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Perspectives of the pandemic in Ecuador

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SUMMARY

By the end of August 2020, the pandemic caused by the new SARS-CoV-2 coronavirus has killed 826 743 people worldwide. All countries have been hit by the infection and have failed to prevent the progression of the infection in their populations. Ecuador, which already had serious social and economic difficulties before the pandemic, now faces very serious funding problems. The rate of diagnostic tests per 1 000 inhabitants is one of the lowest in the region, while the lethality of COVID-19 is one of the highest in the world. The trend has been to have cities paralyzed by fear, hospitals unable to receive more patients, people wandering the streets risking their lives to raising some money to support themselves and their families. Among the dead are friends, colleagues, parents, and grandparents, in addition to the excess mortality recorded in all cities of the country that account for indirect deaths from the pandemic. The health personnel have been the most sacrificed and continues to provide its contingent despite the limitations of supplies and medicines from hospitals.

Key words: *Pandemic, SARS-CoV-2, COVID-19, Ecuador.*

RESUMEN

A finales de agosto de 2020, la pandemia provocada por el nuevo coronavirus SARS-CoV-2 ha causado la muerte de 826 743 personas alrededor del mundo. Todos los países han sufrido el embate de la infección y no han logrado evitar la progresión de la infección en sus poblaciones. Ecuador que ya tenía graves dificultades sociales y económicas antes de la pandemia afronta hoy problemas de financiamiento muy graves. La tasa de pruebas diagnósticas por mil habitantes es una de las más bajas de la región, en tanto que, la letalidad de la COVID-19 es una de las más altas del mundo. La tónica ha sido tener ciudades paralizadas por el miedo, hospitales sin capacidad para recibir más pacientes, personas que pululan por las calles arriesgando sus vidas para recaudar algún dinero que permitan su sustento diario y el de sus familias. Entre los muertos constan amigos, colegas, padres y abuelos, además el exceso de mortalidad que registran todas las ciudades del país dan cuenta de muertes indirectas de la pandemia. El personal de salud ha sido el más sacrificado y continúa prestando su contingente pese a las limitaciones de insumos y medicamentos de las casas de salud.

Palabras clave: *Pandemia, SARS-CoV-2, COVID-19, Ecuador.*

INTRODUCTION

Between 1918 and 1920, the "Spanish Flu" killed more than 40 million people worldwide; it is believed to have been cause d by the influenza A virus, subtype H1N1 (1). By 2020, August 27, the new SARS-CoV-2 pandemic has infected 24 215 678 people and

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killed 826 743, according to the Johns Hopkins University pandemic tracking website (2). Ecuador contributed to those figures with 110 549 infections and 6,410 deaths, figures that show an exponential increase, the same as the relaxation of confinement. Fifty-four percent of those infected were male (Figure 1).

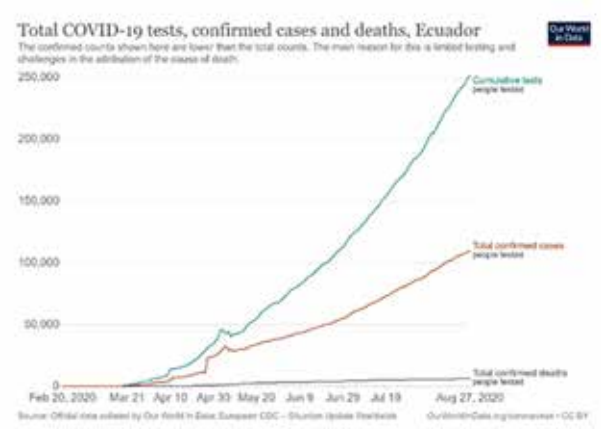

Figure 1. Ecuador: confirmed cases and deaths from COVID-19.
Source: Our World in Data. Oxford University, UK.

It is clear that most countries have failed to manage the pandemic; containment measures never worked, so efforts have been directed almost exclusively to mitigation activities. It should be noted that the management of the crisis by the World Health Organization (WHO) has also left much to be desired, including the late warning of the epidemic, outdated management guidelines without sufficient evidence, and politicization of crisis management (3).

According to official figures in Ecuador, 315 924 laboratory tests have been carried out to detect coronavirus, most of them rt-PCR tests and, to a lesser extent, rapid tests. The provinces of Pichincha, Guayas, and Manabí account for 50 % of those infected and 54 % of the deaths in the country. Although the highest explosive peak of infections and deaths occurred in March and April in the province of Guayas (18.3 %), particularly in the city of Guayaquil, in August, the highest number of infected persons was found in the province of Pichincha (22.7 %), with its epicenter in the city of Quito, and the third-highest frequency of infections was found in the province of Manabi (8.1 %) (4).

Health system response

On this occasion, the protagonist has been the Ecuadorian health system that has shown all its weaknesses. The hospitals are permanently overloaded and forced by circumstances to become COVID hospitals, relegating the care of patients with other pathologies to stay at home, delaying the therapy of catastrophic diseases. For their part, health personnel have been the great sacrificed, at the beginning they did not have appropriate personal protective equipment (EPP) and many had to provide for themselves. In the midst of the chaos, the Pan American Health Organization (PAHO) made the same mistakes it made in the H1N1 epidemic, by initially proposing and achieving centralization of PCR testing, and proposed protective measures against influenza to fight the coronavirus, although underestimating the risk. Doctors in this country and many in the region paid for these mistakes with their lives.

In Ecuador, 150 doctors have died since the beginning of the pandemic, according to reports from the union medical body, the Ecuadorian Medical Federation. While the health authority recognizes only 35 deaths and in an unusual attitude claims that these doctors were infected in their homes. Studies published in the United Kingdom and the United States indicate that hospital personnel has 11.61 [95 % CI 10.93-12.33] times the risk of having a positive test for COVID-19 than the general population (5). These circumstances cannot be different in our countries.

Another aspect that calls for attention is the low number of PCR tests per thousand inhabitants performed. Ecuador and Mexico are the countries with the lowest number of diagnostic tests for COVID-19 per 1000 inhabitants in the region. Since the number of confirmed cases depends on the number of molecular biology tests performed, under-reporting is evident (Figure 2) (6).

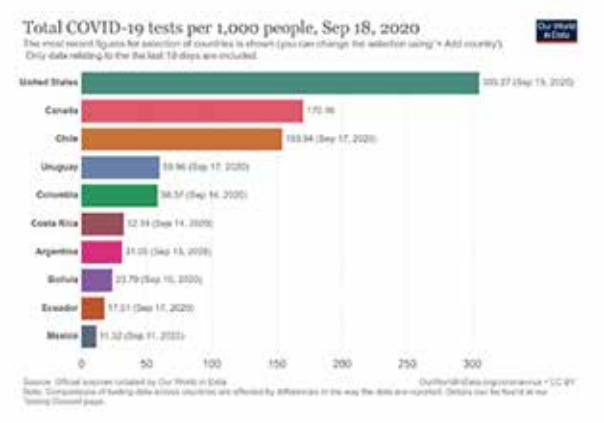

Figure 2. COVID-19, diagnostic tests per 1000 population. Source: Our World in Data. Oxford University, UK.

Consequently, it is certain that the number of infections and deaths reported in the official figures is far from reality and that we have only estimated a fraction of the total infected population.

Given these characteristics, we have resorted to one of the indicators most used by epidemiologists, the lethality rate. Ecuador's case fatality rate has been recorded as one of the highest in the world (Figure 3).

Case fatality rate = (No. COVID-19 deaths / Total confirmed COVID-19)*100.

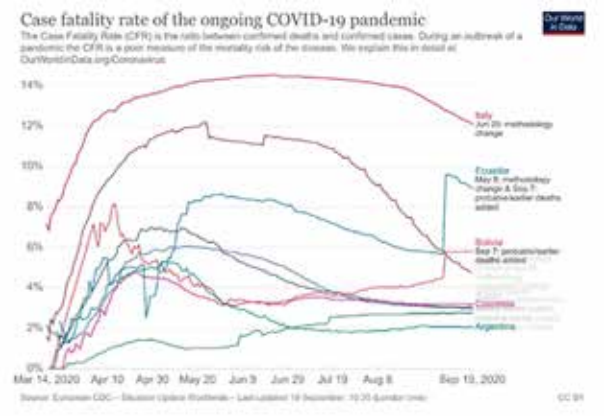

Figure 3. COVID-19: case fatality rate in selected countries. Source: Our World in Data. Oxford University, UK.

Excess mortality

In the city of Guayaquil, during March and April, the explosive outbreak was so intense that it tripled the monthly average of deaths in the two years before the pandemic. Calculations made by The Financial Times of London, with the numbers of deaths of the countries and the Civil Registry of Ecuador estimated that the Province of Guayas had excess mortality of 10 100 people, equivalent to 347 % of the mortality of previous years (7). The Ecuadorian government accepts that an additional 3 500 people would have died from COVID-19 because of the clinical picture described, but without verification with laboratory tests (Figure 4).

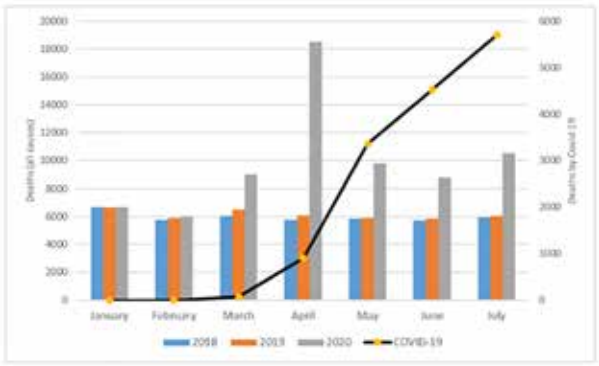

Figure 4. Ecuador: excess mortality January-July, 2020. Source: Civil Registry of Ecuador. National COE.

Excess mortality refers to the number of deaths over the expected average in the same period in previous years. In this case, it indicates the impact of the pandemic, because in these conditions, under-recording is important and not all deaths from COVID-19 are diagnosed. There are also indirect deaths, such as those who suffered from cardiovascular, cerebrovascular, and oncological diseases, among others, who did not receive the necessary health care due to lack of physical space in COVID hospitals.

The most used measure to represent the excess of mortality is the P-score which, in our case, allows us to identify the most affected provinces

and coincides with the different moments in which the increase of infections and, of course, of deaths occurred in each of them.

The peak of deaths in March and April occurred in Guayas and Santa Elena but did not replicate with equal intensity in other provinces where the increase was progressive (Table 1).

Table 1

Ecuador: P-score, excess mortality in the provinces, January-July 2020

PROVINCE	January	February	March	April	May	June	July
AZUAY	0,01	0,04	-0,07	0,00	0,09	0,15	0,40
BOLÍVAR	-0,23	0,13	-0,37	0,58	0,46	0,27	0,67
CAÑAR	0,16	-0,12	-0,20	0,80	0,21	0,02	0,47
CARCHI	-0,03	-0,06	-0,11	-0,07	0,15	0,27	1,04
CHIMBORAZO	0,03	-0,10	-0,12	0,51	0,57	0,70	1,13
COTOPAXI	-0,21	0,14	-0,05	0,03	0,27	0,94	0,68
EL ORO	0,09	-0,09	-0,06	1,46	1,77	1,14	0,78
ESMERALDAS	-0,15	0,14	-0,36	0,23	1,63	1,09	0,50
GALÁPAGOS	0,11	-0,11	1,00	-0,25	-0,75	1,33	-0,20
GUAYAS	0,03	0,02	1,71	5,39	0,54	0,12	0,19
IMBABURA	0,02	0,04	-0,17	-0,03	-0,03	0,39	1,07
LOJA	-0,03	-0,26	-0,29	-0,23	0,12	0,31	0,63
LOS RÍOS	-0,04	-0,06	-0,20	1,18	0,93	0,44	0,40
MANABÍ	0,10	0,01	-0,12	1,78	1,68	0,56	0,60
MORONA SANTIAGO	0,01	0,19	-0,28	-0,49	0,15	0,94	1,13
NAPO	0,04	0,26	-0,59	-0,03	0,97	1,27	0,44
ORELLANA	0,20	-0,27	-0,43	-0,33	0,21	1,39	1,27
PASTAZA	0,42	0,32	-0,17	-0,14	0,25	1,04	1,31
PICHINCHA	-0,06	0,14	0,03	0,24	0,43	0,72	1,62
SANTA ELENA	0,02	0,05	0,34	8,58	2,73	0,22	-0,09
STO. DOMINGO DE LOS TSÁCHILAS	-0,02	0,21	-0,21	0,29	0,54	1,26	1,20
SUCUMBÍOS	0,08	-0,05	0,01	-0,13	0,52	1,17	2,56
TUNGURAHUA	-0,04	0,07	-0,11	0,24	0,69	1,24	1,55
ZAMORA CHINCHIPE	0,13	0,26	-0,38	-0,05	0,45	1,10	0,79

Source: (8). The highlighted cells correspond to the months with excess mortality.

These figures are related to the average variation of the Effective Reproductive Number (Rt), which is a parameter that adjusts the R0 according to time. As the proportion of the population likely to acquire the disease decreases, the transmission would be lower; however, the figures presented by the Pan American Health Organization (9) reveal that the Rt >1 in August 2020 and its projection do not allow us to foresee a decreasing trend (Figure 5).

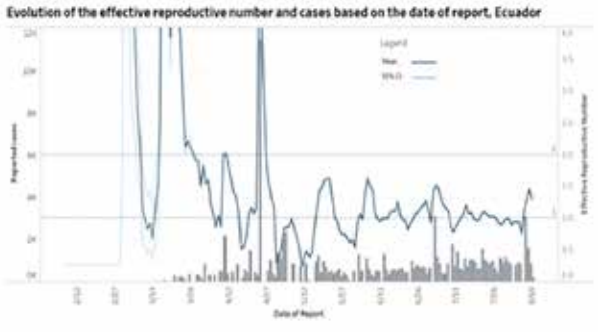

Figure 5. Ecuador: Effective reproductive number (Rt), 2020. Source: (9).

Just as in the Spanish influenza epidemic (1918), the social determinants were those that qualified the new coronavirus pandemic. The most dispossessed social classes could not endure confinement to their homes; large numbers of people took to the streets to seek daily income, became infected, and spread to family and friends. There are no published studies in the country that indicate the quintiles of the population that became infected, but it cannot be different from other countries. The biggest casualty of the pandemic, of course, has been employment. According to estimates from the Central Bank of Ecuador, 335 413 jobs were lost due to the COVID-19, 31 % of which corresponded to the commercial sector. The Central Bank projects that the national economy will fall between 7.3 % and 9.6 % in 2020 due to the crisis, which could mean a loss of 600 000 jobs by the end of the year and an increase in poverty of up to 4 % (10).

Activities developed by the Ecuadorian Academy of Medicine

In the context of this pandemic, the Ecuadorian Academy of Medicine has made efforts to share relevant information on the protection of health care personnel and the management of infected patients. This activity was carried out in collaboration with the San Francisco de Quito University and consisted of six webinars, which attracted the interest and connection of hundreds of Ecuadorian doctors. The topics covered in the sessions dealt with concepts of genetics, bacteriology, molecular biology, critical care, convalescent serum transfusion, mechanical ventilation, among others.

The voice of the Academy was also present in union forums demanding the provision of protective material for health personnel; denying the promotion of false treatments to the Ecuadorian population by pseudoscientists, since, in the absence of specific treatment, offers of treatments of doubtful or no efficacy have proliferated, with the consequent danger to the health of the population.

In the field of research, with regard to the pandemic, members of the Ecuadorian Academy of Medicine are carrying out research sponsored by universities and together with their teams. Soon we will have the results of these studies, which will help us to know this disease better and to help patients.

It is worth mentioning the work done by the Institute of Microbiology of the San Francisco de Quito University that sequenced the complete genome of the virus strain isolated in Ecuador, variant named hCoV-19/Ecuador/HEE_01/2020 (11).

The enormous efforts made by the country's young doctors, the sacrifice that has cost the lives of the health personnel of our hospitals should not go unnoticed, so this Academy pays tribute to the fallen in battle and applauds the work done by the Ecuadorian doctor. Always remember Seneca's words: "Work and struggle always call for the best".

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Conflicts of interest: None

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