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The SARS-CoV-2 in Colombia – A view from the Academy of Medicine

Dr. Gabriel Carrasquilla[1]

SUMMARY

The first case of SARS-Cov-2 in Colombia was reported on March 6th, 2020, in a woman arriving from Milan (Italy), and on March 12th sanitary emergency was declared by the President. Colombia started preparation for the pandemic in early January by monitoring all ports of international entrances. The initial strict and complete lockdown was mandated for 19 days starting on March 24, which was later extended in various opportunities until August 31. However, beginning late April few economic sectors were allowed to start activities. The number of cases grew constantly up to the end of July and since the beginning of August, the daily number of new cases is decreasing. Colombia began processing 3 000 samples for RT-PCR diagnose of COVID-19 and increased to 119 laboratories and 45 000 tests per day and increased from 3 000 to 10 000 beds in Intensive Care Units across the country. The National Academy of Medicine has followed the pandemic by meeting weekly to analyze different aspects of the pandemic, among others, primary health care, and the situation of health services, mental health, economic impact, and social indiscipline. Results of the early control measures and proper preparedness in testing and ICU are presented as well as the opportunities for improvement in social communication oriented to more pedagogic and educational messages instead of prohibition or fear of the current situation. There are challenges for the post-pandemic such reforms to the health system, strengthening primary health care, better coordination between national and local governments, and recovery of employment that will require strong participative leadership.

Key words: *Colombia, Pandemic, COVID-19, epidemiology, prevention, control, National Academy of Medicine.*

RESUMEN

El primer caso de SARS-Cov-2 en Colombia fue reportado el 6 de marzo de 2020, en una mujer procedente de Milán (Italia) y el 12 de marzo la emergencia sanitaria fue declarada por el presidente de la República. Colombia comenzó a prepararse para la pandemia desde principios de enero mediante la vigilancia de todos los puertos de entradas internacionales. El confinamiento inicial, estricto y completo, se ordenó por 19 días a partir del 24 de marzo, luego se prorrogó en varias oportunidades hasta el 31 de agosto. Sin embargo, a partir de finales de abril se permitió que pocos sectores económicos iniciaran actividades. El número de casos aumentó constantemente hasta finales de julio y, desde principios de agosto, el número diario de nuevos casos está disminuyendo. Colombia comenzó a procesar 3 000 muestras para el diagnóstico por RT-PCR de COVID-19 y aumentó a 119 laboratorios y 45 000 pruebas diarias y se incrementó de 3 000 a 10 000 camas en las Unidades de Cuidados Intensivos de todo el país. La Academia Nacional de Medicina ha seguido la pandemia reuniéndose semanalmente para analizar diferentes aspectos de la misma, entre otros, la atención primaria de salud, la situación de los servicios de salud, la salud mental, el impacto económico y la indisciplina social. Se presentan los resultados de las medidas de control tempranas y la preparación adecuada en las pruebas y en la UCI, así como las

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ORCID: 0000-0002-9449-4931
[1]Permanent Member, Coordinator Health Committee, National Academy of Medicine, Colombia. Email: gcarrasquillag@gmail.com

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oportunidades de mejora en la comunicación social orientada a mensajes más pedagógicos y educativos en lugar de la prohibición o el miedo a la situación actual. Existen desafíos para la post pandemia tales como las reformas del sistema de salud, el fortalecimiento de la atención primaria, una mejor coordinación entre los gobiernos nacionales y locales y la recuperación del empleo que requerirá un fuerte liderazgo participativo.

Palabras clave*: Colombia, pandemia, COVID-19, epidemiología, prevención y control, Academia Nacional de Medicina.*

INTRODUCTION

The SARS-Cov-2 pandemic arrived in Colombia throughout the International Airport in Bogotá. The first case was reported on March 6th, 2020, in a woman arriving from Milan (Italy) and three days later, on March 9, two cases from Spain were also detected, one in the airport of Cali and the other one also in the airport, in Medellin, the three main cities of the country. The following day, six new cases were identified in three different cities (Bogotá, Cartagena, and Medellin). On March 12th, the first pandemic control measure was announced by the government. A Sanitary emergency was declared and public events with more than 500 people were prohibited (1).

Colombia began preparation for the possible entrance of the SARS-CoV-2 in early January. The first decision was to start monitoring all potential entrances such as international airports, seaports, and borders with neighboring countries. Besides, contact was initiated and maintained with international organizations, namely the World Health Organization (WHO), Pan-American Health Organization (PAHO), and the US Center for Disease Control (CDC). The severity of the menace was clearly defined, and the President called for daily updated information for him to proceed in decision making, as necessary.

At the Ministry of Health (MoH), the minister led the preparation for the pandemic by, initially, establishing case definition, how intervention for a detected case was going to be, how the follow-up should be, what to do every health institution like the National Institute of Health, Secretariats of Health at the department (state) and municipal level, what diagnostic tests should be implemented. In addition, diagnose the number of ICUs available in the country and their geographical distribution. Promptly, as of January 28, the government allocated the first 7.5 million dollars to face the coming pandemic. Furthermore, communication and information strategy was designed, and messages announcing the risk and the characteristics of the disease were widely disseminated by mass media including social networks. Initially, the low-risk level for the country was defined and was upgraded to medium risk when Italy declared a high-risk situation. On March 2nd, a high risk for Colombia was declared because the first case was reported in Ecuador. At this moment there was open information about the high risk for the country by press release.

It should be underscored that a new Minister of Health was appointed by the President to face the pandemic because the former Minister had resigned few months ago. On March 20th with 145 cases reported, a national and total lockdown was mandated by the government, beginning on March 24th, for 19 days. The lockdown continued successively up to August 30th. On March 21st occurred the first death of a taxi driver in Cartagena. Additional measures were announced by the government: On March 15th, the government closed schools and universities. On March 27th lockdown for people older than 70 years old was determined and should go until May 30th. On April 20th lockdown was extended until May 11, however economic activities start with strict restriction, manufacture and construction could start working with strict protocols.

In general, Colombia's preparedness took into account the main aspects of what getting ready for a pandemic should be implemented: Good, clear, and transparent communication of the risk to the general population, preparation and updating institutional capacity for testing with the appropriate technology, opportune lockdown especially related to the population at higher risk, health system preparedness for the increased number of people requiring hospitalization and intensive care units (ICU) and centralized response with local implementation left to governors and mayors according to particular situations.

After describing the current epidemiological situation in the country, this document will analyze each of the above issues regarding the positive aspects implemented and the issues that may have been performed in a better way or are still pendent to develop.

Epidemiological Information (as of Aug 29, 2020)

Figure 1 shows the distribution of cases by age, sex, and status, indicating a similar distribution between males (51.5 %) and females (48.5 %), increasing the risk of death as age is older and a relatively low occupation of ICU.

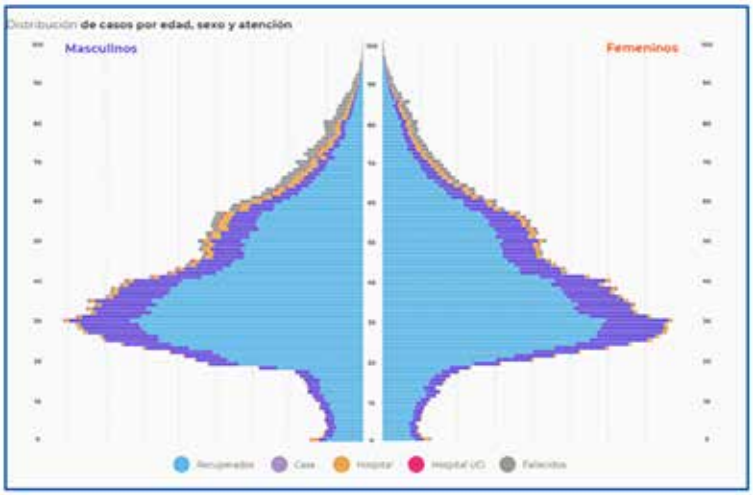

Figure 1. Distribution by age, sex, and status in COVID-19 patients. Colombia as of August 29, 2020.
Source: INS 2020 (2)

In more detail, Figure 2 shows the distribution of COVID-19 deaths by age (left) and cases (right) (3), showing that most mortality occurs in older ages despite having a lower number of cases. A higher number of cases and case fatality rates occur at 60-80 years old that is also the population whit frequent risk factors such as diabetes, hypertension, renal failure, chronic obstructive pulmonary disease.

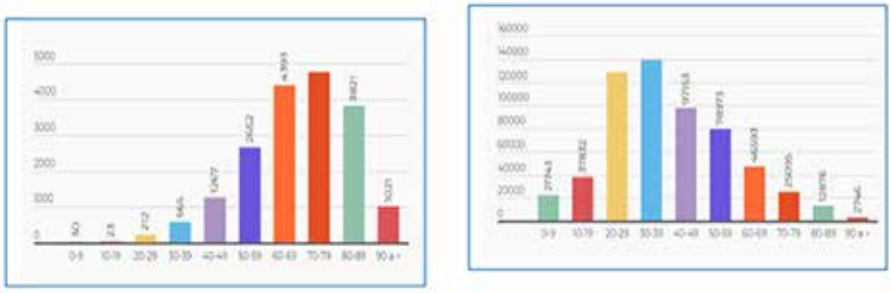

Figure 2. Distribution by age of COVID-19 number of deaths and cases in Colombia on August 29, 2020.
Source: INS 2020 (2)

Figure 3 displays the daily number of cases in Colombia up to August 29, 2020. In the last ten days (from August 19) the increasing trend has changed, and the number of cases is diminishing. However, this may be due to a fewer number of tests that have been taken in the last few days. Nonetheless, models and predictors have shown that the peak of transmission, unless in the main cities (Bogotá, Medellin, Cali, and Barranquilla), should be happening at the end of August beginning of September. Based on these assumptions, the Colombian Government has opened the obligatory quarantine and recommended self-isolation as well as continues using of basic preventive measures such as masks, hand washing, and physical distance.

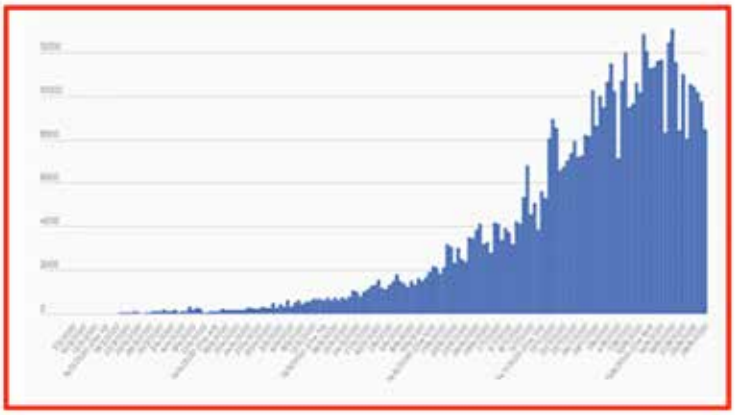

Figure 3. Daily number of cases in Colombia as of August 29, 2020.
Source: INS 2020 (2)

Comparing the epidemiologic situation (at the end of August) with other countries in the Americas, Colombia has reported 11 030 cases per one million inhabitants (6th in The Americas) and 351 deaths per million inhabitants (9th in The Americas) (2).

Finally, in the epidemiological profile of Colombia, Figure 4 shows the daily increase in the number of cases since the beginning of the pandemic (left) and in the last two months (right). In the last ten days of August, the number of cases has not increased more than 2 % daily; indicating that the country is arriving at the peak of the pandemic, and the number of daily cases will be diminishing from now on.

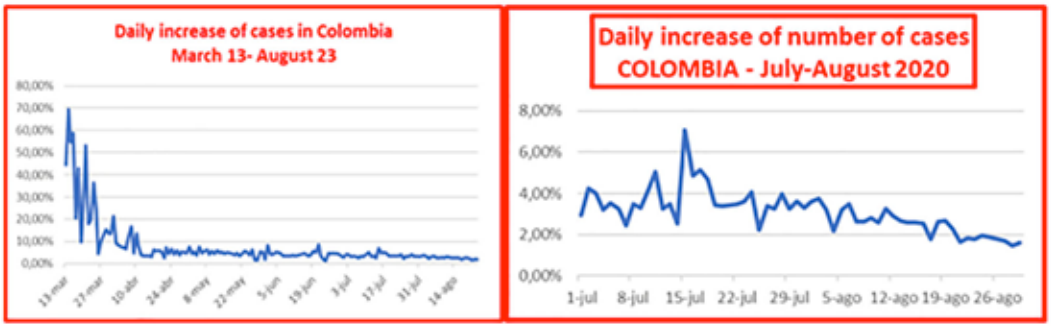

Figure 4. The daily increase in the number of cases in two periods in Colombia.
Source: (3)

Lockdown of the general population, high-risk groups, schools, and universities

The main purpose of the Colombian government to declare an early lockdown for the total population was to start preparing the hospital capacity for the care of patients that would require hospitalization and ICU. At the beginning of the pandemic, Colombia had less than 4 000 ICU beds and the MoH estimation was that 50 % of them could be occupied by patients with severe COVID-19 disease. The government created the Pandemic Unit with a former minister as the manager of the unit reporting directly to the President. This unit started looking for ventilators across the world to increase ICU capacity three-to-four-fold the current availability. As of the end of August, the total number of beds in ICU is 9 993 (4), six thousand one hundred out of them allocated for COVID-19 patients in addition, 20 % of beds in intermediate care units is occupied by COVID-19 patients.

As was pointed out, Colombia reports 351 deaths per million inhabitants, ranking 9th in The Americas, and the early lockdown to prepare the hospital system yielded its effectt, since there is no case of a severe COVID-19 patient that has been rejected to be hospitalized in ICU, if required. By the same token, in 2-3 cities only (Barranquilla, Cartagena, and Leticia), ICUs have been with more than 90 % of occupation, but as average in the country, there has been less than 75 % of ICU capacity in the peak of use of the hospital system. No doubt that the magnitude of the pandemic has revealed how weak and obsolete most health systems are; with very few exceptions, no country was prepared to handle and control a health emergency of the magnitude of the current pandemic. Despite the weaknesses of the Colombia health system, the country has been able to show that, for hospital capacity was able to prepare an appropriate response for severe patients of COVID-19.

On March 15, the government announced the suspension of classes for all public and private schools and universities. This preventive measure is still present (as of the end of August) at may continue the rest of the current year although there have been discussions about the impact that such measure may have on children and adolescents (see below). The first measure taken by the president, after declaring the state of emergency on March 17, was to order mandatory isolation from 20 March to 31 May for all adults over 70 years of age. However, on July 3rd the judge of Bogotá ruled in favor of the tutelage action lodged by a group of elder citizens, ordering the Government to allow the elderly population to leave their homes for outdoor physical exercise two hours every day instead of an hour thrice a week. President had to comply with the ruling but exhorted the elderly population to stay at home given the known higher mortality in this segment of the population (5).

Lockdown was an effective measure to contain transmission in the first three months of the pandemic. However, in June, after the lockdown was relaxed and a gradual commercial opening started, the number of cases tripled (6). The opening of other economic sectors continued up to August 30th. June 19th was declared the VAT day exemption ("COVID Friday") when the pandemic was increasing across the country. People went out to buy appliances, generating crowding, and close contact. Many people were in the malls and streets without basic preventive measures such as masks and, of course, physical distance.

Testing for diagnosing and contact tracing

Diagnose Tests to detect SARS-Cov2 were implemented from the very beginning of the pandemic. Colombia was the first country in Latin America to implement the Berlin Protocol for diagnosing lead by the National Institute of Health (NIH) that started to perform RT-PCR for the suspected cases with a limited capacity of fewer than 3 000 tests per day. Simultaneously, the Institute called for laboratories with the capability to perform PCR tests. Universities and research centers were the first institutions in supporting the NIH in processing tests in the main cities. Hospitals and private health insurance companies started to make diagnose and contract to trace with RT-PCR, afterward. The Institute keeps working on capacity building for other laboratories. As of the end of August, 119 laboratories across the country are currently approved (7) for SARS CoV-2 PCR tests and the

country can test more than 45 000 samples per day. To date (August 30th) more than 2.5 million tests have been performed and the country ranks third in Latin America in the number of tests (48 814) per million inhabitants (8). Another important fact in testing the population is the positivity of tests that was 12.7 % in May and has been increasing to 21.1 % in June, 28.9 % in July, and 33.2 % in August with an average, during the pandemic, of 25.9 % (Figure 5). The increasing proportion of positive PCR tests for SARS-Cov-2 is related to the decision of addressing diagnosis mainly to symptomatic people and contact tracing for identified cases.

Figure 5. The proportion of positive PCR tests in Colombia (11).
Source: INS 2020 (2).

To strengthen the country's capacity for testing symptomatic and suspected cases as well as giving priority to contact tracing as a strategy to control transmission by case identification and isolation, given the opening of most economic activities, the government established the PRASS ("Pruebas, Rastreo y Aislamiento Selectivo Sostenible") strategy (9). PRASS attempts to identify as many as 30-40 contacts of a COVID-19 case amongst relatives, close persons, and all possible contacts. A call center is being installed for the tracing of contacts across the country.

In the last month, the number of daily tests has decreased because the decision has been to test one member of a family and, if positive, isolation is imposed to the complete family to prevent transmission. In addition, no second test is required anymore when the patient has recovered from COVID-19.

During the pandemic, the health committee of the National Academy of Medicine has been analyzing different issues related to the pandemic with experts and leaders of the health sector as well as with highly respected economists, secretaries of health and mayors of cities, education experts, and members of the Academy. Recommendations have been sent to national and local governments.

Primary Health Care

The primary health care system was not prepared for such a pandemic and it has been more evident the lack of economic incentives, appropriate technology, and continuous training for the institutions and for the health care professionals to work at PHC facilities. Recommendations from the Academy of Medicine were addressed to give financial support to PHC institutions without intermediaries such private insurance companies, to conform and train multidisciplinary teams to deliver health care (information and education about prevention and

control as well as clinical signs and symptoms of COVID-19, case identification, treatment for mild cases at home, refer to health care facilities people with risk factors), not only at health care facilities but also domiciliary care. At the beginning of the pandemic efforts of MoH were addressed to prepare hospitals for patients that might require hospitalization. Later, in some cities such as Bogotá and Medellin, for example, primary care strategies were implemented, domiciliary visits performed, samples for diagnosing tests collected, and follow up of COVID-19 patients at home was conducted.

Impact on Health Services

As stated above, the early lockdown in the country was addressed, besides protection of the population of the risk of coming down with the disease, towards allowing hospital and health services to prepare the infrastructure (increasing number of ICU beds), equipment and supplies (ventilators), testing capacity and training of healthcare workers.

However, the quarantine also implied that hospitals diminished ambulatory care; suspend elective surgery, only emergency patients went to surgery. The income of both public and private hospitals decreased at the beginning of the year since many services diminished or were closed expecting Covid-19 cases that start arriving at high-level hospitals when the pandemic had advanced.

On the other hand, people rejected to attend hospitals for the fear of contracting COVID-19, control visits and treatments to NCD such diabetes, hypertension, chronic pulmonary obstructive disease (CPOD), or renal failure have been delayed or postponed. The consequences will be seen when a higher incidence of complications, the severity of the disease, and mortality will occur.

Public health programs and promotion and prevention activities have been affected by the pandemic, as well. EPI program has been impacted since children are not taken to primary care centers to obtain their immunization schedule and so has prenatal care for the same reason of fear going to health institutions or because of the lockdown. Treatments and control of other public health problems such as vector-borne diseases like dengue and malaria may have been discontinued of unattended.

The pandemic has made more evident weaknesses of the Colombian System of Social Security in Health. Inequity in access to health care between regimens subsidize (poor population) and contributory (employees, private health insurance), lack of governmental financial support to public hospitals, low political will for appropriate support to primary health care with proper incentives and training, payments delayed by insurance companies to health care institutions, low priority to health promotion and disease prevention. The National Academy of Medicine and other health institutions and scientific organizations as well as leaders of the health sector are advocating reform to our health system.

Another issue that might have affected the initial response to the pandemic at local level was that on October 2019 was the election of new governors and mayors who inaugurated their administration on January 1st, 2020. The new officers had to establish their teams, planing for the four-year term, budgetary issues, political agreements, and else while start facing the coming outbreak that had already taken place in China and was at the beginning in Europe.

Mental Health

During the pandemic, mental health has not been taken into account in the way it should have been done, but what the pandemic has made visible about the problems of mental health and psychopathologic conditions are serious, complex, frequent, and not easy to face. There are several factors associated with the appearance of mental health disorders (That may increase by three-fold according to experts) in the current pandemic situation. Lockdown is an effective preventive measure for transmission of COVID-19. Notwithstanding, an important proportion of the population stays in small areas where four, five, or more people live causing intrafamilial violence or sexual abuse that both have increased. Another consequence of lockdown is the increase in unemployment that means a lack of income, especially for the

poorest in urban areas and big cities. Besides the obvious problems of this factor, the impact on mental health has been enormous. Depression, anguish, stress, claustrophobia, ideas and attempts of suicide have increased and psychiatrists and psychologists are in high demand. Furthermore, it must be emphasized that lockdown has different consequences for different groups of the population, namely males and females, urban and rural inhabitants, young and the elderly, among others.

Structure and models of health care delivery were not prepared to give a response during or after the pandemic. Our health system must change regarding mental health care, according to with Caracas Declaration (10) whose recommendation was that the restructuring of psychiatric care linked to Primary Health Care and within the framework of the Local Health Systems model will permit the promotion of alternative service models that are community-based and integrated into the social networks; mental health programs must adopt the principles and guidelines on which these strategies and models of health care delivery are based. After all, this pandemic is an opportunity to change and improve mental health care services worldwide.

There have been, however other positive effects of the pandemic from the mental health standpoint. In general, people have developed or improved capacity to adapt to new circumstances, quarantine has provided better opportunities for family life, closer contact between parents and children, there are, for an important proportion of people, an improvement on informatics and technological capabilities, lifestyle has changed and persons and families have learned that there are unnecessary things that they would have shopped, otherwise.

Opening Schools and Universities

Closing schools and universities started early on March 15 and in just a matter of few weeks both public and private education institutions had to get ready for virtual classes and academic activities. Return to school has been an issue worldwide and the Colombian National Academy of Medicine decided to approach the subject to make recommendations for the government.

Several problems start rising amongst children and youngsters. Some went back to look for jobs, even though they were registered in schools, but families needed income since many parents had lost their jobs or decreased their income, due to the pandemic. Without attending school, children and youngsters are exposed to bullying, mistreatment, sexual abuse, poverty, and prone to delinquency. The school is a system to protect children and youngsters with care, food, peer interaction, and playtime.

The country should be aware that there is only 40 % of the population with access to the Internet, although there are regional differences. Furthermore, fundamental functions and goals of the school cannot be obtained virtually and those who do not have access to the Internet are precisely those who are more vulnerable.

Recommendations from the Academy of Medicine to the ministers of Education and Health to be considered to allow students going back to school were as follows:

To comply with established protocols of self-protection, use of masks, sufficient availability of hand washing facilities, physical distance in classrooms, and isolation in case of a suspected case. Continuous surveillance, protection to teachers since some of them may have risk factors, schools can be re-open in places where there are no cases but, on the other hand, there are places where compliance with protocols may not be possible. It is recommended to prepare protocols with the participation of students, teachers, principals, and parents. In this way, compliance with them is more attainable.

Economic impact

As it has been shown at a worldwide level the economic impact of the pandemic has been devastating. In Colombia, the unemployment rate has reached up to 21 % (July 2020). It has been pointed out that only 3 % of the country's population has not been affected by the economic standpoint.

Besides COVID-19, there have been additional factors affecting the economic situation in the country, a significant decrease in oil international prices and the cost of financing has increased by 1.5 %-2 %. Because lockdown primary objective

was to "buy time" to prepare hospitals and the health sector to deal with the increasing number of cases, the longer the time of quarantine, the greater the economic impact, that is unemployment, lack of income especially for the vulnerable population such informal jobs or self-employed people like taxi drivers, street vendors and else. The line of poverty in Colombia before the pandemic was 27 % of the population and due to the pandemic, this percentage may reach 40 %-45 %. One-to-two decades may be lost in poverty and inequity due to pandemic.

Special consideration should be taken regarding the survival of enterprises and assessment of what sectors should be supported by the state, for instance, tourism and recreation since these sectors have lost an enormous amount of money and have laid off several employees. For the second trimester of 2020, the country's GNP fell by 15.7 % compared to the same period of 2019, which was reported to be the greatest economic decline in recent history in Colombia. The economic activities that were hit the hardest were: wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food services (which decreased by 34.3 % and contributed –6.6 percentage points to the annual variation); manufacturing industries (which decreased by 25.4 % and contributed –3.1 percentage points to the annual variation), and construction, which decreased by 31.7 % and contributed –2.1 percentage points to the annual variation) (11).

Given these considerations, some issues should be underscored as actions taken by the government to support the crisis for different sectors of the economy: Allocation of extra funds for the health sector to respond to the pandemic has been prioritized and results are shown in the increase of ICU beds across the country, subsidies for the most vulnerable groups (30 %) of the population with extra income were decided for three months and later extended for additional three months, Central Bank has provided finance liquidity allowing private banks to refinance debts from customers and enterprises. Nonetheless, some issues should have been considered to minimize the economic impact on certain sectors of the population: The independents or freelancers have significantly lost income without support or subsidy and the informal jobs (50 %) have not received any subsidy either. An important allocation of resources is required during and after the pandemic to recover employment and income of the high proportion of the population that went back to be below the poverty line. Different sectors, as mentioned above, will require support in different ways, by loans at subsidized rates, renegotiations and/or delay payments of debts or stimulating generation of employment, defer payment of taxes as examples of different alternatives to strengthening the economy (12).

CONCLUSIONS

Colombia had an early response to the coming pandemic by starting preparation lead by the Ministry of Health and the National Government with clear and proper communication of the coming risk to the general population, the health care institutions, and the state and local authorities. There was an early allocation of additional resources for the health sector. Preparedness of hospitals for strengthening their capacity of ICU as well as the preparation for testing and capacity building of laboratories to implement PCR testing capacity. Identification and preventive and control measures were established at an earlier stage for risk groups. The result of this preparedness is that never the ICU was insufficient for attending patients of both COVID-19 and other diseases. The daily growth of the number of cases was moderated, after the first month and not more than 2 % in the last 4-6 weeks (August 31), CFR has remained around 3.1 %-3.3 % and in mortality and incidence per million inhabitants ranking 9th and 6th in the Americas.

There may be two additional factors influencing the low incidence and mortality rates in Colombia, namely weather and demographic profile. In Colombia, peaks of respiratory virus transmission occur mostly during rainy seasons However, since October 2019 the country has experienced an unusually long dry season that has extended through June 2020 coinciding with the end of the lockdown. In addition, Colombia has a relatively young population which may have attenuated the SARS-CoV-2 impact on mortality (6).

On the other hand, there have been some drawbacks from which there must be a process of learning for the remaining of the pandemic and future health situations. Communication and information were more based on fear, prohibition, and alarm instead of more pedagogic and educational messages to the population. Preparedness and decisions were more oriented towards capacity building of ICU and not more comprehensive activities including primary health care, ambulatory care for NCD patients, and public health activities such as keeping immunization coverage and prevention and control of vector-borne diseases.

Finally, as for most countries worldwide, there are, for Colombia, several challenges for the current situation of the pandemic as well as the post-pandemic period. Better coordination between the national and the state and municipal governments is required and leadership of the country ought to work in such away. To attend to the consequences of the pandemic on mental health at the individual and community level thru a well-integrated primary health care strategy is necessary given the wide impact of the lockdown and economic situation in the country. To work together among different leaders and institutions of the health sector to assess and to propose the changes and reform required for equitable access to health care. Last, but not least is the enormous challenge for Colombia and most countries of the world in the recovering of economy, employment, income for vulnerable groups. For all these challenges strong and participative leadership is required, and the country must demonstrate that can do so for a better place to live for our future generations.

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Conflicts of interest: None

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