Minimizing the long-term impact of COVID-19 on environmental pollution in Sub-Saharan Africa

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ABSTRACT

The outbreak of the COVID-19 pandemic has resulted in increased use of surgical masks and other personal protective equipment (PPE) among people across the globe. While the use of these materials can be seen as a step toward limiting the spread of the coronavirus disease, it presents yet another source of environmental pollution which is currently being overlooked by most governments and people. This article provides a commentary on the environmental effects of the disposal of PPE and recommendations for addressing the potential risks it presents. Health and environmental actors, in conjunction with governments and their various ministries and non-governmental organizations (NGOs) must step up public education on the need to properly discard used PPE without adding to current sources of environmental pollution and endangering human lives.

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Waste management has been a great challenge for most countries across the globe. In developing countries, rapid urbanization and increased resource consumption have been major contributing factors to environmental challenges (Gugssa 2012; Bello, Bin Ismail, and Kabbashi 2016). The principal composition of waste disposed from households in most developing countries, in order of significance, are food waste, paper waste, and plastic waste (Bernache-Perez et al. 2001). According to Adebiyi-Abiola et al. (2019), plastic-waste pollution, aggravated by inefficient waste collection and limited recycling capabilities, is prevalent across most parts of Africa. Although the issue of waste management is an age-old problem, now more than ever, governments in developing countries are finding it challenging to make progress in most urban settings (Serge Kubanza and Simatele 2020).

Previous efforts in Sub-Saharan Africa (SSA) have centered on banning the use of plastics. In 2005 and 2006, Rwanda and Tanzania, respectively, imposed prohibitions on the importation and use of plastic bags (Clapp and Swanston 2009). In 2007, Uganda and Kenya enacted legislation to ban thin bags and to tax thicker bags (BBC 2007; UNEP 2018). Ghana, Ethiopia, and Lesotho are among other SSA countries that have been considering legislation against the use of plastics (Reuters 2007; UNEP 2018; Yeboah 2020). Despite efforts to tackle waste management across SSA, the current COVID-19 pandemic has brought another materials-disposal threat that if not handled effectively could have compounding impacts on the sanitation problems that have saddled most developing countries across Africa.

The emergence of the coronavirus outbreak has brought great challenges to the world’s public health security (Wang et al. 2020). Earlier restrictions such as national lockdowns have come to be regarded in unfavorable terms by most governments, particularly in Africa (Bhorat et al. 2020). Although such measures have reduced transportation activities and contributed to the curtailment of energy consumption (Muhammad et al. 2020), they have also led to widespread disruption of economies (Bhorat et al. 2020) and food systems across the continent (Lawson-Lartego and Cohen 2020). According to studies by Bai et al. (2020) and Lai et al. (2020), the global outbreak and spread of COVID-19 have not only seriously threatened public health, but also greatly hindered global economic growth. The inability of states to accommodate the social and economic consequences of the lockdowns have led to a relaxation of those efforts. Following the gradual easing of lockdown restrictions and a return to some form of normalcy, people have been encouraged to use personal protective equipment (PPE), especially masks and face shields, which have been
demonstrated to reduce the risk of exposure to the virus (Wilder-Smith and Freedman 2020; Chintalapudi, Battineni, and Amenta 2020). The wearing of surgical masks per se is not a new practice for humanity, particularly among health practitioners. However, since the outbreak of COVID-19, the scale of use of these devices and other protective equipment has increased dramatically across the globe.

Almost all governments and the World Health Organization (WHO) have advocated for mechanisms for limiting the spread of COVID-19. In so doing, they have encouraged the wearing of masks in public places at all times. The challenge of how best to manage PPE waste is, unfortunately, an issue that has been left out of the public discourse. As a result, discarded surgical masks are becoming a threat to sanitation in many developing countries. For instance, a news documentary titled “Taking Care of Nairobi’s Waste During the COVID-19 Pandemic” by Deutsche Welle Television (DW TV) on July 3 reported that in Kenya, the COVID-19 pandemic has worsened sanitation problems as a result of increased medical trash like surgical masks and gloves filling dumpsites (Eco Africa 2020). In Nigeria, a report by Fadare and Okoffo (2020) noted a collection of facemasks along highways and drainage systems in the city of Ile-Ife. This new emergence of PPE as an environmental threat in the wake of inappropriate disposal both in the terrestrial and aquatic environments suggests that the COVID-19 pandemic has not materially reduced waste pollution (Fadare and Okoffo 2020). Public health professionals advise that, on average, surgical masks should be worn for a period not exceeding 8.5 hours and after this amount of time, they should be changed and discarded (Athens 2020). The frequent need for disposing of PPE means there is a high quantity of waste being generated from used surgical masks at any time. Thus, should this pandemic persist and the wearing of surgical masks continue to be encouraged, more PPE will compound the already worsening environmental problems, especially in the absence of appropriate means of managing the waste flow. The gravity of the issue is underscored by low collection rates, ineffective and poorly coordinated management systems, and informality in SSA countries (Gugssa 2012; Jambeck et al. 2015; Quartey et al. 2015). Already, most countries throughout the region are saddled with poor sewage systems in many communities (Mema 2010) and large amounts of untreated industrial and domestic waste empties into surface drains, leading to severe sources of pollution and destruction of natural ecology (Owusu Boadi and Kuitunen 2002). Without swift and appropriate measures to address this emerging sanitation issue of littering the environment and drainage systems with used surgical masks, deleterious effects on environmental sanitation, coastal ecosystems, and human health at large will occur in affected countries.

In this commentary, we add our voices to calls to incorporate best practices in managing waste from used surgical masks to avert the environmental threat it poses to developing countries, particularly in SSA (Aloui-Zarrouk et al. 2020). The disposal of masks and other PPE into the environment is likely to result in the movement of waste materials through sewage into water bodies. This is a major issue that must be considered by governments across the African continent where health authorities are enforcing the compulsory wearing of face-masks in public. Already, most countries in the region are fighting a losing battle against plastic bags in the environment and the potential danger is that increasing volumes of COVID-19-related waste will compound the situation. Inger Andersen, the Executive Director of the United Nations Environment Program, has remarked that in the wake of COVID-19, leadership on environmental sustainability will be in increased demand (Myrick 2020). As such, contributing to addressing this emerging environmental problem will go a long way to meeting the anticipated rising demand for environmental sustainability. The safe and ecologically sound handling, treatment, and final disposal of this waste is therefore essential to prevent negative effects on human health and the environment.

First, there is the need for enhanced community education by governments – especially by ministries of health – and by environmentally aligned nongovernmental organizations (NGOs) on not just the wearing of facemasks but also on the appropriate means of discarding them. While there is some evidence that this education is occurring (Fadare and Okoffo 2020; Nzeadibe and Eijke-Alieji 2020; Sougou et al. 2020), these campaigns have not been given the appropriate attention in the COVID-19 fight. Efforts should focus on where and how to discard the used masks, as well as the consequences of inappropriate disposal. In addition, as most educational institutions have begun the process of reopening to continue academic work in a hybrid (online and face-to-face) manner across SSA, an opportunity exists for these institutions, in collaboration with their respective ministries and governments, to institute school campaigns and awareness-raising programs. Where appropriate, individuals who litter the environment with surgical masks should be fined as a way to deter others from repeating similar behavior.
Second, at places where people congregate, collection bins must be provided for disposing of these materials alongside other wastes. This should include markets, truck parks, tourist sites, and attraction centers, among others. This will reduce the tendency to drop the used masks on highways and in open places.

Finally, governments should encourage the use of PPE of high quality that can be treated with disinfectant and reused. In addition, there can be innovative ways of recycling used PPE into other products so as to avoid littering the environment. Executing these measures will help reduce the rate of improper disposal of used PPE as well as promoting more sustainable production and consumption.

In the long-term, eco-friendly masks should be developed to provide for easy disposal and biodegradation. Taking these actions and many others will lead to a change of behavior of people and an improvement in the sanitation situation of most urban areas in developing countries, especially SSA. However, severe environmental consequences for both humans as well as other terrestrial and aquatic species should be expected in the face of inaction against this potential threat.

Disclosure statement

No potential conflict of interest was reported by the authors.

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