Preparedness and response of the Palestinian Ministry of Health for COVID-19 pandemic based on World health organization 8 pillars from health policy-makers' perspective in Gaza strip

Belal A. Aljamal [1,*], Mohammed Nimer [2], Susan Ali-zroog [3]

[1] University of Al-Butana, Ministry of Health, Gaza, Palestine.
[2] International University of Africa, Khartoum, Sudan.
[3] University of Al-Butana, Ruffaa, Sudan.

Received: 25/04/2024; **Revised:** 08/10/2024; **Accepted:** 26/11/2024

Summary: Although the crises become a part of living in Palestine and the Gaza Strip, the Coronavirus disease-2019 pandemic was a special and unfamiliar crisis faced by global healthcare systems generally and the Palestinian healthcare system in particular, especially in light of the extreme shortage of resources and this long period of the continued siege. Aims of the study: The main aim of this study was to assess the preparedness and response of Palestinian MOH for the Coronavirus disease-2019 pandemic based on the World Health Organization's eight pillars from the health policy-makers' perspective in the Gaza Strip. Methods: A descriptive, exploratory qualitative design was used, the sample size was 25 using a purposeful sampling technique, face-to-face semi-structured interviews were employed to collect data, and the directed qualitative content analysis approach was adopted for the analysis of the interview data. Results: The study's results according to the participant's perspectives revealed that there was good multi-partner coordination, planning, and monitoring between all governmental ministries, the Ministry of Health, and all health services providers in managing the Covid-19 pandemic crisis. The quarantine and the processes of controlling crossings and entry points effectively delayed the uncontrolled spreading of the pandemic and prevented the worst scenario of the pandemic crisis. Unique efforts were made by the Ministry of Health to surge the capacity of hospitals and to continue the other routine and emergency health services of the community during COVID-19.
Keywords: Covid-19, Preparedness, Response, Eight pillars, health policy-makers
Jel Classification Codes :

I- Introduction :

Disease outbreaks and pandemics can affect countries at any time, causing substantial human suffering and deaths, and economic losses. If health systems are not resilient to deal with such situations, the results may be worse. The current coronavirus (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) a single-chain ribonucleic acid (RNA) virus. (Wang et al. 2020) Established evidence on the transmission of RNA viruses demonstrates person-to-person transmission through respiratory droplets, both airborne and on fomites. Common symptoms associated with COVID-19 are pyrexia, dyspnea, and dry cough(Kucharski et al. 2020).
The Covid-19 pandemic is one of the health crises that have confused global health systems, even in developed countries, as the large numbers of injuries and the rapid spread of the pandemic in light of the weakness and inability of the Palestinian health system in general and in the Gaza Strip in particular. As the health system and government hospitals suffer from weak logistical capabilities and a severe shortage of human cadres, which makes such health crises, resulted in large numbers

* Corresponding author, e-mail:belal.jamal1994@gmail.com

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

of injuries and deaths and required a variety of advanced medical services compared to the capabilities of the health system in the Gaza Strip, especially in light of this unjust siege imposed on it for nearly 15 years.

According to the report of the Palestinian Ministry of Health(MoH), the total number of people infected with Covid-19 reached 271.426 people, and the number of deaths was 1997 people since the beginning of the epidemic in the Gaza Strip, noting that the active cases were in the thousands, and the intensive care often witnessed the filling of the majority 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)

Good preparation for such community outbreaks and pandemics as Coronavirus Disease 2019 (COVID-19) is critical for maintaining healthcare services during a response, reducing disturbance of the health system, and minimizing losses and fatalities as possible. (Sheikhbardsiri et al. 2017).

The real gap lies in the fact that the health system does not have sufficient experience and capabilities to deal with such health crises in light of the confusion and collapse of international health systems. There is a need for a scientific reference and documenting the experience of the health sector in managing such a real health crisis.

This study offers an opportunity to assess the preparedness and response of Palestinian MOH for the Coronavirus Disease 2019 (COVID-19) pandemic based on the World health organization 8 pillars from health policy-makers' perspective in the Gaza strip through a comprehensive in-depth qualitative research study rather than just a quantitative assessment, to gain more deep and detailed data and describe the experience of Palestinian MoH with its successes during this pandemic which can helped to be a manual or a base which can be used to guide the preparedness and response plans and procedures in light of it. World health organization (WHO) developed 8 pillars for covid-19 strategic preparedness and response plan (SPRP) and Country preparedness and response plan (CPRP) for covid-19. (WHO, 2020a). These pillars focused on a holistic approach of pandemic crisis management with its different aspects which the health care system must consider in preparedness and response plan and implementation. The general objective of this study is to assess the preparedness and response of Palestinian MOH for the COVID-19 pandemic based on WHO 8 pillars from health policy-makers' perspective in the Gaza strip.

II– Methods

2.1 Design

The qualitative description appears to be the best method for this study. First, there is no information available regarding the viewpoints of health policymakers regarding Palestinian MoH preparedness and response to the COVID-19 pandemic based on WHO 8 pillars. Second, It gives a broader and more flexible scope to gain more information and does not restrict the interviewers from providing information about phenomena (Cronin, Coughlan, and Smith 2014).

Participants selection

2.2.1 Sampling

Non-probability sampling principles are employed in qualitative research to illustrate purposeful ones to recruit suitable people and provide rich data and knowledge about the phenomena. So, to draw participants for this study, a purposeful sampling approach was used.

Participants were selected as those who have a policy-making role in the HCS and are in charge of making executive and legislative decisions about issues relating to the covid-19 pandemic in GS and were named as members of the Higher Health Emergency Committee and the Covid-19 Crisis Cell. These decision-makers hold a variety of positions, from general directors and unit managers who write health policies and guidelines to the deputy minister of health, who represents the highest level of MOH.

2.2.2 Sample size

The Higher Health Emergency Committee and the Covid-19 Crisis Cell were 25 participants who targeted to gather suitable and sufficient data to create a full description of the phenomena and examine the issue in depth. Participants positions and affiliations are presented in Supplementary Table S1.

2.3 Data collection

Face-to-face, semi-structured interviews were used in this study's data collection. By promoting in-depth conversations and fostering the emergence of novel concepts, this technique also allows the interviewer to investigate phenomena alongside participants and collect the richness of information necessary for the qualitative description. An interview guide was used to conduct each interview, a pilot interview was conducted with a Ph.D. nurse who has particular expertise in qualitative research.

2.4 Interview guide/schedule

Based on searching the relevant literature and scientific references and based on the expertise of the researcher, who is a member of PHEOC, the researcher created the interview guide in light of the eight pillars of the World Health Organization and the items of preparedness and response plans for the Covid-19 epidemic (WHO 2020).

Final set of an audio-recorded interview guide are presented in Supplementary Table S2.

2.5 Data analysis

A directed content analysis approach was used in this study to give inductive organizing and interpretation of narrative responses by generating new patterns and constructing themes from the data. the researcher followed five steps Immersion in the data, meaning units, the coding process, developing subcategories, and identifying categories were all used in the content analysis.(Graneheim and Lundman 2004). Nvivo 11 Plus, a qualitative research application tool, was used to organize, analyze, and identify insights in unstructured or qualitative data such as interviews. (Miller 2006). Nvivo helps the researcher create a visual view of the data and makes it easier to create nodes of categorized data based on its categories and subcategories.

2.6 Quality in research/rigour

The term trustworthiness is used to describe rigour in qualitative research, which can be difficult due to the approach's contextual and subjective character (Cronin, Coughlan, and Smith 2014). The researcher employed four criteria to obtain trustworthiness in this research (credibility, transferability, confirmability, and dependability), which is the most popular strategy used by qualitative description researchers (H Abu-Odah, Molassiotis, and Justina 2022).

2.7 Ethical considerations

After receiving legal authorization from the Helsinki Committee, the Palestinian Health Research Council (No. PHRC/HC/1173/22). The researcher got the facilitating letter and permission to implement the interviews from the Palestinian Health Information Center-MoH. The researcher adhered to confidentiality and anonymity rules.

III. Results and Discussion

In-depth semi-structured interviews were applied to gain a broad overview of health policymakers' perspectives to assess the preparedness and response of Palestinian MOH for the COVID-19 pandemic based on WHO 8 pillars from health policy-makers' perspective in the Gaza strip. The interviews generated eight primary categories presented in detail in the following sections.

3.1 Category 1: Multi-sectoral and multi-partner coordination, planning, and monitoring

Regarding the first category, multi-partner coordination, planning, and monitoring, the results of the study according to participant interviews are consistent with the health emergency plan with its current version 2022-2023 and the previous one 2017-2018 which the researcher found that the MoH emergency plans taking in account the NGOs, CBOs, and private sector plans and capabilities and the health emergency committees containing members of all health sectors stakeholders and determines their role according to their capacities, but under supervision and determinants of MoH as it's the biggest representative and responsible one (MOH 2022). "MOH prepared a strategic plan to deal with the Covid-19 epidemic, which included 8 strategic goals and pillars". (P3, Male, Chairman of Covid-19 crisis cell).

The plan was divided into levels according to the number of positive cases and severe patients who need special Medical care (ICU, Oxygen...etc.), and three scenarios were adopted:

- Scenario A: The lower and lighter Scenario.
- Scenario B: The Medium scenario
- Scenario C: The Highest and worst-case scenario.

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

Each scenario had its arrangements and measures.

According to this study, coordination and cooperation were at both health and governmental sectors and this is consistent with Qandeel (2022) mixed approach study conducted in governmental hospitals in GS, which revealed that showed the extent of cooperation between the governmental and non-governmental work committee and MoH to manage the COVID-19 crisis as part of the central health system in the ministry, to maintain an effective response to the COVID-19 crisis (Qandeel 2022). The researcher see that it can be seen clearly through different committees and subcommittees formation and its roles as follows:

1. A central government emergency committee was formed to manage the Covid-19 epidemic, which included all relevant government ministries.
2. Multi- Ministerial committee "Quarantine Centers": Ministry of Health - Ministry of Interior - Ministry of Public Works and Housing - Ministry of Social Development - Ministry of Education and Higher Education - Ministry of Awqaf and Religious Affairs
3. At the health level, there is a committee called the Higher Health Emergency Committee, which includes deputy assistants, directorates managers, central units, and heads of governorates Health emergency committees, in addition to the WHO, which is responsible for emergency management in the health sector.
4. The Higher Health Emergency Committee began preparing an emergency plan for the health sector to manage the Covid-19 epidemic and formed sub-committees such as:

A. Covid-19 epidemic crisis cell.

B. Governorates Health Emergency Committee (5): The governorate health emergency committees included health service providers in the governorates (hospitals, primary health care, UNRWA, NGO hospitals, MoH ambulance, and Red Crescent ambulance). In each governorate, there was an emergency committee comprising all governmental and non-governmental health service providers, and it coordinated with all partner agencies, through it.

C. Epidemiology and Infectious Diseases Committee, which later became called the Advisory Committee for Covid-19 Epidemic (includes the Ministry of Health, experts, academics, and specialists from governmental and NGOs, UNRWA and WHO). It was responsible for developing and updating policies and medical protocols.

D. Health Coordination committee, an assistant deputy minister of health, and a member of the Higher Health Emergency Committee were assigned to lead this committee, this committee included (Coordination Unit with Non-Governmental Institutions - Private Medicine Unit - Information Systems Unit - some NGOs representatives).and it was responsible to coordinate with NGOs, was including (primary care in MoH, UNRWA, universities, human rights organizations, and some NGOs such as (Caritas, Medical Relief...)) - On the other hand, all components of civil society were involved in managing the crisis.

"…the number of private and health NGOs that provided health services during covid-19 supporting the MoH reached 41 institutions". (P13, Male, Member of the Higher Health Emergency Committee)

E. The National Committee for Education and Health Promotion: The National Health Committee for the Covid-19 epidemic was formed, whose reference was the Ministry of Health, which included government agencies and groups of society, (the unit for coordination with civil institutions, the Ministry of Awqaf, civil institutions)

F. Health Awareness and Education Committee (which includes bodies from inside and outside the Ministry of Health to spread awareness and health education to all segments of society).

G. The Supreme Committee for Ambulance: Also, MoH had a Coordination to provide ambulance service through the Supreme Committee for Ambulance, which includes 5 entities: (Palestinian Emergency medical services- MoH (Ambulance Unit) - Palestinian Red Crescent - The International Committee of the Red Cross (ICRC) - Military medical services - Civil Defense).

3. 2 Category 2: Media communication and community engagement.

Regarding the second category, Media communication and community engagement, most of the participants (17/25) stated that there were good mechanisms for controlling media communication with society - with its various segments through several determinants and measures.

"…MoH has developed social media platforms which contained 80 WhatsApp groups, Facebook, Twitter, and Telegram, in addition to the official website of MoH". (P18, Male, Member of the Higher Health Emergency Committee) It was very effective to achieve community engagement

using formal or social media platforms, and that is consistent with results of Qadah (2020) study which implemented in Jeddah city, through online questionnaire targeted 1023 health workers, which stated that social media and the workplace were the main sources of information for the majority of respondents(Qadah 2020). Especially that the delivery of the latest information to people in general and health personnel, in particular, enhances the accurate clinical diagnosis of the disease according to Geleta et al. (2020) study (Geleta et al. 2020) .

3. 3 Category 3: Controlling entry points and crossings.

For the third category, the process of controlling entry points and crossings, the study showed the gradual steps of the quarantine and the processes of controlling crossings and entry points, different policies and measures, and their effective role in delaying the uncontrolled spreading of the pandemic and preventing the worst scenario of the pandemic crisis, " The estimated scenarios of the epidemic entering and spreading rapidly from the first moment in the GS were terrifying, especially in light of the fragile health system". (P15, Male, Member of the Higher Health Emergency Committee), and that consists with the results of Abu-Odah et al. (2021), which study aimed to compare the measures across 2 densely populated locations, Hong Kong and Gaza, and stated that The strategies implemented in both settings included border closures, social distancing, proper hand hygiene, and mask usage to help prevent increasing rates of infectious(Hammoda Abu-Odah et al. 2021b) .

3. 4 Category 4: Surveillance, rapid response teams, case investigation.

For the fourth category, Surveillance, rapid response teams, and case investigation, the research described several types and stages of Surveillance and lab examinations using different protocols and policies, the different rapid response and investigation teams with their effective roles, especially the effective role of Telemedicine and mobile medical teams.

The interviewees agreed that Multiple teams have been formed from primary health care-MoH, NGOs, and civil institutions, including:

1) Epidemiological Investigation teams

Investigation teams were formed in the first waves of the epidemic and the investigation team's tasks were going in two directions:

- ✓ The source of infection for the infected person
- ✓ The contacts of the infected person.

2) Rapid Response team: RRTs are trained and equipped to investigate suspected cases. These teams were conducting random surveillances within the community and identifying the epidemic areas, and all this was within the cooperation of the primary health care staff, the Preventive Medicine Department, the Infection and prevention Control Unit, and NGOs.

- ✓ Follow-up visits to the contacted and suspected cases, and investigation.
- ✓ Disseminate case definition (suspected case, contact case & confirmed case).
- ✓ The investigation protocol was updated according to the epidemiological situation.
- ✓ Mechanism of activation of RRTs through governorates.

3) Telemedicine teams (Hotline 103): which provided more than half a million medical consultations during the pandemic. There was a hotline 103 to respond to citizens and provide medical consultations without the need to access hospitals through consultants and retired doctors, especially for simple cases, and if necessary, they could direct teams to them. The main goal was to reduce the burden of overcrowding patients in hospitals and their lack of contact with Covid-19 patients.

4) Mobile medical teams (Home Isolation Team): to provide medical services at homes, which carried out about 8,000 home visits.

- ✓ Follow up on the confirmed and contacted cases for a home visit.
- ✓ Collaboration with NGOs & coordination with MoI for Home visit
- ✓ Home visit-program, & protocol
- ✓ Priority for home visits (Elderly, NCD, co-morbidity), & early hospital admission.

The general goal of these teams was to reduce patients' visits to the hospitals and to reduce the burden of overcrowding, in addition to other goals that were specific to each type of team (elderly care, psychological counseling, telemedicine, and pregnant care).

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

5) Psychological support teams and psychological counseling:

Among the rapid response teams was a psychological support team: which provided psychological services through psychiatrists and social workers. The teams were formed from the staff of the MoH and the mental health staff of NGOs like the Gaza Community Mental Health Program (GCMHP).

This research reults are consistent with the results of Lee et al. (2020) which stated that Telemedicine and virtual care can play an important role, especially with successful experiences in the management of previous acute respiratory infections such as severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (Hong et al. 2020), and this was proven in the results of Khan et al. (2021) study in the KSA through using of the Tawakkalna application (Shereen et al. 2020) . Also, the results of this study highlighted the effective roles of PHIC and ICT in reporting using dashboards, infographics, and GIS data distribution, which are consistent with the results of Qandeel (2022) study (Qandeel 2022).

3. 5 Category 5: Laboratories and lab tests during Covid-19.

For the fifth category, Laboratories, and lab tests during Covid-19, this study stated the, procedures, and SOPs used to manage test samples, the high level of accuracy of the lab results through different stages and protocols of lab tests in light of difficult situations and obstacles especially the shortage of lab necessary materials and logistics, which enhance MoH to use a scientific based methods to duplicate the numbers of samples in one test which called Pooled tests, which means pooling of samples involves testing them in batches, and when pooled sample tests positive, then individual samples are assessed. Using combinatory, an algorithm is found that unscrambles the test results and tells you which of the individuals in the pool are positive. In effect, the number of tests that need to be carried out is less than if there had to be tests done for each individual("A Protocol for Pooled RT-PCR Testing of COVID-19 - The Hindu" 2022).

3. 6 Category 6: Infection prevention and control (IPC) during Covid-19.

Regarding the sixth category, Infection prevention and control (IPC) during Covid-19, the results of this research showed the efforts and procedures made by the Palestinian MOH regarding IPC which aimed to limit the spread of the pandemic, detecting heavily infected geographical areas and controlling it, and preventing the spread of the pandemic to society in a short period. These efforts began before detecting any positive case in GS, which ranged from extended weeks of compulsory home quarantine and curfews to preventive measures and policies according to the pandemic stage and protocols and providing PPEs and training courses to the health staff and community members. These results are consistent with the results of Qandeel (2022), the study which stated many efforts of HCS regarding IPC as providing safety means and training the health workers on means of protection, safety, and rapid response mechanisms(Qandeel 2022). And that was also proven by Tambora (2022) in his study which aimed to identify the extent of readiness of the emergency committees in the northern Gaza governorate in managing the COVID-19 crisis and to evaluate appropriate planning and training programs in dealing with work teams(Tambora 2022). Especially for the training of the HCW, the results of this study are consistent with Aljabari *et al* (2021) study, regarding high level of training courses on PPEs and IPC measures(Aljabari et al. 2021). Still, there is inconsistency with both Humaid (2022) and Alser *et al* (2021) studies which revealed that there is a shortage of personal protective equipment (PPE) and low level of training on the use of PPE within the Radiology department (Aljabari et al. 2021)(Alser et al. 2021). The researcher sees that this is because the training courses focused on ICU and emergency dept. rather than other departments.

3. 7 Category 7: The medical plan and protocols for Covid-19 Cases management.

The seventh Category is the medical plan and protocols for Covid-19 Cases management, in which the results of this study explained the medical plan and procedures adopted by the health system to manage various cases as participants stated which the researcher see that were distinguished and unique because of the great efforts to surge the capacity of hospitals, departments, and quarantine places according to the pandemic stage and medical protocols which changed according to the WHO and advisory committee recommendations, on the other hand, the study results revealed that MoH strived to continue the other routine and emergency health services of the community during the Covid-19 pandemic by a set of creative and holistic measures as medical plan for cases distribution, involvement of health NGO providers and cooperation of local and private health institutions, and this is consistent with Qandeel (2022) study which also saw that the Governmental cooperation by allocating a budget to manage the COVID-19, where the capacity of human resources, medicines, medical consumables, and necessary vaccinations was increased the effective response to the COVID-19 crisis(Qandeel 2022). Also, this study showed that MoH made many structural and constructive interventions to the health facilities and hospitals, which contributed to increasing the resilience of hospitals, this is consistent with the study results of Samsuddin *et al* (2018), which conducted a study to investigate the hospital preparedness attributes and resilience indicators; and to establish a relationship of preparedness attributes towards the hospital's resilience among twenty-six Malaysian hospitals' staff, the findings revealed that there is a strong positive relationship between preparedness attributes and resilience indicators(Samsuddin et al. 2018).

3. 8 Category 8: Operational support and logistics during the Covid-19 epidemic.

The eighth category described the operational support and logistics during the Covid-19 pandemic generally or its process regarding financial, human, logistics, and oxygen resources. The results of this study are consistent with many studies Aljabari *et al.* (2021), Alser *et al.* (2021), and Alser *et al.* (2020), in the reality of the existing shortage of human, therapeutic, and financial resources and logistics either before or during the Covid-19 pandemic but according to the participants of this study(Aljabari et al. 2021)(Alser et al. 2021)(Alser et al. 2020). There was a plan to manage the resources and logistics with its various types and there were some contributing factors as international aids and Governmental budget that allocated to the health sectors and Covid-19 needs, and this is consistent with Qandeel (2022) results.

- **Regarding oxygen:**

The amount that it was able to produce before the Covid epidemic was 800 liters/minute, and during the Covid epidemic crisis, its capacity reached 16 thousand liters/minute". (P18, Male, Member of the Higher Health Emergency Committee).

A plan was drawn up to provide the Ministry's need for oxygen-bearing in mind that the need was twice the normal production capacity of the existing stations - and initially focused on doubling the oxygen produced in the European Hospital, which was allocated to severe cases of patients with the Covid-19 epidemic.

❖ **To achieve this, several measures have been taken, including:**

- ✓ Allocating the European Hospital for Covid-19 patients and severe cases, and transferring other departments to other hospitals.
- ✓ Delaying non-urgent operations and closing some departments to reduce oxygen consumption.
- ✓ Transferring and redistributing some oxygen stations from other hospitals after stopping outpatient clinics and routine operations.
- ✓ Request new oxygen stations through donors,
- ✓ Purchasing an oxygen supply service from some private companies to meet part of the need, especially filling oxygen cylinders for discharged patients outside hospitals.
- ✓ Restoration and maintenance of oxygen networks inside hospitals
- ✓ Filling portable oxygen cylinders to use if needed.
- ✓ Daily and periodic follow-up of the rate of consumption and production of oxygen.

IV– Conclusion

This is the first qualitative study aimed to assess the Palestinian MoH preparedness and response to the Covid-19 pandemic based on WHO eight pillars from the health policy-makers perspective in GS, which tried to describe the HCS's real experiences to deal with such a pandemic considering all aspects with crises management with all various phases, and ways to deal with it, points of successes and gaps in light of scientific international pillars which used as a guideline in formation and implementing a holistic planned preparedness and response, especially during this exceptional environment and living determinants in the context of GS, which already have been suffering from recurrent crises and shortage since many years due to this unjust siege.

The results of the study according to the participant's perspectives revealed that there was good multi-partner coordination, planning, and monitoring between all governmental ministries, MoH, and all health services providers that played an effective role in managing the Covid-19 epidemic crisis.

There were good mechanisms for controlling media communication with society - with its various segments through several determinants and measures, and it was very effective to achieve community engagement using formal or social media platforms. The quarantine and the processes of controlling crossings and entry points, different policies and measures, and its effective role in delaying the uncontrolled spreading of the epidemic and preventing the worst scenario of the epidemic crisis.

Several types and stages of Surveillance and lab examinations use different protocols and policies as Pooled tests,. The different rapid response and investigation teams with their effective roles highlighted the effective role of Telemedicine and mobile medical teams. There was a high level of accuracy of the lab results through different stages and protocols. The Palestinian MOH regarding IPC which aimed to limit the spread of the epidemic offered efforts began before detecting any positive case in GS, which ranged from extended weeks of compulsory home quarantine and curfews to preventive measures and policies according to the epidemic stage and protocols.

Distinguished and unique efforts done by MoH to surge the capacity of hospitals, departments, and quarantine places according to the epidemic stage and medical protocols and to continue the other routine and emergency health services of the community during the Covid-19 epidemic through a set of creative and holistic measures. Regarding the operational support and logistics during the Covid-19 epidemic, there was a shortage

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

of human, therapeutic, and financial resources and logistics either before or during the Covid-19 epidemic but according to the participants of our study, there was a plan to manage the resources and logistics with its various types and there were some contributing factors as international aids and Governmental budget.

6. Recommendations

In light of the study results, 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, promoting health contingency planning based on different scenarios and risk analysis and effectively involving all health services providers, and enhancing the culture of documenting their experiences in dealing with their 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, to direct international aids and funds to enhance the long-term capabilities of emergency management and primary health care rather than short-term projects, to focus on telemedicine and health applications to facilitate health service provision during such pandemics and to develop the health information systems and health informatics.

7. Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

8. Conflict of Interests

The authors declare that this manuscript was approved by all authors in its form and that no competing interest exists.

9. Authors' Contributions

The first Author (Belal Aljamal) was responsible for conceiving and designing the analysis and collecting the data by implementing the interviews, the second and third authors (Mohammed Abuanja, and Susan Zroog) contributed to data analysis tools and methodology, contributed in performing the analysis and writing the paper.

10. Acknowledgments

The researcher completed this study under the guidance and supervision of Prof. Mohammed Jebreldar, and Prof Sozan Ali who belong to the University of Butana as a part of the Ph.D. study Requirements. I would like to thank all those who helped me, Dr. Hammoda Abu-Odah, Dr. Motasem Salah, and Mr. Hamada Dorgham**.**

11. Funding

This study was not funded but was self-financed research.

12. Supplementary Material

Table S1: shows the participants positions and affiliations who targeted in the study to gather suitable and sufficient data, who considered members of the Higher Health Emergency Committee and the Covid-19 Crisis Cell. Table S2: is the Final set of an audio-recorded interview guide.

Table S 1 : Key decision-and policymakers included in this study

Org. abbreviation	Full name (participants affiliation)	No. of Participantsin the interview
MOH	Assistant deputy minister	1
	Assistant deputy minister for IT and Information Systems.	1
	Assistant deputy minister for Engineering and Maintenance Affairs	1
	GD of Administrative Affairs	1
	GD of Health Information Unit	1
	GD of General Administration of Hospitals	1
	GD of Financial Affairs	1
	GD of Nursing	1
	GD of International Cooperation	1
	GD of Pharmacy	1

	GD of Mental Health	1
	GD of IT and communication technology.	1
	GD of the Laboratory and Blood Banks Unit.	1
	GD of Internal monitoring	1
	GD of the Ambulance and Emergency Unit	1
	Chairman of Covid-19 crisis cell and advisory committee	1
	Director of the Safety and Infection Control Unit	1
	Director of the Coordination Unit with Non-Governmental Health Service Providers	1
	Director of the Public Relations and Media Unit	1
	Manager of Public health emergency operation center (PHEOC)	1
	Heads of the health emergency committees in the governorates (Directors of the main hospitals at governorates)	4
WHO	Health cluster coordinator - WHO	1
	Total participants	25

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

Study Objectives	Questions	Probe	Type of participants will be offered the question
Warm-up enquiries	*1. Could you briefly describe your Sociodemographic data (According to interview guide part1)*		All participants
	2. Have you received crisis management courses?	• Probe to what extent health policy-maker's attitudes and capacity to have a culture of crisis management? • Probe what health policy-makers have prior knowledge of dealing with pandemic crises?	All participants
	3. Have you received crisis management courses for Covid-19?		All participants
1. To assess the preparedness and response of Palestinian MOH for the COVID-19 pandemic from health policymakers' perspective in the Gaza strip regarding Country-level coordination, planning and monitoring, Risk communication, and community engagement.	*3 As one of the key persons in MOH: can you describe multi-sectoral and multi-partner coordination, planning, and monitoring to support preparedness and response to the Covid-19 pandemic?*	• Probing question about if the preparedness and response was according a clear plan with scientific and managerial base? • Probe to what extent MoH involved other health partners and health services provider in the plan? • Probe about the committees and administrative hierarchy to manage all aspects of the pandemic health service's needs?	All participants
	4 Can you tell about the mechanisms for controlling media communication with society - with its various segments - and involving it in the epidemiological situation and what is your assessment of the efficacy of these mechanisms?	• Probe about the mechanisms for controlling media communication during covid-19? • Probe about to what extent the community engagement was through various formal and social media? • Probing question about the efficacy of media controlling mechanism to achieve its roles?	All participants

Published on 30-12-2024 in the el-Bahith review (Mağallaẗ al-bāḥiṯ) : https://elbahithreview.edu.dz

2. To identify the preparedness and response of Palestinian MOH for the COVID-19 pandemic from health policy-makers' perspective in the Gaza strip regarding Surveillance, rapid response teams, case investigation, and Points of entry.	*5 As far as you know, how was the process of controlling entry points and crossings, what were the safety and infection control measures that were taken, and did they have an effective role?*	• Probe about the process of controlling entry points and crossings during covid-19? • Probe about the safety and infection control measures at entry points and crossings? • Probing question about if the process of controlling entry points had an effective role: If say yes, how this helped in covid-19 crisis management? If say no, what the alternatives?	All participants
	6 Can you explain the protocol of Surveillance, case investigation process, rapid response teams, and the forms of reports that were issued?	• Probe about the protocol of Surveillance, case investigation process during covid-19? • Probe about various rapid response team's tasks? • Probing question about what reports were issue routinely or not routinely?	All participants
		Prompt: What the role of the Palestinian health information center (PHIC) in reporting?	GD of Health Information Unit
		Prompt: What the role of IT and communication technology in reporting?	GD of IT and communication technology.
3.To assess the preparedness and response of Palestinian MOH for the COVID-19 pandemic from health policy-makers' perspective in the Gaza strip regarding Infection prevention and control and National laboratories.	*7 How do you describe the capacity and response of laboratories, and what are the standards and procedures used to manage test samples from the moment they are withdrawn until their registration and notification in light of safety procedures and risk reduction?*	• Probing question about capacity and response of laboratories? • Probe about what are the standards and procedures used to manage test samples from the moment they are withdrawn until their registration during covid-19? • **Prompt**: How do you assess the accuracy of the tests and safety procedures?	All participants except non-medical specialty (Assistant deputy minister for IT and Information Systems, Assistant deputy minister for Engineering and Maintenance Affairs, GD of Administrative Affairs, GD of Financial Affairs, GD of IT and communication

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

	8 *Can you tell about the efforts and procedures made by the Palestinian MOH regarding prevention and infection control measures in various health and non-health sectors, starting with PPEs and policies for referring and transferring patients, to training and awareness-raising for health cadres and the community?*	• Probing question about the efforts and procedures made by the Palestinian MOH regarding prevention and infection control measures in various health and non-health sectors? • Probe about what are the policies for referring and transferring patients? • Probe about what are the efforts in training and awareness-raising for health cadres and the community?	technology)
		Prompt: What is role and efforts of General Directorate of the Ambulance and Emergency Unit in referring and transferring patients?	GD of the Ambulance and Emergency Unit.
4.To identify the preparedness and response of Palestinian MOH for the COVID-19 pandemic from health policy-makers' perspective in the Gaza strip concerning Case management and Operational support and logistics.	*9 Can you give a summary of the medical plan and procedures adopted by the health system to manage cases - with their various vulnerability and severity-, Mechanism for determining the medical protocol, and how it meets the other routine and emergency health services of the community during the Covid-19 pandemic?*	• Probing question about the medical plan and procedures and classification of patients? • **Prompt**: What is the criterion for distributing patients to hospitals? • Probe about what are the Mechanism for determining the medical protocol of covid-19 patents treatments? • Probe about how MoH could meets the other routine and emergency health services of the community during the Covid-19 pandemic?	All participants except non-medical specialty (Assistant deputy minister for IT and Information Systems, Assistant deputy minister for Engineering and Maintenance Affairs, GD of Administrative Affairs, GD of Financial Affairs, GD of IT and communication technology)
	10 *Can you explain managing operational and logistical support during the Covid-19 pandemic, and how was the process of managing and controlling human and material resources?*	• Probing question about the mechanism and process of managing operational, logistical support ad resources during the Covid-19 pandemic**?**	All participants
5.To determine the main challenges and	*11 From your point of view, what are the*	• Probe about the main challenges to	All participants

obstacles faced by the Palestinian Ministry of Health in managing the Covid-19 pandemic crisis, and the lessons learned.	*main challenges and obstacles that the health sector faced during the management of the Covid-19 pandemic crisis, and how was the ministry overcome them?*	covid-19 service's needs regarding (structures, human resources, medical supplies and drugs…*etc.?* • Probe about ways of dealing and solving measures that facilitate to deal with it?	
	12 As one of the health policymakers, can you evaluate the Ministry of Health's general experience in managing the COVID-19 crisis, and what are the main lessons learned?	• Probing question about **the** Ministry of Health's general experience in managing the COVID-19 crisis? • **Prompt**: From your point of view, can you give us an assessment of preparedness and response in percentage form? • Probe about the main lessons learned during covid-19?	All participants
Ending of interview	*13* Is there anything else they would like to add or suggest?		All participants

GD: General Director; MOH: Ministry of Health; WHO: World health organization

Table S 2: Final set of an audio-recorded interview guide

GD: General Director; MOH: Ministry of Health;

Referrals and references:

1. "A Protocol for Pooled RT-PCR Testing of COVID-19 - The Hindu." 2022. 2022. https://www.thehindu.com/sci-tech/science/a-protocol-for-pooled-rt-pcr-testing-of-covid-19/article31489428.ece.
2. Abu-Odah, H, A Molassiotis, and L Justina. 2022. "(PDF) An Exploration of the Factors and Needs Associated with the Development of a Palliative Care Programme into the Palestinian Healthcare System from Different Key Stakeholders' Perceptions." https://www.researchgate.net/publication/362409159_An_Exploration_of_the_Factors_and_Needs_Associated_with_the_Development_of_a_Palliative_Care_Programme_into_the_Palestinian_Healthcare_System_from_Different_Key_Stakeholders'_Perceptions.
3. Abu-Odah, Hammoda, Sheena Ramazanu, Eslam Saleh, Jonathan Bayuo, Yehia Abed, and Motasem Said Salah. 2021a. "COVID-19 Pandemic in Hong Kong and Gaza Strip: Lessons Learned from Two Densely Populated Locations in the World." *Osong Public Health and Research Perspectives* 12 (1): 44–50. https://doi.org/10.24171/J.PHRP.2021.12.1.07.
4. Aljabari, Mohammed A., S. Elkhateeb Mahmoud, Hamada K. Dorgham, and Ahmed H. Alsufi. 2021. "Assessment of Health System Preparedness for Response in the Context of COVID-19 in the Gaza Strip." Ministry of Health, Gaza Strip.
5. Alser, Osaid, Heba Alghoul, Zahra Alkhateeb, Ayah Hamdan, Loai Albarqouni, and Kiran Saini. 2021. "Healthcare Workers Preparedness for COVID-19 Pandemic in the Occupied Palestinian Territory: A Cross-Sectional Survey." *BMC Health Services Research* 21 (1): 1–7. https://doi.org/10.1186/S12913-021-06804-7/TABLES/4.
6. Alser, Osaid, Shaymaa Alwaheidi, Khamis Elessi, and Hamza Meghari. 2020. "COVID-19 in Gaza: A Pandemic Spreading in a Place Already under Protracted Lockdown." *Eastern Mediterranean Health Journal* 26 (7): 762–63. https://doi.org/10.26719/EMHJ.20.089.
7. Cronin, Patricia, Michael Coughlan, and Valerie Smith. 2014. "Understanding Nursing and Healthcare Research." *Sage*, 207.

This is an open access article under the CC BY-NC license: https://creativecommons.org/licenses/by-nc/4.0/deed.en

8. Geleta, Tinsae Abeya, Berhanu Senbeta Deriba, Rebik Shukure Beyane, Ahmed Mohammed, Tadesse Birhanu, and Kemal Jemal. 2020. "Covid-19 Pandemic Preparedness and Response of Chronic Disease Patients in Public Health Facilities." *International Journal of General Medicine* 13: 1011–23. https://doi.org/10.2147/IJGM.S279705.
9. Graneheim, Ulla Hallgren, and B. Lundman. 2004. "Qualitative Content Analysis in Nursing Research: Concepts, Procedures and Measures to Achieve Trustworthiness." *Nurse Education Today* 24 (2): 105–12. https://doi.org/10.1016/J.NEDT.2003.10.001.
10. Hong, Ki Ho, Sang Won Lee, Taek Soo Kim, Hee Jae Huh, Jaehyeon Lee, So Yeon Kim, Jae Sun Park, et al. 2020. "Guidelines for Laboratory Diagnosis of Coronavirus Disease 2019 (COVID-19) in Korea." *Annals of Laboratory Medicine* 40 (5): 351–60. https://doi.org/10.3343/ALM.2020.40.5.351.
11. Humaid, Labeeb. 2022. "Preparedness of the Governmental Hospitals to Respond to Corona Virus Pandemic Case Study: Radiology Department." Islamic University of Gaza.
12. Khan, Anas, Ahmed Alahmari, Yasir Almuzaini, Nada Alturki, Alhanouf Aburas, Fahad A. Alamri, Mohammed Albagami, et al. 2021. "The Role of Digital Technology in Responding to COVID-19 Pandemic: Saudi Arabia's Experience." *Risk Management and Healthcare Policy* 14: 3923–34. https://doi.org/10.2147/RMHP.S317511.
13. Kucharski, Adam J., Timothy W. Russell, Charlie Diamond, Yang Liu, John Edmunds, Sebastian Funk, Rosalind M. Eggo, et al. 2020. "Early Dynamics of Transmission and Control of COVID-19: A Mathematical Modelling Study." *The Lancet Infectious Diseases* 20 (5): 553–58. https://doi.org/10.1016/S1473-3099(20)30144-4.
14. Lee, Seulki, Jungwon Yeo, and Chongmin Na. 2020. "Learning From the Past: Distributed Cognition and Crisis Management Capabilities for Tackling COVID-19." *American Review of Public Administration* 50 (6–7). https://doi.org/10.1177/0275074020942412.
15. Miller, Robert L. 2006. "Handling Qualitative Data: A Practical Guide." *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 7 (2). https://doi.org/10.17169/fqs-7.2.107.
16. MOH. 2022. "Health Emergency Plan 2022-2023."
17. PCBS, Palestinian Central Bureau of Statistics. 2022. "Palestine in Figures 2021." Ramallah – Palestine.
18. Qadah, Talal. 2020. "Knowledge and Attitude among Healthcare Workers towards COVID-19: A Cross Sectional Study from Jeddah City, Saudi Arabia." *The Journal of Infection in Developing Countries* 14 (10): 1090–97. https://doi.org/10.3855/jidc.13083.
19. Qandeel, Nesma. 2022. "Assessment of Governmental Hospitals Response in Containing the COVID-19 Pandemic Crisis from the Supervisors and Managers' Perspective." Islamic university of Gaza.
20. Samsuddin, Nor Malyana, Roshana Takim, Abdul Hadi Nawawi, and Sharifah Nur Aina Syed Alwee. 2018. "Disaster Preparedness Attributes and Hospital's Resilience in Malaysia." *Procedia Engineering* 212 (January): 371–78. https://doi.org/10.1016/J.PROENG.2018.01.048.
21. Sheikhbardsiri, Hojjat, Ahmad Reza Raeisi, Mahmood Nekoei-Moghadam, and Fatemeh Rezaei. 2017. "Surge Capacity of Hospitals in Emergencies and Disasters With a Preparedness Approach: A Systematic Review." *Disaster Medicine and Public Health Preparedness* 11 (5): 612–20. https://doi.org/10.1017/DMP.2016.178.
22. Shereen, Muhammad Adnan, Suliman Khan, Abeer Kazmi, Nadia Bashir, and Rabeea Siddique. 2020. "COVID-19 Infection: Emergence, Transmission, and Characteristics of Human Coronaviruses." *Journal of Advanced Research* 24 (July): 91–98. https://doi.org/10.1016/J.JARE.2020.03.005.
23. Tambora, Montaser. 2022. "Preparedness of the Emergency Committees Preparedness in Managing the COVID-19 Crisis North Gaza Governorate - Palestine." Islamic university of Gaza.
24. Unit of information system-MOH. 2022. "Epidemiological Situation of the COVID-19 Pandemic." Ministry of Health. Gaza Strip. 2022. https://www.moh.gov.ps/portal/coronavirus/.
25. UNRWA. 2018. "Where We Work." UNRWA. 2018. https://www.unrwa.org/ar/where-we-work.
26. Wang, Chen, Peter W. Horby, Frederick G. Hayden, and George F. Gao. 2020. "A Novel Coronavirus Outbreak of Global Health Concern." *The Lancet* 395 (10223): 470–73. https://doi.org/10.1016/S0140-6736(20)30185-9.
27. WHO. 2020. "COVID-19 Strategic Preparedness and Response Plan." UN,. https://digitallibrary.un.org/record/3859863.