



## Commentary

# The 3<sup>rd</sup> Pan African Thoracic Society (PATS) biennial congress: Lessons learnt to advance lung health in Africa

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## ABSTRACT

Lung health in Africa is of great public health concern. To exchange knowledge, communicate the latest scientific advances in lung health, build the capacity of young researchers, and provide a platform for networking of lung health stakeholders in Africa, the Pan African Thoracic Society (PATS), in partnership with the Respiratory Society of Kenya organized and held the 3<sup>rd</sup> Biennial PATS congress, from June 7–10, 2023 in Mombasa, Kenya. There were a total of 30 conference sessions, which included six skills building workshops, two research dissemination workshops, six plenary sessions, and five each of pediatric, adult, and thoracic surgery symposia. A total of 60 abstracts were presented, including 27 oral abstracts and 33 posters. A wide range of issues for lung health in Africa emerged. These include the emerging role of the environment, especially climate change and global warming, on lung health, the threat posed by the use of tobacco and other nicotine products in Africa, the high burden of lung infections, insecurity of medical oxygen supply systems, and high burden of chronic respiratory disease. In this paper, we summarize the proceedings of this conference and draw lessons that can be used to advance lung health in the African continent.

**Keywords:** Lung health, Africa, Climate change, Air pollution, Infections, Tobacco use

## INTRODUCTION

Lung health is a major public health concern in Africa. The continent, which is home to about 1.5 billion people or about 18% of the global population, has a disproportionate burden of many lung diseases, including tuberculosis (TB), acute respiratory tract infections, and chronic respiratory disease (CRD) (reference). Multiple risk factors interact in complex ways to drive this burden; however, at the bottom of these factors is poverty which is pervasive in the African continent. In 2019, it was estimated that 35% of the population in Sub-Saharan Africa was living in extreme poverty (World Bank, 2020).<sup>[1,2]</sup>

The Pan African Thoracic Society (PATS), a membership organization of healthcare professionals from across Africa and beyond, aims to promote lung health in Africa. PATS, in partnership with the Respiratory Society of Kenya (ReSoK), held its third congress from June 7–10 in Mombasa, Kenya.<sup>[3]</sup> The conference was intended to provide a forum for networking of African clinicians, public health practitioners, researchers, and other healthcare professionals; dissemination of the latest scientific information relevant to lung health in Africa; building various skills of healthcare professionals that are needed for the delivery of lung health interventions in Africa; and building

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the capacity of early career researchers and other health-care professionals.

The congress comprised 30 conference sessions, which included six skills-building workshops, two research dissemination workshops, six plenary sessions, and five pediatric, adult, and thoracic surgery symposia. A total of 60 abstracts were presented, including 27 oral abstracts and 33 posters. Presenters at the conference were requested to submit their presentations to a central unit where they were archived. Rapporteurs were assigned to every session of the conference and were mandated to take notes of the proceedings of each session and then summarize the session content. To obtain key messages of each session, rapporteur notes were reviewed, and comparisons with the submitted presentations were made to ensure the accuracy of abstracted information. The rapporteur team then used this information to summarize the key messages that came out of the conference and to deduce the key lessons for lung health in Africa.

Figure 1 and Table 1 show the geographic spread of the countries from where delegates to this conference came from. Conference attendees were drawn from several (number) African countries and also from other regions including PATS/ReSoK partner societies such as the European respiratory society (ERS), the British thoracic society (BTS), and the American Thoracic society (ATS). A wide range of lung health topics were discussed at the conference. Below, we provide summaries of the discussions by topic area.

## CLIMATE CHANGE AND LUNG HEALTH

It is known that climate change causes an increase in aeroallergens, heat waves, thunderstorms, wildfires, droughts, and floods. These have been shown to trigger asthma exacerbations and affect nutrition and access to healthcare in already stressed healthcare systems in low- and middle-income countries.<sup>[4,5]</sup> Within the context of these fragile health systems, local factors such as poor waste management in urbanized areas, industrialization, fuels, and vehicular smoke, among other human activities, exacerbate the looming crisis, as highlighted in a talk by an environmental health activist in Kenya. Besides increased morbidity and risk of CRDs, other non-communicable diseases, including lung cancers, are on the increase.<sup>[4-6]</sup>

## THE SOCIAL ENVIRONMENT AND LUNG HEALTH

Whilst in the biomedical health model, risk factors on disease are clearly articulated and well researched, the impact of the social environment, such as gender, culture, religious beliefs, and income, are equally or even more important as drivers of lung health or ill health. These influence health-seeking behavior, treatment access, acceptability, and affordability for respiratory diseases. To address these factors, a multi-sectoral



**Figure 1:** Map of African countries with delegates attending the 3<sup>rd</sup> Pan African Thoracic Society (PATS) biennial congress: PATS congress, Kenya, June 2023.



Members of the Pan African Thoracic Society (PATS) executive committee, PATS congress, Kenya, June 2023.

sustainable approach is required for both the promoting of well-being and equity for people in Africa.<sup>[7,8]</sup>

## EARLY LIFE EVENTS AND FUTURE LUNG HEALTH

Early life events impact lung health throughout the life course. Childhood viral infections, child and maternal nutrition,

**Table 1** : International participant countries at the congress.

International participant countries.	
1. Brazil	2. Germany
3. Israel	4. Netherlands
5. Turkey	6. UAE
7. Hong Kong	8. Spain
9. UK	10. USA

maternal smoking, exposure to pollutants during pregnancy, and air pollution contributes to lower lung function and have been associated with an increased risk of chronic obstructive pulmonary disease (COPD), as highlighted in a Kenyan study.<sup>[9,10]</sup> Preterm birth, low birth weight, and small for gestational age, collectively referred to as “small, vulnerable neonates”, are associated with higher morbidity and mortality, increased risk of bronchopulmonary dysplasia, wheezing, pulmonary hypertension, asthma, and reduced lung function that persists into adulthood.<sup>[11]</sup>

## TOBACCO AND NICOTINE PRODUCTS

Tobacco is the leading preventable cause of death in the world. Africa has a lower prevalence of smoking compared to other regions of the world, and this has been on the decline over the past few years, and it's expected to reach 11.2% by 2025.<sup>[12,13]</sup> Africa has a largely youthful population, and the increased purchasing power may make tobacco products more affordable, thereby increasing the use of these products. With poor regulatory systems and a largely unregulated market in Africa, the tobacco industry continues to use aggressive marketing tactics that target the young. There is, therefore, a real danger that the use of tobacco products in Africa will increase in the coming years, and with this, tobacco-associated health problems, including TB, lung cancer, and COPD, may increase.

With the increasing use of e-cigarettes and vaping products with unknown quantities of tobacco and harmful chemicals, carcinogens, toxins, bacteria, and fungi, there is a worrying trend in the use of these products, which are largely marketed to adolescents worldwide. Although the acute effects of these products are well known, there is less robust data on the longer-term consequences of using these products. In a survey of youth in Nigeria, the prevalence of the use of e-cigarettes was about 8% (51/949).<sup>[14]</sup>

To address the tobacco menace in Africa, there is a need to improve adherence to anti-TB tobacco laws, rules, and regulations, enhance the training of healthcare workers to offer tobacco counseling services and improve the availability of and use of tobacco cessation services. There is also a need for enhanced legislation to ensure youth are protected from using these products.<sup>[12,14]</sup>

## RESPIRATORY TRACT INFECTIONS

Respiratory tract infections remain an important contributor to the cause of death in children under the age of 5 years in Africa.<sup>[15,16]</sup> Several studies examined risk factors for mortality, which include long distance to the hospitals, delayed referral, poverty, education level of the caregiver, lack of recognition of the severity of illness, cigarette smoking, male gender and living in informal settlements, and high-density residential settings.

Risk factors for nasopharyngeal carriage of *Streptococcus pneumoniae* were highlighted in studies from Gambia and Kenya. These included exposure to biomass smoke, poor home ventilation, dampness, and fungal exposure at home. A Senegalese study noted a change in the normal seasonal patterns of respiratory viruses like respiratory syncytial virus which was attributed to climate change.

Several recommendations were proposed to address the public health challenge of high morbidity and mortality from respiratory tract infections in Africa. These include the promotion of early diagnosis, the use of point-of-care diagnostic tools, advancing health information tools, and the use of artificial intelligence software for chest radiography interpretation.

Although the COVID-19 pandemic, overall, had multiple negative effects on health, there were also positive impacts, such as improving access to oxygen even at the primary care level. These advances should be leveraged to advocate for improved care for people with lung disease. The capacity built-in expanding molecular diagnostic tools should also be used to enhance diagnostic capacity for infectious and non-infectious diseases in Africa.

## SICKLE CELL LUNG DISEASE (SCLD)

Sickle cell disease is a common inherited disorder in Africa and is associated with a spectrum of lung diseases affecting the pulmonary vasculature, parenchyma, and airway. A study of lung function in 131 matched SCLD cases and controls in Nigeria found a predominantly restrictive lung function impairment pattern.<sup>[17]</sup> Exploring alternative lung function tests, including oscillometry in children under five years, may provide earlier objective measurements. Hydroxyurea has been shown to decelerate lung function decline, reduce acute crises, and improve hypoxemia rates.<sup>[18]</sup>

## CRDs

COPD and asthma are leading causes of high morbidity and mortality from CRDs globally and in Africa.<sup>[2]</sup> Air pollution and a poor social environment are noted to be risk factors for the development of these two entities and drive poor treatment outcomes. In addition, infrastructural challenges

and limited healthcare worker knowledge contribute to missed diagnoses and poor management.

Various studies from Kenya, Malawi, South Africa, and Nigeria highlighted the need for essential medicines and diagnostic tests to be made available and affordable to people with CRDs in Africa.<sup>[19]</sup> There was a call for setting up a data-driven African surveillance platform on CRDs to address the lack of national or regional guidelines that are informed by local and regional. Improved social security systems and implementation of Universal Health Coverage policies would be expected to enhance CRD care and treatment.<sup>[19]</sup>

## CONCLUSION

Africa continues to suffer a high burden of respiratory disease that is driven by multiple factors, including poor air quality, climate change, and social factors in the backdrop of weak healthcare systems. There are significant gaps in knowledge and information about the burden of lung health problems in Africa. Africa-based research data are needed to direct policies and guidelines that would address the risk factors for poor lung health in Africa. There is a need to develop interventions and approaches like the integration of lung health plans in routine health-care services and health promotion programs that would ensure the best and most cost-effective national programs for lung health.

## Author's contributions

AI contributed to the conception, design, acquisition and analysis of the data, writing the original draft and editing. AO contributed to the acquisition and analysis of the data, writing the original draft, supervising, and reviewing and editing the draft. BM, JK, JC, and RM contributed to the acquisition of the data, writing the original draft, manuscript editing and reviewing. All authors read and approved the final manuscript.

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## Ethical approval

The Institutional Review Board approval is not required.

## Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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## Conflicts of interest

There are no conflicts of interest.

## Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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