Contact Tracing During The COVID-19 Pandemic In District Health Directorate Example in Istanbul, Turkey

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Report

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Abstract

Background: After March 2020, with the first case of novel coronavirus, Turkish health care system switched to state of emergency to manage the COVID-19 pandemic. In order to control the pandemic, a scientific committee was established, guidelines were prepared, and filiation/contact tracing studies were started. Field investigation and isolation teams were established, and District Health Directorates (DHD) became frontline primary care organizations to manage contact tracing in Turkey.

Case presentation: In this report, pandemic management and contact tracing were evaluated in example of Kartal DHD from Istanbul, Turkey. The report contains the details about the planning process, Kartal DHD Pandemic Management priorities, aim and planning of this policy, coordination and cooperation with other institutes to overcome this extraordinary state. Also, evaluation of the contact tracing and telemedicine usage in the pandemic management is examined as well with future implications.

Conclusions: From the SWOT analysis to planning process, this report attempts to describe how this state of emergency was managed and how effective the contact tracing management process was. With its detailed key points of the pandemic management and future perspectives, it has been written in terms of preparation for the future pandemics.

Background: State Of Emergency

Covid-19 was first identified in December 2019 in China and subsequently spread to the rest of the world. As of March 2020, the month in which the first Covid-19 case was seen in Turkey, the healthcare system has shifted from its routine operating system to a state of emergency. Immediately after the first positive case in the country, guidelines with algorithms were published for primary, secondary and tertiary centers. District Health Directorates (DHD) were given the job of contact tracing. The necessary information for the management of the pandemic is provided through frequently updated guidelines (1, 2). Like all other provincial organizations, the main priority of Kartal DHD is the management of the Covid-19 pandemic after March 2020. People with positive PCR tests were declared as a confirmed case and isolated for 14 days. Close contacts of positive cases were identified and kept in quarantine for 14 days, while in the fall of 2020, the isolation period was reduced to 10 days due to recent studies. As of end of May 2021, the quarantine period was extended to 14 days again in order to prevent the pandemic from getting out of control again because of the new mutations and the time required for vaccination process.

The District of Kartal and The Organizational Structure of the District Health Directorate

The district of Kartal is located in the southeastern portion of Istanbul, the most populated city in Turkey. The population of Kartal is 474,514 and it is the 12th most populated out of Istanbul's 39 districts. (3, 4) There are 20 neighborhoods and 2186 streets in Kartal. (3) There are 12.386 people per square meter, and population density is above the Turkish average (2.842). (4)

There is a full-fledged public hospital, a specialty research hospital, an oral dental health clinic and six private hospitals in Kartal. Due to the strong and well-equipped healthcare system, there are admissions from neighboring districts to the healthcare facilities in Kartal.

The District Health Directorate monitors services provided in primary care and is the local authority on administrative matters regarding health. The regulation, execution and inspection of all health services falls under its purview. It is responsible for planning against, managing and reporting anything that threatens public health. The containment of communicable diseases, one of its fields of activity, has become the most important field of activity during the Covid-19 pandemic. Contact tracing is organized and conducted by DHDs for past 18 months.

Case Presentation: Kartal Dhd Pandemic Management

First Step: Priority, Aim and Planning:

After 11 March 2020, Kartal DHD aimed to set up the necessary infrastructure and reach all Covid-19 patients on the HSYS Kartal district list, start medication if indicated, make sure the patient gets the appropriate treatment, give information about isolation rules and keep the pandemic under control in the provincial level. In addition, contact tracing of positive cases was aimed to be completed within 24 hours. Meetings were held regularly to identify problems, make rapid decisions as needed and to implement new interventions when necessary. Pandemic management at Kartal DHD are summarized in steps in Table 1.

Table 1
Pandemic Management Planning Steps of Kartal DHD

- The formation of the pandemic management teams
- A meeting to inform the staff about Covid-19
- The formation of the central team to coordinate between field teams
- Educating the field teams about PCR samples via the guidelines
- Checking the adequacy of personal protective equipment in regular intervals
- Coordinating with City Health Directorate, District Police, District Educational Directorate, District Governorship, Mukhtars/Local authority, and Municipality
- Keeping track of Ministry of Health guidelines updates
- The pandemic administrative management team which consists of the director, branch manager, public health specialist, and general practitioners, being in constant contact regarding the current situation
- The constant tracking of test kits and the medicine sent by the ministry of health (first Hydroxychloroquine then Favipiravir) stocks
- Reinforcing field teams when increases in case numbers
- Increasing the number of vehicles and drivers to shorten contact tracing time
- Increasing field team numbers, educating personnel from other departments
- The formation of central calling teams to confirm the validity of addresses given by patients, questioning contacts, and learning the patients' medical history to help the physician decide whether or not to give medicine
- Establishing new ways to answer questions and requests from citizens (e-mail accounts, messaging applications on smartphones etc.)

The most important resource for contact tracing is qualified healthcare workers, followed by personal protective equipment, testing kits, and transport vehicles.

Program Design and Implementation

There are a total of 140 staff in Kartal DHD, with 72 regular staff and 68 assigned to the directorate due to the pandemic. It changed during the past year, especially at the peaks of the waves and restricted periods, but in Table 2, it shows the staff at the date of May 2021. In addition to staff, vehicle numbers have also gone up, from 4 in the beginning of 2020 to 13 in the second quarter of 2020 and 26 at the end of 2020, 39 at 3rd wave's peak in March 2021 and 8 again in June 2021.

Table 2
Distribution of Kartal DHD Staff (May 2021)

Kartal DHD Staff	Total: 140
Administration	4
Doctor (specialist / general practitioner)	27 (4/23)
Dentist	5
Pharmacist	2
Psychologist	2
Dietician	2
Midwife	28
Nurse	17
Other Healthcare Workers	57
Assignment	Total: 68
Dentist (Specialists as well)	35
Other Healthcare workers	33

Table 2
Distribution of Kartal DHD Staff (April 2021)

Kartal DHD Staff	Total: 140
Administration	4
Doctor (specialist / general practitioner)	27 (4/23)
Dentist	5
Pharmacist	2
Psychologist	2
Dietician	2
Midwife	28
Nurse	17
Other Healthcare Workers	57
Assignment	Total: 68
Dentist (Specialists as well)	35
Other Healthcare workers	33

Coordination, Cooperation and Motivation

Coordination and cooperation are of vital importance in extraordinary situations such as the Covid-19 pandemic we are in. Up-to-date decisions of the Ministry of Health regarding pandemic management were regularly shared with DHDs by the City Health Directorate, and an expert was appointed for each district by the provincial administration, in addition to interactive meetings. In this way, the necessary communication was established in a short time, even in non-work hours, and the problems were resolved. Field investigation teams consisting of non-healthcare personnel (imam, mukhtar/headman, police,

etc.) who monitor the compliance of patients and their contacts with the isolation rules, in addition to the contact tracing teams, contributed to the control of the pandemic. In addition, cooperation with institution managers in institutions affiliated to the Directorate of National Education and the prompt detection of cases ensured that the pandemic was controlled in schools. The people and organizations with which DHD cooperates are summarized in Table 3.

Table 3
People and Institutions DHD collaborates with

Ministry of Health	Central authority
Istanbul City Health Directorate	All resource management such as supply of equipment, supply of medication, distribution of kits, providing supervision and chain of command
Kartal District Governor's Office	Providing vehicles and drivers
Kartal Education Directorate	Providing the necessary contact with educational institutes
Kartal Police Department	Control of adherence to isolation
Mukhtars and Imam-Hatips	Control of adherence to isolation
Kartal Oral and Dental Health Center	Reinforcement of DHD field teams through assignments
Family Health Centers	Following up risky patients via telemedicine, vaccination center
Other Health Institutions	Increasing contact tracing personnel through assignments

Telemedicine in the Health System and Pandemic Management

E-government (*e-devlet*), electronic information management system (*E-BYS*) and related software is used in all healthcare centers in order to comply with the effort to digitalize government. During the pandemic, a case tracking module integrated with the Public Health Management System (*Halk Sağlığı Yönetim Sistemi-HSYS*) software was launched and is updated every day (5). Ordering samples, writing progress notes, contact tracing, tracking of isolation periods are all done through this software and website by staff with authorization. In addition to this, a mobile application integrated to the HSYS system was developed, called Contact Tracing Tracking System (*Filyasyon Takip Sistemi-FİTAS*). This application allows contact tracing teams access the contact tracing system, check adherence to isolation and give isolation/quarantine report to people while in the field.

Alongside these, DHDs can track their district contact tracing statistics via the Statistical and Causative Analysis in Health (*Sağlıkta İstatistik ve Nedensel Analizler-SİNA*) website and Spatial Business Intelligence Application (*Mekansal İş Zekası Uygulaması- MİZ*) (6, 7).

Discussion: Evaluation

At the end of each day, the numbers related to the contact tracing of that day are conveyed to the city health directorate's specialist in charge of the district, including details (Table 4).

Table 4
Kartal DHD Daily Contact Tracing Chart

1. Number of cases that were traced
2. Number of traced contacts (including contacts carrying over to the next day)
3. Carried over cases
4. Carried over contacts
5. Number of contact tracing teams for that day (Field teams + central teams)
6. Total number of contact tracing teams (Field teams + central teams)
7. Total number of vehicles
8. Total number of drivers
9. Total number of tests taken that day during contact tracing (tests from contacts + tests from 5-10 day follow up patients)
10. Total number of addresses visited that day
11. Total number of patients given medication that day

In addition to these data, each district can see the average time to reach the cases, the average time to reach the contacts, the average number of contacts per case, the average distance in meters from which the case and the contact's tracing were finished from FITAS app, on the SINA website.

Key Findings: SWOT Analysis

The evaluation of the characteristics of Kartal DHD in pandemic management are given in Table 5 where it shows the strengths, weaknesses, opportunities and threats.

Table 5
Kartal DHD Pandemic Management SWOT Analysis

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ● There are multiple authorized and auxiliary personnel for the division of labor and management in the district organization. ● The district health director is an experienced manager. This ensures that management takes the right steps in a timely and consultative manner. ● Communication in the Directorate is provided by a closed-circuit telephone line. There is also a direct line with the City Health Directorate. FITAS has its own telephone line to contact with the patients. ● The Directorate is in a central location, in the Government House building. ● Meeting with the City health directorate every week is important for good communication, meeting demands and providing the necessary support. ● The Ministry's announcement that it would make additional payments to the contact tracing teams increased the motivation of the personnel. 	<ul style="list-style-type: none"> ● There are not enough trained/qualified personnel in this district to adapt to the pandemic conditions. It was necessary to appoint physicians, midwives/nurses and dentists for field teams. ● District Health Directorate has many responsibilities apart from pandemic management. Moreover, the ministry had not stopped following up on these duties, and frequently awaits evaluation and reporting. ● Under normal conditions, the Directorate does not have personal protective equipment, drugs, or sample kits in its own warehouse, so it is totally dependent.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ● The lack of personnel can be easily resolved by assignments from the oral and dental health center, various hospitals, and municipalities. In addition, vehicle reinforcements for the field teams were made by the district governor's office. ● Increasing the personnel in the form of assignments of health workers, reducing the workload and resting the existing personnel with flexible overtime ensure that the personnel remain strong against the pandemic. ● Providing contact tracing services to foreign people is provided through the translator line of the Ministry of Health, which can be used 24/7. 	<ul style="list-style-type: none"> ● Because the Directorate does not have its own personal protective equipment stock, and has a shortage of personnel, if it cannot quickly amass the necessary workforce with the necessary equipment, personnel shortages and service disruptions may occur. ● The intensity of the workload, communication problems, the stress brought on by the intensity sometimes causes violence. This situation is not uncommon for Turkey, unfortunately. The Ministry of Health awaits the implementation of certain laws. However, the teams working in the field do not have security support against possible risks when faced with angry citizens. In some cases, the citizens may react to the staff. This situation reduces the motivation of the staff. ● Since all personnel are assigned to services related to contact tracing and pandemic, there may be foreseen and unforeseen disruptions in the provision of health services.

Conclusion And Recommendations

Policy implications:

The Covid-19 pandemic is well managed by the district health directorates in Turkey, especially in primary care. However, in such an outbreak, a permanent solution may be possible with a vaccine with proven effectiveness. At this stage, it is

important to obtain vaccines and to vaccinate the population quickly. (8)

The first year of the pandemic has been completed, and in this process, the dedication of the contact tracing teams has been effective in the pandemic management and control efforts. However, in the prolonged pandemic, health workers had to work with sudden assignments outside of their usual places of duty. It is inevitable that this situation will cause anxiety as time progresses. For this reason, it is important to keep strong communication with the field and to rest the staff to keep their motivation strong.

In addition, parameters used to evaluate success of district pandemic management such as from how many meters were contact tracings performed, in how many hours was it performed, the number of contacts added, the percentage of tests taken from contacts, percentage of patients given medication do not provide quality information on how the pandemic is managed in a district. Variables like the area, population, distribution of the population, the presence of hospitals within the district, number of staff of the DHD, the presence or lack of adequate equipment are different for each district. These differences make it difficult to compare the data. In addition, people who cannot be found in the field even if they go to their address, whose official registered residence (MERNIS) address and declared address are different from each other, whose contact addresses are recorded incorrectly / incompletely, as well as foreign nationals who do not have any contact information are the problems that await solutions.

Since the beginning of the pandemic, the algorithms published by the Ministry of Health regarding diagnosis, treatment and contact tracing have been resources that have facilitated the operation in the field. (1, 2) Continuing the implementations in accordance with the algorithms determined by the central government will ensure the standardization of the services provided and will increase the confidence of the citizens in the service. In order to end the pandemic, we need to accept that in addition to providing vaccines in an accessible way all over the world, mask, distance and hygiene measures should be a part of our lives from now on. With the new normal paradigm, it seems that we need to be more prepared for the new epidemics that we will encounter in the future. For this, all of society and scientists must be prepared. In order to be prepared for epidemics, detailed due diligence and forward-looking expansions are important.

Declarations

Ethics approval and consent to participate

The report was declared to and approved by the Ministry of Health and conducted according to the guidelines laid down in the Declaration of Helsinki.

Consent for publication

Not applicable.

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

İHA and MMÖ interpreted the data regarding the contact tracing programme. İHA drafted the manuscript. YA and MMÖ revised it critically and contributed with important intellectual content. Both İHA, MMÖ and YA approved the final version of the manuscript.

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