
COVID-19 outbreak In Palestine: Early Response and National Strategies Implemented in Confronting the Epidemic

REVIEW

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ABSTRACT

The early response and management of the coronavirus disease 2019 (COVID-19) and the outbreak in Palestine is summarized in this report. Since the WHO announced the pandemic, COVID-19 has rapidly extended globally within a short period of time putting health systems in many countries on alert. This report aims to provide an overview of the national strategies implemented to contain the ongoing COVID-19 epidemic in Palestine, highlighting the main steps implemented in etiology, epidemiology, vulnerability, social and economic impacts. Containment of the disease was very successful at the early outbreak by legally enforced lockdown which proved a golden strategy to tackle the disease. Community outreach and raising awareness, and implementation of legally enforced preventive measures were essential to contain the spread of the epidemic in Palestine. Monitoring the outcome of health and preventive measures are important to live the epidemic and minimize its unintentional negative impacts.

Keywords: COVID-19, Corona virus, Palestine, Epidemic

Introduction

Severe acute respiratory syndrome coronavirus (SARS-CoV) reported in November 2002 and Middle East Respiratory Syndrome coronavirus (MERS-CoV) reported in September 2012, which emerged as zoonosis in human population from animal reservoirs and caused severe respiratory illness with high mortality rates. Another Severe Acute Respiratory Syndrome coronavirus-2 (SARS-CoV-2) has been emerged for the first time in Wuhan, China in December 2019 causing highly contagious and severe illness; identified as Coronavirus Disease 2019 (COVID-19) (Du Toit, 2020). SARS-CoV-2 is classified as a novel Betacoronavirus belonging to the Sarbecovirus subgenus of Coronaviridae family. This virus has never previously been identified in humans

(Cyranoski, 2020). Millions of people around the World have been infected, and more than a hundred thousand deaths. The World Health Organization (WHO) declared COVID-19 a global pandemic spread in 213 countries and territories, United States of America, Italy, Germany, France, United Kingdom, China, Iran, Canada, Brazil are among the highly affected countries (Organization, 2020d). Countries in the Middle East where less affected and most of the cases reported were imported from other countries especially European countries, United States and China (Karamouzian and Madani, 2020; Organization, 2020b, d).

The origin of coronavirus-19 (SARS-CoV-2), is still unknown, SARS-CoV virus has been identified in many animals including raccoons, dogs and Chinese ferret-badgers (intermediary source) and in live animal markets, bats species (horseshoe bats) which are the primary reservoir of coronaviruses (Benjamin-Chung et al., 2019; Guan et al., 2003; Wu and McGoogan, 2020). The transmission cycle of COVID-19 is not fully understood, recent studies have reported human-to-human transmission through the droplets generated from the infected person by coughs or sneezes, which

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could potentially infect others remaining in close contact and by touching contaminated surface with the virus (Chan et al., 2020; Huang et al., 2020; Lai et al., 2020; Tey et al., 2020). WHO declared that SARS-CoV-2 may be transmitted from person to person via air particularly indoors with poor ventilation (Organization, 2020c). The severity of the virus appears to be lower than that of SARS and MERS (Petrosillo et al., 2020). Among the symptomatic COVID-19 patients, 81% developed a mild to moderate disease characterized by dry cough, fever, or unspecific symptoms such as headache, and fatigue. Only 5% of the patients were critically ill with dyspnea and pneumonia, respiratory failure, sepsis, and may lead to multi-organ failure (Guan et al., 2003). Some Palestinian patients with COVID-19 claim sudden loss of smell and taste (Palestinian Ministry of Health, 2020). People of all ages are affected, however the severity of the disease is different with age, old people and immunocompromised are under high risk. Children are considered asymptomatic carriers of the virus. However, their potential to transmit the virus has not been ruled out even if they do not show clinical manifestations (Dong et al., 2020).

In the absence of clinically approved drug or pharmacological treatment to treat COVID-19, public health measures are adopted in countries who early suffered from the disease like China, Germany and Italy. These measures include isolation, social distancing, and quarantine of positive cases in specialized health care facilities for treatment and management, and isolation of symptomatic from non-symptomatic patients (Linton et al., 2020; Rothe et al., 2020). Complete lockdown was also implemented in many countries including Palestine.

Effect of environmental conditions are important in the spread of SARS-CoV-2 virus and should be subject for more investigation; ambient temperature and humidity are important factors in the transmission and survival time of the coronaviruses on surfaces (Casanova et al., 2010; Morse et al., 2020; van Doremalen et al., 2013).

As the first outbreak began, different countries start containment of the disease and take strict health measures including lockdown, social distancing and quarantine. Palestine, like other countries in the world, put strategies and measures for confronting the disease outbreak but differs from other countries in having highly populated refugee camps and crowded areas like Gaza strip which is considered the highest populated territory worldwide (AlKhaldi et al., 2020). The Palestinian management of this health crisis is worthy and inspiring. This report aims to provide an overview of strategies implemented nationally to contain the

ongoing COVID-19 epidemic in Palestine, highlighting the main steps implemented in etiology, epidemiology, vulnerability, social and economic impacts. This report may be used as starting point in Palestine for further studies and research involving COVID-19.

Palestinian early response

The first Palestinian response expressed from Palestinian Authority president who declared state of emergency on March 5th 2020, initially for one month, the declaration gives the Palestinian prime minister responsibilities to put measures for containment of the outbreak. The outbreak started in Bethlehem where seven patients confirmed positive for SARS-CoV-2 by RT-PCR. The health measures employed entailed in complete closure of schools including kindergartens, daycares and nurseries, universities and colleges and other higher education facilities, gym and sport facilities, public and governmental businesses except services were shut down. People were advised to stay home and avoid contacts with others (social distancing). Palestinian National COVID-19 response plan released by the Palestinian government on March 26, outlines the strategic measures from a number of key sectors, including health, economy and social protection to contain the outbreak, the government call for combined and complemented efforts of private sector, non-governmental organizations and Palestinian Red Crescent Society (PRCS) and private healthcare providers to contain the outbreak (Agency, 2020; AlKhaldi et al., 2020).

Diagnosis

Patients with COVID-19 were diagnosed in the laboratory using real-time reverse-transcriptase polymerase-chain-reaction (RT-PCR) assay of the nasopharyngeal swabs. Tests were carried out in accordance with World Health Organization interim guidance (Organization, 2020a), and Palestinian Ministry of Health special protocols (Li et al., 2020). Patients found positive for SARS-CoV-2 infection were repeated for confirmation and tagged as a positive result. Chest X-ray is being used for patients with positive result to evaluate the condition and seriousness of the patient especially the functionality of lungs. RT-PCR testing is performed of asymptomatic or mildly symptomatic contacts for the assessment of individuals who have had contact with a COVID-19 patient.

Treatment

Due to the absence of clinically approved treatment of COVID-19 disease, there were no approved

antiviral therapy against SARS-CoV-2. Clinical studies revealed the usefulness of antiviral agents, antibiotic to control secondary complications, corticosteroid, intravenous immunoglobulins especially from COVID-19 recovered patients, and oxygen support (Bhumbra et al., 2020; Huang et al., 2020; Morse et al., 2020; Romani et al., 2020; Wang et al., 2020). Depending on the severity of the case and whether the patient developed mild or severe pneumonia; COVID-19 patients in Palestine are treated according to Palestinian Ministry of Health protocols, which include the use of Lopinavir - Ritonavir, Hydroxychloroquine, and Azithromycin (Palestinian Ministry of Health, 2020).

Outbreak in Palestine

The number of infected and confirmed cases in Palestine vary from one region to another. Some areas in particular showed higher incidence than other regions. This variation in disease incidence between different areas may be related to rapidly spread of the infection and the obligation and commitment to the preventive measures than other areas and it is an interesting field of further study. The outbreak in Palestine is started in Bethlehem in March, 2020 with seven cases infected after having contacts with SARS-CoV-2 positive visitors from different countries, later on, other outbreaks from Palestinian workers in Israel who returned back and transmit the infection to their families. On May, 2020 Palestinian government declared that outbreak of COVID-19 is under control and manageable and decided to go back to normal life and instruct the public to keep on health and safety measures. On June, 2020 a second wave of COVID-19 outbreak was recorded in Hebron governorate, southern West Bank, where tens of cases reported every day. This recent outbreak alerted Palestinian health system and considered a catastrophic health crises, which required immediate intervention, the highest number of cases were reported by July 16, 2020 (4604 confirmed cases) and the lowest was in May, 2020 (Figure 1). The high shift in number of cases is probably due to many factors including; emergence of a second wave of SARS-CoV-2 transmission worldwide (Organization, 2020c), and the unprogrammed lift of lockdown without considering gradual return to normal life where people did not follow the health and safety rules strictly (Alaraby, 2020). The infected cases in the second wave of transmission (June-July) characterized by severe symptoms and high death rate; three deaths were in March-May while 49 deaths reported by July 16, 2020. The recovery rate was higher in March-May compared to Jun and July. The total number of cases by July 16, 2020 was 8617; while the active cases are 7086

(82.2%), the recovered cases were 1482 (17.2%), and deaths were 49 (0.57%) (MOH, 2020).

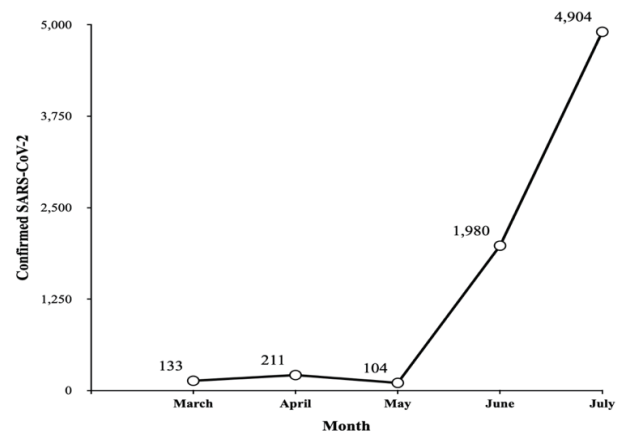


Figure 1: Number of confirmed SARS-CoV-2 cases in Palestine by July 16, 2020. Data were obtained from Palestinian Ministry of Health COVID-19 surveillance system ((MOH), 2020; Palestinian Ministry of Health, 2020).

Preventive health and safety measures

Quarantine

Individuals tested positive for SARS-CoV-2 were quarantined by Palestinian preventive health services in Hugo Chavis COVID-19 hospital, Turmosayya, Ramallah, Palestine. COVID-19 patients received treatment, and medical and psychological follow up free of charge by specialized medical personnel. According to Palestinian COVID-19 protocols, patients are remained isolated for 14 days in the COVID-19 hospital, retested for the presence of the virus. If found negative, they are released for home quarantine for another 14 days. Others who contacted patients are legally enforced quarantined either in specialized quarantine facilities or at home for 14 days, depending on the type of the contact circle (AlKhalidi et al., 2020). Preventive health services developed map of contact circles (Figure 2); primary contact circle include individuals who directly and for prolonged time contacted a COVID-19 patient confirmed positive for SARS-CoV-2, others; secondary and tertiary circles include individuals who contact individuals in the primary circle. Individuals in the contact circles are followed up during the quarantine by medical staff, if tested positive, they admitted to COVID-19 hospitals, otherwise released for home quarantine for another 14 days. Depending on the degree of spreading of the disease and how long it took for preventive health services to build map of contacts for each confirmed SARS-CoV-2 patient, the breakdown of the cycle of contacts and contain the spread of the disease.

Quarantine of patients and contacts is proved

effective for containment of the disease and prevent the spread of the SARS-CoV-2 virus to other healthy individuals (Flumignan et al., 2020; Reddy et al., 2020). Mapping circles of contacts is very intensive work performed by medical and security staff and involved legally enforced investigation.

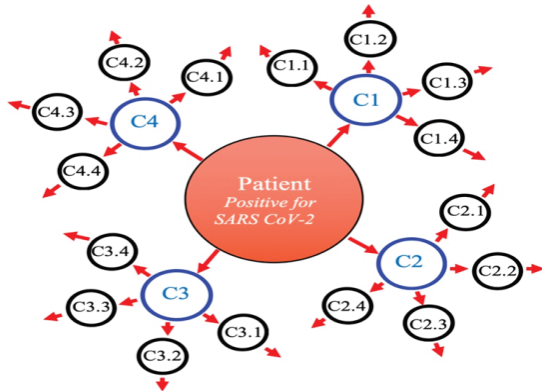


Figure 2: Mapping the circles of contacts. A patient with COVID-19 in the center of the map, C1- C4: primary contact circles, Cx.1- Cx.4: secondary contacts circles. Numbers inside the circles denotes contacts with COVID-19 patient or contacts of contacts. Arrows show the direction of transmission and spread of the disease between patient and contacts

The rapid response in identifying circles of contacts may be effective and crucial to stop the spread cycle of the infection. To perform that; in certain cases Palestinian health authorities ordered to Palestinian Police for mobility restriction of people in newly identified foci for 36-48 hours to have free access to these foci without disruption and carry on health investigation with infected people and with their primary contacts to develop a complete map of contact circles, which will limit the growth of the circles and eventually limit the spread of the virus.

Lockdown and community outreach

Strict preventive measures were implemented and aimed to contain the outbreak of the disease and mitigate the spreading to other areas in the country. The lockdown was legally enforced to all businesses (public and private). However, food shops, groceries, pharmacies and bakeries were excluded from lockdown. People were instructed to stay home and mobility were restricted to emergency or to obtain food and medication in an area not exceeding one kilometer away from home. Police officers were deployed on main roads and junctions for legally enforce inter-city mobility restriction.

Stay home strategy and mobility restriction were combined with community outreach using media especially Palestinian national TV where representative

of Palestinian ministry of health and government spokesman appear for morning and evening updates and update the public for new reported cases and consequent regulations and instructions. These updates impacted positively on the majority of Palestinian public, social media were also used extensively by health experts to educate the public about prevention measures that should be taken, concentrating on social distancing, hand wash, and wearing mouth and nose masks. Lockdown were combined with legally enforced regulations, complete shutdown of holy places and mass prayers were prevented for the first time since centuries; mosques and churches were closed.

Outcomes

The outcomes of lockdown and preventive measures were evaluated based on the number of daily new positive cases, mortality rates, and feedback support from the public. The incidence of the COVID-19 was shown to be on very low levels and the epidemiology of the disease kept under control. Only five deaths were recorded and almost all have health problems, most patients infected with SARS COV-2 were asymptomatic or developed mild symptoms and were responsive to treatment. With the implementation of strong prevention and control measures by the Palestinian government, the containment of the epidemic has been achieved, but the global situation is still out of control and confirmed infected cases are rapidly increasing each day.

Gradual return to normal life

On May 26th 2020 the Palestinian government took the decision to lift the mobility constrains, reopening all private and public business. The government insisted and instructed the public to persist keeping the preventive measures of social distancing and wearing masks. The government took the decision to return to normal life after evaluation of the socioeconomical situation. The unintentional negative impacts of this decision were appeared by June 15, 2020 where new confirmed positive cases emerged in multiples at the beginning and then increased to reach hundreds of cases each day in certain areas in the country. By July 15, 2020, the cumulative numbers recorded in Hebron governorate were 5366, Nablus 244, East Jerusalem 1697, and Ramallah 497. The total number of cases from March to May in the country were 448 and after lifting the lockdown by June 2020 the total number of cases shifted up to reach 4904 cases by July 16, 2020. Gradual recovery and returning to normal life slowly appeared a key issue to live with

COVID-19 epidemic in Palestine. Gradual reopening the public and private business, keeping the legally enforced measures of social distancing and preventing social gatherings especially wedding celebrations are key issues to prevent the transmission of the disease massively in the society. Palestinian government in the light of the new COVID-19 outbreak or the second wave of the outbreak, took new preventive measures of lockdown, mobility restriction and social outreach to stop the spread of SARS-CoV-2 in the country especially in highly endemic areas like Hebron, East Jerusalem, Ramallah and Nablus.

Negative impacts

Although, quarantine and other health measures can have adverse negative effects, strict prevention and control measures undertaken are more effective in containing the COVID-19 outbreak. These effects include, psychological effects such as anxiety, posttraumatic stress symptoms, confusion and anger, which can lead to adverse long-term psychological problems, social and economic consequences on communities that have been subjected to extended periods of social distancing and other prevention and control measures might also lead to an increase in the burden on health overall. In order to maintain the best possible balance of measures, decision makers must constantly monitor the outbreak situation and the impact of the health measures implemented (AlKhalidi et al., 2020; Baloch et al., 2020). Quarantine alone as only measure is considered a key issue but not enough to control the outbreak of the disease, the identification of asymptomatic individuals is very important and this could be done by expanding the screening system to include samples from possible contacts in the third and fourth circle and screening random samples from different areas especially from regions with high death rates. The increase in number of tests is challenged and compromised by the availability of testing kits and the complexity of importing necessary swabs and materials due to limitations on international trade and the high global demand on testing kits.

Discussion

COVID-19 continues to spread all over the world, with increasing morbidity and mortality, preventive health measures have been taken in many countries of the world (Feng et al., 2020; Leung et al., 2020). It was proved that the swift measures imposed by the governments have been effective in containment the transmission of SARS-CoV-2 in many countries including Palestine and saves a lot of lives (Chan et al.,

2020; Dong et al., 2020; Gualano et al., 2020; Lai et al., 2020; Zu et al., 2020). Governments should monitor the outcomes of the health measures undertaken and manage COVID-19 health crises in a way to save lives and minimizing the unintentional bad effects on society and economy. Gradual recovery of the community and gradual reintroducing the people to their normal daily life is very important to avoid re-emergence of the outbreak and help people to coexist with the disease until a treatment or vaccine become available. The quick and swift reaction and legally enforced preventive measures taken by Palestinian government substantially helped to control the outbreak of COVID-19 across the country. The measures successfully contain the disease outbreak in Bethlehem.

Although, the management of the COVID-19 crises by Palestinian government was very useful and saves lives of many Palestinians, the effect of lockdown was very costly on national economy; many private businesses were severely affected and the national income was substantially decreased. Strict lockdown measures were proved effective in many countries including Palestine, keeping on preventive measures by the public is essential. The high number of cases in June-July 2020 in Palestine are concentrated in Hebron Ramallah, Jerusalem and Nablus which is due to extensive social contacts through gatherings without taking into consideration social distancing, and other preventive measures like masks, this results in massive spread of the infection among people. Preventive and safety measures were not practiced by customers of many businesses or business owners did not care of using these measures for their customers. Crowded shops and markets were prominent and aided in the spread of the disease. To keep on the safety measures and economy running without any negative impacts of COVID-19 epidemic, the following measures should be considered in Palestine; flexible working schedules for employees, introducing distance working or remote working, using email and video or audioconferencing to reduce close contacts, legally enforced distancing between customers in shops and markets, using counter shields and personal protective measures and preventing mass gathering weather social, religious, or political. On personal level, community outreach on personal safety and hygiene should be continuously announced by Palestinian media which include washing hands with soaps and water for 20 seconds, avoid touching nose and eyes with the hands, putting on masks when going out of homes and in public places and continuously disinfect surfaces in home and workplaces. By writing this report the number of cases in Palestine is escalating which necessitate putting on

strict preventive measures once again after three weeks of lifting it (Alaraby, 2020).

Conclusion

The Palestinian government took strict health measures at the beginning of the outbreak, and succeeded in containing the outbreak. The serious effects on national economy affected the Palestinian society, forced the government to lift the lockdown. The public unawareness on keeping preventive health measures recommended by the government caused escalating in the spread of the disease in many areas of the country. Community outreach is essential to follow the strict health recommendations, this proves that any strict measures implemented by the government will not tackle the spread of COVID-19 unless public awareness is raised. More research should be carried out on the impacts of COVID-19 epidemic on Palestine national security, economy, health, and education. Recommendations from experts in various fields to put innovative ideas on how to treat the unintended negative impacts on community level in order to recover all sectors from the epidemic.

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