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Short Communication

## Covid-19 Evolution: Analysis of Public Health Countermeasures in Kenya

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### Abstract

Millions of people across the globe are currently at a risk of infection of SARS-Cov-2, have been infected and others have died. The coronavirus has spread worldwide despite the multiple countermeasures to limit its transmission. Kenya recorded its first case of COVID-19 on March 13, 2020. The data on the pandemic and evolution was gotten from the Kenyan Ministry of Health (MoH). This paper aims at examining the evolution of COVID-19 pandemic in Kenya and the highlights on the different measures taken to stem its progression between March 13, 2020 and May 4, 2020. After 7 weeks of the pandemic, the number of confirmed positive cases in Kenya reached 490 with 24 deaths and 144 recoveries. The wearing of masks was implemented on April 5, 2020 by the Ministry of Health (MoH) in order to flatten the curve and allow the healthcare officials curb the pandemic. Therefore, the impact of this measure can be assessed by checking on the evolution of the curve in coming weeks. Sharing of these results can serve as an example to other countries the measures taken on the fight against COVID-19.

### Keywords

COVID-19, countermeasures, evolutionary stratification, Kenya, pandemic

**Open Access**

### 1. Introduction

Corona disease 2019 (COVID-19) has been declared a global pandemic by the World Health Organization (WHO) due to its impact on the social, economic, and health of humans [1]. The novel coronavirus is caused by a severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) [2]. The virus has had an impact on many countries across the world with the medical healthcare systems compelled

to find innovative ways of handling the disease due to increasing numbers of those infected, in the Intensive Care Units (ICU), and the death toll [3]. The coronavirus which is officially responsible for COVID-19 has spread so fast internationally despite multiple countermeasures to avert its transmission. The nature of the virus has made the World Health Organization (WHO) declare the state of international health emergency [4]. The health authorities and scientists are striving to ensure speedy diagnosis, isolation or

quarantine measures, and research on the vaccine and therapeutic measures to counter the virus [5].

In East African countries, Kenya was the first country to confirm the first case of coronavirus in March 13, 2020 in Nairobi [6]. The Kenya Ministry of Health (MoH) and the government at large focused on scaling up the measures to contain the spread of the global pandemic [7]. This first case was of a woman who had travel history from the United States of America. The incident management system was activated at the WHO regional office and most of the countries in East Africa were on high alert [8]. In order to better coordinate and support the preparedness, the Kenyan government launched measures that were aimed at combatting the disease.

At the moment of increased cases of infection and mortalities across the globe especially in Italy, France, Morocco, and Spain, Kenya's reported cases began increasing each day [9]. The country went for stiffer measures that saw the country impose curfew, close schools and higher institutions of learning. Since early detection of COVID-19 importation and prevention of the spread are the crucial challenges for most of the countries, Kenya was not spared in this case. East African countries such as Uganda, Tanzania, Somalia, South Sudan, Ethiopia, and Rwanda were the countries that were at risk and had to focus on the travel bans and containment [10]. These countries were identified by the WHO as direct links of travel to China.

From March to May 2020, Kenyan coronavirus cases were recorded daily and there was an increase in Nairobi and Mombasa counties [11]. Therefore, the government issued travel bans with no flights and also cessation of movement in and out of the counties of Nairobi, Mombasa and Kilifi were officially announced. By May 2, 2020 mass testing started and there were 435 positive cases and 22 deaths. Furthermore, the government focused on mass testing of the most hit areas as most leaders advocated for social distancing, wearing of masks, washings hands (sanitizing), and working from home [12].

Many studies have been published with the aim of understanding and then control and prevent the pandemic. In Kenya, the data on the pandemic and its evolution came from the Kenyan MoH. The data is updated in the MoH website on a daily basis. In this regard, this paper aims at examining the evolution of COVID-19 pandemic in Kenya and the highlights on the different measures taken to stem its progression. This experience especially from a low-income country help the governments of similar countries to anticipate the right actions to be taken during the new crisis to the international healthcare system.

## 2. Methods

We used the data published on the MoH website since the declaration of the first case in Kenya on March 13, 2020. The data concerns the cases recorded every day which includes; The number of new cases confirmed by county and sub-county, the number of deaths, and number of recovering cases. The graphical presentation of the cumulative cases are done per county or region (47 counties). The dates of introduction of the countermeasures marked the evolution of the epidemic. These countermeasures included; closing of schools, compulsory wearing of masks, closing boarders, ban of international and domestic flights, suspending public activities (sports, weddings, churches, public rallies, restaurants and cafes), confinement and cessation of movement. The data was also supplemented by the WHO coronavirus reports, publications, and the media. This analysis concerns the situation of Kenya from March 13, 2020 to May 4, 2020.

## 3. Results and Discussion

Kenya tried to exercise containment measures through a number of strategies. The response against coronavirus was very stringent right from the initial stages. Kenya among the countries that implemented drastic countermeasures aimed at curbing the spread of the virus on considering the evolution of the outbreak (Table 1).

Almost half of the confirmed cases were from Nairobi and Mombasa counties out of 47 counties in Kenya (about 90% of the total cases).

By April 30, 2020, the total cases were 490 with 24 deaths registered and this called for other tough measures (Figure 1 and Figure 2).

Many countries still have a challenge of predicting the specific public health decisions to undertake on the course of COVID-19 pandemic. However, there are a number of lessons that one can learn from countries that have experienced rapid exploration to phase three like Italy. The hypotheses from such lessons are the failure of population of a country to observe standard hygiene as per WHO, social distance and accustomed socialization and gatherings [13].

The measures undertaken made it possible to limit large gatherings of people by abolishing public meetings (e.g schools, churches, crusades, and political gatherings). This was followed by dispensing information on corona virus on national radio stations, televisions, and newspapers, including national address by the government after the first case from March 13, 2020. Schools were closed and

all public gatherings banned as from March 15, 2020. Furthermore, all flights were suspended on March 25, 2020, and there was ban on the international and domestic flights extension from April 6, 2020. In addition to that, there was cessation of movement in and out of the counties of Nairobi, Kilifi, and Mombasa as from April 25, 2020. This included extension of curfews and closing of boarders of

Kenya with the neighboring countries of Tanzania and Somalia. The reactions of the citizens was positive especially given the great mobilization and sensitization of the state and the civil society. The Kenyan government was equally devoted to handling the challenges of imposed on the health, social, and economic levels.

**Table 1:** Description of public health countermeasures in Kenya

<b>Dates</b>	<b>Countermeasure</b>
March 13	A Kenyan citizen returning from USA tests positive
March 15 (upto and including May 4)	Suspension of cultural, educational, sportive and ducational activities. All public rallies and churches suspended
March 25 (upto and including May 4)	Suspension of al flights, both local and international
April 5 (upto and incuding May 4)	Mandatory wearing of masks
April 6 (upto and including May 4)	Curfew and censation of movement in and out of the counties of Nairobi, Kilifi, and Mombasa imposed

There were support measures undertaken in Kenya that was initiated towards the emergency fund. The fund was aimed at fighting the pandemic and the socio-economic consequences as a result of the coronavirus. Economically vulnerable groups of people and those who had last jobs were helped through the emergency funds. The head of state worked on the a formula (March 25, 2020) to help reduce the Value Added Tax (VAT) from 16% to 14%, 100% tax relief for persons earning \$240 and below, reduction of Pay-As-You-Earn (PAYE) from 30% to 25%, and also reduced tax on corporate and cash transfers. Other measures that were undertaken was disinfection of public places and administration

areas with enhanced personal hygiene communicated through audiovisual media [14].

To further circumvent the spread of the virus, other drastic measures taken by the government of Kenyan included compulsory wearing of masks when in public places and strengthening of the domestic companies from manufacturing mask and PPEs. The masks were made available at a fee of \$0.5 per mask locally made in Kenya. The Kenyan government recommended the use of face masks to prevent the spread of the virus through aerosols as one coughs in public places.

#### COVID-19 cases in Kenya (V·T·E)

■ Deaths ■ Recoveries ■ Active cases

Date	# of cases	# of deaths
2020-03-13	1 (n.a.)	
2020-03-14	1 (=)	
2020-03-15	1 (=)	
2020-03-16	3 (+200%)	
2020-03-17	3 (=)	
2020-03-18	7 (+133%)	
2020-03-19	7 (=)	
2020-03-20	7 (=)	
2020-03-21	7 (=)	
2020-03-22	15 (+114%)	
2020-03-23	16 (+6.7%)	
2020-03-24	25 (+56%)	
2020-03-25	28 (+12%)	
2020-03-26	31 (+11%)	1 (n.a.)
2020-03-27	31 (=)	1 (=)
2020-03-28	38 (+23%)	1 (=)
2020-03-29	42 (+11%)	1 (=)
2020-03-30	50 (+19%)	1 (=)
2020-03-31	59 (+18%)	1 (=)
2020-04-01	81 (+37%)	1 (=)
2020-04-02	110 (+36%)	3 (+200%)
2020-04-03	122 (+11%)	4 (+33%)
2020-04-04	126 (+3.3%)	4 (=)
2020-04-05	142 (+13%)	5 (+25%)
2020-04-06	158 (+11%)	6 (+20%)
2020-04-07	172 (+8.9%)	6 (=)
2020-04-08	179 (+4.1%)	6 (=)
2020-04-09	184 (+2.8%)	7 (+17%)
2020-04-10	189 (+2.7%)	7 (=)

**Figure 1:** The distribution of COVID-19 confirmed cases and deaths in Kenya (from March 13, 2020 to April 10, 2020)

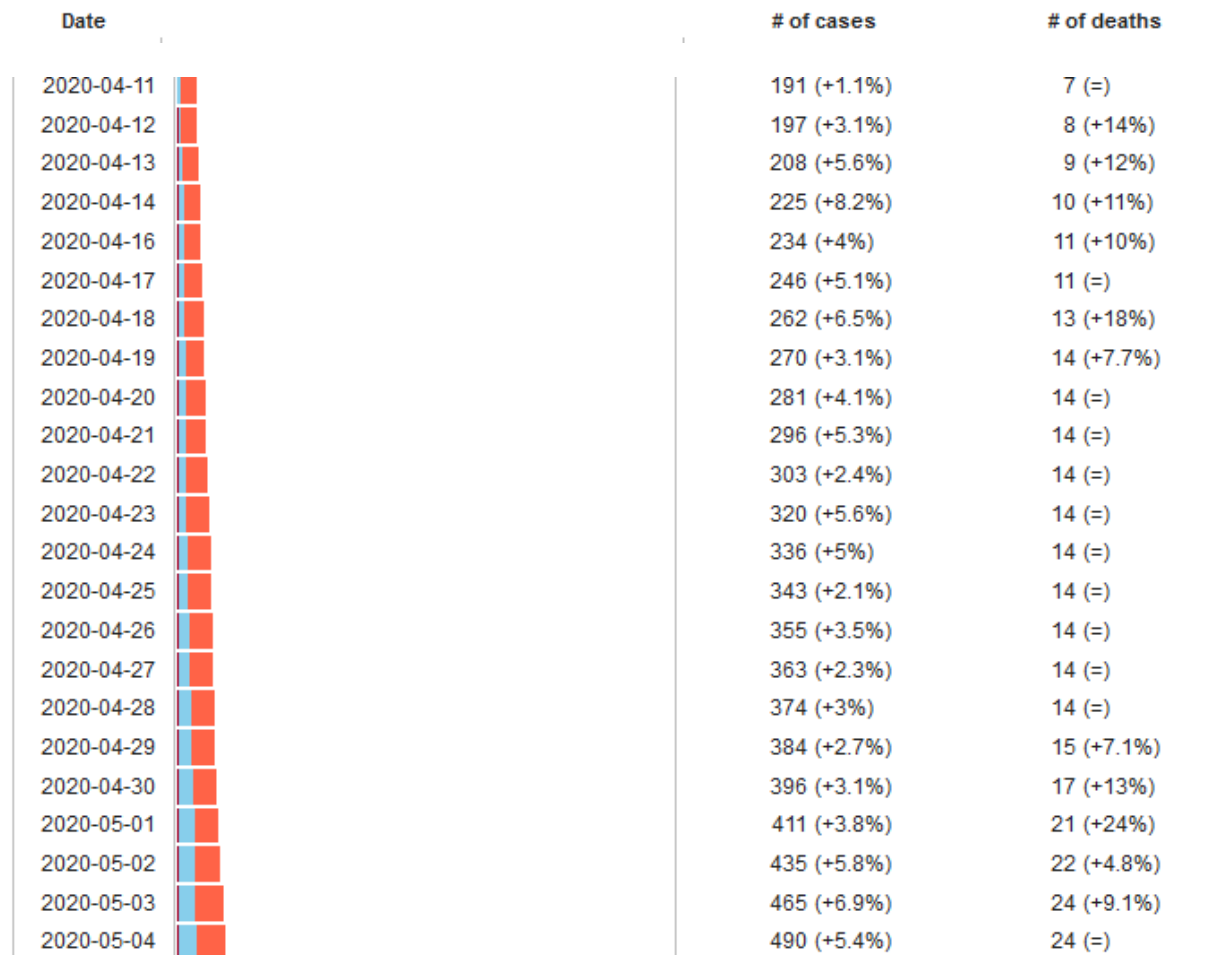


Figure 2: The distribution of COVID-19 confirmed cases and deaths in Kenya (April 10, 2020 to May 4, 2020)

#### 4. Conclusion

Kenya, just like other countries across the world is trying to reduce the rate of spread of the novel coronavirus. The measures were taken very early since the declaration of the first case on March 13, 2020. After a period of about 7 weeks, the cases in Kenya reached 490 with 24 mortalities, and 144 recoveries. The wearing of masks was implemented on April 5, 2020 by the MoH in order to flatten the curve and allow the healthcare officials curb the pandemic. Therefore, the impact of this measure can be accessed by checking on the evolution of the curve in coming weeks. Sharing of these results can serve as an example to other countries the measures taken on the fight against COVID-19.

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#### Competing interests

The authors declare they have no competing interests.

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