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'We are all vulnerable, we are all fragile': COVID-19 as opportunity for, or constraint on, health service resilience in Colombia?

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Abstract
One managerial narrative describes COVID-19 as a trigger for innovation in health system planning and delivery. Analysing 33 interviews with national stakeholders in Colombia´s health system, this paper argues that an 'innovation' narrative provides a partial account of managerial responses to COVID-19. COVID-19 triggered positive and negative effects on adaptive resilience: as mirror for recognizing problems pre-dating the pandemic; as accelerator of service changes; as source of solidarity among professional groups; as workforce trauma; and as disruptor of adjacent improvement activity. The paper concludes that multi-level effects of adaptive resilience, and costs of its practice, need to be recognized.

KEYWORDS COVID-19; Colombia; qualitative study; resilience; leadership; innovation; workforce

Background

COVID-19 represents an environmental ´shock´ that has required rapid adaptation to the planning and delivery of health services internationally (Wang et al. 2020). As well as evidence pointing to additional negative effects associated with COVID-19 (Mahase 2020; Chang et al. 2021), there is a line of management research that points to positive, sometimes unintended consequences for health systems that have emerged from the process of responding to the pandemic. A prominent theme is that COVID-19 represented an environmental challenge that spurred health system innovations (e.g. Phillips, Roehrich, and Kapletia 2021). It represented a pressure for adaptation that resilient health systems could take advantage of. For example, Swaithes et al. (2020) speculate that COVID-19 may have acted as a pressure that gave 'permission' for health system improvement in relation to the UK´s national health service. In a US study, COVID-19 was regarded as a 'catalyst' for introducing adaptations to existing services, notably telemedicine, by motivating teamwork among health professionals that aided implementation (Srinivasan et al. 2020). Related concepts examined in this journal concern the ways in which responses to the pandemic relied on public service ethos (Shand et al. 2022) or motivation (Toubøl et al. 2022). Reflecting the need for system-wide collaboration to respond to the pandemic (Leite and Hodgkinson 2021),

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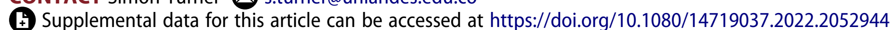
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service change could have been accelerated by the involvement of a variety of institutional actors whose roles included relaxing, or enabling new approaches to, health system regulation (Helou et al. 2020).

However, such an 'innovation' perspective neglects potential negative effects that could stem from making changes to the planning or delivery of services while acting under such a force. While recognizing the motivating influence of the environmental 'shock' represented by COVID-19, such pressure for change could be positive or negative (e.g. adaptive pressures could contribute to the worsening of working conditions). The quotation in the paper's title comes from an interview with a representative of a health professional association in Colombia. The reference to the vulnerability and fragility of all health professionals, no matter their perceived seniority or status, was expressed in the context of crisis: that health workers had suffered from division historically ('the clashes, the egos, the discrimination' described by the interviewee later in this paper), but the pandemic had signalled the need for greater cooperation, in the form of 'teamwork', to address the challenges presented by COVID-19. It suggests, as a departure point for this paper, that the pandemic was a signal that health workforce resilience had been lacking historically in Colombia, and yet the crisis represented an opportunity for adaptive resilience to be built for the health system to respond to the pandemic.

This paper employs resilience as a concept for engaging with processes of health system adaptation in response to COVID-19. Resilient public services are regarded as: adaptive, sustainable, and transformational (Boin and Van Eeten 2013; Linnenluecke and Griffiths 2010; Barber and Murdock 2017). This means that resilient services are well placed to adapt to shocks like pandemics and, moreover, may improve by assimilating new capabilities in responding to such challenges (Trinchero et al. 2020). However, this characterization of resilient services is an idealized one; it does not tell us much about how services become 'resilient', including the sources of resilience and their availability in describing resilient and non-resilient organizations. Resilience is also understood as a broad, and somewhat ambiguously defined, concept with differing meanings in relation to public service performance.

The paper is structured as follows. Next, the conceptual distinction between planned and adaptive resilience is outlined; the case for examining the latter in responses to COVID-19 is then presented. Following reporting of the research methods, the results are divided into five themes that characterize the heterogeneous effects of COVID-19 on health system resilience in Colombia. Finally, the implications for research, policy and practice are discussed.

Conceptual framing: planned and adaptive resilience

Various conceptual distinctions can be found in the organizational literature on resilience. A key one is between planned and adaptive resilience. While planned resilience refers to preparations made to improve the capacity to respond to future crises, adaptive resilience refers to responding to change and disruption during and in the aftermath of crises (Barasa, Mbau, and Gilson 2018). The literature on planned resilience emphasizes slack and resource availability, including historical financing (Barasa, Mbau, and Gilson 2018), and tools and techniques for improving emergency preparedness (Crichton et al. 2009). In response to COVID-19, organizational factors for strengthening health systems that align with planned resilience

include investing in health informatics (Reeves et al. 2020); generous government investment in public health (Denis et al. 2020); and designing health system structures that support flexibility, including the appropriate degree of centralization (Gaskell and Stoker 2020) and integration (Blecher, Blashki, and Judkins 2020; Legido-Quigley et al. 2020).

In contrast, the literature on adaptive resilience emphasizes the practice of new abilities that are triggered by a crisis which may, in turn, lead to the acquisition of new capabilities. Environmental challenges or disturbances trigger adaptive resilience (McCarthy, Collard, and Johnson 2017). The process of adaptive change is theorized to be the product of variation, which may come from informal practices, such as 'happy' accidents associated with improvisation, or formal innovation programmes (McCarthy, Collard, and Johnson 2017; Boin and Van Eeten 2013). For example, in health system planning responses to COVID-19 in Bogotá, Colombia, a critical role for trial-and-error learning in a context of uncertainty was acknowledged (Turner et al. 2021a). In response to COVID-19, recommendations for improving health system responses that appear to fit with building adaptive resilience emphasize flexibility, experimentation, trust, collaboration, and citizen engagement (Ansell, Eva Sørensen, and Jacob Torfing 2021) as well as 'open' leadership, timely communication, crisis financing, and legal decrees (Chua et al. 2020). Adaptive resilience is also influenced by factors associated with planned resilience, notably organizational slack. Resource availability allows organizations to reconfigure their operations in response to crisis (McCarthy, Collard, and Johnson 2017; Greenhalgh et al. 2004). That said, a context of resource scarcity may provide the motivation for an organization to reconfigure their strategy or operations (McCarthy, Collard, and Johnson 2017).

This paper focusses on adaptive resilience practised in response to the COVID-19 pandemic. The paper takes this focus for conceptual, empirical and methodological reasons. Conceptually, there is some ambiguity in the literature concerning sources of planning and adaptive resilience. For example, Boin and Van Eeten (2013) refer to precursor resilience, which is taken to be synonymous with planned resilience, yet include 'decentralized improvisation' as a source of precursor resilience, which appears more likely to be a form of adaptive resilience. Due to conflation of some sources of adaptive resilience with those related to planning or precursor activities, practices of adaptive resilience are relatively understudied.

Empirically, COVID-19 has represented a major and unprecedented challenge for health systems internationally (Wang et al. 2020), which suggests that planned resilience is likely to have been insufficient to respond in the absence of adaptive resilience, meaning that the potentially critical role of the latter is worthy of empirical investigation.

Methodologically, the study´s interview data collected during the crisis was oriented more to exploring short-term adaptive responses to COVID-19 in Colombia rather than identifying longer-term sources of planned resilience. The interviews only captured shorter-term responses aimed at mitigating the immediate impact of the pandemic. We were not able to explore longer-term organizational preparedness, which anticipates and prepares for environmental shocks, although we acknowledge that exploring the relationship between longer-term preparedness (planning resilience capacity) and short-term mitigating actions (adaptive resilience) is an important area for further investigation. However, it could be suggested that planned resilience was lacking within the Colombian health system at the pandemic´s onset: it faced resource

pressures and technical constraints (Rodriguez-Morales et al. 2020; OECD 2020; United Nations 2020; Turner et al. 2021b) and suffered from provider fragmentation linked to marketization (Hernández 2002; Jaime 2016; Turner, Segura, and Niño 20221c).

Current conceptualizations of adaptive resilience raise several issues for critical engagement. Firstly, as adaptive resilience relies on informal sources of variation, including improvisation and trial-and-error learning, this suggests a need to incorporate individual or personal level resilience among the workforce into analyses of organizational responses. Personal resilience can be defined as the active process of adjusting to adversity, maintaining equilibrium and control in doing so, to manage the adverse situation faced (Jackson, Firtko, and Edenborough 2007). Organizations that demonstrate adaptive resilience may negate the need for personal resilience among their workforce, while other organizations may rely on personal resilience where resilience at the organizational level is lacking. To address this gap in the literature, this paper explores the relative role of personal and organizational resilience in adapting to change, and how processes at the two levels are related.

Secondly, the potential relationship between adaptive resilience and improved performance needs to be critically evaluated. The concept of resilience tends to be attributed a positive connotation; little is known about the cost or 'price of resilience' (Boin and Van Eeten 2013). As there is no consensus on how to assess organizational resilience (Ruiz-Martin, López-Paredes, and Wainer 2018), it is not clear how, or if, resilience is linked to improved performance (for instance, resilience might improve organizational performance in one respect, while weakening it in another). To address this gap in the literature, this study examines the relationship between adaptive resilience and organizational performance, and at what cost improved performance is achieved.

This qualitative study of health system leaders' responses to COVID-19 in Colombia engages critically with these issues. It does so by analysing COVID-19 as an environmental disturbance that triggered adaptive responses among health system leaders. The paper examines the forms of adaptive resilience triggered by the pandemic, identifies both positive and negative effects of resilience from the perspective of interviewees′ responding to COVID-19, and explores potential interplay between individual and organizational level resilience.

The aim of the paper is to examine how responding to COVID-19 has influenced personal and organizational resilience among health system leaders. To address this aim, this paper poses the following research question: what are the positive and negative effects of responding to COVID-19 upon resilience among health system leaders in Colombia? It addresses this research question using evidence from the Global South, covering Colombia, an upper-middle income country that faced health system resource pressures at the pandemic′s outset. It provides qualitative interview-based data on health system leaders′ experiences of responding to COVID-19 from within national level planning, service provider, and intermediary organizations such as professional associations.

Methods

Empirical context

Colombia has a population of 50.88 million and is classified as an upper-middle income economy (World Bank 2022). However, several of the country's socio-economic indicators show that it still faces several of the challenges that low income developing countries have, especially during the year 2020. According to the Colombian Administrative Department of Statistics (DANE) the population living in poverty increased from 35.7% in 2019 to 42.5% in 2020; those living in extreme poverty rose from 9.6% to 15.1% over the same period (DANE 2021). Colombia has the second highest level of inequality in Latin America after Brazil with a Gini index of 50.8 for 2019 (OECD 2019).

Colombia has a structured pluralism health model in which health services are highly privatized (Homedes and Ugalde 2005). The country provides universal health insurance through the General Social Security Health System (GSSHS), the backbone of the health system. This system is mixed, with both the public and private sector participating in the insurance, management, delivery and funding of health care services and it is financed through payroll contributions and general taxation. In terms of affiliation, it includes two social insurance schemes, the contributive regime, which covers those formally employed and independent workers, and the subsidized regime which covers individuals classified as poor according to a proxy means test (SISBEN). Insured individuals in both schemes choose their insurer and care providers from within the insurer´s network. 97.22% of the population is affiliated to the GSSHS: 47.17% is affiliated to the subsidized regime; 45.99% to the contributive regime (Así Vamos en Salud 2021).

At the pandemic´s onset in Colombia in March 2020, the country´s health system already reported resource pressures and technical constraints, meaning it can serve as a case of the particular challenges encountered by less developed economies in responding to COVID-19 (Rodriguez-Morales et al. 2020; OECD 2020; United Nations 2020). The Colombian health system still faces challenges such as its scarce financing, the lack of infrastructure and inequality in health access (Suárez-Rozo et al. 2017). In addition, the scarcity of health professionals and the poor conditions under which many are contracted has also been highlighted as a limitation of the health system with a significant impact in the response to the pandemic (Departamento Nacional de Planeación 2020). For 2018, Colombia had 2.18 physicians and 1.33 nurses per 1000 people (World Bank 2021).

Colombia has been severely affected by COVID-19. By 4 August 2021, Colombia had 86,521 cases per million, representing the sixth country in terms of cases per million after Uruguay (107,659), United States (104,142), Argentina (101,124), Panamá (94,091) and Brazil (88,572). Colombia had the third highest number of deaths per million in the Americas after Perú (5,794) and Brazil (2,477) (Instituto Nacional de Salud 2021).

Data collection

The dataset is derived from a ten-month national study, funded from May 2020 to March 2021 (Turner and Niño 2020). The main study involved 118 interviews at multiple levels of Colombia´s health system, including national-level stakeholders and

planners and providers at local level. Analyses at local case study level of inter-sectoral collaboration and workforce implications are reported elsewhere (Turner et al. 2021b, 2021c). The findings presented here are based on a subset of 33 interviews with national level stakeholders within Colombia, including national level planners and coordinating bodies, insurance companies, health professional associations, and trade associations (Table 1). Interviewees represented public, private and non-profits at the national level of the Colombian health system. Analysis of the distinctive roles and motivations of the private sector and universities in the response to COVID-19 has been undertaken elsewhere (Turner et al. 2021b). We note here that varied interests across sectors (a sense of solidarity, economic concerns, and maintaining reputational legitimacy) motivated multi-sectoral involvement in response to the crisis, and that these interests may also influence participants´ responses to interview questions (e.g. trade unions´ concerns about improving working conditions). However, workforce concerns are borne out by other research conducted in Colombia prior to (Ochoa and Blanch 2016; Ruano and Villamarín 2015) and during the pandemic (Delgado et al. 2020; Turner et al. 2021cd). Based on the interview data available, there were no discernible differences in perceptions of resilience by sector type; a cross-sectional survey would be more appropriate for studying potential differences in future research.

The selection of organizations approached for interview was based on purposive and snowballing sampling. Purposive sampling was based on stakeholder mapping of key organizations involved in the response to COVID-19 at national level; such mapping was undertaken based on documentary analysis (e.g. reviewing press and social media accounts; visiting providers´ websites). Snowball sampling involved sharing the stakeholder mapping and asking interviewees about other relevant organizational actors we should include in our sample. We controlled for bias by ensuring that any suggestions made by interviewees were triangulated with our own stakeholder mapping which was informed by documentary analysis (e.g. the documentary analysis ensured any potential bias in our sample´s suggestions was addressed and potential gaps in our sample were filled). Within each organization, senior level leaders (mostly director level) were approached that could provide an overview of their organization´s experiences of, and responses to the pandemic in Colombia. Interviewees´ roles and organizations´ names were anonymized.

Ethical approval was provided by the Committee on Research Ethics, Universidad de los Andes; it was classified as low risk (1166–2020). Initial contact with potential interviewees was via email, messaging platforms, or telephone. All interviewees received a participant information sheet and provided informed

Table 1. Study participants.

	Type of organization			
Type of actor	Public	Private	Non profit	N
Stakeholders working as directors in Ministries of National Institutes relevant to respond to the emergengy	11	–	–	11
Directors of insurance companies and asociations of insurance companies	–	7	–	7
Asociations of health profesionals (nurses, doctors, intesive health care)	–	–	12	12
Directors of observatories of health	–	–	1	1
Directors of asociations representing the economic sector of relevance to respond to the emergency	2	–	–	2
Total	13	7	13	33

consent. The interviews were conducted 'virtually' by trained researchers using online meeting platforms, Microsoft Teams and Zoom. Interviews were semi-structured using a topic guide, audio-recorded, and professionally transcribed by a contracted agency.

Data analysis

Data analysis involved a combination of inductive and deductive methods (Bradley, Curry, and Devers 2007). Inductively, the interviews sought to capture interviewees′ experiences of the pandemic and its personal and organizational impact. This is reflected in open-ended questions included in the interview topic guide (Appendix 1), which related to the wider qualitative study from which this paper is derived (Turner and Niño 2020). Deductively, the analysis of the interview data for this paper was informed by ideas related to personal and organizational resilience. Resilience was captured by coding for: precursors for developing an existing resilience capacity (although little data was apparent on this topic); emergent sources of resilience developed in response to the pandemic; and unintended consequences or negative effects associated with responding to COVID-19 that may influence resilience. See Appendix 2 for the step-by-step approach to the thematic analysis of the transcripts using manual coding.

It is important to note a methodological limitation of this exploratory qualitative study that utilizes interview data collected in the initial months following the arrival of COVID-19 in Colombia. It identifies responses to COVID-19 from the perspective of health system leaders through analysis of their reported experiences and perceptions; it did not seek to generalize from those particular experiences to make wider claims about leaders′ responses to COVID-19 or to propose mechanisms that attempt to explain the changes in behaviour reported. This approach fits in with a perspective on qualitative research as one of identifying and conveying the meanings that actors′ attribute to their experiences (Merriam 2009, 5).

Results

Thematic analysis of the interviews with national level stakeholders informed the construction of five effects upon these actors of responding to COVID-19: as a *mirror* that facilitated reflection on health system challenges which pre-dated the pandemic; as *accelerator* for the introduction of service change; as a source of *solidarity* or common purpose within and among professional groups; as *trauma* which affected the working environment of those responding to the pandemic; and as *disruptor* of existing improvement programmes and non-COVID services. A summary of the findings by theme is provided in Table 2.

Mirror

COVID-19 held up a mirror to existing approaches to health service planning and delivery which encouraged reflection on long-established problems that pre-dated the pandemic, and suggestions for how health services should change in the future. The identification of structural challenges within the Colombian health system was a by-product of responding to COVID-19. As the following quotation illustrates, one area of concern was the working conditions of healthcare professionals which had come into sharper focus during the pandemic:

Table 2. Summary of findings by theme.

Theme	Subthemes
Mirror	• Working conditions need to be bolstered (e.g. psychological support programmes for front-line staff) • Framing of health care evaluation needs to shift from 'economic' considerations • At the individual level, 'egos' are holding back democratic decision-making • At the organizational level, 'blame' is holding back necessary alliances. • At the societal level, improving health needs to achieve more status as a collaborative task.
Accelerator	• Service change accelerated • Scaling up of telemedicine services • Relaxation of or changes to regulatory practices facilitated service change
Solidarity	• Common purpose or frame of mind • Some individuals perceived as indifferent to the pandemic • Intensification of communication among professional groups around shared interests • Addressed professional hierarchies
Trauma	• Impact on wellbeing from intensity of communication through virtual meetings, emails, and messaging platforms • Ongoing pressures led to emotional and physical exhaustion • Informal self-care routines (e.g. isolating, exercise) as protective measures
Disruptor	• Disrupted existing improvement programmes • Focus on COVID-19 affected adjacent services

> "what we have seen at the level of public and private hospital institutions is that there has been an upsurge in the precariousness of work, along with a drop in wages, which do not align with the demands on the health system to deal with the pandemic. But what we also see in a shameless way is the issue of harassment at work: if you don't like it, then quit and go, there are many behind you."

(Representative of an association of health professionals, SHA001)

Another interviewee highlighted how the lack of resources to protect the workforce had been exacerbated by COVID-19, as illustrated by shortages of personal protective equipment, like gloves, which predated the crisis:

> "While there is a shortage of personal protection items, then, workers cannot be required to share items, which as the name implies, are personal protection items, they cannot be shared. Now we are beginning to see the significant number of health sector workers who are beginning to succumb to COVID-19. So what we are seeing in the pandemic is a recurrence of those situations that we saw before. That is, before we already had some problems with no gloves, well, we didn't have problems with the issue of face masks, but specifically, there were no gloves or no other supplies to care for patients. But what is happening now . . . it is an exacerbation of that."

(Representative of an association of health professionals, SHA001)

This interviewee's claim about the lack of resources for safeguarding the health workforce is borne out by a survey of healthcare professionals in Latin America, including Colombia, in which resources were reported to be lacking to respond to COVID-19 (Delgado et al. 2020). The pandemic also provided system leaders with a new perspective from which to evaluate the effectiveness of health services. For the following interviewee, this implied adding a new consideration to the traditional 'economic' lens that was concerned with the distribution of costs among actors to fund health services. This new lens related to making available shared or collective 'resources', no matter where they sat in the health system, to improve public health management:

> "We always found ourselves trapped in the economic aspect, the economic, the economic, the economic. Thank God, now we are talking about a different subject [. . .] how do we generate resources, no matter where they are, to make proper public health management?"

(Representative of a health insurances association, SHA016)

Holding up a mirror to the organization of health services, the pandemic provided the opportunity to re-evaluate health service provision and identify areas for improvement. Safeguarding human resources, including front-line workers, was a prominent area cited. This led the interviewee below to suggest 'psychological support' initiatives for doctors, which was a need among healthcare workers more widely reported in our dataset:

> "we are broken, the doctors in the country were in very bad psychological condition, and that is reflected in the number of suicides that we see, in the amount of depression that is seen. If that was before [the pandemic], how will it be now? And that is one of the things we have told the government, and I was very clear with both municipalities: hello, please make psychological support programmes for those people who are going to face a war every day and with a fear of falling into that war. They have to breathe; they have to see another perspective"

(Representative, medical professional union, SHA013)

COVID-19 prompted reflection on the existence of barriers to collaboration across entities within the health system, and how the pandemic might help to address these. Such barriers were identified at different levels: individual, organizational, and societal. At the individual level, the presence of 'egos' was felt to have undermined democratic decision-making historically (e.g. the desire to seek and reach consensus on planning among a range of stakeholders). The uncertainty associated with the pandemic – including the continuing emergence of new evidence – was seen as a signal that more democratic approaches to decision-making were needed and had proven possible:

> "This [pandemic] is an issue that calls into question egos. We do live in a society full of very strong egos. Under this context, all egos are put into question. Nobody knows everything, nobody has the truth revealed, everything [known] is susceptible to new studies."

(Representative of a health professionals association, SHA026)

At the organizational level, the presence of a culture of 'blame' across entities had undermined inter-organizational cooperation in the past. As the following interviewee argues, COVID-19 had indicated a need to move away from such relationships to improve cooperation, although looking for the 'culprit' organization within the system was heavily entrenched:

> "It is not easy because there are generation and generations looking for where the culprit is. Look at the health system; the health system is always looking for culprits: this should have been made by [the insurance company], this should have been made by the [healthcare provider], the doctor is the one who should have done that, this was the state´s responsibility. If each of us could just assume their responsibilities, I could assure you we could move forward on a completely different path."

(Representative, not-for-profit, business association, SHA015)

At the societal level, indications of greater cooperation in response to the pandemic, such as charitable donations and business philanthropy, suggested a need to amplify the status and task of improving health in society, so that this mountainous task becomes a focal point for policy and a collaborative effort:

> "I believe that this is where we have to think about this more organized civil society: what are the higher common purposes towards which we should direct our work? And each one, from their experience and knowledge, and from their expertise, should support and contribute to

> this direction. And I believe that this is a challenge for society to learn from this collaborative work which, for me, stems from the need to put aside that, not a habit, that natural vision or that natural desire to impose my idea, and not to find the truth that suits us all."

(Representative, health observatory, SHA014)

In summary, health system leaders indicated how COVID-19 had held up a mirror to – and sometimes exacerbated – pre-existing challenges with the resourcing and organization of the Colombian health system. Improving working conditions and tackling barriers to cooperation at multiple levels were suggested in response.

Accelerator

As an accelerator, COVID-19 was described as a stimulus for making relatively rapid changes to health service planning and delivery. A service change that was discussed prominently in the interviews was the introduction or expansion of telemedicine services. COVID-19 had 'accelerated' the expansion of telemedicine services – from a few thousand to 1.5 million consultations per month according to one interviewee – by forcing greater effort on assembling the necessary resources and technology to offer these services:

> "I completely believe that in some cases we have been innovative in care processes and also in care models [. . .] and some came to stay, for example, the model of attention in telehealth because basically that accelerated the process with COVID and for some time it is going to stay. In other words, we had a few beginnings in telemedicine, but it was precisely the pandemic that forced us to make some dramatic changes in the preparation of resources and the purchase of technology, and in record time we have been able to make changes that are now working properly for this type of care."

(Representative, national insurer, SHA007)

Another interviewee highlighted how the expansion of telemedicine had been facilitated by changes in the practice of national regulation, as a government decree relaxed the conditions necessary to provide telemedicine services:

> "I believe that the subject of telemedicine was adapted so quickly that I still cannot believe it, because with telemedicine the visits were absurdly demanding; they asked for specialized software. Now I can do medical consultations through [Microsoft] Teams [. . .] When the decree came out and they said we are going to convert to tele-health and the *territorial bodies* [refering to the local town halls and health secretariats] will verify and authorize and the authorization is now simply an email. I believe that they adjusted to the reality of the country. Besides the fact that they don't want to make visits anymore – because they don't want to get Coronavirus – that's another thing, the verifiers don't want to make visits. So, it has allowed me to adapt and be very flexible to be able to respond to the needs of insurers that provide telehealth"

(Representative, national certification body, SHA012)

However, such accelerated changes to services were not universally welcomed. One interviewee questioned the relevance of telemedicine to a significant proportion of Colombian´s population that lacked access to the necessary technologies or knowledge to participate in virtual appointments via a computer screen:

> " . . . it turns out that more than 20 million Colombians do not have digital connectivity, they do not have broadband, how are you going to talk about teleconsultation? Or, how are you going to talk about teleconsultation if you have a serious problem of access to electricity in many areas of the country? How are we going to install the computer, the screen for people to make the appointment, and the other one to read the unified medical history?"

(Representative of a health professionals association, SHA026)

In summary, service changes were accelerated by the pressure to adapt services in response to COVID-19. Rapid expansion of telemedicine services was accomplished through a combination of service providers´ actions and regulatory change, although the acceptability to patients of accelerated changes, such as user technology-based services, was also questioned, indicating a need for evaluative evidence.

Solidarity

The process of responding to COVID-19 was regarded to have improved some relationships within the health system. Some interviewees described the pandemic as creating a source of 'common purpose', or putting people into the same frame of mind, which influenced their willingness to collaborate with others:

> "The triggering factor is that we felt identified by a common purpose through an uncertainty of an attack from an external agent that was common to all of us and that has affected us all equally and so we wanted to see how we could help each other."

(Representative, health observatory, SHA014)

Others expressed greater scepticism about the pandemic´s universal impact on people´s behaviour, suggesting some individuals remained in a 'state of indifference' concerning the coordination of their actions with others to respond to the pandemic:

> "There are people in a state of indifference that one cannot imagine and nothing happens and that [change in commitment] seems to me to be the success rather than the coordination [. . .] I believe one can do coordination if everyone has the will, everyone is willing because it is also not just a matter of what is coordinated but one is willing to be coordinated, but it is not so, that is to say it is not so."

(Representative, national research body, SHA018)

In analysing willingness to cooperate further, there appeared to be patterns of cooperation in accordance with professional groupings. Members of common professional groups shared information, championed common causes, and strengthened relationships within their profession. For example, one interviewee pointed to the sharing and development of operational guidance, including protocols for emergency care, among nurses across the country as sources of 'solidarity and cooperation':

> "It has generated solidarity and cooperation. And there are people there who handle, for example, all the information on protocols. If someone says: is there a protocol for such a thing, someone in Guaviare [a department of Colombia] says, yes there is a protocol, and there it appears. The group said: we have a problem with the issue of ethical guidelines, who can work on the issue of ethical guidelines for emergency medicine, the issue of emergency resuscitation? So, a group got organized and we are going to draw up ethical guidelines for the issue of emergency care."

(Representative of an association of health professionals, SHA001)

Another interviewee remarked on intensive communication among particular stakeholder coalitions based on their interest in common causes, such as safeguarding doctors´ working conditions, which brought together different medical and scientific associations, among other groups:

> "Look, the Colombian medical federation, scientific associations, infectious disease groups, intensivist groups, general practitioner groups, everyone is constantly communicating with concern about the helplessness of doctors due to stigmatization, lack of biosecurity, disorganization of medical work."

(Representative, society for academic medicine, SHA002).

For some key professions involved in responding to COVID-19, the pandemic had improved professional recognition and legitimacy, paving the way for 'internal strengthening' of these professions, as the following interviewee representing the physiotherapy profession told us:

> "that element of what the role of the profession means in this concrete situation . . . well . . . it became a scenario of recognition and legitimacy outwardly, and a possibility of internal strengthening, which . . . well . . . today places us – it seems to me, above all on the internal level – with a very important condition of visibility and recognition."

(Representative of an association of health professionals, SHA030)

At the inter-professional level, the pandemic provided an opportunity to address professional hierarchies that had thwarted inter-personal relationships in the past. Such hierarchies were visible within and across specialities. COVID-19 provided an opportunity to address such hierarchies 'within the world of health workers' based on acceptance of workers′ mutual vulnerability and fragility during the pandemic irrespective of professional status:

> "The problems, the clashes, the egos, the discrimination within the world of health workers is brutal, it's tremendous. The categories, the hierarchies. The doctor is not the same as the nurse, much less the assistant. And I think that condition has been very beautiful, because I think that everyone has put the pandemic on a level of common humanity. We are all vulnerable, we are all fragile. If we don't understand that we are a team to deal with this situation, we are all screwed. I think that has been a gain in the process."

(Representative of a health professionals association, SHA026)

Inter-professional cooperation across specialities was also highlighted in relation to the staffing of intensive care units (ICU) for COVID-19 patients. The need to resource the scaling up of critical care space – as a national decree meant 50% of ICU capacity needed to be dedicated to COVID-19 – necessitated closer working relationships between intensivists and other specialities:

> "That's the nicest thing that's ever happened. Never before, we showed each other our teeth [. . .] with anaesthesia we always had a cordial but very frivolous relationship, I think distant. And you know why, don't you? Because of jealousy. Because we intensivists have considered the ICU to be ours, just as cardiologists consider the cardiology service to be theirs. [. . .] So, there are some actors who have come in, such as anesthesiologists, surgeons, internists, with whom we obviously have a very good relationship, and in fact, I think it was very helpful to the country that the units had not been handed over only to the 900 intensivists, because with the pandemic we would have drowned."

(Representative, association for critical care medicine, SHA031)

In summary, COVID-19 encouraged solidarity within and among professions, driven by recognition of vulnerability in the face of a mutual threat within professions, or cooperating to enact mandated change at the inter-professional level (e.g. responding to a national decree on ICU capacity).

Trauma

COVID-19 was described as a source of trauma for those responding to COVID-19, placing a burden of those responding that generated fear and uncertainty, as well as physical and emotional stress. One element of the toll related to the volume and intensity of work associated with responsive planning. In the following quotation, this interviewee highlights the sheer volume of correspondence – through emails, group messaging services, and telephone calls – that confronted them at times during the pandemic:

> "I had in my mailbox at one point, like 3,000 to 4,000 emails, plus the correspondence system that was handled by someone else, plus three phone lines: at one point they come to you. In each chat, you can have 90 chats, then you already enter a level of human impossibility to respond and you are taking a risk, even though all the management was dedicated to helping to respond [. . .] It's a challenge at the end and from a professional, technical and even emotional point of view, it wears you out. And the media acting almost against it, questioning the measures, questioning that the information that is being given is suddenly not reliable, is not complete, sowing a certain skepticism in the face of what is being given."

(Representative, national planning authority, SHA017)

The pressures associated with dealing with such correspondence came on top of extended and very long working days. Another interviewee highlighted the relentless pace of work and lack of time off during the pandemic, as urgent problems continued to emerge:

> "But when the emergency started, we said we had to buy ventilators and the subject of ventilators started and to be able to express what happened at that time, I can tell you that this is like when you are at the university studying medicine but 35 years older, that is to say, it is much more, it is much more difficult because when you are studying medicine it is so hard and if you are young, you are good, you endure, you are young and you endure and you spend two days straight and you continue with Saturdays and Sundays and all that story. I don't remember this year's Holy Week, I have no idea what happened, for me Thursday and Good Friday were the same as Good Monday or Monday of the previous week because precisely at that time we were at the end of the acquisition of the ventilators."

(Representative, national planning authority, SHA022)

The number of meetings also rose in response to the pandemic. These was a product of either new meeting fora emerging or increased intensity of communication within existing ones. This interviewee explained how the frequency of board meetings of an association of private medical providers that they chaired had risen from monthly to daily. Meeting on a daily basis was deemed necessary and valuable, but tortuous to organize and participate in:

> "So, there has been a super informal and not very deliberate increase in communication, why? Because of that silly little change, let's not meet every month, but let's meet every day within a pandemic! Now, for me it has been a torture, because imagine what it is like to have a board of directors every day, but it is a torture that I put up with . . . "

(Representative of a health insurance association, SHA021)

These various pressures contributed to exhaustion. One interviewee described feeling 'emotional' and 'physical' exhaustion personally, and suggested that exhaustion was more widespread, using the example of decreasing enthusiasm for and participation in webinars over the course of the pandemic as a marker:

> "From an internal and professional point of view, I also think that people are exhausted, both physically and, obviously, emotionally. There are many signs that suggest that people are already saying: "look, we're kind of exhausted", look that webinars are one more thing - it seems to me that webinars are a very interesting element. We launched the first webinars in April [2020] and the number of people was impressive, and today you hold a webinar - there is also a saturation of webinars of course - but you hold a webinar and you don't manage to get more than 50-60 people to come, either for technical or legal issues."

(Representative of an association of health professionals, SHA030)

Another type of trauma related to how some medical professionals were sometimes treated in wider society – as either a source of blame for the situation or otherwise a source of contagion – that fuelled various forms of 'aggression' towards them. According to one interviewee, this included instances of threatening behaviour in both the workplace and their own neighbourhoods:

> "Then, one sees that the true professional is totally coerced to exercise their practice, but today, yes, we go out to applaud them: ′how beautiful, how nice, how wonderful!′ But, at the same time, we are suffering a lot of aggression: [. . .] ′Leave this hospital, leave this place, leave this residential area, you will contaminate us . . . !′"

(Representative, medical professional union, SHA013)

In response to such pressures, some interviewees revealed various practices of informal self-care, ranging from isolation measures to avoid particular telemediated communications through to short bouts of exercise that were fitted somehow into the working day:

> "Then it's my turn to breathe, to go out, here on the terrace, to do yoga for ten minutes, which I don't do and don't know how to do, but I kind of try to do it . . . "

(Representative of a health insurance association, SHA021)

In summary, responding to COVID-19 was associated with accounts of trauma among health system leaders in Colombia. Reported sources included gruelling work schedules that spilled over into evenings, weekends and holidays, the intensity of telemediated communications, negative media opinion and, for visible healthcare providers, facing aggressive and stigmatizing behaviour from others within and beyond the workplace.

Disruptor

COVID-19 was regarded as disruptive to some existing improvement programmes that predated the pandemic and to some services for non-COVID-19 patients. With regard to existing improvement programmes, the leader of a medical association described how one programme – concerning the legal recognition of doctors that had recently passed their training – was cast into uncertainty as planning in response to the pandemic was prioritized:

> "the pandemic has been catastrophic in all senses of the word. Just this year, we had very important work that we were developing on the implementation of the law of medical residences. We had obtained the budget to start this year, we had the tasks for this year defined. [. . .] the pandemic falls, then there begin to be doubts about whether the budget will be available [. . .] everything that had to do with the residence law was dissolved and we entered as a direct response as an association, about trying to ensure that none of the wellbeing conditions of the residents were violated.

(Representative of an association of health professionals, SHA029)

It was also recognized that other types of illness had not 'disappeared' due to COVID-19 and, indeed, that other illnesses could be exacerbated by the pandemic, as the leader of an association for public hospitals stated:

> "So we have to adapt, especially in the health sector, where hypertensive patients, diabetics and pregnant women have not disappeared because COVID is here. On the contrary, cancer and all these types of pathologies, if we do not start to work, which is what we have been encouraging, to work with the chronic population [. . .] there will also be a giant boom when, in inverted commas, "people start to go out" and suddenly this type of pathology begins to emerge [. . .] these issues are going to generate huge costs for the system, if we don't start to deal with an issue that is already parallel to the issue of COVID."

(Representative of a health providers association, SHA011)

In summary, there was concern that the health system´s focus on COVID-19, as well as governmental interventions like lockdown measures, was having a disruptive effect on the management of other forms of illness that could contribute to further health system challenges.

Discussion

This study asked what effects responding to COVID-19 had upon resilience among health system leaders in Colombia, both positive and negative. These effects were analysed using the concept of adaptive resilience which treats environmental disturbances as a potential stimulus for practising new abilities to allow an adaptive response. The analysis of key stakeholders´ responses from within the Colombian health system indicated that COVID-19 was not a trigger for a particular type of response, such as giving permission for innovation (Swaithes et al. 2020). Instead, COVID-19 unleashed a heterogeneous set of effects upon health systems as described from the perspectives of health system leaders. Some could be characterized as positive effects, such as holding up a mirror to existing problems, accelerating the introduction of innovations, and encouraging solidarity based on common purpose. Others could be seen as more damaging effects of the pandemic, including experiences of workforce trauma, and disruption to existing improvement activity and the delivery of adjacent services affected indirectly by the focus on COVID-19.

By analysing processes of adaptation in response to COVID-19, this paper provides qualitative evidence that puts into question the positive connotations often associated with the concept of resilience. Conceptualized as a capability for adaptive learning and transformation (Boin and Van Eeten 2013; Linnenluecke and Griffiths 2010; Barber and Murdock 2017), resilience is often framed positively in the public management literature as an attribute to which public managers and organizations should aspire. In relation to England, Shand et al. (2022) argue that system-wide collaboration among health system actors in response to COVID-19 was aided by a common public ethos among local government managers in England. Our evidence on leaders´ experiences of responding to the environmental shock of COVID-19 in Colombia indicates that such enthusiasm for resilience should be tempered with acknowledgement of the harsh, everyday realities of leading health system adaptation in response to crises. In response to the research question, exhibiting resilience in response to the pandemic was shown to have positive and negative effects upon health system leadership in Colombia.

This paper makes three contributions to the literature on adaptive organizational resilience. First, resilience has been shown to come at a cost. Our findings indicate some categories from which the 'price of resilience' could be calculated, which has been identified as a gap in previous research (Boin and Van Eeten 2013). These relate to the themes of disruptor and trauma that were identified as negative effects associated with responding to COVID-19 among health system leadership in Colombia. The intensity of focus needed to respond to the environmental disturbance of COVID-19 placed pressure on the workforce, including senior leadership, as key agents of adaptative resilience, and involved the neglect of other priorities (e.g. elective hospital services) as resources were reallocated to respond to the immediate crisis. Managing the costs of workforce trauma and disruption to adjacent services and activities should be regarded as additional 'necessary features' (Leite and Hodgkinson 2021) when planning for resilience in response to future pandemics.

Second, it highlights the need to consider processes of adaptive resilience at the personal and organizational levels. Resilience should be treated as a multi-level concept in which processes at one level can affect the need for resilience at others. For example, responding to COVID-19 by introducing new services or modifying existing ones, learning from others' experiences by participating in networks, or building workforce capacity (Turner et al. 2021a, 2021b, 2021cd, 2021d) – which could be seen as adaptive resilience at the organizational level – also demanded adaptive resilience at the personal level. Demonstrating such resilience impacted on leaders' wellbeing (i.e. the high intensity of communication demanded to enact service change via frequent participation in virtual meetings, email exchanges, and messaging platforms). Adaptive processes at the individual and organizational levels need to be complemented by adaptive resilience at the wider system level. For example, service change in response to COVID-19 has been accelerated by the relaxation of, or new approaches to, aspects of health system regulation (Helou et al. 2020). Adaptive resilience should be treated as a multi-level concept that is exhibited to a varying extent at the individual, organizational, and system-wide levels, and is influenced by interactions between these levels.

Third, the results provide insight into the mechanics of adaptive resilience when triggered by environmental challenges. The actions resulting from such disturbances have motivational and problem-solving components (McCarthy, Collard, and Johnson 2017). In response to COVID-19, the crisis motivated solidarity among some health system leaders, expressed through greater disposure to a common purpose or frame of mind, which led to outcomes like increasing intensity of communication within and across professional groups to facilitate adaptive learning in response to the pandemic. It also motivated accelerated changes to services to provide access to adjacent services for non-COVID-19 patients unable to use health services in-person (e.g. use of telemedicine). Regarding problem-solving, the disturbance caused by COVID-19 became a mirror for reflecting on existing service planning and delivery by health system leaders, engendering recognition of prior problems (e.g. poor working conditions on the front-line) and where to focus managerial attention to bring about improvement (e.g. addressing 'egos' and 'blame' which were perceived to undermine collaboration among actors). However, given that positive aspects of resilience, like solidarity and mirror, were identified alongside more negative aspects, like disruptor and trauma, it is important to acknowledge the wider context in which processes of adaptive resilience take place. For example, how are the motivational and problem-

solving processes that are potentially triggered by crisis, then stymied or facilitated by previous investment in personal, organizational, and local system level resilience? To address this question, there is a need to examine the relationship between adaptive and planned resilience in future research.

Policy and practice implications

This paper on practices of adaptive resilience stimulated by COVID-19 has a number of implications for policy and practice. First, as key agents of adaptive resilience, the wellbeing of the health system workforce needs attention. A focus on safeguarding the workforce is aligned with O'Flynn (2021) call for public management research that engages with social justice themes. Other qualitative research on COVID-19 has highlighted its impact on front-line healthcare workers′ mental and physical health (Algunmeeyn et al. 2020; Rowe et al. 2020; Turner et al. 2021cd); additionally, this study indicates the need to attend to the wellbeing of health system leaders involved in coordinating responses, e.g. by introducing an appropriate communication policy for managing its intensity and potential intrusiveness at times of crisis.

Second, health system changes have been introduced at a faster pace to respond to the challenges of the pandemic, including Colombia (World Health Organization 2020). Such urgency of change may be linked in part to the severe threat to health posed by COVID-19. However, evaluation of accelerated service changes triggered by COVID-19, and rapidly implemented, needs to be assured to gauge their acceptability to patients, families, and staff.

Third, adaptive resilience needs to be built, and aligned, across multiple levels by organizational and policy leaders. Deficits in resilience at one level are likely to impact on processes at other levels (e.g. a lack of slack resources at the organizational level is likely to place pressure on resilience at the individual level due to increased workload or role pressure, while adaptive resilience is needed at the wider system-level to facilitate service change by enabling the timely review and updating of service regulations in times of crisis). To offset the burden of resilience felt by individuals such as health system leaders, as identified in this study, it needs to be distributed across supportive organizational structures, and not only a burden felt by individuals, to prevent experiences of managerial trauma.

Fourth, new abilities practised in response to crises need to be catalogued and unpacked from a human resource and organizational design perspective to evaluate their potential value as, and feasibility of their translation into, longer-term capabilities.

To support the drawing of lessons for policy and practice, the five themes identified in this study could be used as a self-diagnostic tool for use by managers and policymakers in the ongoing response to COVID-19 and future crises. First, as a 'mirror', what does COVID-19 highlight about the strengths and weaknesses of existing public service provision and policy processes? Second, as 'trauma', how was the workforce affected by COVID-19, taking into account different services, staff roles, and levels of seniority? What was done to safeguard the workforce? How can this be improved in future? Third, as 'disruptor', which areas of adjacent activity were affected negatively by responding to COVID-19? What criteria (if any) informed decisions concerning resource allocation? Fourth, as 'accelerator', what types of service change were implemented in response to COVID-19? Were unnecessary barriers to service change

revealed? Has the efficacy of accelerated service changes been evaluated? Fifth, as 'solidarity', what inter-personal and organizational level processes motivated cooperation? What undermined cooperation, where it was lacking?

Limitations and avenues for further research

This study suffered from a number of limitations, some of which were linked to conducting the research during times of COVID-19. First, the analysis relies on interview data. Ethnographic research could critically evaluate the practices associated with the five themes identified by, for example, observing practices of accelerated decision-making on innovation or the building of solidarity through meetings and other forms of virtual communication.

Second, the research provided a 'snapshot' of experiences of COVID-19 within the first six months or so of the pandemic´s onset in Colombia meaning that it captured actors´ early experiences and responses to the pandemic, which were often expressed in the midst of considerable strain personally for the interviewee and for health services alike. It was not possible to evaluate sources of planned resilience historically, and therefore potential interplay with the processes of adaptive resilience identified, nor examine whether the new abilities practised in response to COVID-19 can be translated into longer-term capabilities, as other work on adaptive resilience suggests (Trinchero et al. 2020). While there was evidence of solidarity increasing within and to some extent among professional groups, we are not able to determine whether disposure towards collaboration will be sustained once mandated changes to services (e.g. emergency decrees) and the immediate threat posed by the pandemic fades away post COVID. To address this analytical gap, longitudinal studies that include repeat interviews with the same actors could capture sustained sources of resilience, both planned and adaptive, as well as their potential translation into capabilities for dealing with future crises, and factors that inhibit this translation process, at the personal and organizational level over time.

Finally, our findings come from data collected from actors within one health system, situated within an upper-middle-income country, that presented particular structural characteristics at the pandemic´s onset which, in turn, influenced its subsequent responses to the pandemic. International comparative studies, including review articles that summarize existing data, could compare starting conditions of planned resilience in each health system and capture how these influence adaptive responses across different international contexts.

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