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Review Article

# The Fight against Coronavirus Disease-2019 Pandemic: A Perspective on the Ethiopian Scene

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## Abstract

We recognize that human coronaviruses owing to their wide distribution and large genetic diversity, and the ever-increasing human-animal interaction has been causing major global emergencies, particularly since 2002. The latest in this series of human infections caused by severe acute respiratory syndrome-coronavirus-2 caught the world by surprise in 2019 quickly turning into a pandemic. By July 6, 2021, the pandemic swept across the globe affecting over 183 million and causing over four million deaths. In continental Africa, a total of over 4.3 million confirmed cases and 102 thousand deaths were reported, which constituted a small proportion (2.3%) of the overall global burden. Ethiopia, a country with a huge population of over 115 million and many socio-economic vulnerabilities, only 276,984 cases and 4,343 deaths, this occurring in and around Addis Ababa, the capital city. The government initially responded strongly but was subsequently challenged with the enforcement of regulations and guidelines as the number increased. Most of the health care workers, who are at the front line and exposed to the hazards, are knowledgeable about coronavirus disease-2019, but not practicing mitigation measures adequately, partly due to lack of infection prevention skills and personal protection equipment. Various measures were taken to boost health workers' motivation and improve their working environment. Despite the relatively lower number of cases, the health system was outstripped by the demands of the pandemic, including laboratory diagnosis, while catering to other basic health services like maternal and child health, surgical interventions, and follow-up services for patients requiring chronic care. The pandemic is perceived in Ethiopia to constitute a major public health threat that could result in unprecedented socio-economic disruptions. The pandemic and associated mitigation measures had and will continue to have a heavy negative impact, particularly among the most vulnerable population groups. Limitations with resources, sporadic conflicts, political instability, and poor governance will further constrain the country's limited capacity to effectively continue with the response to the pandemic, while also addressing other competing needs. The emerging technology of medications and vaccines seems to be promising to eventually control the pandemic, but much remains to be done to win the battle against the corona pandemic.

***Keywords:*** *Coronavirus; SARS-COV-2; COVID-19; Pandemic*

## Introduction

We know that human coronaviruses have been responsible for a substantial proportion of upper respiratory tract infections in children since 1965, when these viruses were first recognized to cause disease in humans [1]. We also recognize that coronaviruses kept emerging periodically and cause infection in humans, mainly due TO their wide distribution and large genetic diversity, and the increase in human-animal interface activities [2]. Ongoing research has generated a considerable amount of information regarding the epidemiology of these viruses. Since 2002, at least five new human coronaviruses have been identified, including a very new strain - severe acute respiratory syndrome coronavirus (SARS-CoV), which emerged in 2003 in China, and has caused significant illness and death in 29 countries across the globe [3]. Then came the Middle East respiratory syndrome (MERS)-CoV, which was first reported in the United Arab Emirates in July 2013 and claimed many lives by 2020 [4,5].

In 2019, despite all the signals for an impending catastrophe over the preceding two decades, the world was again caught off guard by a novel coronavirus, which originated in Wuhan, China, and was designated by the World Health Organization (WHO) as SARS-CoV-2, and

the disease it causes as coronavirus disease-2019 (COVID-19) [6]. The disease quickly turned into a major pandemic of global concern with the severity that ranges from asymptomatic to severe and fatal disease [7]. The cumulative number of cases reported globally as of July 6, 2021, exceeded 183 million, and the number of lives the pandemic claimed passed the four million mark [8]. To date, countries across the globe have strived to contain further spread of the pandemic and mitigate its health and economic impact, but with varying degrees of success. The pandemic has created unprecedented disruptions in global health and development [9].

Quite evidently, the short-term implications of the global challenges posed by the COVID-19 pandemic are seriously felt everywhere. In Africa, a continent with a population of over 1.2 billion, a cumulative total of some 4.3 million confirmed cases and 102 thousand deaths have been reported as of July 11, 2021 [10]. This constitutes a small proportion (2.3%) of the overall global burden. However, consistent with the global situation, it has been recognized that all facets of society are and will continue to be negatively impacted by the pandemic. In the health sector, the pre-existing fragile health systems are being overwhelmed with the surge in COVID-19 cases [11,12].

Ethiopia started strong with the response to the pandemic. However, the country, like most others sub-Saharan Africa, faced major vulnerabilities including a weak health system that was not ready for a large-scale crisis compounded by social unrest and internally displaced persons. The socio-economic impacts are being felt across the country and already are wide-ranging and serious with the potential to become severe, depending on the pandemic's trajectory, the effects of counter-measures, and underlying and structural factors. This review appraises the country context, the epidemiology of the disease, the national response, challenges encountered, the impact of the pandemic, and prospects to win the battle against the pandemic.

## County context

Ethiopia (Figure 1) is a country with a total surface area of approximately 1.1 million square Kilometers and divided into 11 administrative regions. Its topography ranges from peaks as high as 4,550m above sea level to a low land 110m below sea level and shares a border with six countries. The country is the second most populous county in Africa and has a population of over 115 million, 83.6% of the population living in rural areas [13]. Children under 14 years of age constitute 39.6%, adults 15 - 64 years 56.9%, and population aged 65 and older 3.6%. Nearly half of the population lives below the poverty line. Ethiopia's health care system is among the least developed in sub-Saharan Africa. Widespread poverty, poor nutrition, low education levels, and limited access to health services have contributed to the high burden of infectious and non-infectious diseases in the country.


***Figure 1:*** *Map of Ethiopia.*

## The Ethiopia face of the pandemic

### COVID-19 epidemiology

The virus was confirmed to have reached Ethiopia on 13 March 2020 [14]. Nearly three-quarters of the pandemic reported in Ethiopia are concentrated in and around Addis Ababa, the capital city, and the risk of infection increased across most of the parts of the country, including severe cases of the disease and the risk of death [16]. In the initial months of the pandemic, the driving factors of COVID-19 in country included information gap concerning protection methods, illness behaviour and access to care, and regional and district variations in the myths around the disease, and false assurances [17]. A cross-sectional study on knowledge and practice towards COVID-19 pandemic prevention conducted in April 2020, showed that most of the country's population knew about mitigation measures but had problems in applying prevention practices [18]. By 12 July 2021, there were 276,984 confirmed cases and 4,343 deaths [15]. Over one-half of the deaths occurred among those 60 years of age and over (Figure 2).

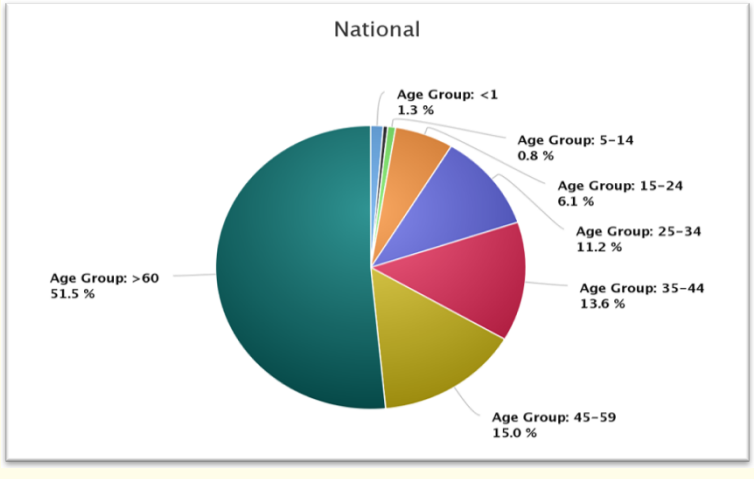


***Figure 2:*** *COVID-19 case fatality disaggregated by age, Ethiopia, 2021.*

Most of the health care workers (HCWs) in one of the big regions in the country had good knowledge about COVID-19 and the pandemic, but prevention practices were inadequate, and this was associated with rural residence, lack of infection prevention (IP) training and guidelines, having chronic comorbidities, lack of personal protection equipment (PPE) and high workload [19]. The prevalence of COVID-19 was significantly higher among the elderly, inter-city travelers, and those who had contact with confirmed/clinical suspects of the disease.

### National response

The highly communicable nature of the COVID-19 pandemic has posed a huge challenge to the national response in Ethiopia. on the other hand, the country's young population, low rural population density, and a strong network of community workers are positive aspects in the fight against the virus [20]. The government took several measures ranging from public health emergency response to the state of emergency to reduce the risks of COVID-19 transmission. A good balance has been maintained, and economic activities, especially agriculture and industry, have continued with a view to maintaining food security and preventing unrest. The government has used several strategies to alleviate socio-cultural, political, and economic factors that drive the pandemic.

The government has also issued comprehensive guidelines and promoted tailored activities of risk communication and community engagement at all levels [21]. However, the enforcement of regulations and guidelines has not been strictly implemented and negligence among the public has undermined the preparedness and response measures. Of the known mitigation measures of COVID-19 transmission, regular hand washing practice has been rewarding and physical distancing turned out to be a major challenge across all regions of the country. Presence of a huge number of homeless people, mass use of public transportation, the substantial population size with low education levels, overcrowding in cities and homes, shortage of sanitary utilities, and shortage of PPE, have the major barriers to the national program [22].

## Care and treatment services

In the early month of the pandemic, the spread as well as the overall case fatality rate was very low, indicating substantial care and treatment outcomes. Integrated actions taken include the provision of health education to the youth, taking measures to improve treatment outcomes, and enhancing intensive care unit (ICU) care quality [23]. With the further spread of COVID -9, health service resources were heavily constrained, and the country soon realized that it had to increase the resilience of its health system by strengthening its health workforce. In order to boost health workers' motivation and improve their working environment, the government put in place measures including the establishment of a life and health insurance scheme, the institution of a special allowance for health workers, provision of extra funding to high-load hospitals, guidelines and protocols for isolation, quarantine, and treatment of health workers [24].

The government also took measures to beef up the preparedness at the level of service delivery points, including administrative support arrangements, infection prevention and control services, emergency space preparation, outpatient service delivery arrangements, and logistics and supplies management system [25]. As a result, though most of the burden from the pandemic was exerted on the health care system and health facilities, the country effectively managed cases within its means averting an outstripping the existing resources by the pandemic. Limited molecular laboratory capacity in the country has been a huge challenge in the diagnosis of cases and the overall management of the disease. The national reference laboratory at the Ethiopian Public Health Institute used the opportunity afforded by the pandemic to establish an additional standard molecular laboratory [26].

## The trend over time

In the initial months of the pandemic, the transmission and prevalence of the infection remained low [27]. However, with the gradual rise and widespread community transmission (Figure 3), the threat associated with the pandemic started to increase fast. Thus, the country worked towards averting a potential humanitarian crisis the pandemic could cause by strengthening disease surveillance and targeted testing for the most vulnerable groups. The evidence subsequently made available from Ethiopia has shown that the trend in new cases of COVID-19 has been on the rise, partly due to the scale-up of testing services and access to care and treatment services [28]. However, the number of cases has remained significantly low in rural and semiurban areas with low population density. Overall, Ethiopia is experiencing the negative impacts of COVID-19 but cases so far are much lower than what was projected.

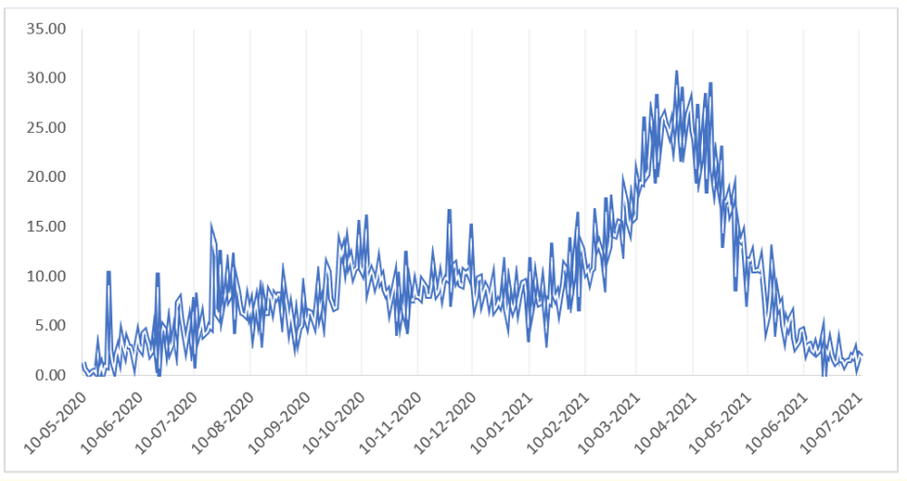


***Figure 3:*** *Trend over time of the national positivity rate, Ethiopia. May 2020 - July 2021.*

## Immediate challenges and impact

As in any outbreak situation, HCWs who were at the front line in the response to COVID-19 and, as such, were exposed to the hazards that put them at risk of getting infected by the virus in the Ethiopian context [29]. Besides an increased risk of exposure to the pathogen, it has been documented that the hazards to HCWs in Ethiopia include long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and psychological violence [30]. Key challenges include, but are not limited to, implementation of occupational safety and health management systems to identify hazards and assess risks to health and safety; infection prevention and control (IPC) measures; zero-tolerance policies towards workplace violence and harassment. Lack of preventive equipment, being female, contact with many patients, low self-efficacy, and working in private health facilities were risk factors for anxiety [31].

The COVID-19 pandemic is perceived in Ethiopia to constitute a major public health crisis, with daunting and unprecedented socio-economic disruptions. Organizations fighting infectious disease, supporting health workers, delivering social services, and protecting livelihoods have moved to the very center of the country's attention. In the process of implementing measures to detect, manage and control COVID-19, patient flow has decreased in all elements of essential healthcare services, with family planning, emergency surgery, and follow-up of chronic surgical conditions hit hard [32]. The pandemic and the associated mitigation measures have heavily impacted most vulnerable population groups. Reports show that intimate partner violence against women has increased to significant levels [33], and long-term consequences of the disease among children, including violations of their rights and educational setbacks, and the risk of adverse effects on children's growth and development has similarly increased [34]. In humanitarian contexts, conflict, political instability, resource limitations, and poor governance, further constrain the ability to detect and respond effectively to this pandemic and other similar threats in the future.

With the intensity of the pandemic increasing over time, Ethiopia is facing massive problems from the pandemic especially with the education system and the entire economy. Students are facing many academic and socio-economic challenges, including a persistent lack of developed a learning system that is compelling institutions to use social media platforms that are not well developed [35]. In spite of a serious attempt on the part of the government, teaching and learning are heavily affected by the limited digital technology capacity and mismanagement [36].

Similarly, the socio-economic constraints being felt across the country are already wide-ranging and serious. These have the potential to become severe depending on the trajectory of the pandemic, the effects of countermeasures and the underlying structural factors [37]. Ethiopia has experience with its share of isolation when attempting to respond single-handedly to COVID-19 pandemic, which is indeed a major exogenous shock. The short-term implications of the challenge posed by COVID-19 are evident. The long-term consequences of the pandemic in terms of how it shapes health and development, occupations, and national priorities are still difficult to imagine. The country has discovered its fragility, reflected in its dependence on the rest of the world to mount adequate short and long-term responses.

## Prospects for winning the battle

Despite the steady increase in the number of reported COVID-19 cases, Ethiopia has so far avoided the feared catastrophe from the pandemic, partly due to the milder and asymptomatic nature of the disease. Although Ethiopia has taken serious steps to detect, manage, and control the spread of the COVID-19 pandemic, more effort is needed to expand testing capacity and bring about behavioral changes in the community. Ethiopia also needs to focus on averting COVID-9 related humanitarian crisis by strengthening COVID-19 surveillance and targeted testing for the most vulnerable groups. The country needs to put in place alternative options to mitigate interruptions of essential basic healthcare services.

This pandemic will be controlled eventually by the technology of medications and vaccines. In the meantime, quick-win interventions together with a recovery plan need to be designed and implemented before the temporary health shock turns into a socio-economic crisis that will have long-term repercussions [38]. With the increasing pattern of widespread community transmission, the global limitations

in progress with therapeutics and production and distribution of vaccines, and the continued emergence of more infectious variants of SARS-CoV-2 [39], there is much to be done to win the battle against the COVID-19 scourge.

## Conclusion

This review has highlighted that, with its large population of over 115 million and severe resource limitations compounded by social unrest, internal population displacement, and other socio-economic barriers, Ethiopia faces major vulnerabilities to the COVID-19 pandemic. During the last 16 months, the pandemic has impacted various facets of life in the country. However, the impact has not been up to the scale that was expected, partly due to the country's young population, low rural population density, and a strong network of community workers. Some of the factors driving the pandemic and the gaps in Ethiopia are well defined and this can be used by the national program to improve its response plans to the pandemic. Most of the burden from the pandemic was on the structure and functions of the health service delivery system, which requires strengthening to effectively mount responses to the current and future threats of similar kind and scale. With the increasing intensity of the pandemic over time, its impact on the education system and the entire economy is being felt across the country and will inevitably be wide-ranging, both in the short- and long-term. Ethiopia has so far avoided the feared catastrophe from the pandemic, more effort is needed to strengthen its response capacity through appropriate investment, surveillance and research to avert a potential COVID-9 related crisis.

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