

COVID-19 in Ethiopia in the first 180 days: Lessons learned and the way forward

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Abstract

Within just nine months of its official identification by the World Health Organization, coronavirus disease 2019 (COVID-19) has caused 34 million confirmed infections and about 1 million deaths worldwide. The collateral damage and spill over effects to all sectors has caused severe social disruption and an economic crisis that the world was unprepared for. Despite the relentless global effort, the pandemic remains a serious threat to lives and livelihood. As a result, all countries are faced with the daunting task of balancing outbreak prevention strategies against efforts to save their economies. Nevertheless, almost every country now has months of local evidences about the pandemic that will support contextualized and measured actions.

The number of confirmed cases and deaths attributable to COVID-19 in Ethiopia has steadily increased since the first reported case on 13 March 2020. Although the country has so far avoided the feared catastrophe, the true burden of the problem may be far beyond what has been reported due to limited testing capacity. With the current trends of widespread community transmission, COVID-19 remains a serious public health threat in the country. In addition, multiple human-related and environmental factors, combined with relaxed COVID-19 mitigation strategies, have put the country at a high epidemic risk. Thus, proactive and balanced measures based on local evidence should be taken to prevent the country from slipping into a dire public health crisis. [*Ethiop. J. Health Dev.* 2020; 34(4):000-000]

Key words: COVID-19, Ethiopia, pandemic

Introduction

Coronavirus disease 2019 (COVID-19) will probably remain a phenomenal disease in the history of medicine for many reasons. From the initial report of a ‘mysterious human respiratory illness’ in Wuhan, China in late December 2019 (1), it took less than three months to spread to over 200 countries (2). Furthermore, in just nine months since its official recognition by the World Health Organization (WHO), COVID-19 has caused 34 million confirmed infections and about 1 million deaths worldwide (3). However, the threat posed by the pandemic is much more than numbers can convey. The collateral damage and spillover effects to all sectors are still unfolding and will probably take years, if not decades, to overcome (4).

Nevertheless, the remarkable ‘achievement’ in the fight against the pandemic will undoubtedly have a lasting effect in the practice of medicine. Never before in the history of medicine has the world developed a vaccine in clinical trials in less than a year since the discovery of a new disease (5). There are currently a staggering 169 COVID-19 vaccines under development worldwide, 26 of which are at the clinical trial stage (at

least nine of them are in phase III clinical trials) (6). The world might have also learned the value of hand hygiene in disease prevention more than ever before (7). These achievements and lessons will surely change our approaches in the fight against existing diseases for the better.

Despite all these positive developments, the risk posed by the pandemic remains high. The numbers of new infections and deaths are surging all over the world. However, every country is faced with the dilemma of saving its economy and safeguarding its nation from the pandemic (8). Because the global distribution of the pandemic does not follow similar patterns due to the peculiar demographic and socio-economic nature of each country, specific interventions should be based on local data (9). Moreover, as mitigating actions are likely to have far-reaching consequences, strategies should be tailored to the local context, based on the risk posed by the outbreak and the ‘cost’ of possible actions. In this review, we will present how COVID-19 unfolded in Ethiopia in the first 180 days and the lessons learned so far. We will also extrapolate the risks in the near future and detail possible strategies to contain the outbreak.

How did COVID-19 unfold in Ethiopia?

Important milestones (10)

- 13 March 2020 – First confirmed case in Ethiopia
- 19 March 2020 – First case with severe disease
- 29 March 2020 – The first case outside Addis Ababa (three cases reported in Adama)
- 05 April 2020 – First COVID-19-related death in Ethiopia
- 79 days – the time it took to reach the first 1,000 cases
- Nine days – the time it took to reach the next 1,000 cases after the first 1,000.

Outbreak summary after day 180 (as at 09 September 2020) (10)

- Total laboratory tests – 1,093,830

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- Total number of cases – 61,700
 - o Overall test positivity rate – 5.64%
- Recovered cases – 23,054
- Total COVID-19-related deaths – 966
 - o Death rate among known outcomes – 4.02%
 - o Death rate among all cases – 1.57%
- Active cases – 37,678
- Cases with severe disease – 319
 - o Rate of severe disease among active cases – 0.85%
- Older people (≥ 60 years) accounted for only 7% of the cases, but for 53% of the deaths (11)
- Addis Ababa is the major hotspot – about 40% of laboratory tests, 58% of the cases and 78% of the deaths were reported in the city (see Figure 1)

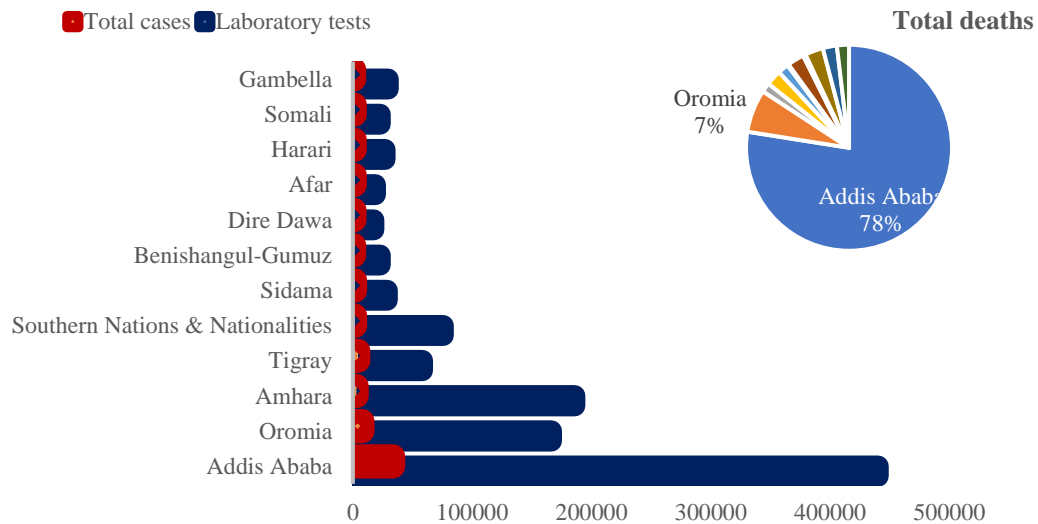


Figure 1: **Laboratory tests, total cases, and deaths by regional states in Ethiopia in the first 180 days of the COVID-19 outbreak**

Data sources: Daily press release by FMOH (10), EPHI weekly bulletin (12), and daily reports by regional health bureaus

Pattern of testing and test positivity rate

The daily testing capacity in Ethiopia evolved from less than 100 tests daily until the first week of April, to the highest of 25,158 tests on 06 September 2020. The test positivity rate declined from an average of 5% in the first

few weeks to less than 1% during mid-April to mid-May 2020. However, the rate gradually increased to reach the highest of 10.46% on 24 July 2020. Since then, it has become stable at an average of 7% (see Figure 2).

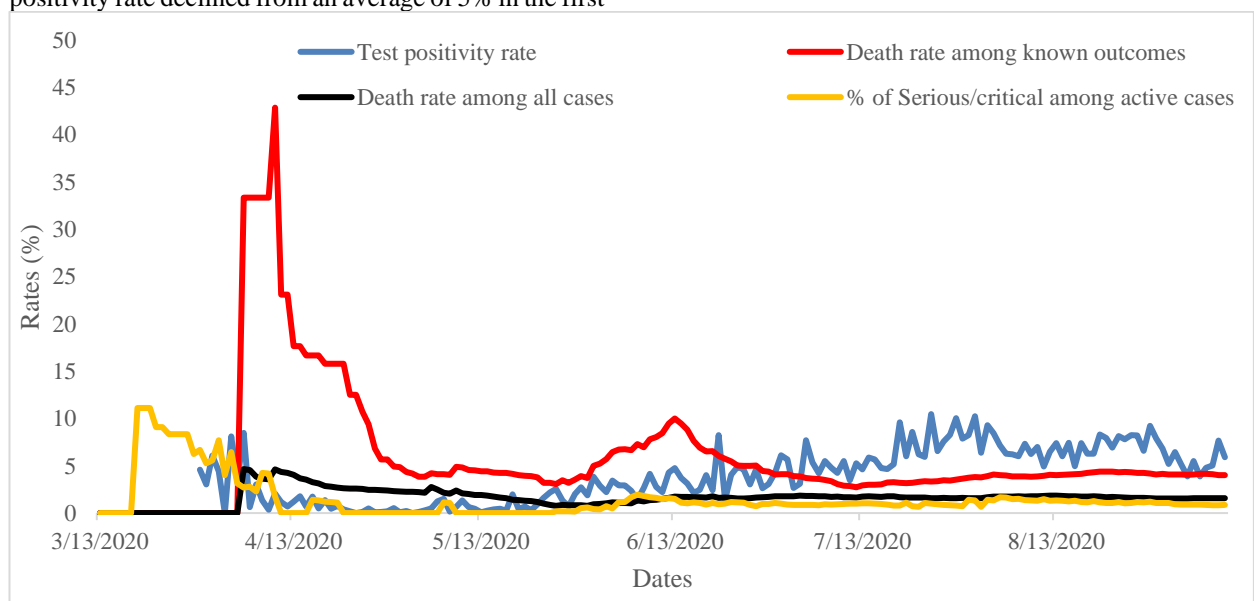


Figure 2: **Trends of test positivity and disease outcome in COVID-19 cases in Ethiopia in the first 180 days of the outbreak**

Graph constructed from daily reports by FMOH (10)

Pattern of disease severity and case fatality

Death rates among known outcomes and rates of severe disease among active cases were high during the early weeks of the outbreak because only a relatively few cases were tested and diagnosed. These rates gradually declined from mid-April to mid-May (see Figure 1). However, the number of deaths remained more than the number of cases with severe disease. This happened because most reported COVID-19-related deaths in Ethiopia happened outside of health facilities and were incidentally detected during postmortem evaluation. For instance, of the 505 deaths reported as COVID-19-related in Addis Ababa up to the end of August 2020, the virus was recovered from dead bodies in 321 (63.6%) of the cases (10)).

Lessons learned

1. **Mitigation strategies when implemented properly are effective and help prevent catastrophe.** During the first few weeks of the pandemic, the test positivity rates, case fatality rates among known outcomes, and ICU admission rates among active cases were high. This was most likely because of the fact that testing was done only in symptomatic cases and contacts of confirmed cases. Most of these rates declined from mid-April to mid-May. The test positivity rate dropped to below 0.2% between 22 April and 03 May 2020. The number of recovered cases overtook active cases between 01 and 08 May 2020. In addition, ICU admissions remained at zero between 21 April and 06 May (see Figure 2). These achievements matched the mitigation strategies taken nationally in March and April (11). These included:
 - Huge media coverage and proactive public awareness creation activities by all stakeholders
 - School closures from 16 March 2020
 - Mandatory quarantine for international arrivals from 23 March 2020
 - Most regional states banned public transport as of 30 March 2020. This remained in effect for at least two weeks
 - State of emergency declared on 08 April 2020
 - Semi-lockdown actions in March and April
 - Launch of national hygiene and preventive measures movement, with hand washing facilities in most public places
 - The banning of public gatherings, including at places of religious worship.

However, most of these initiatives became weaker by May due to public fatigue, and the pattern of the outbreak started to escalate thereafter. This shows that epidemic control strategies during an ongoing outbreak should not be one-time campaigns. A sustained and innovative approach is required to motivate the public at large to remain vigilant.

2. **The more laboratory tests are conducted, the more cases are detected.** Evidence is emerging that many people affected by COVID-19 remain asymptomatic but can still transmit the infection,

making control strategies challenging (13). As a result, the disease may silently spread in the community unless proactively investigated. Ethiopia enhanced testing strategies with the Community-Based Actions and Testing (ComBAT) campaign in August. As a result, 54.5% of the total tests (584,820 of the total 1,093,830 tests) were performed in 30 days only. Consequently, 38,112 of the total 61,700 cases as of 09 September (61.8%) were detected during the same time. The number of severe diseases and COVID-19-related deaths also increased during this period.

3. **There is widespread community transmission.** The proportion of positive cases among laboratory tested is a critical measure for public health intervention of the outbreak. A higher test positivity rate suggests higher community transmission of the disease or a low testing rate (14). WHO in May recommended that for any country to re-open from lockdown, the test positivity rate should remain less than 5% for at least two weeks. The 5% positivity rate is often used as a good margin because any rate above this translates to large-scale community transmission (15). In Ethiopia, the national average for test positivity remained above 5% for over three months while it has been over 10% in Addis Ababa. Translating the high positivity rate as high community transmission may be inaccurate. However, the fact that this rate remained above 5% during enhanced testing in August suggests that the reported cases represent only a minority of the actual cases in the country. Furthermore, a seroprevalence study conducted by the Ethiopian Public Health Institute across the country found that 4.5% of the population have antibodies against the virus (11).
4. **The reported COVID-19-related death rate is highly inaccurate.** Knowing the true morbidity and mortality from COVID-19 remains a challenge globally. As asymptomatic cases are less likely to be tested, the reported case fatality rate, which considers confirmed cases only, is likely to be exaggerated. On the other hand, reported COVID-19 deaths may be underestimated, as affected people may die at home without accessing any healthcare (16). Thus, it is important that COVID-19-related deaths are recorded based on a clear and unambiguous case definition.

According to WHO's guidelines, a COVID-19-related death is defined as any death directly resulting from clinical conditions compatible with a probable or confirmed COVID-19 case. This definition excludes deaths influenced by COVID-19, but caused by another disease, or deaths that happen due to unrelated conditions but the virus was incidentally detected (17). However, the Ethiopian national report indiscriminately includes all deaths as COVID-19-related just because the virus is detected in the person before death or from the dead body, no matter what the immediate cause of death was (18). Attributing all such deaths to the outbreak distorts the true case fatality rate of the disease. Moreover, as testing is random and

unpredictable, mortality in the Ethiopian context, particularly with the current approach, is an inaccurate parameter.

Future risks

Projecting the trend of the outbreak may not be easy given that it depends on multiple factors (19). However, the exponential nature of the disease spread, and the fact that most of the national mitigation strategies are now completely relaxed, create much uncertainty. On top of that, there is widespread public fatigue, a reluctance to implement preventive measures, and conspiracy theories that distract and misinform the public (20). Hence, it is possible to predict that Ethiopia is still far from the peak of the outbreak.

There are also environmental factors that pose a great risk of enhancing disease transmission. September to November is regarded as flu season – a period of heightened respiratory illness in Ethiopia (21, 22). This period is known for high rates of hospitalization due to bronchial asthma and lower respiratory tract infections, particularly in children (23). The well-known ‘Spanish flu’ (The 1918 Influenza Pandemic), historically known as *Yehedar Besheta*, is reported to have caused serious causalities in these months (24).

Besides, after the end of rainy season in September in Ethiopia, the dry season ensues, accompanied by dropping relative humidity and an increment in dust and pollen levels. These environmental factors are known for allergic sensitization and worsening of chronic respiratory disease (25), and hence represent a risk for severe COVID-19.

Although COVID-19 itself does not appear to be seasonal, not taking strong preventive measures during this period (September-December) may overwhelm COVID-19 critical care units, as the course and prognosis of COVID-19 may be worse during coinfection with seasonal flu, as has been witnessed in patients with comorbid respiratory illness (26). On the other hand, putting strong COVID-19 preventive strategies in place may help to reduce the incidence of seasonal flu during these months in Ethiopia.

Recommended actions

Because of the reasons listed above and multiple other global uncertainties, COVID-19 poses a greater risk in Ethiopia in the coming few months. The problem is compounded by the fact that the healthcare system is already strained and struggling to contain the pandemic. Hence, the risk posed by this pandemic is likely to get worse if not properly handled. Short of ‘a magic bullet’ at hand, preventive strategies should be tailored to the context. However, these measures come at a cost and thus should balance between effective containment of the outbreak and minimizing collateral damage. The following issues deserve special attention, among others, for effective handling of the outbreak:

1. **Major focus should be on reducing mortality** – Reports from COVID-19 treatment and isolation centers in Ethiopia show that the vast majority of people who test positive for the virus either have no

symptoms or only mild ones (11, 12). As the number of COVID-19 cases increases, this will overwhelm health facilities beyond their capacities. The recent enhanced testing strategies of the ComBAT campaign in August 2020 showed that there is already widespread community transmission. Although tracing, testing, and isolation of all contacts are essential to cut disease transmission, limited laboratory capacity and long delays for test results, as often observed in routine practice, raise questions about its benefit in such settings with widespread community transmission. Due to these limitations, the country should focus on reducing mortality by targeting and prioritizing testing for the most vulnerable groups. Besides, COVID-19 isolation and treatment centers should be dedicated for the high risk and those with severe disease. Moreover, continuous public awareness creation and education on prevention strategies and monitoring of their implementation should be strengthened.

2. **School opening** – More than 26 million school children have not attended school since March 2020 in Ethiopia due to school closures (27). Although this has been a challenging time for children, families and the country, evidence shows that the early closure of schools has prevented widespread outbreaks in several countries (28, 29). Other countries have also reported a surge in COVID-19 cases after reopening schools, often leading to their closure shortly thereafter (30, 31). Hence, although it is essential to return children to school and keep them on the educational track, the timing of school reopening should be guided by the best interests of the child and overall public health considerations, based on an assessment of local context. In Ethiopia, it is important to delay school opening until the pandemic is on its downward curve. Besides, as the pandemic will remain with us for a long time, it is important to support and ensure schools to establish all the preventive measures and strategies for reopening. Most importantly, the country should design step-by-step opening of schools, as recommended by WHO and UNICEF (32). Such approaches are important to lessen the probability of a new outbreak and boost the confidence of parents, students, and teachers in terms of school safety. Otherwise, opening schools without establishing proper conditions may lead to new outbreaks that may in turn erode the confidence of families and ultimately lead to major dropouts from schools.
3. **Public transport and social gatherings** – The cost for public transport had doubled when the government reduced the loading capacity by half to ensure physical distancing. However, this has been very challenging and unaffordable for the large majority of people that use public transport on daily basis. Therefore, other measures, such as hand hygiene and the use of masks, should be intensified in public transport. Moreover, public gatherings, where it is difficult to ensure the implementation of prevention strategies, need to be restricted.
4. **Research, data management, and exit strategy** – It is essential to strengthen the quality of national data

collection, handling and management procedures regarding COVID-19 to produce evidence that will help design contextualized prevention and treatment strategies and policies. As the pandemic will remain with us for the foreseeable future, getting back to normality may take time. Some form of lockdown will remain in place and the country may also go back to some forms of restrictions if cases surge after lockdown has lifted. However, lockdowns pose considerable economic costs that threaten lives, put livelihoods at risk and exacerbate poverty. The country should thus plan for short-term and long-term exit strategies that preserve lives while protecting livelihoods. Furthermore, Ethiopia should actively work and also collaborate on COVID-19 prevention and treatment research, including ongoing vaccine development and its access and distribution in the country.

Conclusions

The number of confirmed cases and deaths attributable to COVID-19 in Ethiopia has been steadily increasing since the first reported case on 13 March 2020. Nevertheless, the country has so far avoided the feared crisis from the outbreak. However, the true burden of the problem may be far beyond what has been reported due to limited testing capacity. With the current trend of larger outbreaks of community transmission, it seems that the true peak of the outbreak is yet to arrive. Besides, multiple human-related and environmental factors, on top of the relaxed mitigation strategies, put the country at a high epidemic risk. Thus, proactive and balanced measures based on local evidence should be taken in the country.

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