

# A crisis amidst many others: COVID-19 response satisfaction during the economic collapse and post-Beirut port explosion in Lebanon

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## ABSTRACT

The COVID-19 pandemic in Lebanon has been compounded by the economic collapse and devastating Beirut port explosion, leading to a severe humanitarian crisis. This study aimed to assess the satisfaction of the Lebanese population with the government's response to the pandemic and evaluate the public perception of the economic crisis and the Beirut port blast's impact on the COVID-19 situation. This is a web-based cross-sectional study that utilized a self-administered questionnaire comprising closed-ended questions with predefined response options. To identify predictors of the governmental response score, a multiple linear regression analysis was conducted. A total of 2,384 participants were enrolled, with a mean COVID-SCORE of  $15.38 \pm 5.28$  (out of 40 points). The majority of participants (2,163, 90.7%) expressed mistrust in the Lebanese government's ability to effectively address unexpected health threats related to the COVID-19 pandemic. Two-thirds of the participants (1,849, 77.6%) believed that the economic crisis had impacted the government's response to the pandemic. Nearly 70% of the participants perceived that the Beirut port explosion contributed to COVID-19 transmission. Government mistrust, along with the economic crisis impact, were significantly associated with lower satisfaction scores ( $P < 0.001$ ). This study revealed a significant level of dissatisfaction among the Lebanese population regarding the government's response to the COVID-19 pandemic, underscoring a lack of trust in its ability to effectively manage the crisis. The compounding challenges arising from the Beirut port explosion, economic collapse, and depleted resources have further impeded Lebanon's ability to navigate the pandemic successfully. Urgent interventions and collaborative efforts are required to effectively manage the economic and political repercussions, rebuild a resilient healthcare system, and alleviate the humanitarian crisis in Lebanon.

## Key words:

COVID-19; pandemic; perception; level of satisfaction; government; economic crisis; Beirut port explosion, Lebanon

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## INTRODUCTION

The COVID-19 pandemic inflicted a detrimental impact on Lebanon, a country currently facing extreme political instability and economic collapse. Years of political mismanagement and corruption have contributed to one of the most severe economic crises since the Great Depression of the 1930s.<sup>1-3</sup> This compounded crisis facing Lebanon, consisting of economic collapse, political instability, and the COVID-19 pandemic, was further intensified by the tragic Beirut port explosion on August 4, 2020. The explosion caused extensive damage to the Eastern sector of Beirut, resulting in the loss of 220 lives, 6,500 injuries, 300,000 displaced individuals, and substantial financial losses.<sup>4</sup> The explosion inflicted billions of dollars in damages to the country's infrastructure, exacerbating the ongoing economic crisis and heightening its vulnerability.<sup>4</sup> As a consequence, Lebanon struggled to effectively manage the pandemic and address the concurrent crises, leading to an overwhelmed healthcare system, overburdened hospitals, and healthcare professionals, creating a recipe for disaster. These factors impeded Lebanon's response to COVID-19, forcing the country to operate with limited resources.<sup>5</sup>

Presently, Lebanon finds itself isolated, lacking substantial international support, and enduring successive hardships, resulting in a vicious cycle of self-inflicted destruction.<sup>5</sup> Globally, governments play a critical role in curbing the spread of pandemics and mitigating their impact on their respective nations.<sup>6</sup> As of December 15, 2020, Lebanon had reported 147,613 confirmed COVID-19 cases, accounting for approximately 2.17% of the population, which is estimated to be around 6.8 million. Additionally, there were 1,347 reported deaths, resulting in a mortality rate of

0.91%.<sup>7</sup> However, Lebanon faced an inadequate response to the COVID-19 crisis, characterized by a lack of transparency. This inadequacy was reflected in delayed and insufficient enforcement of strict lockdowns and preventive measures, as well as an inadequate healthcare response, leading to shortages of essential medical supplies, medications, and facilities for treating COVID-19.<sup>6,8-10</sup>

Therefore, this study aimed to evaluate the perception of the Lebanese population regarding the government's response to the COVID-19 pandemic, while also assessing the impact of the economic crisis and the Beirut port explosion on the COVID-19 situation. Shedding light on these crucial aspects within an economically shattered and corruption-riddled country like Lebanon will deliver a comprehensive view of COVID-19 control strategic plans for future pandemics. It will serve as a foundation for mobilizing international and national organizations to collaborate effectively in devising interventions, strategies, and providing support to aid Lebanon in this genuine humanitarian crisis.

## METHODS

### *Study Design*

This web-based cross-sectional study was conducted from December 15, 2020, to February 1, 2021, with a non-probability sampling approach targeting adult Lebanese participants aged 18 years and above. Recruitment of participants took place through various social networking platforms, including social media, emails, online radio, and newsgroups. Participants were invited to self-administer the survey and partake in the study. The survey was made available in both English and Arabic, allowing participants to choose their preferred language for response.

### ***Questionnaire development and structure***

The questionnaire employed in this study consisted of 40 closed-ended questions with pre-specified response options. It was structured into two main sections. The first section focused on collecting participants' sociodemographic information, including age, gender, educational level, number of family members, health insurance coverage, household income, employment status, and marital status. The second section gathered information regarding the impact of the economic crisis and Beirut port explosion on the spread of COVID-19. Additionally, this section assessed participants' satisfaction with the Lebanese government's response to COVID-19 using the COVID-SCORE-10 scale.

The COVID-SCORE-10 scale used in this study was adapted from a previously developed and validated scale by Lazarus et al.<sup>11</sup> It consisted of ten items measuring participants' satisfaction on a 5-point Likert scale, with response options ranging from 1 (Strongly disagree) to 5 (Strongly agree). For our study, we included eight items from the scale, excluding two items that were deemed inapplicable to the Lebanese context. Thus, the scale mean ranged from 8 to 40 (**COVID-SCORE-8**), with a higher score indicating a stronger agreement and satisfaction towards the government's response in handling the pandemic, and vice versa. To assess the internal reliability of the scale, a Cronbach's alpha test was conducted, yielding a value of 0.825, indicating that the scale has good internal consistency and reliability.

A pilot study was conducted with a sample of 10 participants to assess the validity and reliability of the survey. The participants were asked to evaluate various aspects of the survey, including its structure, clarity, length, and overall impression. Based on their feedback, certain questions were modified to enhance the survey's quality. The data collected

during the pilot study was not included in the final study analysis.

### ***Statistical analysis***

Collected data were analyzed using the IBM Statistical Package for Social Sciences software version 24 (SPSS® Inc., Chicago, IL, USA). Categorical variables were represented as frequencies and percentages, while continuous variables as mean and standard deviation. Univariate and multiple linear regression were used to screen for predictors of governmental response scores. All variables with  $p < 0.25$  resulting from the univariate analysis were entered into a multiple linear regression model, using backward stepwise analysis. Results with a P-value  $\leq 0.05$ , with a 95% confidence interval, are considered significant.

### ***Ethical considerations***

The study design and conduct followed the guidance of the World Medical Association Declaration of Helsinki. The study received approval from the institutional review board (IRB) at Beirut Arab University (No. 2020-H-0071-P-R-0435). The aim of the study was explained in the introduction of the questionnaire. Participation was voluntary, and electronic informed consent was obtained. Participants had the right to refrain from submitting their responses at any time. The anonymity of respondents was preserved as no personal data or identifiers of participants were collected.

## **RESULTS**

### ***Demographics and Socioeconomic Status***

A total of 2,384 individuals participated in this study. The majority of the participants were young (2,148, 90.1%), falling between the ages of 18 and 44 years. Additionally, almost two-thirds of the participants were females (1,697, 71.2%). The majority of the participants held a university degree (74.2%). Just over half of the respondents were employed at the time

of data collection, and nearly two-thirds reported receiving their monthly household income in Lebanese Lira currency. The median amount of the monthly household income is equivalent to \$454 [227 – 1,136\$]. Among the employed respondents (n=1,288), 734 (57.0%) experienced recent

changes in their jobs, with 654 (50.8%) facing reductions in their salaries. These consequences were attributed to either the pandemic, economic crisis, or both. For more detailed sociodemographic data of the participants, please refer to Table 1.

**Table 1.** Socio-demographic data of study participants

	<b>Total (N = 2,384)</b>
Age (Years), Mean $\pm$ SD	28.8 $\pm$ 10.43
18-44	2,148 (90.1%)
45-64	219 (9.2%)
$\geq 65$	17 (0.9%)
Gender, n (%)	
Male	687 (28.8%)
Female	1,697 (71.2%)
Educational Level, n (%)	
No education/Illiterate	18 (0.8%)
High School Degree	353 (14.8%)
Some College	243 (10.2%)
Bachelor's Degree	1,000 (41.9%)
Post Graduate Degree	770 (32.3%)
Number of Family members, Mean $\pm$ SD	4.45 $\pm$ 1.71
Number of Children, Mean $\pm$ SD	1.78 $\pm$ 1.33
Marital Status, n (%)	
Single/Engaged	1,622 (68%)
Married	697 (29.2%)
Widowed/Divorced	65 (2.7%)
Medical Insurance, n (%)	
No	573 (24%)
Yes	1,811 (76%)
Employment Status, n (%)	
No	1,096 (46%)
Yes	1,288 (54%)
Monthly Household Income (\$), median [IQR]	454\$ [227 – 1,136\$]

### ***Satisfaction Score of Governmental Response (COVID-SCORE-8)***

The mean COVID-SCORE is 15.38  $\pm$  5.28 (out of 40 points), indicating that the majority of the respondents disagree and are dissatisfied with the governmental response in handling the pandemic (Table 2). More than 45% of the respondents disagreed/strongly disagreed on all eight statements. The statement "The Lebanese government helped me and my family meets our daily needs during the COVID-

19 pandemic in terms of income, food, and shelter" received the lowest proportion of agreement from respondents (87.2%). In contrast, the highest proportion of agreement by respondents (30%) was given to the statement, "The Lebanese government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity, or language".

**Table 2.** Scores of governmental responses against COVID-19 (COVID-SCORE-8)

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Score
1. Do you approve of the way the Lebanese government is handling the pandemic in Lebanon?	1,033 (43.3%)	809 (33.9%)	369 (15.5%)	148 (6.2%)	25 (1%)	1.88 ± 0.95
2. The Lebanese government provided assistance to me and my family, ensuring that our daily needs such as income, food, and shelter were met during the COVID-19 pandemic.	1,627 (68.2%)	453 (19%)	246 (10.3%)	44 (1.8%)	14 (6%)	1.48 ± 0.79
3. The Lebanese government communicated clearly to ensure that everyone had the information they needed to protect themselves and others from COVID-19, regardless of socioeconomic level, migrant status, ethnicity, or language.	621 (26%)	557 (23.4%)	553 (23.2%)	545 (22.9%)	108 (4.5%)	2.56 ± 1.22
4. I trusted the Lebanese government's reports on the spread of the pandemic and the statistics on the number of COVID-19 cases and deaths.	682 (28.6%)	668 (28%)	526 (22.1%)	446 (18.7%)	62 (2.6%)	2.39 ± 1.15
5. The Lebanese government provided everyone with access to free, reliable COVID-19 testing if they had symptoms.	1,160 (48.7%)	652 (27.3%)	366 (15.4%)	172 (7.2%)	34 (1.4%)	1.85 ± 1.01
6. The Lebanese government made sure we always had full access to the healthcare services we needed during the pandemic.	968 (40.6%)	757 (31.8%)	436 (18.3%)	195 (8.2%)	28 (1.2%)	1.98 ± 1.01
7. The Lebanese government provided special protections to vulnerable groups at higher risk such as the elderly, the poor, migrants, prisoners, and the homeless during the COVID-19 pandemic.	1,239 (52%)	789 (33.1%)	279 (11.7%)	66 (2.8%)	11 (0.5%)	1.67 ± 0.82
8. The Lebanese government provided mental health services to help people suffering from loneliness, depression, and anxiety caused by the COVID-19 pandemic.	1,380 (57.9%)	691 (29%)	245 (10.3%)	57 (2.4%)	11 (0.5%)	1.59 ± 0.80
<b>Total Score (out of 40)</b>						<b>15.38 ± 5.28</b>

\*P-value ≤ 0.05, 5-point Likert Scale coded as follow (Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5)

A Cronbach's alpha test was used to test the internal reliability of the 8 items Governmental Response scale, which yielded a 0.825, thus the current scale has reliable and has a good internal consistency

### **Public Perception of Governmental Response and Contributing Factors to COVID-19 Transmission**

The majority of participants (2,163, 90.7%) expressed mistrust in the Lebanese government's ability to successfully address unexpected health threats related to the COVID-19 pandemic. When asked about the current state of the pandemic in Lebanon, most of the participants (2,616, 90.6%) believed that the worst is yet to come. In terms of the impact of the economic crisis on the spread of COVID-19, over 70% of respondents answered affirmatively, recognizing it as a major contributing factor to the high number of COVID-19 cases. Moreover, two-thirds of the participants (1,849, 77.6%) believed that the economic crisis had an impact on the government's response to handling the

pandemic. Additionally, almost 70% of the participants (1,686, 70.7%) believed that the Beirut port explosion significantly contributed to the transmission of COVID-19 in Lebanon.

### **Predictors of the Satisfaction Score of Governmental Response**

**Table 3** presents the results of a linear regression analysis, indicating the significant predictors influencing the satisfaction with governmental response score. The following factors were significantly associated with lower satisfaction scores for governmental response: government mistrust in addressing the health threat, perception of the economic crisis impact on COVID-19 response, and perception of economic crisis impact on the pandemic spread ( $P < 0.001$ ).

**Table 3.** Multiple linear regression analysis of the governmental score

Model	Unstandardized Coefficients		Standardized Coefficients	t	P-value	95% CI
	B	Std. Error	Beta			
(Constant)	22.78	1.07		21.3	0.001*	20.68 - 24.88
Educational Status	-0.1	0.11	-0.02	-0.93	0.35	-0.42
Marital Status	0.23	0.2	0.02	1.15	0.25	-0.79
Trust that the Lebanese government will successfully address unexpected health threats to Lebanon related to COVID 19 pandemic	5.24	0.4	0.28	12.9	< 0.001*	4.45 - 6.04
Do you think the economic crisis phased by Lebanon impacted the COVID-19 response of the Lebanese Government?	1.37	0.27	0.11	5.04	< 0.001*	0.84 - 1.90
Do you think the economic crisis was a major factor that led to high COVID-19 cases in Lebanon?	0.53	0.24	0.04	2.17	0.03*	0.05 - 1.02

Abbreviations: CI, confidence interval; SE, standard error, \*= statistically significant ( $P \leq 0.05$ )

ANOVA F: 63.83, P-Value: 0.0001

R: 0.553 and R2: 0.305 → thus the model detects 30% of the variation in the mean of COVID-8-Score

## **DISCUSSION**

This study examined the sentiment of the Lebanese population regarding the government's response to the COVID-19 pandemic. It was conducted amidst the

severe economic crisis that struck Lebanon, exacerbated by the devastating Beirut port blast. Currently, Lebanon is undergoing a collapse reminiscent of Venezuela, characterized by severe shortages of basic food and medications, as well as daily

instability in the Lebanese currency. This dire situation has put millions of Lebanese citizens and refugees in the midst of a grave humanitarian crisis.<sup>1,4</sup> The study's findings indicate a significant level of dissatisfaction among Lebanese population, highlighting their lack of trust in the government's management of the pandemic. The Human Rights Watch has reported the failure of the Lebanese political class in effectively addressing the political, economic, and health crises.<sup>12</sup> Additionally, the report published by the Arab Reform Initiative titled "Towards a Zero-COVID Lebanon: A Call for Action" empirically and statistically supports some of the current study's data. According to the report, although the Lebanese government achieved initial success in handling the early stages of the COVID-19 pandemic, it failed to develop sustainable policies and long-term measures to support both the impoverished population and small businesses in coping with an unprecedented socioeconomic crisis. This failure ultimately resulted in local resistance to strict lockdown measures.<sup>13</sup>

The rapid economic downfall and sharp devaluation of the Lebanese Lira to an all-time low have significantly impacted the willingness of the Lebanese population to comply with COVID-19 restrictions and endure multiple lockdowns. In this context, people were more inclined to risk contracting COVID-19 rather than face the threat of hunger, particularly due to the absence of any substantial economic or stimulus plan from the Lebanese government to mitigate the effects of both the pandemic and the economic crisis.<sup>1,6,8</sup> Consequently, the public's lack of confidence in the government's ability to effectively address unforeseen health threats related to the pandemic is a prevailing sentiment among the majority of participants. The pessimism regarding the future course of the pandemic is equally concerning, with nearly 90% of respondents expressing a belief that the

worst is yet to come. This gloomy outlook among the Lebanese population directly correlates with the ongoing economic collapse, as significant number of participants attribute the economic crisis as a factor exacerbating the spread of COVID-19. Consequently, the persistent failure of the Lebanese political class to embrace necessary reforms will undoubtedly further deteriorate an already dire situation.

The perception of the Lebanese public towards their government is shaped by the absence of a clear, unified, and robust response plan to effectively manage the COVID-19 pandemic.<sup>14</sup> Following the devastating Beirut port explosion on 4<sup>th</sup> of August 2020, the Lebanese government failed to provide a practical and coherent COVID-19 response plan that could address the impact of the explosion on the country's healthcare sector.<sup>4,14</sup> The World Bank, in collaboration with the European Union and the United Nations, estimated in their Beirut Rapid Damage and Needs Assessment (RDNA) report that the damages incurred by the Lebanese health sector ranged between US\$95.0 million to US\$115.0 million. Approximately 36% of health facilities (292 out of 813) suffered damages worth US\$75.0 million to US\$90.0 million to hospital buildings. Some of the larger hospitals in the vicinity of the explosion remained partially or completely non-functional, with delayed or nonexistent rebuilding efforts. As a result, 70% of respondents believed that the port explosion significantly contributed to the spread of the pandemic.<sup>4,15</sup> The catastrophic explosion, one of the largest non-nuclear explosions in history, resulted in a rush of injured individuals seeking medical care at the remaining functioning hospitals in and around Beirut. This overwhelming influx of patients exceeded the capacity of medical facilities, hindering their ability to effectively handle the subsequent wave of COVID-19 cases.<sup>4</sup> Consequently, there was a noticeable spike in COVID-19 cases, doubling from 5,271 cases on August 4 to

10,952 cases on August 20. Moreover, the explosion severely depleted the national capacity to respond to the surge in COVID-19 cases and fulfill the secondary healthcare needs of the population.<sup>16</sup>

According to the World Bank Economic Monitor Report, despite continuous urging and warnings from international funding agencies for the Lebanese government to urgently implement reforms, limited policy responses have been observed.<sup>17</sup> Lebanon is currently facing a critical depletion of resources, including loss of human capital, leading to an increasingly desperate situation characterized by brain drain. This brain drain has had an immediate impact on the healthcare sector, exacerbated by the collapse of the Lebanese Lira, the complete breakdown of government services, and the traumatic effects of the Beirut port explosion. Lebanese physicians and healthcare workers have been compelled to migrate to Arab Gulf States and Western countries. Naturally, this mass exodus has directly affected the pandemic situation and the overall healthcare sector, which was already struggling to endure.<sup>5,18</sup>

This study had several limitations that should be acknowledged. Firstly, the self-administered nature of this study may have led to social desirability responses. Second, the recruitment of participants through social platforms resulted in a convenience sample, which may have introduced selection bias. Third, the study sample had an underrepresentation of the elderly and illiterate population, which could be attributed to the nature of the web-based questionnaire. Consequently, the generalizability of our findings to the Lebanese population is limited.

## RECOMMENDATIONS

In conclusion, this study provides insights into the sentiment of the Lebanese

population regarding the government's response to the COVID-19 pandemic. The findings indicate a significant level of dissatisfaction among Lebanese residents, highlighting a lack of trust in the government's ability to effectively handle the crisis. The already challenging situation in Lebanon, including the devastating Beirut port explosion and the ongoing economic collapse, has further exacerbated the difficulties faced in managing the pandemic. The absence of a clear and robust response plan, along with the depletion of resources and brain drain, has hindered Lebanon's capacity to navigate the pandemic successfully. It is imperative for the international community to intervene and address the medical, economic, and political repercussions of the crisis, as well as alleviate the humanitarian crisis faced by millions of Lebanese residents. Urgent action is required from political parties, health authorities, and the international community to overcome the multifaceted challenges and rebuild a resilient healthcare system and political landscape in Lebanon. Therefore, to improve Lebanon's ability to effectively respond to and manage future pandemics, the Lebanese government should focus on strengthening the national healthcare infrastructure and developing a comprehensive preparedness plan. As well as, fostering international collaboration, it is crucial to invest in healthcare workforce development, ensure equitable vaccine and treatment access, and conduct public education campaigns.

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## REFERENCES

1. The World Bank. Lebanon Sinking into One of the Most Severe Global Crises



- Episodes, amidst Deliberate Inaction [Internet]. 2018 [cited 2023 Jul 7]. Available from: <https://www.worldbank.org/en/news/press-release/2021/05/01/lebanon-sinking-into-one-of-the-most-severe-global-crises-episodes>
2. Corriero AC, Aborode AT, Reggio M, Shatila N. The impact of COVID-19 and the economic crisis on Lebanese public health: Food insecurity and healthcare disintegration. *Ethics Med Public Health*. 2022;24:100802. doi: 10.1016/j.jemep.2022.100802.
  3. Zheng Y, Xu N, Pang J, Han H, Yang H, Qin W, et al. Colonization With Extensively Drug-Resistant *Acinetobacter baumannii* and Prognosis in Critically Ill Patients: An Observational Cohort Study. *Front Med (Lausanne)*. 2021;8:667776. doi: 10.3389/fmed.2021.667776
  4. Al-Hajj S, Dhaini HR, Mondello S, Kaafarani H, Kobeissy F, DePalma RG. Beirut Ammonium Nitrate Blast: Analysis, Review, and Recommendations. *Front Public Health*. 2021;9:657996. doi: 10.3389/fpubh.2021.657996.
  5. Fleifel M, Abi Farraj K. The Lebanese Healthcare Crisis: An Infinite Calamity. *Cureus*. 2022;14(5):e25367. doi: 10.7759/cureus.25367
  6. Itani R, Karout S, Khojah HMJ, Rabah M, Kassab MB, Welty FK, et al. Diverging levels of COVID-19 governmental response satisfaction across middle eastern Arab countries: a multinational study. *BMC Public Health*. 2022;22(1):893. doi: 10.1186/s12889-022-13292-9.
  7. World Health Organization. Lebanon: WHO Coronavirus Disease (COVID-19) Dashboard With Vaccination Data [Internet]. [cited 2023 Sep 22]. Available from: <https://covid19.who.int/region/emro/country/lb>
  8. Khojah HMJ, Itani R, Mukattash TL, Karout S, Jaffal F, Abu-Farha R. Exposure of community pharmacists to COVID-19: A multinational cross-sectional study. *J Taibah Univ Med Sci*. 2021;16(6):920-8. doi: 10.1016/j.jtumed.2021.06.007
  9. Abu-Farha R, Mukattash T, Itani R, Karout S, Khojah HMJ, Abed Al-Mahmood A, et al. Willingness of Middle Eastern public to receive COVID-19 vaccines. *Saudi Pharm J*. 2021;29(7):734-9. doi: 10.1016/j.jsps.2021.05.005.
  10. Itani R, Khojah HM, Karout S, Abu-Farha R, Mukattash TL, Rahme D, et al. Oral contraceptive pills shortage in Lebanon amidst the economic collapse: a nationwide exploratory study. *BMC Health Serv Res*. 2023;23(1):520. doi: 10.1186/s12913-023-09523-3.
  11. Lazarus JV, Ratzan S, Palayew A, Billari FC, Binagwaho A, Kimball S, et al. COVID-SCORE: A global survey to assess public perceptions of government responses to COVID-19 (COVID-SCORE-10). *PLOS ONE*. 2020;15(10):e0240011. doi: 10.1371/journal.pone.0240011.
  12. Human Rights Watch. Lebanon: Failure to Address Economic, Political Crisis [Internet]. 2020 [cited 2023 Jul 7]. Available from: <https://www.hrw.org/news/2020/08/03/lebanon-failure-address-economic-political-crisis>
  13. Abi-Rached JM, Issa N, Khalife J, Salameh P, Karra-Aly A, Asmar M. Towards a Zero-COVID Lebanon: A Call for Action – Arab Reform Initiative [Internet]. Arab Reform Initiative; 2011 [cited 2023 Jul 7]. Available from: <https://www.arab-reform.net/publication/towards-a-zero-covid-lebanon-a-call-for-action/>
  14. Moussallem M, Zein-El-Din A, Hamra R, Rady A, Kosremelli Asmar M, Bou-Orm IR. Evaluating the governance and preparedness of the Lebanese health system for the COVID-19 pandemic: a qualitative study. *BMJ Open*. 2022;12(6):e058622. doi: 10.1136/bmjopen-2021-058622
  15. The World Bank. Beirut Rapid Damage and Needs Assessment (RDNA)

- [Internet]. 2020 [cited 2023 Jul 7]. Available from: <https://www.worldbank.org/en/country/lebanon/publication/beirut-rapid-damage-and-needs-assessment-rdna---august-2020>
16. Hashim HT, Uakkas S, Reda A, Ramadhan MA, Al Mostafa MY. Beirut Explosion Effects on COVID-19 Situation in Lebanon. Disaster medicine and public health preparedness. United States; 2022;16:1703–4.
17. The World Bank. Lebanon Economic Monitor, Spring 2023: The Normalization of Crisis is No Road for Stabilization [Internet]. 2023 [cited 2023 Jul 7]. Available from: <https://www.worldbank.org/en/country/lebanon/publication/lebanon-economic-monitor-spring-2023-the-normalization-of-crisis-is-no-road-for-stabilization>
18. Azhari T, Bassam L, Saad M. Lebanon's healthcare on brink of collapse amid crisis, says minister [Internet]. Reuters. 2022 [cited 2023 Jul 7]. Available from: <https://www.reuters.com/world/middle-east/lebanons-healthcare-brink-collapse-amid-crisis-says-minister-2022-01-20/>