. Carcasses are disposed of through burning or burial, and the infection site is cleaned entirely, creating a control zone around any contaminated facilities and tracking pig movement inside it. It is critical that pigs do not encounter ticks (members of the genus *Ornithodoros*) that might spread the disease in African nations where the disease is enzootic.[13]

FIGURE 1 African swine fever endemic regions in Africa [Colour figure can be viewed at wileyonlinelibrary.com]

Currently, there are no known treatments for this highly lethal virus, where mortality rates can reach up to 100%.[3] Moreover, no vaccines have been developed to counter this health threat.

3 | THE BURDEN AND CURRENT STATUS OF AFRICAN SWINE FEVER DURING COVID-19 PANDEMIC IN AFRICA

The current ASF is a serious crisis due to its high fatality rate, affecting rural and pig industries worldwide. Therefore, in 2019, Food and Agricultural organization (FAO) and the OIE declared ASF a worldwide priority.[14] Accordingly, these entities included ASF in the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TAD) to resist the massive burdens of the disease, especially early in the COVID-19 pandemic where the disease continued to spread in sub-Saharan Africa.[8,15]

ASF has significantly impacted the affected countries' livestock producers, communities, and economy. At the same time, it induces trade restrictions due to the lack of approved treatments or vaccines. Following this limitation, depopulating all affected and exposed swine herds remains the only means of preventing the disease.[1,3,4] Consequently, affected swineherds whose investments and life-setting depend mainly on these animals' active capacity and health would deteriorate the economic status, promoting poverty. During the pandemic, the restrictive regulations and lockdowns worsened trade and the consumption of the pork industries.

Many sectors—namely those tied to the pharmaceutical production and grains market—were negatively impacted in the face of the ASF disease even before the emergence of COVID-19.[16] Nevertheless, such sectors' commerce and daily operations deteriorated during the COVID-19 pandemic for several reasons: (1) GF-TAD global efforts to prevent the disease postponed more than 30% of their field activities and measures; (2) the capacity of early detection by veterinary services diminished due to movement restrictions and trade restrictions across regions; and (3) many healthcare workers' attention shifted from the ASF to help fight the COVID-19. Hence fewer precautions and protective measures were employed and obeyed.[15]

4 | CURRENT EFFORTS AND CHALLENGES FACING RESPONSES TO AFRICAN SWINE FEVER DURING COVID-19 PANDEMIC IN AFRICA

The emergence of COVID-19 has caused both a public health emergency and socioeconomic crisis, where livestock sectors are among the foremost affected sector due to the bridge in animal movement and production output.[17] The junction of the COVID-19 pandemic and ASF outbreak led to a shortage in pork production, instigating a change in protein consumption from animal meat to other protein-rich sources.[18] Most ASF outbreaks were found to disproportionately affect small herds of less than 50 pigs, which was attributed to insufficient awareness on the adequate implementation of biosecurity.[18]

Further challenges faced in combatting ASF amid CODVI-19 included lack of pig movement control, insufficient rapid ASF detecting capacity, enforcement of bans on pig transport, and inefficient animal quarantine. Furthermore, the bridge in supply chain and pork production elevated pork's value, which further impacted the value of other livestock rich in protein as chicken meat and aquaculture products.[18]

In addition to ASF, some African countries have faced other infectious diseases and viral outbreaks such as Bird flu, Malaria, Ebola, Measles, Dengue, plague and Lassa fever.[19–26] The unprecedented COVID-19 pandemic came as a shock to both the societies and economies, but it might be implied that COVID-19 had little impact on pig production compared to ASF to pig production as the ASF outbreak was responsible for the death of many thousand pigs.[27] The most significant impact of COVID-19 was posed on pork consumption. Although the ASF outbreak had already ensured low rates of pork consumption, the COVID-19 outbreak further contributed to the decline due to the imposed lockdown, which caused the closure of markets and food outlets.[27]

5 | LEARNED LESSONS FOR DEALING WITH THE FUTURE COMBINED OUTBREAKS IN A POST-COVID CONTEXT

The COVID-19 pandemic highlighted pivotal weaknesses of global health systems, such as lack of social awareness, health education and research, alongside evidence-based health practices across the globe. Worrying situations of combined outbreaks are troubling the international community, and important lessons need to be highlighted to overcome such informational burdens and strengthen health policies.[19,28]

In this context, global health studies demonstrate the need to develop a One Health approach to avoid future outbreaks, especially related to zoonoses such as Rift Valley fever, ASF and bird flu.[29] Interdisciplinarity, as an alternative approach to lead efforts towards prevention, need to be highlighted and be put to practice. Research, prof imperative to minimize damages in health, society and economy, prevent infections in animals and humans and contribute to a sustainable recovery of the unprecedented global health crisis that is the COVID-19 pandemic.

Yet, few international studies were published demonstrating data about the learned lessons to deal with combined outbreak, being a needed change to embase national, international and global policies to achieve a sustainable health systems for people, animals and the planet.

Pivotal moment of unprecedented awareness on infectious diseases, highlighting long lasting needs in different challenges on global healthcare and countries health systems, per example lack of research and development of evidence-based practices in public health, universal health coverage, accessibility, awareness and trustworthy information for the public, differing from fake news or misinformation. Based on this context, the increased risk of other highly infectious disease outbreaks such as RVF is significant and expresses a concern amongst specialists.[14]

A One health approach is essential in RVF, demanding the development of a working group to develop surveillance to identify possible risk factors for developing the disease and for evolving to a severe presentation. Also, it's imperative to raise awareness from governmental powers and the civil society, with health policy campaigns to increase education to prevent outbreaks.[19]

In this context, the authors recommend adopting a intersectional approach between different disciplines, with the need for partnerships of experts on animal and environmental health and local, national and international health workforce of the risk regions.[14,19] An interdisciplinary approach is imperative to minimize damages in health, society and economy, prevent infections in animals and humans, and contribute to a sustainable recovery of the unprecedented global health crisis that is the COVID-19 pandemic.

ASF is a deleterious disease that originates in African and a virulent disease of pigs.[19] It is highly transmitted, and affects domestic and feral pigs, which may be a significant threat to the food supply and livelihood of individuals in Africa and around the world.[28]

The COVID-19 emergence has caused both public health emergency and socio-economic crisis of which livestock sector are among the foremost affected sector due to the bridge in animal movement and production output.[29] In light of the COVID-19 pandemic and ASF outbreak, it resulted in a shortage in pork production, which caused a change in protein consumption from meat to other protein sources.[27] Most of the ASF outbreak was found to affect greatly small herd of fewer than 50 pigs which was attributed to insufficient awareness or knowledge on adequate biosecurity implementation.[27]

Additionally, challenges faced were lack of pig movement control, insufficient rapid ASF detecting capacity, enforcing bans on pig transport and inefficient animal quarantine. Furthermore, the bridge in supply chain and pork production has caused a rise within the price of pork which also impacted the worth of other protein source livestock like chicken meat and aquaculture products.[27]

The COVID-19 pandemic was unprecedented, which came as a shock to both the societies and economies, but it might be implied that COVID-19 had little impact compared to ASF to pig production because ASF outbreak caused the death of many thousands pigs.[5] The most significant of COVID-19 was on pork consumption. The ASF outbreak had already resulted in a low rate of pig consumption. Nonetheless, The COVID-19 outbreak further caused a decline within the consumption rate due to the imposed lockdown, which caused the closure of food outlets, markets.[5]

6 | RECOMMENDATIONS

As a highly contagious haemorrhagic viral disease among pigs, ASF is accountable for significant production and economic losses worldwide. The spread of this transboundary animal disease (TAD) is facilitated through pigs (including live, dead, domestic and wild) and pork products in addition to contaminated foods and fomites (e.g., clothing, shoes, knives, vehicles and other equipment) thanks to the ASF virus' environmental resistance. There are no approved vaccines or treatments presently available against ASF. However, it is imperative to employ appropriate import and biosecurity measures in countries currently free of ASF contamination to prevent the introduction of infected pigs and pork products in the area. Furthermore, standard sanitary measures should be continuously employed, especially during ASF outbreaks in infected countries, including early detection and proper processing of killed animals (e.g., adequate disposal of carcase and waste); thorough cleansing and disinfection; compartmentalization, zoning, and movement controls; surveillance and exhaustive epidemiological investigation; and rigorous biosecurity measures on farms.

7 | CONCLUSION

ASF is a highly infectious haemorrhagic viral illness of domestic and wild pigs. Several outbreaks of ASF have occurred domestically and beyond Africa in recent years, with the African continent experiencing more substantially outbreaks. The recent upsurge in the number of ASF outbreaks has been attributed to the economic and healthcare consequences of the COVID-19 pandemic. However, despite the lethal nature of the disease, effective treatments and vaccines against ASF are yet to be discovered. Accordingly, preventive strategies including appropriate import

policies, biosecurity measures, sanitary measures, and movement controls should be implemented. In addition, the disease requires surveillance and detailed epidemiological investigation to reduce future outbreaks.

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CONFLICT OF INTEREST

The authors declare no conflict of interests.

ETHICS STATEMENT

Not applicable.

AUTHOR CONTRIBUTIONS

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DATA AVAILABILITY STATEMENT

Research data are not shared.

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