



## ORIGINAL ARTICLE

# Contact Tracing for COVID-19 Outbreak in Bahrain: Resource Allocation and Use of Non-health Volunteers

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### Abstract

The Disease Control Section in the Public Health Directorate is responsible for contact tracing amid the Coronavirus Disease-2019 (COVID-19) pandemic. The Section recruited volunteers to strengthen their contact tracing team. Moreover, a nationwide call for volunteers was ignited in order to support the groups with vigilant case investigation and tracing in order to limit the spread of the infection in the community. This viewpoint report shares the experience of the disease control section with the COVID-19 pandemic in 2020, shedding light on the use of non-healthcare background volunteers and their roles in contact tracing. The utilization of volunteers during outbreaks and emergencies helped multiple entities to continue their operations and thrived through expanding themselves into teams and units. Regardless of the skills and backgrounds of the volunteers, they were allocated efficiently according to their area of interest. This experience indicates that a sustainable volunteer pool is valuable to have, even in non-emergency occasions.

**Keywords:** COVID-19, Contact tracing, Coronavirus, Disease outbreaks, Volunteers

### Introduction

The Kingdom of Bahrain is one of the Gulf Corporation Council countries. The health care system in Bahrain is provided mainly through the public sectors, which is funded by the government and is free of charge at the point of care. The public health care system comprises of three parts: primary care, secondary care, and tertiary care. The public health directorate is an essential part of the ministry of health.

Disease Control Section (DCS) is one of the main sections in the Public Health Directorate (PHD), and it is composed of five Groups: Communicable Disease Group, Non-Communicable Disease Group, Immunization Group, Anti-Smoking Group, and Occupational Health Group. DCS is the Section that followed the communicable disease routinely and during outbreaks or pandemic through the communicable disease group. DCS had played a major role in H1N1 (Influenza type A virus)

Pandemic in 2009, mainly in contact tracing and public preventative measures closing off the viral infection. Similarly, Coronavirus Disease-2019 (COVID-19) pandemic required immense preventative measures that would hinder the viral infection from infiltrating the community. The recent census in Bahrain demonstrates a population of over 1.7 million.<sup>1</sup> Bahraini community is social and well-integrated with each other, creating fertile soil for community transmission during a pandemic. Accordingly, DCS required substantial preparations preceding the first confirmed case, resulting in pivotal re-allocation of resources, including an assemblage of healthcare workers (HCW) from all groups within the Section.

## Method

Positive cases were extracted from the iSEHA (National Health Information System) business intelligence report for COVID-19 new positive cases. Close contacts were registered in iSEHA visit sheets at the testing center, this report was extracted from the Business intelligence Information report. Also, a master sheet with volunteers' major and date of joining was constantly updated.

This study was approved by the National COVID-19 Research Team, Kingdom of Bahrain.

## Results & Discussion

### *Contact Tracing & Early Cases*

The World Health Organization (WHO) recommended strategy to combat the COVID-19 spread is test, trace, and treat. Contact tracing is one of the WHO strategy pillars, which is easily done when there is mutual trust between the community and the health authorities. A cornerstone for the success of this strategy is community awareness.

Additionally, the WHO emphasizes on monitoring close contacts on a daily basis for any symptoms, even if the initial test is negative.<sup>2</sup> Certain countries depend on mobile applications to help them in contact tracing. These applications are beneficial to control the transmission by alerting individuals for possible contact of a positive case, and they mainly depend on the locations on mobile phones.<sup>3</sup>

Initially, the Section followed WHO outbreak news in China in late 2019. Based on early evidence, all

travelers coming from China were screened in the airport for symptoms and signs of COVID-19. If asymptomatic, they were kept in home isolation with daily follow-up through telephone calls from the DCS. If any symptoms arose any time during the 14 days of follow-up, the person was admitted to the COVID-19 treatment facility and tested by Polymerase Chain Reaction (PCR) testing. Strict measures were placed in the airport and seaport, in which all travelers arriving in the country were screened for fever and symptoms since late January. In February 2020, The Bahraini National Taskforce to Combat Coronavirus was formed.<sup>4</sup> Bahrain guideline to combat COVID-19 was issued and circulated to all health care facilities. All the healthcare workers were educated and updated about the disease through lectures and updated disease circulars. Before the first case in Bahrain, all the health care workers in public and private sectors had received a detailed circular and guideline of when to suspect COVID-19 and how to refer the suspected cases.

Late February 2020, the first confirmed positive case for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was reported.

The case was a 27-year-old Bahraini male arriving from Iran. The patient presented to the local health center with upper respiratory tract infection symptoms and reported a history of travel. As a result, the physician notified health authorities, and the suspected case was immediately isolated in Ebrahim Khalil Kano Center (EKK), a center that is well-equipped to manage suspected cases. A PCR test result confirmed the diagnosis, and all the patient's close contacts were tested negative. PCR screening was then initiated for all travelers arriving from Iran. About 85 Bahraini Nationals arriving from Iran reported positive within the same week. On March 11, 2020, WHO declared the COVID-19 as a pandemic.<sup>5</sup>

Initially, the DCS team in Public Health initiated the response system by vigilant methods of contact tracing. All arrivals from high-risk countries were tested in the airport and followed up by daily interviews to check on their symptoms. All close contact for positive cases were quarantined and

similarly followed daily for COVID -19 symptoms. Close contact tracing goes back to 14 days before the onset of symptoms or positive PCR test.

Initially, all positive cases were institutionally isolated in COVID-19 treatment facilities. As the number of positive cases increased, the Team required a surge in capacity to cope with the contact testing and tracing required.

Thus, alongside support from the Bahrain National Taskforce, a nationwide testing center was established to test contacts of positive cases, travelers, and any suspected cases.

### ***Resources and Activities***

The COVID-19 pandemic required immense surge capacity in all public health aspects.

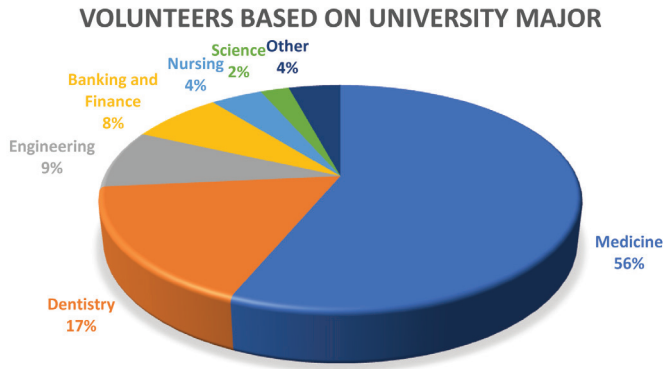
To elaborate, contact tracing is vital to control the spread of infection.<sup>6</sup> It is considered the first line of defense against the spread of the infection as it limits the virus spread. Close contacts were quarantined initially for 14 days, even if their initial swab was negative. The quarantine period altered later on to 10 days depending on the updated evidence about the infectivity of the virus and its incubation period, during which the individual might be carrying the virus without presenting any symptoms.<sup>7</sup> Therefore, close contacts are quarantined for that period, which was preliminarily measured as 14 days.<sup>7</sup> Contact tracing is one of the primary responsibilities of the disease control section in the public health directorate. All positive COVID-19 cases are notified to the public health responsible personnel. Immediately the case investigation is initiated. A detailed history is taken from positive cases, and all their contacts are listed. Contacts identified are subjected to a COVID-19 PCR test and quarantine. The Contact tracing team in public health was supported by a specialized COVID-19 contact tracing team in the Ministry of Interior (MOI). Initially, the investigation calls were three lines call, which comprised of the patient, investigator from public health, and investigator from MOI. This was proposed to ensure that each bit of the case

investigation were covered and to try to identify the source of infections. This process took a long time to finish the case investigation and was discontinued as the number of positive cases soared up. However, both the MOI and the public health contact tracing teams continued working together until now.

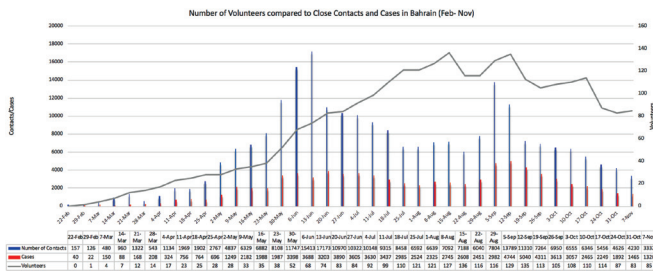
As the number of cases increased, the amount of work required overwhelmed the department. Ancillary staff was recruited from other departments to cope with the additional workload. The call for volunteers was announced nationally. The contact tracing team recruited many volunteers with a variable backgrounds, most of which were medical. Nonetheless, over 20% of volunteers had no medical background at all (Figure 1). All the volunteers received initial training on how to conduct case investigations and contact tracing. They work under close supervision by the public health specialist to ensure the comprehensive and smooth process of case investigation and contact tracing.

In May 2020, cases in Bahrain increased from an average of 100 cases per day to over 300 cases per day. As a result, the DCS team required an additional workforce to cover the escalated numbers, which were mainly non-Bahraini laborers at that time. A great proportion of volunteers joined the DCS team to help with contact tracing interviews and booking appointments. Afterward, cases surged even more than expected because of gatherings in the holy month of Ramadhan and Eid, and community transmission was prevalent. For this reason, the DCS team initiated sub-teams within the contact tracing.

Until now, the response team in DCS is largely dependent on volunteers, which volunteers comprise 91% of the workforce in the DCS response team. The Team continued recruiting more volunteers, in a direct proportionate with the surge of cases. Further, during the month of August, the Team peaked at 136 volunteers in comparison to 12 volunteers in March, which was intentionally done to cope with the workload (Figure 2).



**Figure 1:** A Pie-chart illustrating the distribution of volunteers based on their university major. The majority of volunteers were from Medical majors



**Figure 2:** A graph showing the trend line of volunteers in comparison to number of cases & number of close contacts per week from February – November 2020

**Hurdles & Filling the Gaps**

The majority of obstacles that DCS faced were revolved around human recourses, burnout, and volunteer turnover. Among volunteers, the average interval from starting work until leaving DCS was six weeks. This overwhelmed the core team and staff as it resulted in daily training for new volunteers to keep up with the work ethics and standards needed. As the universities reopened at the end of August and the beginning of September, recruiting volunteers with the medical background was difficult. The resumption of training programs, internships, and other job opportunities added to the difficulty of recruiting medical volunteers. Therefore, a major hurdle was training non-medical volunteers to perform history taking and list close contacts.

Secondly, balancing between routine work and COVID-19 response has been a challenge for the core public health team. Daily follow-up on surveillance for other notifiable diseases such as Tuberculosis, Human Immunodeficiency Virus, Mumps, Rubella, Hepatitis & others were carried

out.

Evidence for contact tracing at the early stages of COVID-19 were scarce. As the pandemic thrived, significant evidence was attained to develop technical and allocative efficiency. The guidelines placed by the Bahrain National Taskforce Protocol for COVID-19 were updated regularly as the evidence evolved. Continuous operational guidelines were being developed in DCS to match the protocol and to maintain the sustainability of work.

For example, the period of contact tracing was decreased to five days based on the maximum yield compared to resources used in May 2020. It was further decreased to two days in September 2020, except for mass gatherings, which could be traced back to five days.

Moreover, workshops were conducted weekly for investigators. These workshops gave an overview of the importance of contact tracing, providing the latest literature on how to determine the risk of contacts and illustrate the areas for improvement based on internal audits.

During September, another surge of positive cases happened, as there were multiple gatherings during the last week of August, which marked Ashoora. Positive cases per day had increased to above 600 positives for the month of September.<sup>8</sup> Correspondingly, additional volunteers were recruited to bolster the current Team and manage the demanding workload. Robust contact tracing is eminent regardless of the overwhelming cases; therefore, the Team distributed more cases to the volunteers and assigned team leaders to review the cases alongside them.

**Conclusion**

Adversity has shaped the Section’s resilience and progression. The experience of the Section was profound and one of a kind. Innovative utilization of human resources is vital during outbreaks, such as the experience in the DCS use of volunteers, especially those with limited medical knowledge. Various entities would benefit from the volunteer pool if stratified by interest. Sustaining this nationwide pool aids the organizations with scarcity

in human resources, and volunteers benefit from tremendous experience in their subject of interest.

### Disclosures

The authors declare no funding and conflicts of interest.

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