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'COVID-19 is just another way to die…': a qualitative longitudinal study of frontline COVID-19 response governance across Syria

Yazan Douedari ,[1,2,3] Mervat Alhaffar ,[1,3] Ahmad Khanshor,[3] Omar Alrashid Alhiraki,[3,4] Manar Marzouk,[1,3] Natasha Howard [1,3,5]

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[1]Department of Global Health and Development, London School of Hygiene & Tropical Medicine Faculty of Public Health and Policy, London, UK
[2]Free Aleppo University, Azaz, Syria
[3]Syria Research Group, London School of Hygiene & Tropical Medicine and NUS Saw Swee Hock School of Public Health, London, UK
[4]Acute Medicine Department, United Lincolnshire Hospitals NHS Trust, Lincoln, UK
[5]Saw Swee Hock School of Public Health, National University of Singapore, Singapore

Correspondence to
Dr Yazan Douedari;
Yazan.Douedari@lshtm.ac.uk

ABSTRACT

Introduction Governance of COVID-19 responses has been challenging for all countries. Syria has been particularly challenged due to protracted multiparty conflict and debilitated health systems fragmented across different areas of control. To improve response governance, better understanding of frontline response policy implementation across the country is needed. This study thus explored perspectives of COVID-19 response governance among frontline healthcare providers over time and across major areas of control.

Methods We used a qualitative longitudinal study design, conducting five rounds of remote semistructured interviews in Arabic (ie, approximately eight interviews each in March 2020, July 2020, September 2020, December 2020 and September 2021) with 14 purposively sampled public and private healthcare providers in the three main areas of control (ie, opposition-controlled area, Autonomous Administration-controlled area and al-Assad government-controlled area (GCA)). We conducted integrative thematic analysis in Arabic within and across geography and time.

Results Almost all participants across all areas and rounds expressed distrust of local health authorities and dissatisfaction with COVID-19 response governance. This was most apparent in initial rounds and in GCA. Response planning was identified as insufficient, non-participatory and non-transparent. Limited infrastructure and resources were the main challenges across time, though anticipated rapid virus spread and health systems' collapse did not occur and participant optimism increased over time. Public adherence to prevention measures varied—initially weak due to general scepticism, increasing after first cases were confirmed and then fluctuating with case numbers and challenges of insecurity and misinformation. Perceptions of COVID-19 vaccination varied, with low uptake and hesitancy attributed to misinformation, disinformation and disinterest. Suggested improvements to COVID-19 response governance focused on strengthening health systems' capacity and coordination.

Conclusion This is a unique longitudinal study of COVID-19 responses. Addressing transparency and misinformation should be a first step to improving public engagement and trust and thus response governance for health emergencies in Syria.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ COVID-19 response governance is particularly challenging and complex in conflict-affected countries such as Syria.

WHAT THIS STUDY ADDS

⇒ Perceptions of COVID-19 response governance in Syria were primarily negative, reflecting concerns with transparency, equity and participation.
⇒ Dissatisfaction appeared strongest in government-controlled areas.
⇒ Public adherence to COVID-19 prevention appeared most related to trust in local authorities.
⇒ Social media was the main source of COVID-19 information across time and geography, including considerable misinformation.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Feasible low-cost interventions should be adopted by local authorities in conflict-affected areas to improve transparency and participation.
⇒ Doing so will likely improve public trust and consequently adherence to public health and disease control measures.

BACKGROUND

The COVID-19 pandemic, due to its severity and complexity, challenged public health authorities globally and highlighted deficiencies in national health crisis responses.[1 2] Most governments tried to reduce SARS-CoV-2 transmission through combinations of non-pharmaceutical interventions and vaccination once available.[3] Response governance refers to the capacity of governance actors to respond effectively and in a timely manner to emergencies.[4] It encompasses processes, systems, policies and practices that enable decision-making, resource allocation, communication and collaboration among emergency response actors.[5] Infectious disease response

governance aims at prevention, control and containment.[6] Geographical and socioeconomic differences across countries provided different COVID-19 response governance challenges,[7] such as federalism and fragmented approaches in the USA,[8 9] unclear policies and excess COVID-19 mortality in the UK[10] and high population density and increased morbidity in Japan.[11]

Response governance in lower income countries is particularly constrained by resources.[12–15] Lessons from Ebola response governance in Liberia and Sierra Leon indicated that without local engagement of non-state actors, epidemic containment would have been difficult.[16] Public engagement thus helps build trust between the state and communities through trusted intermediaries (eg, civil society groups).[16] Literature on infectious disease response governance indicates that transparency, participation and communication with the public are essential to success in any setting.[17 18]

Globally standard responses—primarily designed for stable high-income countries—were less feasible in conflict-affected countries, given damaged health infrastructure and extensive population displacement into temporary or informal shelters.[14 19 20] COVID-19 response governance in conflict-affected settings has generally been decentralised and uncoordinated between governments and de facto authorities.[19 21] In Yemen, both internationally recognised government and Houthi government responses were similar, with disparities in wartime social orders and security.[22] In Libya, political fragmentation and insecurity curbed containment efforts.[23 24] In Afghanistan, political instability, humanitarian difficulties and a fragile largely subcontracted health system exacerbated the pandemic.[25 26]

Syria's protracted 12-year multiparty conflict significantly constrained COVID-19 responses.[27] The conflict, which started with armed government responses to peaceful 2011 uprisings demanding change,[28] has thus far resulted in mass casualties and 6.5 of its 17 million population being displaced[29] and shift to low-income country status,[30] with 90% of its population living below the poverty line.[31] Healthcare has been politicised and weaponised through aid blockages and targeting of health facilities and personnel.[32 33] Conflict-induced political changes have resulted in emergence of three major military governance areas with distinct health systems, each with different governance, capabilities and COVID-19 response approaches (figure 1)[27 28 34]: (1) government-controlled areas (GCA) dominating Syria's south and centre[35 36]; (2) Autonomous Administration of North and East Syria-controlled areas (AACA) in the northeast, with approximately 100 000 of its 3.2 million people living in displacement camps[37 38]; and (3) opposition-controlled areas in Northwest Syria (OCA),[39] with an estimated population of 4.2 million, over 2.8 million displaced from across the country—1.2 million of them in camps.[40] COVID-19 responses for each area of control were primarily led by the Health Cluster in Gaziantep Türkiye for OCA (often sidelining health directorates (HD) in the region), by WHO and UNICEF for AACA and by the Ministry of Health in Damascus for GCA.

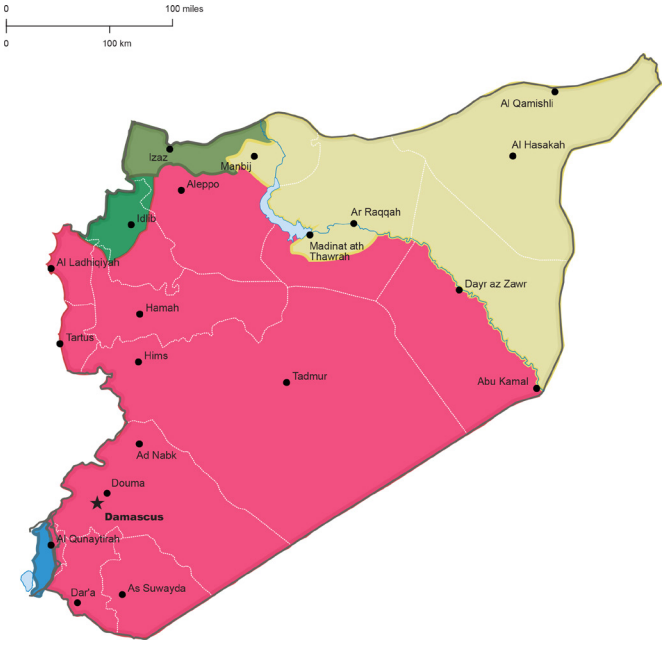

Figure 1 Syria map, indicating main areas of military control. Autonomous Administration-controlled area (AACA) is in yellow; government-controlled area (GCA) is in red; opposition-controlled area (OCA), along with Turkish-controlled areas, is in green. Source: Noor Albeik, 2022.[20] Additionally, an open access regularly updated map can be found at https://syria.liveuamap.com/.

Emergency response governance is of paramount importance in conflict-affected countries such as Syria, which already experience humanitarian conditions due to violence, sociopolitical instability and fragmented governance structures.[28 32] Studying response governance in these settings can provide additional insight into response governance realities to help improve future responses. We thus aimed to examine how frontline COVID-19 response governance implementation varied or remained stable across time and governance areas in Syria during 2020–2021.

METHODS

Study design and methodological orientation

We chose a qualitative longitudinal study design using five rounds of remote semistructured interviews with frontline health workers in Syria's three main areas of military control over 18 months in 2020–2021. Lipsky's 1980 theorisation of street-level bureaucrats,[41] further articulated by Zacka,[42] helped inform our analysis of frontline governance policy implementation, decision-making and consideration of lessons. We chose this because of the fragmentation of authority and multiplication of health systems and responses across Syria, which we argue makes frontline interactions the default area in which to study policy interpretation, implementation and ad hoc development in all areas of the country.[42]

Our research question was: '*How do frontline Syrian health-workers perceive and implement COVID-19 response governance across time and geography?*'

Participant sampling and recruitment

We used a two-stage sampling process, as recruitment was challenged by confidentiality and safety concerns, limited internet access and time constraints. First, we sampled authors' WhatsApp contacts purposively to provide a broad range of professional perspectives. Second, we snowballed by asking each contact to identify two other potential participants. We ensured approximately 50% inclusion of women to counter Syrian women's frequent under-representation in research.[43]

To obtain informed consent, we sent potential participants the study information sheet and consent form electronically via WhatsApp and offered individual meetings to address questions and concerns. We then recorded written or verbal consent for those willing to participate prior to interview as described in Douedari *et al*.[43]

Patient and public involvement

We developed and implemented research guided by an advisory committee of Syrian academics and healthcare practitioners. All members had experience of the Syria's health systems as providers or researchers and helped reflect public priorities and preferences. We conducted Arabic and English dissemination webinars and are planning open access publication and Arabic translation of outputs hosted at https://scahr.org/.

Data collection

We developed an Arabic topic guide based on the literature and expert consultation to examine COVID-19 response governance, actors, challenges, facilitators and concerns while allowing exploration of emerging concepts. Interviews averaged 40 min each. As participants were based in Syria and authors in the UK, interviews were conducted in Arabic using WhatsApp and Signal freeware. YD, MA and AK conducted five rounds of interviews in March 2020 (ie, 7 interviews), July 2020 (ie, 9 interviews), September 2020 (ie, 8 interviews), December 2020 (ie, 10 interviews) and September 2021 (ie, 8 interviews) to correspond with COVID-19 prearrival, initial cases and responses, peak of first and second waves and initial vaccine rollout. A total of 42 interviews were conducted with 14 participants, including 16 total interviews in OCA, 13 in AACA and 13 in GCA (table 1). We determined data saturation using Fusch and Ness' grid.[44]

We conducted interviews at times chosen by participants, digitally recorded them with participant consent and took notes to contextualise findings. Interviews were recorded anonymously using numerical identification codes and transcribed by the team in Arabic. We stored audio recordings, transcripts and notes in password-protected files on London School of Hygiene & Tropical Medicine servers. An on-call Arabic-speaking psychotherapist was available to provide remote psychological support for participants and interviewers who needed it, though none used this.

Analysis

YD and AK analysed data in Arabic using integrative thematic analysis within and across geography and time as described by Neale.[45] After data familiarisation and initial inductive coding, they looked for patterns and variation within rounds and within area to identify potential themes. They then looked for continuities or changes in initial themes temporally across all rounds and geographically across all areas of control. We further contextualised themes according to question guide topics, transcripts and interview field notes and considered potential explanatory factors using member checking and referring to Syrian news media content. YD, AK and MA translated illustrative quotes into English. NH reviewed coding and themes and all authors revised discrepancies and agreed to final interpretations. We chose to report findings thematically by area of control rather than temporally, despite our initial assumption that temporal comparisons would prove more informative. This choice was guided by our data, which yielded richer differences geographically than temporally. Thus, temporal comparisons were analysed but only reported if relevant differences were noted. Reporting adheres to Consolidated Criteria for Reporting Qualitative Research criteria.[46]

Reflexivity

Two men (YD, AK) and one woman (MA) conducted interviews. All have experience conducting qualitative interviews in Syria. All are current or former Syrian health workers with experiential knowledge of the Syrian sociopolitical context, and participants responded to them as such. This appeared to facilitate trust, willingness to participate and discussion. YD and MA have MSc in Public Health degree and AK has MSc in Education degree, which influenced their interpretation. No interviewers had personal relationships with any participants.

Ethics

We received ethics approval from the Observational Research Ethics Committee at the London School of Hygiene & Tropical Medicine (reference: 17360) as no appropriate ethics committee exists in Syria.[43]

RESULTS

Participant characteristics and themes

Table 1 provides limited participant characteristics to avoid identification. Participants were all frontline providers with direct patient engagement, living and working in Syria at the time of interview. We included a range of professions (eg, doctors, dentists, pharmacists, midwives, nurses).

We categorised responses under: (1) frontline distrust and dissatisfaction; (2) complexity of governance actors[36]; (3) limited response planning and implementation; (4)

Table 1 Characteristics of 14 participants across 42 longitudinal interviews

Code	Round	Interviewees	Area	Gender	Age range	Governorate
R1-O1	1	Participant 1	OCA	Male	40–50	Idlib
R1-O2	1	Participant 2	OCA	Female	30–40	Aleppo
R1-A1	1	Participant 3	AACA	Male	30–40	Hasaka
R1-A2	1	Participant 4	AACA	Female	50–60	Hasaka
R1-G1	1	Participant 5	GCA	Male	30–40	Homs
R1-G2	1	Participant 6	GCA	Female	30–40	Damascus
R1-G3	1	Participant 7	GCA	Male	20–30	Aleppo
R2-O1	2	Participant 1	OCA	Male	40–50	Idlib
R2-O2	2	Participant 2	OCA	Female	30–40	Aleppo
R2-O3	2	Participant 8	OCA	Male	30–40	Idlib
R2-A1	2	Participant 3	AACA	Male	30–40	Hasaka
R2-A2	2	Participant 4	AACA	Female	50–60	Hasaka
R2-A3	2	Participant 9	AACA	Male	30–40	Deir-Ezzor
R2-G1	2	Participant 5	GCA	Male	30–40	Homs
R2-G2	2	Participant 6	GCA	Female	30–40	Damascus
R2-G3	2	Participant 7	GCA	Male	30–40	Aleppo
R3-O2	3	Participant 2	OCA	Female	30–40	Aleppo
R3-O3	3	Participant 8	OCA	Male	30–40	Idlib
R3-O4	3	Participant 10	OCA	Female	40–50	Aleppo
R3-O5	3	Participant 11	OCA	Female	50–60	Idlib
R3-G3	3	Participant 7	GCA	Male	30–40	Aleppo
R3-G4	3	Participant 12	GCA	Female	30–40	Homs
R3-A1	3	Participant 3	AACA	Male	30–40	Hasaka
R3-A3	3	Participant 9	AACA	Male	20–30	Deir-Ezzor
R4-O1	4	Participant 1	OCA	Male	40–50	Idlib
R4-O2	4	Participant 2	OCA	Female	30–40	Aleppo
R4-O3	4	Participant 8	OCA	Male	30–40	Idlib
R4-O4	4	Participant 10	OCA	Female	40–50	Aleppo
R4-G3	4	Participant 7	GCA	Male	30–40	Aleppo
R4-G4	4	Participant 12	GCA	Female	30–40	Homs
R4-G5	4	Participant 13	GCA	Female	40–50	Homs
R4-A1	4	Participant 3	AACA	Male	30–40	Hasaka
R4-A3	4	Participant 9	AACA	Male	20–30	Deir-Ezzor
R4-A4	4	Participant 14	AACA	Male	50–60	Hasaka
R5-O1	5	Participant 1	OCA	Male	40–50	Idlib
R5-O2	5	Participant 2	OCA	Female	30–40	Aleppo
R5-O3	5	Participant 8	OCA	Male	30–40	Idlib
R5-G3	5	Participant 7	GCA	Male	30–40	Aleppo
R5-G4	5	Participant 12	GCA	Female	30–40	Homs
R5-A1	5	Participant 3	AACA	Male	30–40	Hasaka
R5-A2	5	Participant 4	AACA	Male	50–60	Hasaka
R5-A3	5	Participant 9	AACA	Male	20–30	Deir-Ezzor

AACA, Autonomous Administration-controlled area; GCA, government-controlled area; OCA, opposition-controlled area.

Table 2 Thematic changes over time

Theme	Round 1	Round 2	Round 3	Round 4	Round 5
Trust and satisfaction	Negative*	Negative	Less	Less	Less
Governance actors	Complex†	Complex	Complex	Complex	Complex
Response planning and implementation	Very inadequate‡	Inadequate	Inadequate	Inadequate	Inadequate
Reliance on social media for COVID-19 information	Consistent	Consistent	Consistent	Consistent	Consistent
Public adherence§ and vaccine acceptance	Low	Increased	Increased	Increased	Low¶

*Strongly negative in government-controlled area (GCA).
†High complexity of actors in opposition-controlled area (OCA) and high fragmentation in Autonomous Administration-controlled area (AACA).
‡Lack of transparency in GCA in all rounds.
§Increased adherence reported but fluctuated between COVID-19 waves.
¶Considerable pressure to take the vaccine was reported in OCA.

reliance on social media for COVID-19 information; (5) fluctuating public adherence and vaccine hesitancy; and (6) challenges and facilitators. Table 2 shows themes longitudinally over time, focusing on similarities among the three areas.

Frontline distrust and dissatisfaction

Almost all participants in all areas and interview rounds expressed distrust of local health authorities and dissatisfaction with COVID-19 response governance in their areas (we chose the term 'local health authority' throughout to simplify the names used to describe area-specific health governance entities (eg, HDs in OCA and GCA and health committees in AACA) in different areas of control). Perceptions of response governance were generally negative unless directly asked about the positives of response governance. This was most prominent in the first two rounds and decreased somewhat over time. Distrust and dissatisfaction were expressed most strongly in GCA. Distrust was also expressed as concerns, consistent across time and area, about potential health system collapse due to overloading and resulting death tolls.

> My concern is that [COVID-19] case numbers keep increasing. Every time we say ok, now we reached the peak, the situation gets worse. This is scary. The future ahead of us is unknown. When will this change? This is scary! (R4-G5)

While dissatisfaction remained, concerns were expressed least in AACA in all rounds and decreased in the last round in all areas. No participants indicated their health system reached collapse in any round and all seemed less pessimistic over time, reporting fewer concerns and more positivity.

Complexity of governance actors

In *OCA*, several actors were consistently identified across rounds as leading COVID-19 response governance, primarily the WHO, non-governmental organisations (NGOs; eg, Syrian American Medical Society (SAMS), Union of Medical Care and Relief Organizations (UOSSM)), local HDs and the Turkish government through Turkish hospitals inside Syria. The private sector reportedly had limited or negative involvement in response governance, mainly attributed to service user costs. WHO was criticised as a 'dictator', particularly in later rounds (R4, December 2020) as frontline health workers were excluded from WHO-led decision-making in Türkiye.

> The problem is that planning happens in closed rooms in Turkiye and no one knows until 6 or 7 months later. By then decisions are already executed… (R3-O2)

In *GCA*, across all rounds, participants highlighted the leading role of government institutions (ie, Ministry of Health, HDs, hospitals), with involvement of the Syrian Arab Red Crescent and youth initiatives such as Aqemha '*Sanitize it*' in response governance. The private sector was perceived to have no role until December 2020 (R4), when participants described private hospitals' conducting testing and isolation. Notably, unlike other areas, participants did not mention WHO as a governance actor, despite its greater presence and funding in GCA. This might be because the Assad government was seen to control response governance.

> Others could be participating only, but the main role is for the Ministry of Health. Others do activities, for example, the [Syrian Arab] Red Crescent distributed posters about COVID-19 prevention. (R4-G5)

In *AACA*, across all rounds, response leadership was particularly fragmented and complex. Participants highlighted the leadership of WHO, national and international NGOs and health committees (ie, local health authority affiliated with the autonomous administration). The Assad government and OCA-EWARN (Early Warning, Alert and Response Network) were reportedly involved in testing and surveillance. The private sector was reported as having no role. The influence of actors from other areas of control was unique to AACA.

Limited response planning and implementation

Opposition-controlled area

COVID-19 response planning was perceived as insufficient from the first round, before any confirmed cases and consistently inadequate across all rounds. This

was primarily due to severe resource shortages and the already overwhelmed health system that enabled SARS-CoV-2 spread and constrained efforts to control or respond to it (eg, test and trace). Planning was considered non-participatory and non-transparent, harming frontline providers' ability to implement response policy.

> In my opinion, not only local communities but also local NGOs' opinions were not initially considered. (R3-O1)

> They [Gaziantep Task Force] developed recommendations but didn't publish or communicate them understandably. (R4-O2)

Participant predictions of rapid virus spread, especially in displacement camps, and collapse of the fragile OCA health system did not occur. While partially explained by limited testing capacity and resulting under-reporting, it appears the OCA epidemic was not as severe as anticipated.

Most participants identified informal community response initiatives, noting these were positive but ad hoc, underfunded and limited in effectiveness.

> There were some great initiatives led by local NGOs and local communities […]. To be honest, these are only volunteer initiatives. Their aim is to provide awareness, or maybe to provide some masks. These initiatives are great, but we still need much more. (R2-O3)

Government-controlled area

Most participants highlighted non-transparency and ineffectiveness throughout all rounds. Participants expressed strong distrust and dissatisfaction with response planning throughout all rounds, particularly in the first three rounds. In the first round (March 2020), participants described government denial of the pandemic. In second and third rounds (July and September 2020), government response shifted to issuing unenforced regulations that participants indicated weakened public concern about tackling the pandemic.

> There were fines for those who do not wear a mask in public areas, and weddings were not permitted in closed spaces, but none of these [regulations] were executed. (R3-G3)

In the fourth (December 2020) round, response shifted again to ignoring the pandemic, with health regulations and advice again absent. Response governance was primarily reactive and focused on daily management rather than strategic control.

> They try to accept all patients and enlarge quarantine areas, but little is done to control the spread of the pandemic. (R4-G3)

> No new services were introduced. In contrast, even some hospitals were closed. (R4-G4)

In the last round, coinciding with initial vaccine rollout, participants noted that government did not encourage vaccination as insufficient doses were obtained.

Autonomous Administration-controlled area

Participants described COVID-19 response planning as unsatisfactory and insufficient mainly due to resource shortages. Participants reported local authorities' inattention to the pandemic in the first two rounds, which was not reported later and could indicate improved satisfaction with responses. Participants described discrimination favouring Kurdish-majority areas such as Al-Hasaka compared with Arab-majority areas of Al-Raqqa and Deir-Ezzor.

> Honestly, for the funding, some areas like Qamishli receive a lot of attention regarding healthcare services, but areas like Deir-Ezzor and Al-Raqqa are neglected. (R3-A3)

Reliance on social media for COVID-19 information

No differences in social media reliance were noted across geographies or time, as it was the primary information source reported everywhere. This included both trusted official sources and informal sources providing misinformation. Unofficial sources ranged from the Facebook pages of famous doctors to random WhatsApp messages.

> Honestly, people source their information from social media mainly. Some might be lies. Some are hilarious, but much of the public does not inspect the validity of such information. (R4-O2)

Misinformation and disinformation were frequent in Syria and participants acknowledged their inability to address them. Participants also questioned the accuracy and transparency of official sources. Public reliance on unofficial sources reflected both poor transparency of local authorities and limited public trust.

> The health ministry announces daily statistics, but they announce statistics of those who were tested while tests are not widely available […]. Therefore, [statistics] were not taken seriously [by the public]. (R4-G4)

Fluctuating public adherence and vaccine hesitancy

Public adherence to prevention measures fluctuated in all areas. Adherence was weak before confirmation of initial cases, as people were sceptical of the pandemic and whether it could reach them, especially after several months passing without any reported cases. Adherence increased significantly after initial case confirmation in each area as pandemic arrival created fear. Awareness and adherence further increased with time, which participants attributed to people witnessing the effects of COVID-19 in their communities. However, adherence reduced between each wave as case numbers reduced and misinformation spread.

> Unfortunately, prevention measures are not yet taken seriously […]. After the cases increased, people started to be scared and partly follow the measures […]. Not to shake hands for example. People know but only 25% act. (R3-O4)

Participants in all areas described fellow health workers' adherence as low and deteriorating over time.

> Even health-workers showed poor commitment at the beginning. Not taking prevention measures resulted in higher percentages of cases among them. (R3-O1)

Participants indicated several potential reasons. Some related this to improper training or shortages of good-quality personal protective equipment (PPE). Others blamed the nature of health workers' jobs, requiring direct patient contact and long working hours (eg, 72-hour shifts) in crowded rooms, so exposure and exhaustion could increase infection, that is, '*Sometimes 20 health-workers spend the night in one 16 square-meter room*' (R4-O2). A third explanation linked increased infections to health worker shortages and resulting inability to properly implement triage systems along with requirements for specialists to work in several facilities. A fourth hypothesis was potential testing bias as health workers had better access to tests. Suggestions for improvement included better coordination, more PPE and testing, improving isolation centres and using telemedicine.

Opposition-controlled area

Security difficulties and constant bombardment changed public risk perceptions, making it difficult for people to worry particularly about COVID-19.

> People lost faith in everything and everybody. They believe they are going to die anyway, so they do not care whether it is because of COVID-19 or because of bombardment. (R2-O2)

> In a context of death, COVID-19 is just another way to die. (R3-O1)

Economic difficulties also hindered adherence. For example, self-isolation was treated as unpaid leave in some hospitals.

> For example, we have nurses in the hospital who have been in touch with positive COVID-19 cases. They were advised to quarantine themselves at home for 14 days. In this case, it is a financial decision for them. If their salaries are not kept running, they will not isolate themselves. (R2-O3)

Participants discussing COVID-19 vaccination in round 5 (September 2021) indicated free vaccines were available. Low uptake meant eligibility restrictions were loosened from health workers and elderly to include everyone and mobile vaccination teams were deployed in remote areas. Low uptake was attributed to poor awareness, spreading misinformation, scepticism about efficacy and fears of blood clots from taking AstraZeneca—the most widely available vaccine brand. All participants described NGOs pressuring their staff to be vaccinated, either through direct enforcement or indirectly by not paying sick leave related to COVID-19 for unvaccinated staff. All participants reported taking both vaccine doses.

> There were threats from NGOs of firing or not giving sick leaves for those who do not take the vaccine. (R5-O3)

Government-controlled area

A participant described sick leave for health workers being refused due to staff shortages, resulting in infected health workers mixing with uninfected staff and patients. Self-isolation was also economically challenging.

> The country's situation is very bad economically. We can't [self-isolate][…]. If people leave work for 5–6 days, they could seriously become homeless beggars. (R2-G4)

In September 2021, participants reported free publicly available vaccines included AstraZeneca, Sputnik and Sinopharm. Participants described vaccine hesitancy due to fear of side effects, lack of transparency on vaccine type/source offered, effectiveness concerns and conspiracy theories. One noted that government did not mobilise communities or address misinformation, suggesting this could be to avoid increasing demand given limited vaccine numbers. One expressed vaccination hesitancy as:

> There is no awareness raising in the media that people should take the vaccine. (R5-G2)

Autonomous Administration-controlled area

Participants described similar adherence fluctuations. Unlike other areas, in September 2021, both availability and uptake of vaccines were reportedly limited. Several highlighted public vaccine hesitancy articulated as distrust of the Assad government and its cold chain.

> Some doctors said the vaccine is offered through the [Assad] regime and the regime killed 1.5 million, so how would I take the vaccine? A regime soldier could simply disconnect the vaccines refrigerator. A good percentage of doctors and educated people refused the vaccine because it's channelled through the regime. (R5-A3)

Highlighted challenges and facilitators

Opposition-controlled area

Perceived challenges were generally consistent and focused on limited infrastructure capacities, equipment, medicine, human resources and financing. For example, health workers in COVID-19 facilities also worked in other facilities due to severe staff shortages. Participants described gradual improvements in ventilators and oxygen supply as insufficient, while increased health worker experience with COVID-19 cases improved healthcare provision over time. Participants related severe capacity constraints to intentional bombardment of health facilities and personnel by the Assad government and frequent attacks resulting in displacement and overcrowding.

> One of the main challenges is contextual. Just before the COVID-19 pandemic started, 70 healthcare facilities were targeted in 2020 […]. This weakened the service quality and ability to respond to the pandemic. (R3-O1)

Equity was highlighted in round 3 when only people with valid Türkiye-issued Syrian identification, provided

to those living in areas under Turkish control, could access COVID-19 tests in Türkiye-supported hospitals.

> Tests are available for people who carry 'Turkish IDs'. (R2-O3)

The focus on COVID-19 response weakened other responses, for example, non-communicable diseases and sanitation. However, participants noted improved coordination between multiple health actors over time that enabled greater actor complementarity as each took responsibility for certain sectors (eg, isolation centres, raising awareness, testing). Fragmentation of authority and absence of a unified governing body progressed from a concern in initial rounds to a significant problem in later rounds.

> If we stay as we are, each NGO working on its own and every sub-area acting alone, then we are heading into a catastrophe. (R2-O2)

> [NGOs] agreed to build 80 community isolation centres, then each NGO did it to different standards. (R4-O2)

In September 2021, participants indicated many COVID-19 projects had ended as they were only temporarily funded, exemplifying sustainability challenges for response governance, and that the health system was further weakening as a long-term effect of COVID-19 response.

Participant suggestions to improve response governance focused on strengthening and increasing capacity in the current health system, particularly financial support, more ventilators and better coordination. While one suggested service users install at-home oxygen cylinders, as done in GCA to reduce health system burden, others criticised this as forcing the burden onto service users. In all rounds, participants reported response governance in their area as better than that in other areas, especially GCA, describing theirs as more serious, transparent and equitable. Participants were critical of response governance in GCA, accusing it of discrimination, hiding information and carelessness.

Government-controlled area

Throughout all rounds, GCA participants reported the main response challenge as the reduced capacity of both authorities and the population. Limited capacity was reported most consistently in GCA, potentially reflecting its severity. Resource shortages appeared most severe in the first three rounds and gradually improved. This was reflected in severe shortages of equipment, medicine and tests, and people's inability to afford face masks and hand sanitisers or stop working to self-isolate. These resulted in poor adherence that was aggravated by poor health knowledge.

> Our neighbour bought some antibiotics. Every day she takes a tablet. She has taken 9 packets so far! For prevention [of COVID-19]! (R5-G1)

Response governance focused on the capital, Damascus, and marginalised other areas. For example, test centres did not exist in Aleppo, the second largest city in Syria, for several months and remained concentrated in other areas.

When asked about what was being done well in COVID-19 response governance, participants were unable to report anything relevant in the first three rounds. In highlighting some good practices, they reflected these were not good enough (eg, early lockdown before any confirmed cases was useful, but ultimate negative as it was impossible to implement another lockdown when cases rapidly increased). Securitising the response was also perceived positively by some participants.

> At the peak, [security forces] established checkpoints, they would measure the temperature [of passers-by] and if they found anyone with high temperature, they would call the health directorate to take them [into forced quarantine centres]. (R5-G1)

In rounds 4 and 5, participants indicated improved health services quality and availability of medicines and oxygen. Through all rounds, participants described public awareness raising as crucial. In the last round, unlike in OCA, participants indicated long-term health system effects would be positive due to loosened Caesar sanctions (US sanctions on the Syrian regime) resulting in less health system restrictions. Reflecting on sanctions, a participant expressed dissatisfaction with the power countries such as Russia and the USA had over domestic medicine production.

> Our country is not producing anything. The [domestic] production in our country is completely in the hands of our colonial countries. Iran took a bit, America, China, and Russia took a bit. Nothing left for Syrians. (R5-G2)

When asked how they evaluated the response in their areas compared with other areas of control, participants only mentioned other governorates within GCA control. This could reflect an absent conceptualisation of non-GCA areas or fear of Assad government security forces.

Autonomous Administration-controlled area

Participants described challenges of limited capacity and resources, lack of authorities' seriousness and poor community adherence to prevention measures across time.

> [Authorities] didn't start planning until there were deaths [from COVID-19]. (R5-A3)

> Although we, as health-workers in Deir-Ezzor, gathered to protest the current health sector situation and demand better prevention measures, nothing changed and less than 10% of what we were promised [by authorities] actually happened. (R4-A3)

Participant suggestions to improve response governance focused on improving health system capacity and increasing public engagement, inclusivity and equity. Concerns about health system collapse appeared

less significant than in other areas and reduced over time, possibly due to the reportedly limited severity of COVID-19 in AACA. Participants also rated response governance in their area as weaker than in the other areas due to the lack of effective leadership and greater fragmentation.

DISCUSSION

Key findings

This unique study provides a glimpse of frontline COVID-19 response governance over 18 months, from before initial cases were confirmed, through multiple waves, to initial vaccine rollout. It investigates changing perceptions across time and geographical areas of control in Syria, a country affected by prolonged multiparty conflict. It is the only study of which we are aware to include longitudinal qualitative data on COVID-19 response governance within Syria, and shows more effort is needed by national and international actors to support subnational efforts.

We consider 'street-level' theories to have analytical potential for examining fragmented health systems in Syria and other conflict-affected areas. We posit that frontline health workers functioned as de facto COVID-19 response policy decision-makers, wielding considerable discretion in day-to-day interpretation and implementation of fragmented, abstract or even non-existent health authority policies in the three areas. 'Street-level' health workers across Syria thus maintained a dual existence as both least influential 'lowest-level' NGO or local authority employees while simultaneously being powerful 'gatekeepers' of public access to COVID-19 diagnosis, supportive treatment and vaccination.

Participants described response planning as insufficient, non-participatory and non-transparent across areas, while limited health system capacity and fear of collapse were shared governance challenges that shifted somewhat over time—as it became apparent that COVID-19 was survivable and health systems did not collapse. However, as COVID-19 responses diverted support from crucial health areas (eg, Non-communicable diseases (NCDs) and Water, Sanitation and Hygiene (WASH)), this affects future health system capacity.

Public adherence to prevention measures fluctuated, while reliance on social media as primary information source remaining unchanged across time and geography. Reliance on social media for COVID-19 information weakened response governance, as most information was produced externally, but was consistent with the literature.[19 47–50] Spread of misinformation through social media was also noted in Iran and elsewhere.[51] Poor adherence to preventive measures was also found in Türkiye,[52] India[53] and Somalia,[54] demonstrating that poor adherence is not necessarily related to political conflict. Roozenbeek and colleagues described links between susceptibility to misinformation, low adherence to COVID-19 prevention measures and vaccine hesitancy.[55] However, health worker and public distrust is potentially understandable across Syria. Watson and colleagues found significant under-reporting of COVID-19 morbidity and mortality in 2021 in Damascus, Syria,[56] supporting our findings on scepticism of official figures. Data under-reporting/non-reporting was described in conflict-affected countries such as Yemen and Libya.[57] Trust is essential to the governance of any emergency response, as shown for Ebola and SARS,[58–60] and distrust can worsen adherence to prevention initiatives such as non-pharmaceutical interventions and vaccination.[61] We found that strong distrust and dissatisfaction, especially in GCA, appeared to affect adherence and vaccine uptake. Perceptions of COVID-19 vaccines were generally positive, with low uptake and reported hesitancy related to geographically (and politically) specific concerns in each area. Interventions to address COVID-19 misinformation and improve vaccination coverage are urgently needed across Syria but require (re)establishment of public trust and increased transparency.[62]

We found few reported community-level response initiatives across either place or time. Instead, all areas relied on pragmatic individual or household adaptations and local authorities/NGO efforts with varied perceived legitimacy. Existing community response initiatives—though interesting—were described as relatively insignificant and under-resourced. Despite the dearth of community initiatives, health authorities could not maintain sufficient trust or engagement with the public, clearly worsened by ongoing multiparty conflict, leaving households to mitigate as best they could amidst risk, confusion and fragmented/disconnected health system governance. However, health worker expectations of rapid COVID-19 transmission in camps, consistent with resident expectations in our earlier research in displacement camps,[19 47] were not borne out, indicating potential expert underestimation of people's disease awareness and agency even in displacement.

Poor transparency, distrust and delays were not unique to Syria or to conflict-affected settings,[51] but may contribute to greater morbidity and mortality in already challenged contexts. Conflict can be described as a social determinant of health,[63] and Daw found that COVID-19 spread was affected by armed conflict, which aligns with our participants' concerns.[57] While all areas shared similar challenges, each had unique COVID-19 response governance concerns. For example, GCA was particularly affected by its deteriorating economy, AACA struggled with severely limited resources and equity, while OCA struggled with fragmented authority and over-reliance on short-term external funding. Thus, COVID-19 had differing perceived effects, weakening the health system in OCA and strengthening it in GCA. This aligns with Martin and Evans' argument that conflict increases displacement and economic hardship, resulting in worsened disease burdens and health outcomes.[64] Rose *et al* describe an emergency management cycle of mitigation, preparedness, response and recovery,[65] all of which

appeared weak in all areas across time. For example, GCA showed lower mitigation and response compared with the two other areas. Suggested improvements thus focused on strengthening current health systems (eg, strategy, infrastructure, staffing).

Implications for policy and practice

Despite significant humanitarian and development funding flows during almost 12 years of conflict, health system governance issues we initially described for OCA in 2019 remain.[28] Health authorities in each area, as de facto local health governance entities,[28] must acknowledge weaknesses and actively strengthen health emergency response governance and related health system governance, particularly accountability, transparency, participation and equity. International funders and implementing partners must ensure they strengthen and work through existing health authorities as much as possible rather than the default parallelism that humanitarian action in conflict-affected settings is known for. This is important both to support the Localization Agenda[66] and to help ensure institutional accountability and sustainability.[28] For example, local health authorities can improve strategic leadership and accountability by leveraging support to develop and implement contextualised strategic planning for health, including public health emergency response, strengthen public communication through social media to improve transparency and access to accurate information, and increase equitable participation through online and other fora that provide safe spaces for service users to share experiences and concerns, which will likely improve public trust and adherence to interventions given legitimate current political and safety concerns. Such actions are relatively low cost and independent of international funding, so remain feasible though improving tarnished public perceptions may be challenging. WHO and other United Nations and partner agencies play a vital role in emergency response governance, but this is not always apparent in frontline interactions in conflict-affected areas with fragmented authority such as in Syria. A multisectoral approach that works through and improves locally recognised and accepted health authorities could increase accountability, sustainability and capacity to respond to shocks. Community initiatives are similarly vital and should be led by local actors and supported by authorities and funders. Response governance could thus be improved in all areas through interventions to strengthen transparency, equity and accountability (eg, effective bidirectional feedback mechanisms). Centring communities requires consulting and providing the accurate and reliable information needed to facilitate bottom-up responses and decision-making.

COVID-19 will not be the last public health emergency in Syria and improved local response governance is needed. The recent earthquake in Northwest Syria has further debilitated the OCA health system, while the lack of meaningful international action to support postearthquake rescue efforts in Syria showed dependence on international support is risky.[67] Local authorities must focus on local solutions. International donors and implementing agencies can help by pushing the localisation agenda in Syria and include support of local authority leadership and capacity in emergency response and health system governance.

Limitations

Several limitations should be considered. First, while we would have preferred to include more participants in each area of control, given logistical complexities and very limited funding, it was not possible to increase participant numbers as this would have been beyond our research team capacity. Some participants (eg, approximately one participant per area) differed each round given the challenging context in Syria. To increase consistency, we ensured at least one participant in each area was interviewed in all rounds. Second, we did not have sufficient investigator capacity to include service users, which would be important to address in future research. Third, we initiated sampling through existing professional WhatsApp contacts in Syria, and to ensure sufficient diversity of participants we snowballed from these initial contacts by asking for potential referrals. Finally, all investigators were new to longitudinal analysis and may have missed or simplified some aspects. For example, we chose to report recurrent themes across time and place, as these appeared most relevant, but could have reported by round or by place.

CONCLUSION

All areas of Syria are directly and indirectly impacted by the protracted conflict, compounded by COVID-19 alongside subnational health emergencies. Misinformation and poor transparency, largely inseparable from protracted conflict and economic hardship, increases mistrust and makes any epidemic response extremely challenging. However, unlike contextual conflict and economic hardships, addressing transparency and misinformation can be improved by local/national authorities without external intervention and should be a first step to improving public engagement and trust and thus COVID-19 and other health emergencies' response governance.

Twitter Omar Alrashid Alhiraki @OAlhiraki

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ORCID iDs
Yazan Douedari http://orcid.org/0000-0001-7964-9408
Mervat Alhaffar http://orcid.org/0000-0002-3737-8790
Natasha Howard http://orcid.org/0000-0003-4174-7349

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