Title: Health response(s) scheme(s) to natural disasters in conflict zones- A case study of the urgent health response to the earthquake in northwest Syria

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Abstract

Introduction: On 6 February 2023, a devastating earthquake with a magnitude of 7.8 hit southern Turkey and northwest Syria, causing tens of thousands of casualties and severe damage to already fragile infrastructure. The earthquake occurred 12 years after a protracted brutal civil war in Syria, significantly weakening the country's health infrastructure. Understanding the health system's response to this catastrophe is, therefore, essential to mitigate the impact of such disasters on the population.

Methods: A qualitative study with 13 Key Informant Interviews (KIIs) including key stakeholders involved in the earthquake response between 21 February and 1 April 2023 was undertaken. We analysed the response of key stakeholders chronologically, focusing on the governance capacities of various stakeholders in the health system response to the earthquake in northwest Syria. Local actors included civil society, local NGOs, health facilities, Health Directorates, community leaders, and de facto authorities. International actors included INGOs, donors, and diaspora. Specifically, we compared top-down versus bottom-up governance systems.

Results: We found the response of civil society and quasi-governmental health institutions representing bottom-up actors was quicker than that of military and de facto authorities and was even faster than the response in Turkey. Some challenges hindered the response, including the UN's institutional response and a delay in donor aid, combined with political polarisation and conflict within the country. In addition to the centralised nature of the NGOs and INGOs, which resulted in a lack of medical supplies.

Conclusion: Our findings highlight the importance of effective governance systems established during conflict that promote greater stakeholder collaboration and coordination to respond promptly and effectively to disasters. The lessons can inform future disaster preparedness and response efforts to strengthen health system resilience in conflict-affected settings.

Highlights

- Undocumented, tacit governance developed during the conflict created an efficient response that was arguably (much) faster than in Turkey and the Syrian Regime areas.
- The qualitative analysis and direct observation of the authors provide unique insight into the different roles of local and international actors and the factors that influenced their behaviour.
- Civil society and bottom-up, quasi-governmental institutions played a significant role in the initial earthquake response, building on their flexible systems and collective experience

developed during the conflict. The top-down approach was necessary following the first phase, when multi-sectorial activities and high-level political interventions were required.

- Further research examining the relationship between bottom-up and top-down governance systems could further improve understanding of how these systems act during natural disasters and armed conflict.
- Addressing health responses to natural disasters in areas affected by armed conflict is critical, given the many conflicts around the world and their increasingly protracted nature.

List of Abbreviations

ACU	The Syrian Assistance Coordination Unit
IDPs	Internally Displaced Person (s)
SSG	Syrian Salvation Government
SIG	Syrian Interim Government
HTS	Hayaat Tahrir Al-Sham
UNSC	United Nations Security Council
OHAs	Opposition-Held Areas
WHO	World Health Organisation
IHD	Idlib Health Directorate
AHD	Aleppo Health Directorate

NGOs	Non-Governmental Organisations
INGOs	International Non-Governmental Organisations
KIIs	Key Informant Interviews
USA	United States of America
HQ	Headquarters
SAMS	Syrian American Medical Society
SBMS	Syrian British Medical Society
MSF	Médecins Sans Frontières
R4HSSS	Research for Health Systems Strengthening in Syria
UN	United Nations
UNHCR	UN Refugee Agency

Introduction

On 6 February 2023, a 7·8 magnitude earthquake struck southern Turkey and northern Syria, resulting in one of the most destructive earthquakes in history.[1] A 7.5 magnitude earthquake followed, around the Turkish city of Kahramanmaras.[2] More than 4300 aftershocks have since been felt across the area, challenging rescue efforts and destroying thousands of buildings in both countries.[3] It is estimated that over 51,000 people have died, with hundreds of thousands injured and displaced in the region. The Syrian Assistance Coordination Unit (ACU) reported more than 4540 people lost their lives in northwest Syria,[4] an area outside the Syrian Regime's control. This area has approximately 4.5 million people, 65% of which are internally displaced persons (IDPs) mostly as a result of protracted armed conflict. The Syrian Ministry of Health reported a further 1414 deaths in areas under Regime control.[5]

Twelve years of devastating conflict in Syria has resulted in more than 874,000 deaths, with over thirteen million displaced, including refugees and IDPs.[6] During this time, 2011 to 2023, there have been significant changes in political and military influence and control, drastically impacting health governance and the delivery of humanitarian aid.[6] In this study, we distinguish between three main areas of political control: (1) The central, coastal, and southern areas under Syrian Regime control; (2) northwest Syria, including parts of Idlib and Aleppo governorates under opposition or rebel control; (3) northeast Syria, including parts of al-Hasakah, Raqqa and Deir ez-Zor under control of the Autonomous Administration of North and East Syria.[7]

The magnitude of the earthquake affecting a country suffering from a protracted conflict, created a multi-layered disaster. Areas under rebel control in the Idlib governorate and rural areas in Aleppo suffered the most. First, the level of destruction was catastrophic,[8] and second; these areas are under the control of the Syrian Salvation Government (SSG)[9] in Idlib and direct Turkish control in northern Aleppo with the nominal presence of the Syrian Interim Government (SIG).[10] SSG and SIG are not internationally recognised and lack substantial capacity to deal with such a disaster. Moreover, SSG is directly linked to Hayaat Tahrir Al-Sham (HTS), which is proscribed as a terrorist group by the United Nations (UN).[11] Most of the aid delivered to these areas comes from Western donors through local and international NGOs,[6] authorised by UN Security Council (UNSC) Resolution 2672, which allows aid to flow from Turkey to opposition-held areas (OHAs) via the Bab Al Hawa border crossing.[12]

The health system is complicated by the multitude of donors and stakeholders involved in health service planning and implementation. These stakeholders include international actors, including Turkey (which has a direct role governing the health system in northern Aleppo, and indirectly in Idlib), and INGOs, UN agencies, including the World Health Organisation (WHO). Local actors are categorised by how they were established; top-down and bottom-up structures. Top-down health structures include ministries of health in SSG and SIG, ACU, and health offices directly linked to the Turkish authorities in neighboring governorates of Gaziantep, Killis, Urfa, and Hatay. Bottom-up actors include independent health directorates such as Idlib Health Directorate (IHD), health facilities, and local NGOs. These actors were established and governed using democratic processes.

While studying humanitarian and health responses to violent conflicts and natural disasters separately has been the norm in academia,[13] this study emphasises the importance of bridging these two domains to understand the intersection between conflict and natural disasters to respond to compounded crises more effectively. We differentiate between local and international interventions and between top-down and bottom-up structures to derive lessons learned from such interventions. Specifically, we explore the following questions:

- Who led the first response to the earthquake in opposition-held areas of northwest Syria? How has this changed over time?
- How does the response of top-down institutions compare to bottom-up institutions in compounded crises?
- What was the impact of the conflict on the response to the earthquake? Importantly, what can this case study offer other regions affected by both conflict and natural disasters?

Methodology

ZZ and MAK conducted 13 Key Informant Interviews (KIIs) targeting actors from key stakeholders involved in the earthquake response. SIG and SSG representatives declined to be interviewed. Most KIIs were male, with only one female respondent, despite attempts to find a more balanced group. Local actors included local NGOs (2), HFs (3), HDs (2), and community leaders (2). International actors included two INGOs, one WHO staff member, and one leading donor representative. Interviews were conducted between 21 February and 1 April 2023. Most KIIs were, therefore, still in the midst of conducting health response activities, implying information was current and well-informed, although this meant participants were still processing traumatic events witnessed firsthand. Interviews were

conducted via Zoom and recorded with the informed consent of all participants. Transcripts were anonymised using a unique identifier for each participant. Data were extracted from the interviews and categorised using a thematic analytical approach. Ethical approval to conduct KIIs was obtained from the IHD and King's College London. Additionally, ZZ and MAK have been prominent figures in northwest Syria's health sector governance over the past decade. ZZ headed the UOSSM (the largest health NGO in Syria) from 2014 to 2019, while MAK co-founded and led the IHD from 2013 to 2020. They, in addition to AE, provided technical support for the health decision-making process of the response to the earthquake in northwest Syria through their role with R4HSSS and their individual efforts focused on research and public health.

Results

The response to the earthquake in northwest Syria began within the first hour after the event on 6 February 2023. Local actors, including HFs, the White Helmets, health directorates, SSG, individuals, grassroots organisations, and Syrian diaspora, were the first to respond. These actors quickly mobilised local resources to initiate the response. This response was then supported by the active humanitarian cross-border hub of northwest Syria, which was paralysed in the first two days due to its location in southern Turkey, an area also devastated by the earthquake.

A Responsive Local Health System

The health facilities in northwest Syria reacted swiftly to the earthquake, despite facing challenges such as limited stocks of essential medicines and coping with a vast influx of injured patients. Local health facilities dealt with all injuries because the disaster in Turkey was more widespread, making it impossible to refer patients cross-border. Health facilities relied on limited supplies during the initial response. "We know how to respond appropriately and how to allocate patients in hospitals" - head of a hospital in Idlib. However, the sheer number of casualties meant some facilities ran out of essential medications within eight hours of the response.

"We initially believed this to be an attack by the Regime due to the sound similar to that of a vacuum bomb. We hurriedly sought refuge in locations we had been accustomed to during such attacks, only to find out through a WhatsApp group several minutes later that this is an earthquake and that we should have left our homes. This prompted us to rush to the hospitals, and within 20 minutes, we

started to receive and operate on the wounded people." A surgeon operating in Akrabat Hospital, near the border between Syria and Turkey.

The IHD was crucial in coordinating the response, creating WhatsApp groups with local medical personnel to communicate the needs of the affected areas. NGOs and representatives from the WHO commended the accuracy and efficacy of IHD's timely updates, enabling them to better comprehend the situation on the ground and prioritise response efforts, "*Actually, the information coming from IHD, as they were the quickest in organising response inside the country"* said a WHO staff member. IHD also supplied hospitals with fuel, medicines, surgical disposables, and blankets while medical personnel increased their numbers, often doubling or tripling the scheduled amount of supplies required.

Critical Role of Trusted Quasi-Governmental Bodies

The role of trust among quasi-governmental bodies in the earthquake response was essential. The White Helmets were the backbone of the search and rescue interventions, deploying 2600 volunteers to 60 main affected areas within 19 hours of the earthquake. Similarly, IHD acted expediently, supporting local health facilities with supplies and fuel, while organising and supplying regular updates to the wider humanitarian community. IHD demonstrated its effectiveness through coordination, supervision, and organising visits from foreign delegations *"The [IHD] secured accommodation of medical delegations, as well as directing them to the place of need. It also played a very important role in assessing medical needs"* stated an INGO participant. Its neutral political affiliation enabled IHD to provide regular updates and act swiftly. This proved beneficial to the WHO, enabling a verification method to gain objective, accurate information about health needs. Aleppo Health Directorate (AHD) was, however, less able to lead the coordination process because most of the main hospitals in northern Aleppo are supported and managed by Turkish health institutions - *"The [IHD] has appeared in many situations as a pioneer, while the role of the Health Directorate in Aleppo has not been shown"* said an INGO participant. Additionally, AHD's capability to coordinate with health organisations was limited by the lack of financial, human, and information resources; *"[AHD] employees have received less than 50% of their salaries for a year and two months,"* a participant from a local health authority said. Consequently, the role of AHD compared to IHD has been less prominent.

The shared characteristics between the White Helmets and IHD include their emergence from local communities via bottom-up approaches; a technical focus and political neutrality in relation to political affiliation; the ability to deliver appropriate interventions to the relevant communities; and

structures and processes to engage with local communities. Given their effectiveness in delivering timely responses and high-quality services, these bodies are highly trusted by local communities. They can be considered quasi-governmental bodies, undertaking functions usually covered by national governments, yet lacking direct political affiliation.

Also worth noting are the roles played by these quasi-governmental bodies supported by de facto local authorities in the region. Local councils were involved in search and rescue operations, however their contribution to the medical response was restricted due to their reliance on Turkish institutions in northern Aleppo and a lack of resources *"The medical offices of the local councils did not play a major role in the response due to the lack of expertise and resources. There might have been a role in referring patients to* Türkiye*, but it has remained a limited role"* said an AHD representative. The SSG provided assistance by maintaining security, opening their health facilities to patients, providing fuel to some health facilities, and participating in supervision and guidance of mobile clinics operated by NGOs. The intervention by SSG became more prominent as the response necessitated coordination with multiple stakeholders outside the health sector, such as protection focused NGOs and camp management. The role of the SIG, which has limited presence in Idlib, and is symbolic in Aleppo, was very minimal. *"They have no resources to offer, so they could not be of any help,"* stated one interviewee from Aleppo.

Community Engagement and Mobilisation

Community actors considerably impacted the earthquake response, both at a personal and collective level. Initially, community members were heavily involved in assisting search and rescue operations, mobilising local resources as instructed by the White Helmets, and playing an active role in the transportation of casualties. Subsequently, they supplied critical provisions such as food and clothing to medical centres and temporary shelters and contributed financial donations. The community was also pivotal in engaging other levels of the health system when communication was difficult. *"In the first period of a disaster, individuals are best able to respond"* - volunteer diaspora participant. This role was organised in different ways in different communities. Some communities had their local councils organise these endeavours, while in others, neighbourhood committees and groups led coordination. In other communities, ethnic groups played a proactive part in procuring resources. Even in areas unaffected by the earthquake, community members and groups eagerly extended their support. For example, ethnic groups in Deir ez Zour governorate in northeast Syria assembled resources and managed to send convoys to northwest Syria. "*There is a national and humanitarian*

dimension in the response of the tribes, but there is also the concept of الفزعة [Fez'a, rush to rescue] that characterises the region's people" - local community leader.

The use of local media and communication tools was instrumental in launching campaigns to raise awareness of humanitarian and health concerns and mobilising resources. Communication through WhatsApp, Telegram, Facebook, and High Frequency Radios was essential in keeping community members informed of instructions to follow and linking the components of the local responses.

Community resilience, developed through 12 years of conflict, was critical in the earthquake response. As stated by one INGO representative; *"the Turkish people were waiting for their government to rescue them, [whereas] people in Syria acted immediately, knowing there was no one to come to rescue them."*

Volunteers from the diaspora and neighbouring countries were immediately engaged in the response, supporting local NGOs and HDs in mobilising resources. They were, however, more successful with the HDs than local NGOs, and suffered from complex coordination amongst themselves, *"[NGOs] do not know how to deal with volunteers…. individuals could not coordinate amongst themselves, as they had difficult access to individuals on the ground"* volunteer diaspora participant. In addition, deep political divisions impacts the ability of expatriate volunteers to work with each other and overcome trust barriers; *"The prevailing political division influences individuals' response to aid. Those against the Regime tend to support northwest Syria, whereas those not opposed to it may opt for responding to Aleppo and Jableh."* This phenomenon is closely intertwined with context comprehension and accessibility, therefore "*roundtable discussions between individuals are needed to understand perspectives and break down trust barriers"* - diaspora participant.

Active Role of Syrian Diaspora

The Syrian diaspora, especially in the USA, Canada and Europe, supported and resourced the earthquake response. In the early hours, due to the various organisations' head offices in Gaziantep being impacted, these organisations' boards of directors, in the USA and Europe established the largest medical NGOs, playing an essential role for the teams inside Syria. This continued for one week until the offices of these organisations in Turkey were more stabilised: *"We were not able to form crisis teams, for example, but the centre [HQ in the USA] led the operation,"* - NGO participant. The diaspora's role in stimulating media coverage of the disaster and drawing political attention to the needs in northwest Syria was critical. Most of the focus in the initial days was on southern Turkey being the earthquake's epicentre, and very little heed was paid to northwest Syria. This was

significantly altered from day three onwards, owing to many international meetings, commentaries, news reports, and coverage influenced by the Syrian diaspora worldwide.[14]

Diaspora also played essential roles in resourcing and providing direct technical aid to the local health response. During the initial stage of the response, the majority of funding was provided by Syrian diaspora NGOs and INGOs, using personal resources. For example, the Syrian American Medical Society (SAMS) and the Syrian British Medical Society (SBMS) initiated fundraising campaigns to support the earthquake response from day two. These resources were fundamental in supplying hospitals with vital supplies before international and UN conveyances started arriving from day five.

Moreover, the Syrian medical diaspora played a key role in developing local capacities and providing direct health interventions. Medical personnel from the diaspora were among the first to arrive in northwest Syria from day three following the earthquake, working in tandem with colleagues on the ground. *"As a result of the closure of the Bab al-Hawa crossing and the inability of patients to enter* Turkey*, we found that sending doctors [volunteers from diaspora] to Syria is the best*" - NGO participant.

The cumulative experience of the Cross-Border Humanitarian Sector

The Humanitarian Hub for the Cross-Border Response in northwest Syria, based in southern Turkey, was severely affected by the earthquake. Most of the Hub's coordination mechanisms were paralysed in the first two days following the earthquake, as most individuals involved were personally impacted. Nevertheless, the humanitarian actors were able to restore activities swiftly.

Most NGOs in the region have accumulated significant experience in dealing with emergencies, having learnt from 12 years of conflict with large-scale atrocities.[15] *"The 12 years of war helped us in developing knowledge in mental health and psychosocial support that were badly needed during the crisis, in addition to the surgery competencies that our physicians developed over the years of the war"* - INGO participant. This expertise in functioning in the region enabled effective coordination and mobilisation of resources, despite additional challenges posed by the earthquake. Humanitarian NGOs acted as key facilitators, providing resources for the response and advocacy. They channelled their assets and donated materials to hospitals and garnered substantial media attention and response from the international community. International NGOs such as MSF Spain acted swiftly, distributing medicines and supplies from their warehouses to health facilities in northern Aleppo. Donors also responded rapidly, liaising with their partners, demonstrating high levels of flexibility with regards to the reallocation of funding or allocating new funds.

Some NGOs were quicker than others in mobilising resources and implementing emergency activities. NGOs established by local actors and had effective governance boards proved particularly capable of responding rapidly, while those without clear governance, or with dysfunctional boards, encountered difficulties in their responses. Additionally, some differences were noted due to the response place; *"The response of the organisations in Idlib is tremendous... The number of active organisations in northern Aleppo is small... If the disaster occurred in several areas in Aleppo, we would not have been able to respond... In Idlib, the response is terrific, despite the disaster occurring in several areas."* - local health authority participant.

Existing Research Capacity and its Role in Decision-Making

Research capabilities in northwest Syria significantly influenced the decision-making process and strategies regarding the earthquake response. This was mainly due to their capacity to improve the abilities of local actors to collect, manage, analyse and use data, design their implementation research, and construct evidence-based decisions. The health directorates, particularly IHD, were able to assess the requirements of affected areas and prioritise response efforts accordingly. Moreover, research initiatives and projects that aim to strengthen the local health system(s), such as the Research for Health System Strengthening in Syria (R4HSSS), provided direct technical support to local health institutions. These initiatives included the publication of policy briefs, as well as offering aid to local health institutions. Therefore, this research capacity was advantageous in informing the decisions about the earthquake response. Furthermore, the research capabilities of local actors also contributed to the decision-making process and response strategies.

The role of the Turkish Government

Turkey has a direct role in the northern Aleppo health system, running hospitals, appointing staff, and providing medical supplies. Although the Turkish health facilities in northern Aleppo responded within the first hour, the administrative role of the Turkish authorities did not surface until day four due to their preoccupation with the response in Turkey. Almost all interviewees mentioned that the response in northwest Syria was much quicker than Turkey itself, due to swift action led by civil society and the quasi governmental institutions. The Turkish people expected state institutions to provide aid, whereas those in northwest Syria, with all the experience accumulated during the protracted conflict, rushed to aid affected people.

International Response

The arrival of emergency humanitarian and health aid, including civil defence search and rescue equipment, was noticeably delayed during the golden period (the first hour), which, according to participants, increased mortality and morbidity rates. In addition, participants criticised the politicisation of aid by UN institutions and their submission to political blackmail by the Syrian Regime regarding the opening of border-crossings between Syria and Turkey. Dr Zohir Karat, IHD Director, announced that until February 13, "the amount of aid entered by UN agencies and other donors across the border covered between 5–10% of the needs of hospitals responding to the disaster."[1] "*The role of WHO and UN agencies in the response can be assessed as negative and very slow"* - local health authority participant. *"We haven't seen the UN response available in the area [...] We have doubts that had it not been for our pressure, he [Martin Griffiths, the Under- Secretary-General for Humanitarian Affairs] would not have visited the border*." - NGO participant. Yet, despite being impacted by the earthquake, Health Cluster personnel, including WHO staff in Gaziantep established a coordination role amongst the NGOs from day two.

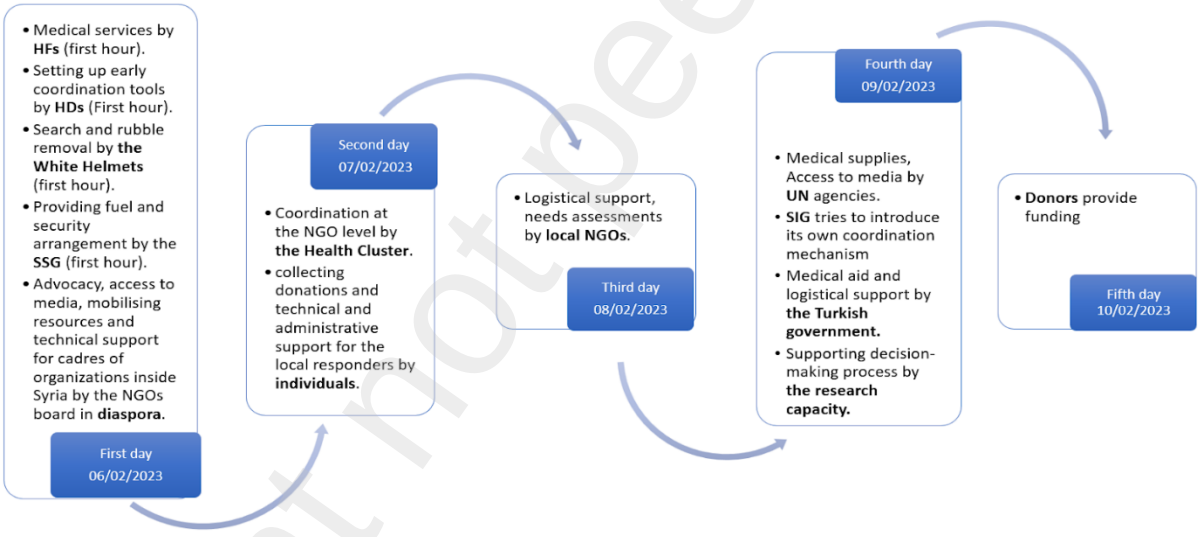

Figure 1: Earthquake response timeline in northwest Syria

Discussion

The health response to the earthquake in northwest Syria provides crucial insight into the role of local efforts in compounded crises. There was an overwhelming consensus that the locally-led response in the first week in northwest Syria was much swifter than that led by the Syrian Regime in territories it

controls and the response of the Turkish government in southern Turkey. This could be attributed to several reasons.

First, despite the challenges faced by the local health system in northwest Syria, including security threats, destruction of health facilities,[16] and lack of resources, it proved adaptable and responsive to local needs. This has been demonstrated in its collective memory and ability to deal with escalated health requirements during the protracted conflict, as well as infectious disease outbreaks including Polio, Measles, Cholera,[17] COVID-19.[18] Although the local health system may not have strong structures, clearly defined constitutions, roles, and responsibilities, it was evident that each element of the system was well prepared for an emergency. Adaptive capacities are crucial for health systems in conflict and their ability to cope with disasters. Therefore, to ensure the stability of the health system, it is vital to continue providing support to these actors.

Second, the collective experience developed by the sector allowed it to implement an undocumented system using basic communication tools such as WhatsApp. Even well-documented subsystems, such as the referral system, were replaced by complete reliance on previous experience and instinct. Health actors in northwest Syria successfully employed a similar approach during COVID-19, communicating through Whatsapp to efficiently manage teams.[18] Therefore, it is essential to support knowledge sharing by relying on more informal responses to disasters.

Third, trust in bottom-up institutions, such as health directorates, enabled immediate and close coordination. Health directorates' close relation to doctors allowed for immediate take up of their instructions, despite their lack of legal enforcement power. Powerful de facto authorities did not try to compete, but rather supported health directorates' role by assisting facilities supervised by the latter. However, when the need for cross-sector coordination arose, de facto authorities were better able to intervene. A week after the earthquake, enhanced coordination among several sectors was required, where top-down powers and quasi-state actors were more effective and efficient. Civil society and bottom-up actors were therefore more suited for a rapid response. State-like institutions were needed at a later stage. The complementarity between these actors is critical in responding to compounded crises. A case study from Colombia highlighted the close interactions between conflict and disasters and their effects on people's lives and livelihoods. The study found that the top-down institutional approach to disasters fortifies the perception of an 'uncaring' state. Additionally, there is

a need for change in mindset away from a culture of expert-led planning towards meaningful and honest 'bottom-up' dialogue that empowers citizens' knowledge and skills required to develop resilience.[19]

Fourth, community resilience in northwest Syria, although initially weakened by conflict, has been more forthcoming due to the protracted nature of the conflict. Access to conflict-affected populations by humanitarian agencies inside Syria has been challenging since the start of the conflict.[20] This meant that in the immediate shock of the earthquake, communities and individuals were able to mobilise and act directly without waiting for any lead institution to respond. This has been seen in other conflict settings, where owing to insecurity, communities develop effective coping mechanisms to deal with armed conflict.[21]

Fifth, the type of implicit governance delivered by the range of actors allowed for spontaneous, well-coordinated action. While effective governance structures are important for managing both sudden and protracted crises, where situations are complicated by the array of actors and political interests, local, multi-sector responses are pivotal. In northwest Syria, each organisation or group undertook a critical aspect of the response, for example rescue work was provided by the White Helmets, while health directorates provided internal coordination between stakeholders, and health facilities provided emergency medical services and supplies. Each of these organisations contributed effectively without bureaucratic meetings or formalised procedures. Similar challenges have been witnessed in other countries, such as Haiti, Sudan, and Yemen, impacted by disasters where bureaucratic complexity by external organisations not only complicates, but delays disaster responses.[22–24] Developing context specific solutions and innovative approaches to disaster management is therefore critical where conflict impedes normal ways of working, or where national governments would normally lead these actions.[25,26]

Lastly, the local response demonstrates the importance of localisation.[20] This provides lessons for the health and humanitarian community in how to improve programmatic interventions and the delivery of aid. Reform of the localisation agenda is essential to not only further develop local capacities, but ensure local actors have the necessary resources to meet future crises and strengthen governance structures to improve coordinated responses. Localisation plays an important role by promoting community engagement, building local capacity, and increasing the legitimacy and sustainability of

healthcare interventions.[20] This can only be achieved through direct engagement with local organisations and quasi-governmental structures, including health directorates, to meet the exponential rise in needs after the earthquake and lead the long-term planning.[1,21]

Despite these efforts, the response faced several challenges during and after the first week of the earthquake. The first and most significant challenge was the politicisation of aid, closure of borders, and sluggish response by UN agencies. International failure in northwest Syria has occurred many times in responding to humanitarian crises, including failure to protect civilians and manage effective humanitarian response during the military campaign by the Syrian Regime and Russia in 2019.[27] The state of political polarisation did not only affect the response by UN institutions and donors but also included Syrian expatriates who preferred to respond in different regions according to their acceptance by local institutions.[21] The dynamics of armed conflict, including the politicisation of humanitarian aid, often greatly impact disaster relief and other support during natural disasters, this has been witnessed in Mali and the Phillipines.[21]

The second challenge faced by health facilities was the lack of medical supplies. This resulted from a lack of NGOs management trust in health facilities, which meant they stored limited supplies in their warehouses inside the country, fearing corruption and centralised control over resources.

The third challenge is the inadequacy of the NGOs' internal systems, which led to the inability to utilise their resources. This was reflected in the slow reactions to adapt to the need for medical supplies inside the country and the failure to accommodate the available large number of volunteers. The main reason for this is the centralised nature of their systems, taking decision-making away from the place it is affecting. This made it difficult for them to accommodate volunteers, as most NGOs lack the appropriate systems to deploy volunteers.

Limitations

We did not compare the response in northwest Syria to the most affected areas in Turkey as the main purpose of our study was to offer lessons for the disaster response from the protracted conflict in northwest Syria.

We did not have access to other areas outside Idlib and Aleppo. Therefore, information about the response in the Syrian Regime's area is derived from the interviewees, media and literature.

Conclusion

This study demonstrates how the health system in northwest Syria, an area experiencing protracted civil conflict, responded to the February 2023 earthquake. We explored the roles of the different stakeholders operating in these areas, as there is no functioning state institution leading the health system.

It is clear that the response of civil society and quasi-governmental health institutions representing bottom-up actors was quicker than military and de facto authorities and the response in Turkey. There are four main reasons behind this effective response; the collective memory gained by communities and civil society actors during the conflict, the informal governance system, community trust in bottom-up entities, and access to various resources in Syria, neighboring countries, and the world. Despite this success, some challenges hindered the response, including the UN's institutional response and donor aid delay, combined with political polarisation and conflict within the country, and the centralised nature of the NGOs and INGOs. The rapid response provides lessons on the importance of engaging bottom-up and top-down governance systems in conflict settings to develop strengthened health systems responding to natural disasters.

Declarations

We would like to express our deepest gratitude and appreciation to the service providers and volunteers who participated in this research by sharing their experiences and insights through interviews conducted during the challenging circumstances of the earthquake. This study would not have been possible without their willingness to open up and share their stories.

Their unwavering cooperation and bravery in recounting their experiences amidst the aftermath of such a huge disaster have provided valuable firsthand perspectives, enabling us to gain a deeper understanding of the impact of earthquakes on individuals and communities.

The authors

Authors' contributions

The initial conceptual framing, literature review, Key Informant Interviews and initial drafting of the piece, multiple rounds of edits, and producing the final manuscript were carried out by ZZ and MAK equally. KM, AE, MAE and PP contributed to further literature review, analysis, additional content, and rounds of edits. KM and PP contributed to the overall structuring and producing of the final draft. All authors read, edited and approved the manuscript.

Availability of data and materials

The datasets generated and analysed through the KIIs are not publicly available as they contain information that could compromise research participant confidentiality. All other data sources used in this study were publicly accessible.

Funding statement

This publication is funded through the National Institute for Health Research (NIHR) 131207, Research for Health Systems Strengthening in northern Syria (R4HSSS), using UK aid from the UK Government to support global health research. The views expressed in this publication are those of the author(s) and do not necessarily reflect those of the NIHR or the UK government.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical approval and consent to participate

Ethical approval to conduct the key Informant interviews (KIIs) was obtained from the Idlib Health Directorate in northwest Syria (15/02/2023; No:180). Ethical approval was also obtained from King's College London (21/02/2023; MRA-22/23-35813). The study has assured that all quotes of interviewees remain anonymous.

Consent for publication

Written consent was obtained from participants in the KIIs. Participants were informed that the findings might be shared and published in academic journals, conferences, or other scientific platforms. Their personal information and identity would remain confidential, and all necessary steps were taken to ensure anonymity and privacy. The results were presented in an aggregated and anonymised format to protect participant confidentiality. By providing consent, participants agreed to disseminate and publish the study findings while ensuring confidentiality.

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