

## COVID-19 PANDEMIC

# COVID-19 PANDEMIC IN THE MIDST OF LEBANON'S WORST FINANCIAL CRISIS

## Capital Control or Captain Control ?

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Riad SARKIS<sup>1</sup>, Hamad HASSAN<sup>2</sup>, Anthony LICHAA<sup>1</sup>, Ray HACHEM<sup>3</sup>

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19 pandemic and outline the current governing public health policies and procedures that have been adopted to manage COVID-19 in Lebanon.

### INTRODUCTION

COVID-19, caused by the coronavirus-2 (SARS-COV-2) pathogen, started as an epidemic in China. It later spread throughout the Eastern Hemisphere and the rest of the world, ultimately becoming a global pandemic as confirmed by the World Health Organization (WHO) [1].

There are approximately 3,500,000 cases around the world of COVID-19, 250,000 dead, 185 world regions affected, it's a pandemic (global epidemic). Concurrently, the Lebanese economic crisis had worsened in November 2019, which ultimately led to a state of total national economic blockage by December 2019. A reduction of national and foreign currencies in the banks resulted in an inability to transfer foreign currency, which resulted in an almost complete cessation of tourism in Lebanon, one of Lebanon's top economic resources [2]. The direct consequence was an 80% reduction in Lebanese foreign travel for the holiday season at the end of the year, and the cancellation of 90% of visitor reservations who planned to come and spend the holidays in Lebanon. Hotel occupancy fell dramatically from 75% to less than 5% after October 17<sup>th</sup>.

Further, impacting the Lebanese tourism industry and economy has been the inability for existing investors to buy into Chinese and Far East business, as well as travel bans set in place to mitigate COVID-19 transmission [3]. These two factors have left Lebanon in a precarious situation to deal with its existing economic instability and unstable public health and environmental programs, while trying to simultaneously create and implement COVID-19 public health policies. Unfortunately, managing Lebanon's economic crisis and its COVID-19 response are directly impacting one another, and must go hand in hand in order to protect the citizens of Lebanon and improve the country's overall economic status.

The purpose of this paper is to summarize the decisions that influenced Lebanon's response to the COVID-

### IMMEDIATE RESPONSE

During the early outbreak of COVID-19 around the world, Lebanon was confronted to its worst public health challenge for decades along with its worst financial breakdown. At first, Lebanon continued to receive flights from countries where there were high rates of COVID-19 cases, in particular from Italy and Iran, which unfortunately served as the original source of the virus in Lebanon. These countries were not locked down at that time allowing infected persons to fly off and spread disease abroad.

After seeing what was happening in the news around the world, the Lebanese citizens reacted out of fear and tried to withdraw their bank deposits, stock up on chronic treatment drugs, and reserve major food supplies in order to stay home and isolate themselves from others. Although this caused food reserves to decrease, these actions taken by the people were critical in the early response to decreasing the transmission of COVID-19 by reducing human contact.

The health crisis hit the country when Lebanon was already confronting an unprecedented economic and financial collapse, only to exacerbate it. Collective and coordinated effort is thus necessary to reduce the strain of the different crises shaking the country, on all those who are most severely affected, especially the poor.

Public institutions have received help from UN agencies, nongovernmental organizations (NGOs) and civil society organizations, with the aim of preventing the spread of the virus, avoiding to overload the national health system and simultaneously prevent the exacerbation of the socio-economic meltdown.

To face the COVID-19 health emergency, the Lebanese Government had to adopt strict public health measures in an attempt to limit the pandemic locally [4-5]. The Lebanon's Ministry of Public Health, and its various partners have worked, under the guidance of the Lebanese Prime Minister, to coordinate a national response

<sup>1</sup>Hôtel-Dieu de France Hospital HDF-CHU, Saint Joseph University (USJ), Beirut, Lebanon. <sup>2</sup>HE Minister of Health, Lebanon.

<sup>3</sup>MD Anderson Medical Center, Houston, Texas.

\*Corresponding author: *Riad SARKIS MD, Ph.D* e-mail: riad.sarkis@gmail.com

which incorporates detection, diagnosis, treatment and isolation of cases and tracing and follow-up of contacts [6].

Material support has been provided to Rafik Hariri University Hospital (RHUH), which is the governmental referral hospital for COVID-19, hence increasing the number of available testing kits of RT-PCR (reverse transcriptase-polymerase chain reaction) and reagents [7]. The hospital has been initially conducting around 200 tests daily and its ability has increased to reach up to 450 tests per day. Additional kits have been made available to perform screening tests in different Lebanese regions. RHUH has also been provided with personal protective equipment (PPE) sets enough to cover two months. The UN also granted ventilators, hence expanding the Intensive Care Unit capacity of the hospital.

The Lebanese Order of Nurses has also organized training sessions for nurses working at primary healthcare facilities and hospitals. The sessions included topics such as infection prevention and control and clinical care for severe acute respiratory infection.

Additional measures are also being taken to raise awareness about the pandemic, inform about standard precautions, communicate risk, screen at Rafik Hariri International Airport and borders, hence managing importation risk and perform epidemiological surveillance [8].

#### LEBANESE GOVERNMENT MEASURES IN COVID-19 RESPONSE

A cause of economic bankruptcy, requests to import products have increased concomitantly with the regulation of foreign currency transfers from the Central Bank of Lebanon (Banque du Liban or BDL) to reduce capital flight of foreign currencies. In this regard, a commission was set up at the request of the governor of the BDL to monitor the requests and the estimate of integration and remove fraudulent invoices. The number of COVID cases has increased the need for general and specific medical equipment for COVID-19 and PPE; the commission facilitated a new procedure for medical equipment and devices through a collaboration between importers and their union, the very dynamic Ministry of Health, the banking sector, the suppliers in the country of origin of the material, with rapid and express interaction from the Bank of Lebanon, verifying the needs of hospitals so as not to miss products, with the steadfast support of the Lebanese Prime Minister, the Minister of the Economy and embassies of several countries to note in particular.

The government hospital RHUH was the first to welcome patients with COVID-19, with high-quality equipment and the introduction of RT-PCR for viral screening. Soon after, Hôtel-Dieu de France dedicated a service to welcome patients with the development of a flu center and

laboratory equipment allowing diagnosis by PCR, and then several hospitals followed. The spread of the disease forced the Ministry of Health, under the guidance of the Prime Minister, in collaboration with medical experts, to propose a total lockdown to reduce the risks of contagiousness.

This containment evolved in curfew to prevent people from going out and reactivate the viral cycle.

A controlled medical repatriation of citizens detained abroad was possible with a screening on arrival in Lebanon, confinement in a hotel, then self-isolation for 14 days at home.

At the end of four weeks, the number of screened cases fell with a flattened curve of new cases. At this stage a widespread screening on the Lebanese ground of the order of 1000 PCR per day was made. Then followed the importation of rapid tests for total screening with containment management – namely the rapid nasal test for viral antigens, and rapid serological tests to check the IgM immunoglobulins during recent infections with possible contagiousness and the IgGs immunoglobulins which testify to an elevation of chronic viral antibodies that could be protective.

#### CLINICAL PROFILE & APPROPRIATE MEDICAL RESPONSE GUIDELINES OF COVID-19

COVID-19 is clinically characterized on a spectrum, ranging from asymptomatic, to mild, to severe and critical cases [9-11]. Older age and comorbidities such as diabetes, cardiovascular disease, hypertension, chronic obstructive pulmonary disease (COPD), chronic kidney disease (CKD) and cancer have been associated with severe COVID-19 illness and increased the rate of mortality [11-15].

The frequent symptoms at presentation are cough, fever, myalgia with fatigue [16,17]. Patients may present with other symptoms including sore throat, nausea, vomiting, diarrhea, headache and rhinorrhea [11,12,16].

#### **I. Staging Clinical Presentation of COVID-19 [18,19]**

1. Mortality of the patient.
2. The patient is hospitalized:
  - a. Intensive care unit with ventilator or Extracorporeal Membrane Oxygenation (ECMO);
  - b. Equipment for a high flow oxygen without intubation;
  - c. The patient requires low flow of oxygen;
  - d. The patient needs medical care only without oxygen;
  - e. Specific treatment with OH-Chloroquine and Azithromycin, or Remdesivir administration.
3. The patient is not hospitalized.

## II. How to confirm the diagnosis of COVID-19 [19,20]

The presence of the RNA of COVID-19 on the nasal swab is the key of diagnosis. The amplification of the genome's components by RT-PCR is considered the most accurate technique for viral detection.

The shedding of the virus may vary with a median duration of 20 days [12]. Studies on viral dynamics in COVID-19 RT-PCR confirmed cases showed that patients with severe diseases had a higher viral load and a prolonged period of virus shedding (beyond 10 days) compared to those with mild diseases [21]. Viral load could serve as a biomarker of disease severity and may have a diagnostic and prognostic role in patients with COVID-19. Virus clearance has been defined as two consecutive negative swab test results obtained at 24 hours apart. [12,22]

## III. Management of COVID-19

Continuous vigorous effort is ongoing to try to evaluate the best management approach, identify drugs and strategies for the treatment, to develop vaccine and prevent this infection.

Several therapeutic agents with different mechanisms of action showed promising activity against COVID-19 but with limited data. Among these therapeutic agents, hydroxychloroquine used alone or in combination with azithromycin are currently recommended for the treatment of hospitalized patients [23].

Limited clinical studies suggested that remdesivir, an inhibitor of RNA polymerase, could be a therapeutic option [24,25]. Moreover, other therapeutic agents are in clinical trial such as favipiravir and lopinavir/ritonavir [26-28]. Cytokine release syndrome with elevated interleukin 6 (IL-6) have been reported in severe cases which triggered the use of IL-6 receptor inhibitor tocilizumab or siltuximab that are currently under investigation.

In addition monoclonal antibody therapies are being considered during this pandemic situation [29]. Convalescent plasma from recovered donors has been used anecdotally in five severe cases with promising results [30]. Corticosteroids are not recommended unless they are used for other indications [31].

## IV. COVID and science [18]

This RNA virus (diameter = 1/107 meter, volume = 1/1018 liter, weight = 1/1015 g) needs two minutes to enter a cell, ten hours to release 1000 virions per cell. The concentration of the RNA virus is variable depending on the sampling site: nasopharynx = 1015, throat = 104, stool = 108/g, sputum = 1011/ml.

## V. Use of masks with COVID-19

We had doubts about the surgical mask, but the study of sputters released into the air by a laser visualization when

a person speaks, with a diameter between 30 and 500 micrometers, their number increases with the intensity of the voice. Wearing a mask considerably reduces the number of sputters in the air. [32].

## VI. COVID-19 vaccine possibilities

An effective MERS-CoV vaccine has been tested with promising results for the development of the coronavirus vaccine. [33,34]

## VII. COVID-19 transmission and outbreak

The transmission from a patient infected with SARS-CoV-2 varies according to the duration and type of exposure, the amount of virus in the sputters, the viral load, the severity of the infection and the comorbidities.

Transmission occurs primarily between family members, in assembly or health care settings when personal protective equipment is not in use (including hospitals and long-term care facilities, and in closed places (e.g. cruise ships). However, groups of cases were reported after professional or social gatherings. The risk of transmission by close contact is also known. Asymptomatic people carrying the virus are contagious 1 to 3 days before the onset of symptoms, the transmission of the virus decreases from the onset of symptoms, continues to decrease over time, but it is difficult to select all the carriers and to isolate them during the asymptomatic incubation phase. [35-37]

## RESULTS TO RESPONSE PROTOCOLS AND THE FUTURE OF SARS-COV-2 RESPONSE

Following the outbreak of the pandemic with the progression of cases detected by RT-PCR, the Ministry of Health (MOPH) opened its offices for all commissions representing the various orders of health: the orders of doctors, hospitals, pharmacists, medical devices, and importers of PPE and all those able to help in the process of screening affected cases, and promoting total containment to reduce the spread. A comprehensive national education in behavior supported by the MOPH and all media to limit dissemination during the confinement period was set in motion. A special commission has been appointed to monitor the progress of the pandemic in Lebanon. Recently, several NGOs and institutions participated on a humanitarian basis with decentralized screening and forming a mobile clinic visiting villages in search of asymptomatic cases; moreover the MOPH opened regional screening centers to reach a total number that exceeds 1300 tests per day. In this period (end of April 2020) the number of positive tests exceeded 700 while the number of tests carried out was around 15000.

The MOPH's strategies were objective and reason-

able with good results which limited the outbreak. Due to the economic isolation of the country, an express procedure of the Bank of Lebanon allowed transfers of foreign currency to subsidize raw materials, flour, fuel and especially all medical devices and drugs in particular for the importation of all COVID-19 orders to fight the pandemic.

With the situation under control, the discussion on rapid tests was concluded in the interest of importing the nasal test by mucous swab and screening by the rapid antigen test which only requires ten minutes, in order to prepare for the phase of gradual return in five phases from the complete lockdown.

Therefore, four measures should be taken into consideration in order to safely reopen the country:

- a. Hospitals must be able to treat inpatients without being overwhelmed.
- b. All symptomatic patients should be tested.
- c. Monitoring of positive cases and confinement. Daily contact with patients in confinement is mandatory to prevent a recurrence of an epidemic.
- d. Controlled confinement will lead to a considerable reduction in the number of patients in fourteen days.

#### CONCLUSION

MOPH strategies were objective and reasonable with good results which blocked the outbreak. Unfortunately, managing Lebanon's economic crisis and its COVID-19 response are directly impacting one another, and must go hand in hand in order to protect the citizens of Lebanon and improve the country's overall economic status.

This paper summarized the decisions that influenced the good preventive results in Lebanon and outlined the current governing public health policies and procedures that have been adopted to manage COVID-19 in Lebanon.

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