Short Communication

Unique situation of Gaza Strip dealing with COVID-19 crisis

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A B S T R A C T

Infected COVID19 cases continue to increase, having already reached 21 million globally, attracting scientists around the world to trying to find a possible vaccine. Unlike many places around the world, movement restrictions and difficulties in travelling in and out due to a 13-year-old blockade with no possibility for tourists to travel in, has benefited Gaza in terms of being self-isolated and less likely to have many travellers or foreigners carrying the virus and infecting the population. First cases were discovered on 22 March 2020, and by 05 July 2020, there were still only 72 cases confirmed, 60 of whom were successfully treated, 11 active cases, and only 1 death. Constructively, this study follows a direct observation approach with in-depth disk review for data collected locally from official sources (Governmental bodies, UN agencies, and INGOs); concrete context analysis is then made and used toward predicting the potential risk scenarios associated with COVID19 supported by the application of a simple risk matrix for each scenario within a limited time frame covering the period from 22 March to 05 July 2020. Three different risk scenarios associated with COVID19 risks were studied and analysed towards understanding exceptional circumstances surrounding Gaza along with potential mitigation measures executed and suggested.

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Introduction

Unlike many other parts of the Middle East region, and particularly Egypt, Israel and the West Bank, cases of COVID-19 were not detected until 22 March 2020 in the Gaza Strip. On that particular day, the first two cases of Palestinians travelling from Pakistan, arriving in Gaza through its southern border with Egypt, tested positive for the virus (UNOCHA, 2020). Such a delay is most likely related to the restricted movement of Palestinians to and from Gaza, due to the imposed blockade leaving the residents with only two crossing points, in the north with Israel (Eretz) and in the south with Egypt (Rafah), experiencing severe movement constraints at both crossing points.

Located on the south-eastern side of the Mediterranean Sea, and housing 2 million Palestinians in only 365 km² area of land, the Gaza Strip is considered to be one of the most densely populated urban areas around the world with nearly 5,479 persons per square meter (Anon, 2017). Being overcrowded with very limited resources along with being besieged for 13 years by Israel severely affects Gazans’ daily life, including economy, education, healthcare, and other aspects of life. The healthcare system in the Gaza Strip is already overstressed, and has significantly deteriorated through the repeated rounds of violence with Israel in 2009, 2012, and 2014 alongside other random escalations in 2018 and 2019, Great March of return, not to mention the impact of blockade, internal division between Palestinians, and the overall unrest situation as well as limited resources and medical supplies (Mills et al., 2020). As such, the healthcare system is at huge risk with the COVID-19 outbreak emergence giving such a complicated situation, especially with whole world being under crisis and the extreme demand of health service and special protection measures and equipment needed to respond to the pandemic situation. The respiratory infection associated with COVID-19 where most of the patients experience severe acute respiratory infection, distress, hypoxaemia or shock leads to the essentiality of administrating immediate oxygen therapy through ventilators. Given Gaza’s complicated situation with only 70 ICU beds equipped with ventilators, ever since the discovery of the first COVID-19 cases in 22 March 2020, local authorities represented mainly by MoH in coordination with ministry of interior affairs in Gaza took several...
measures aiming at preventing COVID-19 infection spread. From 22 March 2020 until 13 April 2020, 17 cases were confirmed, 10 of which were treated, 7 of which are still quarantined, and no fatalities were recorded. By 05 July 2020, 12533 cases were examined; 12461 were tested negative in addition to the 72 tested positive to COVID-19, one death was recorded and 291 are still quarantined. A few days before the discovery of the first two COVID-19 infected cases, the following measures were taken (Ministry of Health, 2020):

- Compulsory quarantine for all returnees to Gaza, either through Rafah crossing coming from Egypt or Israel through Eretz crossing, starting from 15 March 2020 in special quarantine centres designated for potential suspected COVID-19 cases for 14 days, extended afterward to 21 days.
- PCR test is performed for all quarantined cases 18–20 days from the first day of quarantine where the test was first performed.
- Five governmental schools per each governorate across the Gaza Strip (Gaza Strip consists of 5 governorates) were designated to treat cases suffering from respiratory diseases other than COVID-19.
- Suspend all outpatient clinics in all hospitals and stop all recent nonemergency surgeries as well as prohibiting inpatient visiting in hospitals.
- Stop all educational activities including schools and universities as well as reducing office working hours to the minimum for all non-medical non-security force public staff.
- Closure of all wedding halls, stop weekly mobile markets, prohibit all gathering events (e.g. parties, workshops, conferences, etc.) and prevent any form of crowdedness.
- Encourage all citizens to stay home and limit their movements to the minimum.
- All above mentioned measures are not limited to any particular date and are effective until further notice.
- On 25 March all mosques in the Gaza Strip were fully closed (Awkaf, 2020)

As such, this study aims at assessing and analysing the unique situation of Gaza (characterized by long lasting blockade with restricted movement, dense population, and political implications) in the light of COVID-19 spreading and outlining potential scenarios, both optimistic and pessimistic associated with control measures acting as responsive course of action.

**Methods**

This study follows the direct observation approach with in-depth disk review for data collected locally from official sources (Governmental bodies, UN agencies, and INGOs); concrete context analysis is then made and employed towards predicting the potential risk scenarios associated with COVID19 supported by the application of a simple risk matrix for each scenario likelihood determination and consequences identification within a limited time frame covering the period from 22 March to 05 July 2020.

**Results and discussion**

In this study, situation analysis was done based on risk assessment. Risk assessment is done by applying the risk matrix tool illustrated in Figure 1 and Table 1 (Garvey and Lansdowne, 1998) toward assessing potential risks acting as potential scenarios, identifying associated impacts for each risk, and suitable mitigation measures to be considered. The likelihood per each risk assumed is made based on local authorities’ mitigation measures taken, and impact is similarly identified.

![Figure 1. Risk matrix applied.](image)

Practically and as illustrated in Table 1, there are three potential scenarios with clear identified risks. The current situation, where only a few cases are discovered at the borders and then isolated and quarantined until recovery without being mixed in with the community seems to be the best-case scenario.

If widespread COVID19 occurs, measures taken by other countries like full social distancing, restricting movement, sanitizing, and other similar actions would not be that effective or even actionable in Gaza. This is mainly due to the demographic and geographical parameters where the population lives in extreme overcrowded areas (e.g. the eight refugee camps managed by UNRWA where an area of 0.52 square kilometres is the home of 85,628 persons/ more than 15,000 families, called Beach Camp (Anon, 2020c).

Obviously, the second scenario has been going on for nearly a month now and does not seem to impact the healthcare system badly, as things are under control. However, and despite the fact that such a situation seems to be positive on the health side, the restricted measures taken by the local authorities previously mentioned are highly affecting the lives of Gazans severely, as people are living in an exceptional situation presented by the closure of all education institutes including schools and universities, regular weekly markets are prohibited, public activities and gatherings are not allowed, etc. Consequently, and due to protective measures taken by local authorities, thousands of daily paid workers, street vendors, fishermen and farmers, small scale business owners, and others have either lost their income fully or partially or have their livelihoods at high risk. Some aid was provided by international organizations and external donors but it is far below population needs. According to the Palestine’s state of emergency COVID response plan announced by Palestinian Authorities in Ramallah, the economic losses across Palestinian territories are expected to reach $2.8 billion (The State of Emergency Palestine’s COVID Response Plan, 2020).

It should be taken into account that the second scenario is less likely to develop or to roll over to the first scenario compared to the third one. Sustaining this particular scenario may act as an exit strategy where not only the local authorities’ measures are sustained but also coping mechanisms are developed across the past years of isolation and the besieged of the population are employed. Associated low-income, restricted movements, low quality public services, sequence of wars and emergency incidences, and other long-term difficulties faced by the population contribute positively to comply smoothly with restricted measures imposed by the authorities to respond to the COVID19 outbreak, perhaps for a longer period than any community across the globe. On the other hand, sustaining protective measures associated with the second scenario are highly recommended but the longer they go, the more economic burden is felt by the population. Therefore, and based on the situation developing towards COVID19 containment in Gaza, gradual easing of these
measures with close monitoring can be also applied for a short-term period while weekly evaluation is to be conducted by authorities.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. This study was not funded by any external or internal party.

Ethical approval

The study does not involve the use of human or animal subjects in any way (e.g. experimental data, interviews, etc.). Therefore, Medical or Helsinki declaration are not required nor needed.

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Table 1
Potential risks and predicted scenarios development.

| Risk priority | Potential risk/scenario | Likelihood/impact | Consequences | Control measures |
|---------------|-------------------------|------------------|--------------|-----------------|
| R1            | Covid-19 Pandemic widespread – infection widespread into the cities of Gaza Strip (infected cases are in hundreds per day with or without fatalities) | Possible/high | - Thousands of infected people with various levels of severity - Unknown no. of fatalities on a daily basis. - Complete failure of healthcare system - Complete failure of governmental system with massive economic collapse. - Extreme violence & civil unrest with massive flee of civilians towards Israeli and/or Egyptian territories - Absence of medical supplies - Absence/shortage of food and non-food items and supplies | - Full closure with imposed comprehensive curfew and isolation of cities by restricting all movements. - Emergency appeal to provide external urgent support. - Coordination with Egyptian Authorities to establish a large-scale quarantine centre inside Egypt, a few kilometres away from the borders to host infected patients for treatment. |
| R2            | COVID-19 cases detected on borders – cases continue to be detected on borders and quarantined then healed without spreading the infection into the cities | Likely/Medium | Deterioration of public services (e.g. municipal, education, etc.) - Tens of infected people with various levels of severity detected and isolated in quarantine centres. - Few or no fatalities. - Stressed healthcare system and potential lack of services in the long run. - Limited economical activities with continuous suspension and closure of schools and universities. | MOH previously mentioned measures (Abdulla et al., 2017). |
| R3            | Limited spreading of COVID-19 – some cases infect number of people outside quarantine centres (infected cases are in tens per day with very few fatalities) | Possible/Medium | Stressed and burdened public services. - Tens of infected people with various levels of severity detected and isolated in quarantine centres. - Few or no fatalities. - Stressed healthcare system and potential lack of services on the long run. - Limited economical activities with continuous suspension and closure of schools and universities. | - Partial closure with imposed curfew & isolation of infected areas as well as restricting all movements. - Emergency appeal to provide external urgent support. - MOH previously mentioned measures (Abdulla et al., 2017). |