# Lessons learned from the COVID-19 pandemic crisis management in the Gaza Strip: A qualitative study.

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## Abstract

*Aims of the study: The main aim of this study was to discover the lessons learned from the COVID-19 pandemic crisis management from health policymakers' perspective in the Gaza Strip. Methods: The researcher used a qualitative design, targeting 25health policymakers using a purposeful sampling technique and face-to-face semi-structured interviews to collect data. To analyze the interview data, the directed qualitative content analysis approach was used.*

*Results: All interviewees agreed that the Palestinian Ministry of Health (MoH) managed the COVID-19pandemic well despite the insufficient resources and lack of experience. More specifically, the average of most participants' assessments of Palestinian MoH "Preparedness" for the COVID-19 pandemic was 81%, and for "Response" was 83%. This study revealed 42 lessons learned with different frequencies (12 General lessons learned, 12 Lessons learned related to COVID-19 crisis management, five Lessons learned related to MoH administrative structures and components, seven Lessons related to staff and resources, and six Lessons learned related to IT and health information systems). Recommendations: The study recommended activating and enhancing the role of the Palestinian Public Health Emergency Operation Center (PHEOC) and doing further research in health crisis management.*

***Keywords: COVID-19, lessons learned, pandemic, health policy-makers***

## 1. Introduction

Nowadays, the international banner of preparedness against unexpected events, mainly the preparedness of hospitals, puts the highest disaster management at all levels, particularly in disaster-prone countries (Jadalla A, 2019). As stated in the report on the United Nations Website, it was a challenging year for the whole world due to the COVID-19 pandemic. However, the difficulty was more exceptional in densely populated settings, such as the Gaza Strip (GS).

The GS has been suffering from closures and restrictions on movement imposed by Israel for decades, high unemployment rates and poverty levels, the fragility of health systems, and the lack of equipment caused the central laboratory to be completely out of service for periods where no tests were ever conducted (Abu-Samaan, 2020).

GS had never been exposed to such a pandemic and had no prior experience managing or controlling a similar crisis, so it took benefits from what other nations had to do and adopted stringent preventive measures to contain the pandemic as mandatory quarantine, controling borders/partial and complete lockdown, screening and surveillance, communicating with the public, and providing protective equipment (Abu-Odah et al., 2021). According to (Salah, 2022), the Palestinian Ministry of Health took many measures and decisions to enhance the health system's ability to respond to the pandemic and sustain the medical service by involving non-governmental health sectors and medical centers affiliated with international and civil organizations, in addition to establishing field hospitals and transforming the service of some medical facilities and centers.

There are four major healthcare providers in GS: the MOH, United Nations Relief and Work Agency (UNRWA), non-governmental organizations (NGOs), and private for-profit providers. MOH provides primary, secondary, and tertiary health services and purchases unavailable tertiary health services from domestic and abroad providers. UNRWA provides primary care services, only for refugee and purchase secondary care services for hardship cases. NGOs provide primary, secondary, and some tertiary services. The private for-profit sector provides the three levels of care through a variety of specialized hospitals and investigation centers (WHO, 2022).

The number of government hospitals in the Gaza Strip is 16, including seven main hospitals in the governorates. The total number of beds is 3053, including 591 beds for internal medicine, 278 emergency beds, and 158 care beds, according to the Health Cluster report. (Health Cluster-OPT, 2018). As for the reports of the General Administration of Hospitals,

the researche found that the average number of beds allocated to COVID-19 in hospitals was 583 normal beds, with 64 intensive care units (ICU) beds, and that the total oxygen produced from oxygen generating stations in all hospitals was 12970 liters/minute, which was not enough for large numbers of care during the periods of increasing numbers of critical and moderate cases that needed oxygen (General Directorate of hospitals- MOH, 2022)

According to the report of the Palestinian Ministry of Health, the total infected people with COVID-19 reached 271.426 people, and the number of deaths was 2004 since the beginning of the pandemic in the Gaza Strip, noting that the active cases were in the thousands, and the intensive care often witnessed the filling of the majority of the beds in light of the deficit in medical capabilities and the oxygen produced from oxygen generating stations in hospitals (Unit of information system-MOH, 2022)

For this, it was necessary to know and evaluate the performance of the Ministry of Health scientifically and determine the lessons learned so that policymakers could make decisions on how to manage similar crises in the future.

## 2. General objective

The general objective of this study was to discover the main lessons learned from the COVID-19 pandemic crisis management from health policymakers' perspective in the Gaza strip.

## 3. Specific objectives

1. To recognize the general assessment of COVID-19 pandemic crisis management from health policymakers' perspective in the Gaza Strip.
2. To assess the preparedness and response of Palestinian MoH for the COVID-19 pandemic crisis 19 pandemic from health policymakers' perspective in the Gaza Strip
3. To set recommendations according to the lessons learned during managing the COVID-19 pandemic crisis from health policymakers' perspective in the Gaza Strip.

## 4. Questions of the study

1. How was the general experience of the MoH in managing the COVID-19 crisis?
2. What is the assessment of Palestinian MoH preparedness and response in managing the COVID-19 crisis?
3. What are the main lessons learned during managing the COVID-19 crisis?

# 4. Literature review

## 5.1 Health policymakers and health crisis management system in the Gaza Strip.

The term Crisis management "CM" is a set of efforts, which respond to emergencies and deal with the difficult situations associated with them. It aims at reducing losses, urgent assistance, ensuring an effective and close recovery period, and taking into consideration the period of recovery (Pathirage et al., 2012)

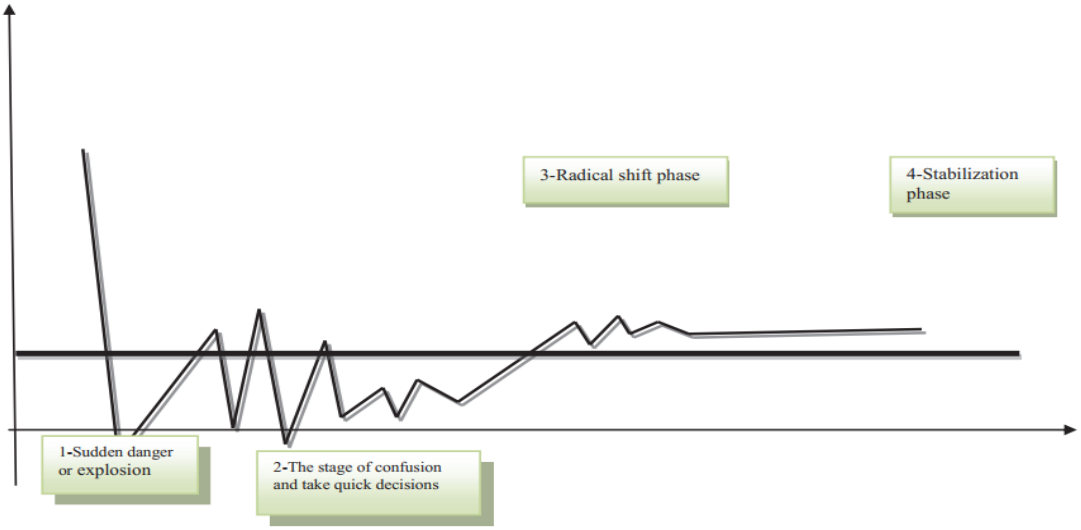


**Figure 1: The basic dimensions of the crisis, (Alsamaray, 2014).**

Managing the health system with its facilities, hospitals, and staff, as well as health policies in it in normal and emergency conditions, requires an administrative and technical structure that includes various experiences and bodies to achieve sound and integrated management of the health system, especially that the process of preparedness and response to various health emergencies also needs an integrated emergency management system. Therefore, the Ministry of Health includes within its structure various committees, each with its powers and tasks to manage health emergencies, whether in the governmental or non-governmental sectors. (PHEOC, 2022). These committees include:

### A. The Higher Health Emergency Committee

is a ministerial committee with full powers to manage the health sector before and after the event by setting plans and ensuring the health sector's readiness for the emergency in the Gaza Strip - Palestine. It is headed by the Minister of Health or whomever he designates (MOH, 2018).

**Tasks of the Committee**

1. Adopting, updating, and approving plans, programs, policies, and procedures to reduce the risks of crises or disasters.
2. Assisting in the establishment of an integrated system for preparedness and preparation for the management of health emergencies.
3. Ensuring the readiness of the health emergency committees in the governorates and public administrations in the Ministry of Health
4. Distributing important emergency files to different departments and units.
5. Communicating with civil and non-governmental health institutions to determine their role in the emergency plan.
6. Evaluating performance, monitoring of gaps, and drawing lessons and lessons learned from the event and the crisis after the emergency to avoid and avoid future dangers(MOH, 2018).

**Table 1: The Higher Health Emergencies Committee (MOH, 2022)**

| | | |
|---|---|---|
| **1.** | Minister of Health | President |
| 2. | Deputy Minister of Health | vice president |
| 3. | Assistant Deputy Minister (2) | member |
| 4. | Heads of the health emergency committees in the governorates (5) | member |
| 5. | Director of the Health Emergency Operations Center | member |
| 6. | Director-General of Financial Affairs | member |
| 7. | Director-General of Administrative Affairs | member |
| 8. | Director-General of Hospitals | member |
| 9. | Director-General of pharmacy | member |
| 10. | Director-General of Primary Care | member |
| 11. | Director-General of International Cooperation | member |
| 12. | Director-General of Engineering and Maintenance | member |
| 13. | Director of the Public Relations and Media Unit | member |
| 14. | Director-General of Internal Monitoring | member |
| 15. | Director-General of Ambulance | member |
| 16. | Director-General of Nursing | member |
| 17. | IT unit manager | member |
| 18. | Laboratory unit manager | member |
| 19. | Health information systems unit manager | member |
| 20. | Director-General of Mental Health | member |
| 21. | Director-General of Human Resources Development | member |
| 22. | Another stakeholder –as needed- like WHO | member |

## B. Health Emergency Committee Authority:

The mini-committee emanating from the Higher Health Emergency Committee remains in a permanent session. Its task is to manage the emergency and respond according to the plan that has been prepared, deal with any developments, supervise the health emergency committees in the governorates, and follow up on the work progress in the Ministry of Health. (MOH, 2022)

**Tasks of the Committee**

1. Managing the state of health emergency and managing all services provided by the Ministry of Health.
2. Supervising the work of the emergency health sub-committees in the governorates and the committees of hospitals and primary care following the emergency plan and monitoring the development of its degree of severity and scenarios for the crisis.
3. Providing medical supplies and logistical support to all governorates and regions.
4. Managing the health and emergency information file.
5. Communicating with local and international authorities.
6. Managing and following up on the file of donations, storage, distribution, and support for all governorates
7. Managing media discourse in Arabic and English
8. Issuing administrative, technical, and tactical decisions to manage health emergencies.
9. Communicating daily with the provincial committees to follow up the workflow in the health facilities in the governorates, including hospitals, care centers, and ambulance centers.
10. Managing the coordination file with donors.
11. Managing and following up the file of damages to health facilities, hospitals, ambulances, and transportation(MOH, 2018).

**Table 2: Health Emergency Committee Authority members:**

| | | |
|---|---|---|
| 1. | Minister of Health | President |
| 2. | Deputy Minister of Health | vice president |
| 3. | Assistant Deputy Minister (2) | member |
| 4. | Director-General of Hospitals | member |
| 5. | Director-General of Primary Care | member |
| 6. | Director of the Health Emergency Operations Center | member |
| 7. | Director-General of International Cooperation | member |
| 8. | Director-General of Administrative Affairs | member |
| 9. | Director-General of pharmacy | member |
| 10. | Director of Public Relations and Media Unit | member |

**C. Health Emergency Sub-Committee in the governorate:**

It is the committee responsible for managing health work in the governorate during the emergency period by coordinating and facilitating the work of health institutions in the governorate and supervising the implementation of the emergency plan that has been prepared. The reference of this committee is the Health Emergency Committee .(PHEOC, 2022)

**Tasks of the Committee**

1. Supervising the implementation of the health emergency plan that was prepared and approved in advance.
2. Communicating with government agencies, "the Governorate Emergency Committee" and relevant non-governmental agencies during emergencies to integrate efforts and coordinate work in emergencies.
3. Submitting a daily report to the Health Emergency Operations Center regarding the progress of health work in the governorate.
4. Optimum utilization of the resources and capabilities available in the health sector in the governorate to respond effectively and ensure the availability of basic health services during the emergency period.
5. Managing human resources by organizing them, defining their tasks, redistributing them, and directing them to respond effectively to health emergencies in the governorate according to the approved plan.
6. Facilitating the access of workers, especially doctors, and nurses, to hospitals and health centers.
7. Coordinating and networking with health institutions in the governorate.
8. Supervising the corpse handling committee by ensuring the implementation of the corpse handling plan, availability of tools and supplies, and submitting periodic reports.
9. Supervising the work of the documentation committee.
10. Following up the documentation committee's plan and determining the human and material needs for implementation.
11. Submitting daily reports on the numbers and names of the martyrs, the injured, the targeted medical staff, and the damage caused to health institutions and ambulances in the region through continuous communication with the emergency departments of hospitals, checking the data and submitting it to the Health Emergency Committee. (MOH, 2022)

**Table 3: Health Emergency Sub-Committee in the governorate members:**

| | | |
|---|---|---|
| 1. | Chairman of the health emergency committee in the province | President |
| 2. | District health manager in primary care | vice president |
| 3. | Hospital directors in the governorate | member |
| 4. | A representative of the military medical services | member |
| 5. | Ambulance and emergency officers in the province | member |
| 6. | A representative of the civil institutions in the governorate | member |
| 7. | A representative of the relief agency | member |

**D. COVID-19 health crisis committee**:

It is a committee created after the announcement of the emergence of the COVID-19 pandemic globally, responsible for managing the health crisis of the COVID-19 pandemic and implementing health policies in the governmental and non-governmental health sectors related to the COVID-19 pandemic.(Salah, 2022)

The COVID-19 health crisis committee includes:

1. All staff members of the Health Emergency Committee
2. The heads of the health committees in the governorates of the Gaza Strip (5)
3. Experts and members of international health institutions -as needed- (Salah, 2022).

## 5. Methods

In this study, the researcher explored the perspectives of health policy-makers on the preparedness and response of Palestinian MOH for the COVID-19 pandemic which involved complex operational situations, involving managerial and technical aspects, and resources management (i.e., Staff, laboratories, funding, medications, etc.).

The qualitative description appeared to be the best method for this study for several reasons. First, there was no information available regarding the viewpoints of health policymakers on the readiness and response of the Palestinian MOH to the COVID-19 pandemic in GS. Second, it provided a broader and more flexible scope to gain more information and did not not restrict the interviewers. (Cronin et al., 2014)

Third, the researcher sought to maintain a basic comprehension of the attitudes and viewpoints of policymakers, for which a qualitative description was appropriate. The qualitative description also enabled a thorough and rich consideration of the information, worries, challenges, and lessons learned regarding the event. The researcher intended to maintain a basic understanding of policymakers' viewpoints and opinions, which was well-suited to the qualitative description. (Abu-Odah et al., 2022)

## 6.1 Design

According to the previous sections, a descriptive, exploratory qualitative design was the best approach to capture key decisions and health policymakers' perspectives.

### 6.2 Participants

#### Sampling

In qualitative research, non-probability sampling principles are used to demonstrate purposive ones to get appropriate participants and have data "rich" in knowledge about the phenomena. Therefore, this study utilized a purposeful sampling approach to recruit participants.

#### Sample size

To gain adequate data to produce a detailed description of the phenomenon and explore the topic in-depth, the researcher anticipated an estimated number of 25 participants which represented different specialties and positions that played roles covid-19 pandemic crisis management.

The participants were selected as they were policy-makers in the HCS and in charge of making executive and legislative decisions about issues relating to the COVID-19 pandemic in GS and named as members of the Higher Health Emergency Committee and the Covid-19 Crisis Cell in GS (MOH, 2022). These decision-makers held a variety of positions, from general directors and unit managers who usually write health policies and guidelines to the deputy minister of health, who generally represents the highest level of MOH. Table (4) illustrates the Health policymakers included in the study. The goal was not to achieve data saturation, but to obtain data from all available key policymakers. The researcher received responses from all of the health policy-makers who were invited to the interview.

#### Data collection

In this study, face-to-face, semi-structured interviews were employed to collect data. This method enabled the interviewer to explore the phenomena with the participants by encouraging in-depth discussions and facilitating emerging new concepts that contributed to the richness of data required in the qualitative description. All interviews were conducted according to an interview guide (Appendix 1). A pilot interview was performed with a PhD nurse who was an expert in qualitative research. In addition, the pilot interview was performed with two retired policymakers (managers of the main governorate hospital) who had the same managerial level of the participants to evaluate the interview guide and modify it where necessary. The pilot data were not added to the final dataset.

### Interview guide/schedule

The interview was composed of two parts; the first part included questions related to personal and sociodemographic characteristic data like age, gender, marital status, qualifications, job title, years of experience, and workplace and the second part included semi-structured interview guide which contained open-ended questions related to the preparedness and response of the Palestinian Ministry of Health for the COVID-19 pandemic from health policy-makers' perspective in the Gaza strip (Appendix 1).

The interview guide was a data collection tool in which study participants responded to open-ended questions and included the flexibility to "probe" or "prompt" participants for further explanation (Parahoo, 2014).

### Data analysis

In this study, a directed approach was utilized to provide inductive organization and interpretation of the narrative responses by generating new patterns and developing themes from the data. The content analysis was carried out utilizing five steps, including immersion in the data, meaning units, coding process, creating subcategories, and identifying categories. (Graneheim & Lundman, 2004). Nvivo 11 Plus, a software program designed for qualitative research, was utilized to organize, analyze, and find insights in unstructured or qualitative data like interviews(Miller, 2006). Nvivo aided the researcher in creating a visual image of the data and eased the making nodes of classified data according to its categories and subcategories.

**Table 4: Log of data gathering activities**

| Date | Place | Participant's identity in result quote | Who |
|---|---|---|---|
| 15.09.2022 | Al-Najar Hospital-Rafah | (P1, Male, Head of the governorate health emergency committee) | Head of the health emergency committee in Rafah governorate+ Director of Al-Najjar Hospital |
| 17.09.2022 | PHEOC-MoH | (P2, Male, Member of the Higher Health Emergency Committee) | Manager of Public Health Emergency Operation Center (PHEOC)-MoH |
| 20.09.2022 | General Directorate of PHC | (P3, Male, Chairman of COVID-19 crisis cell) | Deputy General Director of Primary Health Care and Public Health Affairs |
| 22.09.2022 | Safety and Infection Control Unit | (P4, Male, Member of COVID-19 crisis cell) | Director of the Safety and Infection Control Unit |
| 24.09.2022 | Nasser Medical Complex | (P5, Male, Head of the governorate health emergency committee) | Head of the health emergency committee in Khanyunis governorate+ Director of Nasser Medical Complex |

| | | | |
|---|---|---|---|
| 27.09.2022 | Laboratory and Blood Banks Unit | (P6, Male, Member of the Higher Health Emergency Committee) | Director of the Laboratory and Blood Banks Unit. |
| 29.09.2022 | GD of Nursing | (P7, Male, Member of the Higher Health Emergency Committee) | General Director of Nursing |
| 1.10.2022 | Administrative headquarters-MoH | (P8, Male, Assistant deputy minister) | Assistant deputy minister |
| 3.10.2022 | Administrative headquarters-MoH | (P9, Male, Assistant deputy minister) | Assistant Deputy Minister for Engineering and Maintenance Affairs |
| 6.10.2022 | Administrative headquarters-MoH | (P10, Male, Assistant deputy minister) | Assistant deputy minister for IT and Information Systems. |
| 8.10.2022 | General Directorate of the Health Information Unit | (P11, Male, Member of the Higher Health Emergency Committee) | General Director of the Health Information Unit+ PHIC manager |
| 10.10.2022 | Administrative headquarters-MoH | (P12, Male, Member of the Higher Health Emergency Committee) | General Director of Administrative Affairs |
| 13.10.2022 | Administrative headquarters-MoH | (P13, Male, Member of the Higher Health Emergency Committee) | Director of the Coordination Unit with Non-Governmental Health Service Providers |
| 15.10.2022 | Administrative headquarters-MoH | (P14, Male, Head of Higher Ambulance Committee) | Director General of the Ambulance and Emergency Unit |
| 17.10.2022 | Administrative headquarters-MoH | (P15, Male, Member of the Higher Health Emergency Committee) | Director General of Internal Monitoring + Director General of Medical Support Services |
| 20.10.2022 | Beit-Hanoun Hospital | (P16, Male, Head of the governorate health emergency committee) | Head of the health emergency committee in North governorate+ Director of Beit-Hanoun Hospital |
| 22.10.2022 | Al-Shifa Medical Complex | (P17, Male, Head of the governorate health emergency committee) | Head of the health emergency committee in Gaza governorate+ Director of Al-Shifa Medical Complex |
| 24.10.2022 | Administrative headquarters-MoH | (P18, Male, Member of the Higher Health Emergency Committee) | Director of the Public Relations and Media Unit |
| 27.10.2022 | Administrative headquarters-MoH | (P19, Male, Member of the Higher Health Emergency Committee) | Deputy Director of the General Administration of Hospitals |
| 31.10.2022 | Administrative headquarters-MoH | (P20, Male, Member of the Higher Health Emergency Committee) | General Director of Financial Affairs |
| 1.11.2022 | Administrative headquarters-MoH | (P21, Male, Member of the Higher Health Emergency Committee) | Director of the Department of Foreign Relations - General Directorate of International Cooperation |
| 5.11.2022 | Administrative headquarters-MoH | (P22, Male, Member of the Higher Health Emergency Committee) | General Director of Pharmacy |
| 8.11.2022 | Administrative headquarters-MoH | (P23, Male, Member of the Higher Health Emergency Committee) | General Director of Mental Health |

| | | | |
|---|---|---|---|
| 12.11.2022 | Administrative headquarters-MoH | (P24, Male, Member of the Higher Health Emergency Committee) | General Director of IT and Communication Technology Unit. |
| 16.11.2022 | WHO office | (P25, Male, Member of the Higher Health Emergency Committee) | WHO Emergency Program Officer + Member of the Higher Health Emergency Committee |

**Quality in research/rigor**

In qualitative research, the word trustworthiness is used to describe rigor, which can be a challenge because of the approach's contextual and subjective nature (Cronin, Coughlan, and Smith, 2014). To achieve the trustworthiness of this research, the researcher adopted four most common criteria (credibility, transferability, confirmability, and dependability (Abu-Odah, Molassiotis and Justina, 2022).

**Ethical considerations**

Several criteria were considered to adhere to ethical rules of respect and protection. After obtaining the ethical approval from the Helsinki Committee - The Palestinian Health Research Council with Approval number (PHRC/HC/1173/22), the researcher was given the permission to implement the interviews, according which the researcher adhered to confidentiality and anonymity rules.

## 7. Results

### 7.1 Characteristics of the Participants

The study included 25 health decision-makers and policymakers. Interviews lasted 20-55 minutes and were held between September 15th and November 16th, 2022. All the participants were male, married, postgraduate degrees hoders (M.A. or Ph.D.), and were held at MoH. The majority of the participants had more than 20 years of experience at the MoH and a medical academic specialty. Finally, although the majority of participants received crisis management training, only three of them received crisis management training for COVID-19 (Table 5).

**Table 5: Study participant's characteristics**

| Characteristics | No. |
|---|---|
| Age | |
| 30-45 | 4 |
| 46-55 | 14 |
| >55 | 7 |
| Gender | |
| Male | 25 |
| Female | 0 |
| Marital status | |
| Married | 25 |
| Non- Married | 0 |
| Educational level | |
| Master Degree | 12 |
| PhD | 13 |
| Experience period (Years) | |
| 10-20 years | 7 |
| >20 years | 18 |
| Address | |
| North Governorate | 5 |
| Gaza Governorate | 13 |
| Midzone Governorate | 1 |
| Khan-Younis Governorate | 1 |
| Rafah Governorate | 5 |
| Academic specialty | |
| Medical specialist | 20 |
| Non-Medical specialist | 5 |
| Job title | |
| Assistant deputy minister | 3 |
| GD | 16 |
| Unit Manager | 4 |
| Consultant or External expert | 2 |
| Title during emergency | |
| Member of the Higher Health Emergency Committee | 23 |
| Member COVID-19 crisis cell | 2 |
| Who received crisis management courses | 19 |
| Who received crisis management courses for Covid-19 | 3 |

### 7.2 Qualitative results: categories and subcategories

In-depth semi-structured interviews were applied to gain a broad overview of health policymakers' perspectives to describe the main challenges and obstacles faced by MoH

during the management of the COVID-19 pandemic crisis from health policy-makers perspectives in the Gaza Strip. In this article, the researcher presented one primary category and three subcategories, as shown in Table (6). Each category and subcategory was presented in detail in the following sections.

**Table 6: Categories and subcategories**

| Category | Subcategory |
|---|---|
| The assessment of the preparedness and response for the COVID-19 pandemic and the main lessons learned. | • The general experience towards COVID-19 pandemic crisis management in GS.<br>• Preparedness and response evaluation from health policymakers' perspective.<br>• The main lessons learned during COVID-19 pandemic crisis management in GS. |

### 7.2.1 Category one: The assessment of the preparedness and response for the COVID-19 pandemic and the main lessons learned

This category described the assessment of the preparedness and response for the COVID-19 pandemic and the main lessons learned as stated by participants. It comprised three subcategories: the general experience towards COVID-19 pandemic crisis management in GS, preparedness and response evaluation from health policymakers' perspective, and the main lessons learned during COVID-19 pandemic crisis management in GS.

**A. The general experience towards COVID-19 pandemic crisis management in GS.**

No Ministry of Health in the world was prepared for the scale of a crisis like this pandemic, especially the Gaza Strip. Nevertheless, there was persistence and dedication to work from the Palestinian MoH and the health staff despite the seriousness of the pandemic and fear at the beginning of the pandemic, "We can infer any success or failure of any experiment through the results and indicators. The results were excellent, especially about recovery rates and low death rates" (P11, Male, Member of the Higher Health Emergency Committee).

All of the interviewees (25/25) answered this sub-category and agreed that the MoH excelled during the three years, which indicated that the MoH was capable of dealing with such a crisis:

1. The mortality rate didn't exceed 1%, while the average death rate in the world amounted to 2.5-3.5%, and there were countries where health systems collapsed and the mortality rate reached 30-34%.

2. What happened in the Gaza Strip, despite the limited capabilities, in light of a threatened and fragile health system, was something that could not be described, and the international institutions had stated that the response, the quality of the procedures, and the capabilities of the staff were unique**,** "…the response was wonderful, flexible, and tolerated several scenarios. The COVID-19 file is one of the best files that the MoH has dealt with, which has been proven through WHO reports and evaluation studies"(P15, Male, Member of the Higher Health Emergency Committee).

3. Despite all the challenges that faced the health system in the Gaza Strip, every patient needed a treatment bed or ICU bed was provided his needs, and all basic health services were preserved, in addition to the emerging services of the COVID-19 pandemic.

4. The MoH did not reach the collapse of the health system or the differentiation between cases in admission to hospitals and admission to care. Everything was available to the patients.

5. Delaying the entry of the pandemic helped MoH prepare, plan, train staff, and bring in equipment and needs. It was a new experience, but MoH benefited from it, "One of the most correct decisions was to adopt the quarantine measures, which contributed to delaying the entry of the disease, otherwise, the sudden entry would cause the collapse of the health sector". (P4, Male, Member of COVID-19 crisis cell).
6. MoH did not reach the scenario of the spread of the pandemic within society in a way that was difficult to control.
7. Quarantine and medical isolation measures at the crossings were among the most important measures that allowed for delaying the pandemic and preparing to better management to this pandemic: "At the Medical Diseases Conference 2022, Professor Yahya Abed mentioned that the experience in The Gaza Strip in managing the COVID-19 pandemic is a successful experience that deserves to be taught to generations and that the computerized system that was used to manage information was taken as a sample to be transferred to some neighboring countries" (P19, Male, Member of the Higher Health Emergency Committee).

## B. Preparedness and response evaluation from health policymakers' perspective.

**Table 7: Preparedness and response evaluation from health policymakers' perspective.**

| Participant's Assessment and Average | | | |
|---|---|---|---|
| **#** | **Participants** | **Preparedness assessment** | **Response assessment** |
| **1.** | P1 | **60%** | **70 %** |
| **2.** | P3 | **75%** | **80 %** |
| **3.** | P4 | **90%** | **95 %** |
| **4.** | P5 | **90%** | **85 %** |
| **5.** | P6 | **90%** | **75 %** |
| **6.** | P7 | **90%** | **80 %** |
| **7.** | P9 | **80%** | **85%** |
| **8.** | P10 | **70%** | **80%** |
| **9.** | P11 | **80%** | **85 %** |
| **10.** | P12 | **90%** | **95 %** |
| **11.** | P13 | **95%** | **90 %** |
| **12.** | P14 | **90%** | **90 %** |
| **13.** | P15 | **75%** | **80 %** |
| **14.** | P16 | **70%** | **80 %** |
| **15.** | P17 | **80%** | **80 %** |
| **16.** | P19 | **90%** | **95 %** |
| **17.** | P22 | **80%** | **70 %** |
| **18.** | P23 | **70%** | **80 %** |
| **19.** | P24 | **75%** | **80%** |
| **Average** | | **81%** | **83%** |

**Table 8: Participant's Assessment Classification according to Range**

| Participant's Assessment classification according to Range | | |
|---|---|---|
| Assessment Range | Preparedness Assessment | Response Assessment |
| 60-69 | 1 | 0 |
| 70-79 | 6 | 3 |
| 80-89 | 4 | 11 |
| 90 or more | 8 | 5 |

- **Preparedness assessment:**

All of the interviewees (N=25) answered this sub-category with numerical data form or qualitative answer one. The majority of interviewees (N=19) answered this sub-category with numerical data form regarding preparedness assessment with an average was 81% as illustrated in (Table 7) above.

Table 8 showed that the preparedness assessment (90% or more) was the highest answer (N=8), followed by the assessment (70-79) which had interviewees (N=6).

On the other hand, the rest of the interviewees (N=6) who answered regarding the preparedness assessment with qualitative answer form agreed that the preparedness assessment was excellent with a high level of planning and processing within six months, and there was an increase in readiness in each wave of the pandemic.

- **Response assessment:**

All of the interviewees (N=25) answered this sub-category with numerical data form or qualitative answer one. The majority of interviewees (N=19) answered this sub-category with numerical data form regarding response assessment with an average was 83% as illustrated in (Table 7) above.

Table 8 showed that the response assessment (80-89) was the highest answer (N=11), followed by the assessment (90% or more) which had interviewees (N=5).

On the other hand, the rest of the interviewees (N=6) who answered regarding the response assessment with qualitative answer form agreed that the response assessment was excellent and great and developed at every stage exponentially, "Preparedness and response were evaluated by a committee in the MoH, and the results came out with a high level of response, ranging between 70-80%." (P3, Male, Chairman of COVID-19 crisis cell)

**C. The main lessons learned during COVID-19 pandemic crisis management in GS.**

**Table 9: The main lessons learned during the COVID-19 pandemic and its classification.**

| # | Lessons learned | N |
|---|---|---|
| | **General lessons learned** | |
| 1. | The real investment was the investment in primary health care rather than focusing on emergency services only | 7 |
| 2. | MoH should involve all health service providers more effectively. There should be effective cooperation with other government sectors. | 6 |
| 3. | The COVID-19 crisis had positive aspects in strengthening the capabilities of the health sector in terms of information, as well as logistical capabilities and medical devices for such pandemics | 4 |

| | | |
|---|---|---|
| 4. | Crises have become a reality in our life.<br>***"All indications and studies are stated that the pandemic will turn into an endemic disease that will appear in the form of waves and new mutations will appear, but the world's plan to deal with this pandemic has become better". (P13, Male, Member of the Higher Health Emergency Committee)*** | 3 |
| 5. | Prevention is better than cure: The need to focus more on preparedness and readiness<br>"You are as good as you are prepared." | 2 |
| 6. | Allowing delaying the entry of the pandemic allowed raising the readiness of the MoH at all levels. | 2 |
| 7. | Scientific and clinical studies and research contributed to the effective response to the pandemic. | 1 |
| 8. | Enhancing community participation in emergency preparedness and response. | 1 |
| 9. | The importance of the media's role in crisis management. | 1 |
| 10. | The COVID-19 pandemic crisis was more severe for the staff than wars and attacks, and there was great fear. | 1 |
| 11. | For the first time, health benefited from global evidence, as international studies and experiences recommended that for every 100 COVID-19 patients (80% of them are simple cases, 15% require moderate care, 5% are severe cases, and there is a mortality rate of about 2%), so MoH was able to predict and provide needed treatment beds and medical logistics. and the required bed capacity. | 1 |
| 12. | Promoting health education for the staff and the community, due to the high percentage of education in the community.<br>***"Educational measures were adopted and society's behavior was modified through the Health Believe model, which is based on the principle of the society's beliefs and fear of disease and their belief that simple and applicable procedures prevent danger.***<br>***- The principle of reinforcing and enabling mode was also used to enhance community and health staff commitment to preventive measures, by providing tools for prevention and safety ". (P13, Male, Member of the Higher Health Emergency Committee)*** | 1 |
| **Lessons learned related to COVID-19 crisis management processes** | | |
| 13. | Disasters are not limited to wars, but there are other forms of disasters and crises such as pandemics and diseases, especially in light of modern globalization, which might be more disastrous than wars and earthquakes<br>***"…there are several pandemics struck in the last 20 years such as (Swine flu, SARS, Ebola, and monkeypox). ..) and that there are environmental and climatic factors that may help their emergence, in addition to the exploitation of pathogens in biological warfare and manipulation of their genes, which was predicted by the World Health Organization, which made the organization issue international health regulations in 2005 and all countries in the world that are included under the umbrella of the World Health Organization adopted it in 2012".(P3, Male, Chairman of COVID-19 crisis cell)*** | 15 |
| 14. | Nothing is impossible, and good planning is the key to success such as promoting public health and what is related to scenarios of pandemic crises in health emergency planning which must include all scenarios and types of crises. | 14 |
| 15. | Enhancing health control and follow-up procedures and the importance of controlling the administrative, technical, and medical environment at all levels and unifying standards and protocols | 4 |
| 16. | Dividing preparedness and readiness into multiple aspects, which reached 16 aspects, helped in the comprehensiveness of planning and the distribution of the burden. | 2 |
| 17. | Developing an evacuation plan | 2 |
| 18. | Vaccination needed better follow-up and control. | 1 |
| 19. | Evaluation of each stage and wave of the pandemic and lessons learned allowed us to develop the level of response and anticipate needs. | 1 |
| 20. | Predicting and pre-analyzing each pandemic wave for pre-preparation gave accuracy in planning, preparedness, and response. | 1 |
| 21. | Preparing support projects for marketing in times of emergency, according to real needs | 1 |
| 22. | The leadership should be models for the employees and they should be at the forefront of the work. | 1 |

| | | |
|---|---|---|
| 23. | Enhancing communication between all different administrative levels | 1 |
| 24. | Drills and practical training activities had an impact on readiness. | 1 |
| **Lessons learned related to MoH administrative structures and components** | | |
| 25. | Establishing a health emergency operations center (PHEOC) | 5 |
| 26. | Strengthening the preventive medicine units and the safety and infection control unit, and expanding their roles | 3 |
| 27. | Developing the structure of the MoH to be able to represent the health services and the chain of operation components in different situations. | 1 |
| 28. | Developing laboratories and their capabilities | 1 |
| 29. | Flexibility in organization and structures and the use of resources. | 1 |
| **Lessons related to staff and resources** | | |
| 30. | The staff is first and foremost, and the dedication of the staff and their excellent performance were the secret behind the impressive success. The valor of the staff and the fulfillment of their duties most fully should be considered a patriotic and moral duty. | 7 |
| 31. | The staff must be trained in all types of crises and risks. | 3 |
| 32. | The necessity of restoring the staff and adding new staff, especially to fill the gaps after the retirement of some of them, to ensure the inheritance of expertise | 2 |
| 33. | Benefiting from this experience by raising its capabilities and the capacity of MoH staff, as well as increasing its resources of devices and equipment | 2 |
| 34. | Separating ICU specialization from anesthesia specialization, especially since the greatest interest for some time was in anesthesia and it was found that there was a shortage of ICU specialists | 1 |
| 35. | Government support had a significant impact. | 1 |
| 36. | The burden of work during repeated crises and military attacks was on the surgical staff, but the pandemic crisis burden was on the medical and ICU staff, so the medical staff must be rotated to acquire more comprehensive skills. | 1 |
| **Lessons learned related to IT and health information systems** | | |
| 37. | Developing information systems, databases, and geographic information systems (GIS), especially the geographical distribution of the population, is an essential pillar in the success of managing any crisis | 4 |
| 38. | The information infrastructure and computerized systems contributed to the ease and accuracy of decision-making and directing resources. | 2 |
| 39. | Working on the completion of a project (the unified computerized medical file) for each patient so that it is an archived reference for the sick history that is easy to access | 2 |
| 40. | The cooperation of ministries and governmental and non-governmental sectors contributed to the quality of information and reports through coordination and joint action. | 1 |
| 41. | The need to computerize the health system of private institutions | 1 |
| 42. | The need for telemedicine systems that reduce the arrival of patients to hospitals because of necessity | 1 |

## 8. Discussion

This section described the assessment of the preparedness and response for the COVID-19 pandemic and the main lessons learned. All of the interviewees agreed that the Palestinian MoH managed the COVID-19 pandemic crisis well and several indicators proved that the lower mortality rate which didn't exceed 1% as the total infected people with Covid-19 reached 271.426 people, and the number of deaths was 2004 since the beginning of the pandemic in the Gaza Strip, (Unit of information system-MOH, 2022). All the participants agreed that the HCS in GS didn't collapse despite its fragility, "We can infer any success or failure of any experiment through the results and indicators. The results were excellent, especially about recovery rates and low death rates". (P11, Male, Member of the Higher Health Emergency Committee).

Most of the participants revealed that many factors contributed to achieving this, such as quarantine and medical isolation measures and delaying the entry of the pandemic which helped MoH in preparing, planning well, training staff, bringing in equipment and needs, and benefiting from other countries experiences, " MoH managed and dealt with the crisis, and we came out with the lowest losses compared to other countries. The health sector, without the support of international institutions and donors, would have faced many difficulties." (P25, Male, Member of the Higher Health Emergency Committee).

Globally, some waves of the pandemic showed pressure on healthcare services around the world. Overcrowded hospitals, truck convoys taking the dead to rapidly established cemeteries, and exhausted physicians and nurses battling to save lives with scarce resources provided evidence of the insufficient ability of healthcare services to deal with the outbreak even in high-income countries (Murray, 2020).

Regionally, according to AlKhaldi et al. (2020), more cases were reported in conflict-free countries with strong health systems (e.g. Qatar) compared to conflict-affected countries with poor health systems (e.g. Yemen). This is largely attributed to insufficient surveillance and testing capacity in conflict settings. On the other hand, fatality cases were relatively low in Turkey, Palestine, and Iran and high in Algeria and Egypt, when compared to the rest of the region's countries (Crisis Group, 2020). Fatalities were high in countries that had a high percentage of elderly people in the population, large population density, and weak testing, diagnostic, and treatment capacities (AMSE, 2020).

Most of the participant's assessments of Palestinian MoH "Preparedness" for the COVID-19 pandemic according to their point of view ranged between "90 or more" with an average of 81%, but for "Response" the assessment ranged between "90-89" with an average of 83%, which was consistent with the evaluation done by a committee within MoH itself for Preparedness and response to the COVID-19 pandemic which ranged between 70-80%. However, it was inconsistent with the results of Aljabari et al. (2021) study which revealed that the level of health system preparedness in the Gaza Strip was unsatisfactory (55.7%). The researcher attributed this inconsistency to many factors including that the inconsistent study was implemented during the first waves of the pandemic, included only one part of the health facilities (Two hospitals), targeted a different managerial level, and used a quanititave methodology.

All of the participants stated an asset of lessons learned. Afterr filtration and classification, they were 42 lessons learned with different frequencies. 12 General lessons learned as "The real investment is the investment in primary health care rather than focusing on emergency services only, N=7). 12 Lessons learned related to COVID-19 crisis management processes as "Disasters are not limited to wars, but there are other forms of disasters and crises such as pandemics and diseases, N=15". Five Lessons learned related to MoH administrative structures and components as" Establishing a health emergency operations center (PHEOC), N=5). Seven Lessons related to staff and resources as "The staff is first and foremost, and the dedication of the staff and their excellent performance were the secret behind the impressive success, N=7). Six Lessons learned related to IT and health information systems as "Developing information systems, databases and geographic information systems (GIS), N=4"

## 9. Conclusion

The purpose of this research was to discover the main lessons learned from the COVID-19 pandemic crisis management from health policymakers' perspective in GS. Thus, the researcher adopted a descriptive, exploratory qualitative design, a semi-structured interview targeted 25 health policy-makers with a purposeful approach and the interviews data were analyzed using directed qualitative content analysis approach. All of the interviewees agreed that the Palestinian MoH managed the COVID-19 pandemic crisis well and there were several indicators. The average of most participant's assessments of Palestinian MoH "Preparedness" for the COVID-19 pandemic according to their point of view was 81%, and for "Response" was 83%. Finally, there were 42 lessons learned with different frequencies (12 General

lessons learned, 12 Lessons learned related to COVID-19 crisis management, five Lessons learned related to MoH administrative structures and components, seven Lessons related to staff and resources, and six Lessons learned related to IT and health information systems.

## 10. Recommendations for Health policy-makers and MoH

Based on the findings of the study, the researcher recommended activating and strengthening the role of the Palestinian PHEOC in the integration of health emergency management and serving as a hub that includes health policymakers and stakeholders. It also recommended promoting health contingency planning based on different scenarios and risk analysis alongside effectively involving all health services providers. The researcher also suggested enhancing the culture of documenting experiences in dealing with recurring crises to increase the level of coordination and cooperation with other health services providers such as NGOs and private sectors to promote those sectors and reduce the burden on MoH. Another recommendation was directing international aids and funds to enhance the long-term capabilities of emergency management and primary health care rather than short-term projects. Telemedicine and health applications should be focused on to facilitate health service provision during such pandemics and develop the health care system.

## 11.Appendices

**Appendix 1: Final set of an audio-recorded interview guide**

| Study Objectives | Questions | Probe | The type of participantswill be offered the question |
|---|---|---|---|
| Warm-up inquiries | Could you briefly describe your Sociodemographic data? | • Probe to what extent health policy-makers' attitudes and capacity to have a culture of crisis management.<br>• Probe what health policy-makers have prior knowledge of dealing with pandemic crises. | All participants |
| | Have you received crisis management courses? | | |
| To assess the general assessment and experience towards managing the COVID-19 pandemic crisis. | As one of the health policymakers, can you evaluate the Ministry of Health's general experience in managing the COVID-19 crisis? | • Probing question about **the** Ministry of Health's general experience in managing the COVID-19 crisis? | All participants |

| | | | |
|---|---|---|---|
| To assess the preparedness and response of Palestinian MoH for the COVID-19 pandemic crisis 19 pandemic | As one of the health policymakers, what about the assessment of preparedness and response of the Ministry of Health for COVID-19? | • Prompt: From your point of view, can you give us an assessment of preparedness and response in percentage form? | All participants |
| To identify the lessons learned during managing the COVID-19 pandemic crisis. | As one of the health policymakers, what are the main lessons learned during managing the COVID-19 pandemic crisis. ? | • Probe the main lessons learned during COVID-19. | All participants |

## 12. Abbreviations*:*

COVID-19, coronavirus disease; GS, Gaza Strip; GD, General Directorate; HCS, Health care system; ICU, intensive care units; Lab, Laboratory; MoH, Ministry of Health; NGOs, Non-Governmental Organizations; Opt, Occupied Palestinian territory; PCR, Polymerase Chain Reaction Test; PHIC, Palestine Health Information Centre; PHEOC, Public health emergency operation center; UNRWA, United Nations Relief and Works Agency; WHO, World Health Organization

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# الدروس المستفادة من إدارة أزمة جائحة كوفيد-19 في قطاع غزة: دراسة نوعية

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**الملخص**

*بالرغم من أنّ الأزمات باتت جزءاً من واقعنا في فلسطين وقطاع غزة، فإنه لا أحد يستطيع أن ينكر أنّ أزمة وباء كوفيد-19 كانت أزمة استثنائية وغير اعتيادية بالنسبة للأنظمة الصحية العالمية بشكل عام، وللنظام الصحي الفلسطيني في قطاع غزة على وجه الخصوص، خاصة في ظل الظروف المعيشية والاستثنائية والعجز الشديد في المصادر، في ظل هذا الحصار الطويل. والهدف الأساسي من الدراسة هو معرفة الدروس الرئيسية المستفادة من إدارة أزمة جائحة كوفيد-19 من منظور صانعي السياسات الصحية في قطاع غزة. وطريقة البحث ومنهجيته قامت على أساس من استخدم الباحث في دراسته الكيفية، النهج النوعي الوصفي، عبر مقابلات شبه مقيدة، استهدفت 25 متشاركاً من صانعي السياسات الصحية عبر نمط عينة قصدية.*

*وجاءت نتائج البحث على نحو يعكس اتفاق جميع من تمت مقابلتهم، بأنّ وزارة الصحة الفلسطينية أدارت أزمة وباء كوفيد-19 بشكل جيد، بالرغم من عدم كفاية الموارد ونقص الخبرات في التعامل مع مثل هذا الوباء. ووفقًا لوجهة نظر المتشاركين، فإنّ معدل تقويم تأهب وزارة الصحة الفلسطينية لقطاع غزة كان 81٪. أما معدل " الاستجابة، فقد كان "83٪. وكشفت هذه الدراسة عن 42 درسًا مستفادا بمعدلات تكرار مختلفة: (12 درساً مستفاداً تتعلق بإدارة أزمة وباء كوفيد-19، 5 دروس مستفادة تتعلق بالهياكل والمكونات الإدارية لوزارة الصحة، 7 دروس متعلقة بالموظفين والموارد، 6 دروس مستفادة تتعلق بتكنولوجيا المعلومات وأنظمة المعلومات الصحية). وعليه فإنّ الدراسة توصي بتفعيل دور مركز عمليات الطوارئ الفلسطيني للصحة العام(PHEOC) ، وإجراء مزيد من الدراسات في مجال إدارة الأزمات الصحية.*

***الكلمات الدالة: كوفيد-19، الدروس المستفادة، وباء ، صانعو السياسات الصحية.***