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Decentralised governance and health workforce resilience lessons from the COVID 19 pandemic in Nepal

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Abstract

Background

Nepal's process of decentralisation to a three-tiered government structure was underway at the time of the COVID-19 pandemic. This study examines the health system's response to staffing health services in the context of this structural change and provides lesson on governance and system resilience at all levels.

Methods

We employed an exploratory cross-sectional design involving a multi-level review of relevant policies issued in 2020 and we conducted 22 purposive key informant interviews in 2021 across federal, provincial, and municipal levels, focusing on Kapilvastu district in Lumbini Province. Data were analysed using a thematic framework approach, guided by an adapted framework focusing on three pillars - increasing numbers, increasing flexibility, and increasing support.

Results

While numerous relevant workforce-related policies and guidelines were developed during 2020, primarily by the federal government, implementation was hindered due to pre-existing staff shortages and lack of preparedness of decentralised governance. Nevertheless, the surge of health workforce demand was partially addressed using decision space for emergency contract hiring at federal and municipal levels and locally made deployment decisions. Flexibility regarding service delivery was evident in the adaptive capacity of local managers and frontline workers. While the federal government undertook efforts to support health workers regarding guidance on roles, treatment policies and practice, cascading of new skills, and provision of personal protection and risk allowances – this support was not always received at the frontline in a timely and consistent manner due to various implementation and system level constraints. However, health workers demonstrated adaptive resilience by establishing informal knowledge networks to bridge gaps in information-sharing and capacity-development.

Conclusion

During the initial period of the pandemic, Nepal faced health workforce challenges for delivering COVID-related services including shortages of staff, skills and related support which was hampered by the structural reorganisation following the federalisation process. Nevertheless, some challenges were mitigated due to the adaptive capacity and resilience of managers and health workers at subnational

level. More effective support, motivation and monitoring systems across all levels of the health system would strengthen health workers' response in the early stages of future pandemic or shocks.

1. Background

It is well documented that one of the key elements for an effective pandemic response at the health system level is the availability of health staff (often in additional numbers to address the surge of demand for services) and their capacity to play multiple roles (1–4). Globally, the COVID-19 pandemic underscored the critical role of a resilient health workforce in crisis response. In this paper, we analyse the case of Nepal, where the COVID-19 pandemic played out against a background of structural change in the form of decentralisation introduced by the new federal constitution passed in 2015 (5).

The federal transition and health workforce governance gaps

Following the 2015 constituion, the local elections were held in 2017 and the three-tiered governments were operational in 2018. The transition to a decentralised structure introduced confusion due to unclear guidance regarding the coordination mechanism among the three tiers of government, in relation to the roles and functions of health staff management, including recruitment, promotion and transfers. The provincial government (tier 2 of the structure) now holds the authority to recruit permanent staff at the sub-national level (province and municipality) through the provincial public service commission, whereas the federal government is responsible for managing salaries. Municipal governments (tier 3 of the structure) can now recruit staff on contract basis using their budgets (5, 6). A summary of the restructuring process, and reallocation of responsibilities and resources is provided in Table 1.

As in many cases of decentralisation for example, Kenya, (7, 8), in Nepal the process of reallocation of all government staff (including health workers) was challenging, lengthy and contested. In March 2019, 7,600 government employees filed complaints related to the adjustment process (9). By September 2019, local government was short of 58,000 employees, while 21,399[1] employees were lacking at provincial level (10). In May 2020, due to the pandemic and related financial constraints, recruitment was halted (11), further limiting progress to increase the number of health workers.

Insert <Table 1 here>

Multiple crises and health workforce challenges

Over the last decade, Nepal had experienced major shocks, including a devastating earthquake in 2015 (12) and an unofficial blockade later that year (13), prior to the start of the structural governance reorganisation. The start of the COVID-19 pandemic in early 2020 provided another major challenge for the government. Given the importance of the health workforce in scaling-up access to essential COVID-19 tools (14), the weak state of the workforce and the recruitment and reallocation issues in relation to the federalisation process, responding to the COVID-19 pandemic was more challenging for the government. A major potential benefit of decentralisation is that managers can respond both more

rapidly and appropriately to local needs (15–17), though in the case of Nepal it was unclear how much ‘decision-space’ or range of choices (15) managers at decentralised levels have to meet local staffing needs. Within the context of ongoing decentralisation processes, this paper examines the management of the health workforce to address the needs of the pandemic in the first year, to identify critical lessons on how decentralisation impacts health workforce resilience amidst multiple crises.

2. Methods

2.1 Study design

The research adopted an exploratory cross-sectional design, employing a mix of multi-level policy review and primary data collection through key-informant interviews to allow for triangulation of sources. While the primary data focused on the initial pandemic period in 2020, this timeframe offers a critical point for Nepal’s federal transition, enabling an examination of the health system’s response to workforce management during the early phases of decentralisation.

2.2 Study sites

The selected study sites across three tiers of government included Kathmandu (federal level), Lumbini Province (provincial level) and two municipalities of Kapilvastu district within Lumbini province (local level). This district was selected primarily due to its high number of COVID-19 cases, stagnant health service indicators, and being a high-burden border district, with the influx of returnee migrants requiring rapid and coordinated action between the municipal and federal governments. This selection allows us to understand how decentralised units manage crises under immature decentralised stages and with resource constraints.

2.3 Data collection

In the first stage, we conducted a rapid desk-based review of health sector policies and documents related to COVID-19 preparedness and response at national and sub-national levels, from January to December 2020. Governmental websites were visited on a regular basis to search for relevant documents. Data concerning the health workforce was extracted from the selected documents to understand the formal policy landscape. In the second stage, 22 key informant interviews (KIIs) were conducted with stakeholders across federal, provincial and local levels, selected purposively considering their roles in policy formulation, implementation and COVID-19 pandemic response (Table 2). A topic guide was developed to explore the policies introduced to address the needs of COVID-19-related services and the guidance and implications for staffing as well as the extent to which emerging staffing needs were met during the study period. All interviews were conducted face-to-face in the Nepali language and audio-recorded following consent of the participants.

2.4 Analytical framework

All recordings were transcribed in Nepali and then anonymised and translated into English for analysis. The thematic framework approach (18) was used to analyse the interview and document review data. In the first stage of analysis, a coding framework was developed derived from the topic guides, research objectives and themes emerging from reading the transcripts and desk review. Data was coded using NVivo software.

In the second stage, we examined the policies and practices in relation to the health workforce in terms of numbers, flexibility and support (4). We applied an adapted version of a framework for analysing the core health staffing options available to address different types of shocks developed by Coates et al. (4). Their framework proposes three categories for responding to three different pressures: 1. addressing the *volume demand* requires strategies focused on *increasing numbers* of HWs for providing both COVID-19 related and routine services; 2. addressing a *skills demand* requires strategies focused on *increasing flexibility* of the workforce to increase among other things the scope of work within and between cadres of health workers; and 3. addressing the need for *sustained health worker availability* requires strategies focused on *increasing support* of workers in practice.

Following an initial review of the data and because of our interest in the level of 'decision space' afforded to provincial and municipal level managers as a result of the decentralisation process, we widened the definition of 'flexibility' to incorporate the management of the health workforce (Table 3).

3. Results

We analysed the policies with respect to the health workforce, and practice data from the interviews related to increasing numbers, flexibility and support for health workers. Each section reports on what seemed to work well and the misalignment between centrally led policy formulation and decentralised execution across the three pillars.

1. Increasing numbers

From early 2020 policy directives were developed rapidly, and further revised throughout the study period, to address the pandemic by expanding and mobilizing the health workforce. This enabled the determination of additional staffing requirements to support new or modified services. These requirements included: patient transport teams (19) and quarantine centres from April (20); establishment of Case Investigation and Contact Tracing (CICT) teams from May (21, 22); and Intensive Care Units (ICU) in September (23). The new staffing requirements, where known, are summarised in Table 4, supported by relevant policy documents issued from January to December 2020.

These staffing requirements were translated into plans by the MOHP to meet the significant surge in demand. The largest increase of HWs needed was to operate CICT teams in all 753 municipalities, which required an increase in over 3,000 extra HWs[2] (22). The MOHP's plans included the mobilization of fresh medical graduates, and at a later date, the training of laboratory personnel for COVID-19 testing (24, 25).

Some of these guidelines also suggested alternative ways to mitigate the shortages by redeploying trained specialist doctors, nurses and paramedics from tertiary hospitals; and health workforce pooling through coordination between MOHP and other private, NGO, cooperative or community hospitals (26–29). In April, the MOHP suggested the engagement of Masters level (health science) students on government scholarships (29) and fast-track hiring of staff on contract bases including mobilization of volunteers(30), and in May (31) the engagement of the private sector with the Nepal Public Health Laboratory through an agreed partnership model.

Against this backdrop of critical yet ambitious targets, implementation was affected because of delayed staff adjustment processes. The 2018 Employee Adjustment Act successfully allocated staff on paper, but sanctioned positions remained vacant throughout the country. Respondents across all levels and sites identified this as a primary challenge.

At that time, the human resources were insufficient in our health facilities because we still do not have staff as per sanctioned posts. (Official_Muncipality1)

To address this challenge, the province and municipality levels utilized their available decision space to respond to the new staffing demands, for example by creating and funding temporary sanctioned posts at provincial level.

We created temporary sanctioned posts since it was not sufficient from the government structure, especially for the operation of dedicated COVID-19 hospitals. In addition, we managed salary, risk allowance, food, vehicle which were required for the temporary sanctioned posts. (Province official)

There was some success at municipality level in engaging health workers employed by non-government organisations. Some administrative staff were also employed at municipality level during the study period, e.g. staff employed in medical stores.

We also mobilized the non-technical (administrative) staff there to fulfil the vacant posts to provide supportive services for COVID-19. (Official_Municipality1)

However, it was difficult to engage HWs from the private sector who preferred higher payment.

Due to limitations in the human resource for health (HRH) information system, researchers relied on qualitative evidence to understand how well the staffing plans were being met. All respondents reported staffing shortages in government health facilities at provincial and municipal levels, despite the national level HRH plans described above. This affected the delivery of new and routine services. For example, in both sites, only 2–3 of the 6 HWs suggested for managing quarantine centres (32) were mobilized and that was mostly on rotation or on-call basis. Similarly, CICT teams could not be formed as per guidelines because the required Public Health Officer or Laboratory Technician in each team were not available locally.

The effect of the pandemic also reduced staff availability, as health workers with COVID-19 had to remain in isolation.

Most of our health workers got infected and we had difficulty running the hospital. We only conducted emergency surgery. (HW_Municipality1)

Despite policies promoting supplementation of the formal health workforce with volunteers at the community level, there were numerous challenges leading to a reported underutilisation of this resource. During the initial stage FCHVs, who are numerous at community level, were not actively involved in COVID-19 preparedness and response activities in either of the municipalities studied due to lack of guidance on their mobilization. In addition, local level managers thought that FCHVs were vulnerable to COVID-19 infection due to wide exposure in the community and their age, as most FCHVs are 50 years old or more. However, FCHVs proactively contributed to pandemic-related services by informing local representatives of outsiders, particularly migrants, entering the community, referring people with symptoms to health facilities and engaging in the relief distribution programme conducted at ward level.

"There are not any specific roles given to us by the health post. We ourselves refer the people to the hospital if they have any [symptoms] like common cold, coughing and trouble in breathing." (FCHV_Municipality1)

<Insert Table 4 here>

2. Increasing flexibility

Flexibility was achieved through both high professional commitment by frontline health workers and timely use of decision space by subnational managers within their constitutional boundaries. Existing frontline health workers demonstrated flexibility in adapting to the new roles reported above without any strong resistance. They also showed flexibility with the increase in working hours needed to maintain both COVID-19 and routine services.

It was very difficult for us to manage due to lack of health workers. We had to perform duty for multiple days in a row without a break. (HW_ Municipality2)

Health workers surrendered annual leave to cover the workload.

There are no provisions for leave during COVID. No one has taken leave or holidays right now. Even if we did not come in health facility on Saturdays, we went to the isolation and quarantine centres. (HW_ Municipality1)

From a governance perspective, managers demonstrated flexibility at various levels, while remaining within the boundaries of decentralised authority. Provincial managers exercised their decision space and transferred staff under their jurisdiction, but respected the devolved responsibilities of the municipal level:

Due to the limitations (with the three levels of government), we managed by mobilizing health workers within our own area. For instance, the areas that come under provincial level are hospitals and public health office. We transferred the health workers of hospitals and public health office only. We do not have right to interfere at the local health worker's level. (Province official)

Responses from managers, particularly at municipal and ward level, demonstrated flexibility in the deployment of health workers by adjusting the staffing of health facilities according to need and existing shortages.

If some health facilities had enough staff or all fulfilled positions, then we mobilized them in a health facility with staff shortage. (Official_ Municipality1)

The response at the local levels was hindered in the absence of clear communication from the federal authorities. While complex guidelines for CICT (32) and mobilization of COVID-19 facilitation groups (25) were formulated at federal level, managers at municipality level lacked guidance about the recruitment and financing of staff needed to operationalize the guidelines, including managing quarantine and isolation centres.

Municipalities were not clear how to manage budget and from where to manage health personnel to form CICT team. (EDP_Federal)

This shows that health workers demonstrated commitment and willingness and were "stepping-up" to perform multiple roles. However, the system was less prepared to provide a clear structure and guidance to perform tasks according to the guidelines. The flexibility was evident at the local level and was reactive to cope with the situation in the absence of strong governance structures.

3. Increasing support

Protection of HWs

Federal guidelines mandated that every health facility assess the health condition and risks of the staff and provide appropriate Personal Protection Equipment (PPE)(27–29, 31–33). However, the initial centralized procurement and distribution system of PPE was problematic. Local health workers reported a complete lack of basic supplies such as mask and sanitizers in the early months of the pandemic:

The situation is pathetic here. I recently went to the district as there was no mask even in our municipality. I did not have sanitizer. (HW_Municipality1).

However, NGOs provided some support, and eventually local governments, utilizing their decision space, started procuring logistics and supplies. While protective equipment was generally available in the study municipalities during the later stages of COVID-19, the initial experience highlighted a gap in the federal fiscal system, with local governments forced to purchase logistics and supplies locally but did not have budgets for prompt and sufficient purchasing.

To facilitate effective working and protecting their families and communities, the federal government proposed the use of hospital accommodation and catering or the use of local hotels and transport for staff in May (31).

However, there were no reports at the local levels confirming this provision of accommodation for staff. Instead, one respondent commented on the difficulty of managing food while working because of staff shortages and no provision of food while on duty:

We had to go there [Quarantine Centre] in the morning, then come back home to cook food and eat and then go to the health facility. Talking about our struggle, we could not even eat properly. We do not have enough staff. (HW_ Municipality2)

Federal guidance on the provision of mental health services and psychosocial counselling for health workers and their families through appropriate media such as group counselling apps was given in May 2020 (31, 33). However, neither the local level nor health facilities were found to be organizing any kind of programme for supporting the mental health of staff in the study areas.

Most health workers suffered discrimination and stigmatization from community members at the beginning of the COVID-19 pandemic, despite policies for support and monitoring (31). They were often viewed as carriers of the virus and thus were prohibited from using community drinking water sources and were stigmatised when going to shops.

In road, community people blocked the road by making fence and did not allow me to enter. Then, I had to take an alternative way. I had to face such situation many times. (HW_Municipaliy2)

However, the MOHP worked with the Chief District Officers to enforce anti-discrimination measures that included taking legal actions to address the problems and subsequently this abuse declined. While the MOHP response to the stigma and discrimination was reactive, there was a strong recommendation from the frontline health workers that mental health services should be integrated into the emergency response mechanisms of the health system.

Capacity strengthening

The need for capacity development was recognised early on and the MOHP planned to develop a pool of master trainers to provide regular face-to-face and online training, in collaboration with agencies having experience in emergency response (31). However, due to inadequate preparation for emergency situations within the newly established federal structure, it was unable to meet the required number of staff to be trained in a short time. The National Health Training Centre (NHTC) developed training modules but did not have the capacity to virtually train health workers throughout the country. By mid-2020, although thousands of health workers required training, the NHTC only reached 60 individuals.

NHTC coordinated the training. But it couldn't reach at mass level. 3,000 staff needed to be trained within 3 months during the time of emergency, but they were able to provide training to 60 staff only within these 4

or 5 months. (EDP_Federal)

Some training for CICT teams on IPC and personal protection reached the provincial level, but could not be replicated at municipal level due to lack of financial and human resources:

We only did it at province level, but we could not go to municipal level because we had limitations of budget and health workers. (Province official)

Thus, most health workers were not trained in appropriate use of PPE (when it became available) and critical care. While federal guidelines were available on official websites, most skill development at provincial and municipal levels occurred through health workers' own initiatives. These included searching for online videos and social media and the use of pamphlets and posters.

There was a communication gap. Federal level formulated the guidelines but never informed us about them. (Province official)

At the beginning of pandemic, we faced so much difficulty in managing CICT because when one case was found, we did not know how to follow, where to go and how to contact. WHO along with other organizations helped us more at that time. (HW_Proincial hospital)

Moreover, there was no mechanism to ensure that the policy and guidelines to provide COVID-19 services and maintain staff safety had been communicated well and that HWs understood and implemented them effectively, which became a critical learning for the federal government:

No one has made us understand in that level. For instance, what are the new updates about COVID-19, what are the existing rules. Before it was said 14 days' compulsory isolation and now it is heard that the time duration has decreased. (HW_Municipality1)

There should be targeted audience and focused communication. We just did general communication. After developing policies, we should have informed ministers of all seven provinces and directors about the policy. We should have explained the reasons for not doing PCR testing after 14 days and presented evidence on which guidelines are based on. We didn't communicate about it. (Official_Federal MOHP)

Compensation

A policy on risk allowance for staff involved in COVID-19 services was issued in May by the MOHP (34). The policy covered health workers stationed at border entry points (where returnees were tested), quarantine centers, treatment facilities, laboratories, and contact tracing activities.

Later the Government of Nepal adapted the health insurance provision to motivate frontline health workers managing the pandemic (26, 31, 34). Some health workers at the local levels expressed dissatisfaction that they did not receive the risk allowance, and others complained about the late distribution of allowances. While health workers infected with COVID-19 received the insurance, FCHVs

were excluded from both the insurance and risk allowance as they are not considered formal staff as they are not on the government payroll.

Health insurance for FCHVs is not available. The municipality has done health insurance of all its staff but health insurance of FCHVs is not done because FCHVs do not come under our staff.
(Wardchair_Municipality2)

4. Discussion

There have been many lessons identified regarding the management of the health workforce (both policy and practice) from shocks such as Ebola (35, 36) and recently the COVID-19 pandemic (36). Our study adds to these lessons drawing on the analysis of the first year of the COVID-19 pandemic in Nepal and using the analytic framework by Coates et al (4). Specially, it identifies lessons on the effect of the ongoing decentralisation process in Nepal and the level of adaptive capacity demonstrated particularly at the subnational level, which is a critical feature of health system resilience.

In spite of the numerous plans developed, a major challenge for addressing the pandemic in the early stages was identified by the study as an insufficient health workforce to meet both the surge, and the variety of new skills required, a finding consistent with reports from other countries (38–42). (37)

However, because of the lack of accurate data on the 'stock' of health workers (38) prior to the pandemic – especially because many staff were in transition - it was difficult to quantify staff shortages. It is likely that some staffing plans, for example the staffing of the CICT teams across the country, were unachievable because of the low staffing baseline. Global evidence shows that countries with stronger human resources, flexible workforce management, mental health interventions and proactive digitization tactics, including HRH information systems were more capable to take timely responses in emergencies (39, 40).

While there were some reports of industrial action from other countries– indicating a lack of flexibility (41, 42) - none was reported in Nepal during the study period. Managers at provincial and municipality levels also demonstrated flexibility in decision-making relating to the deployment and management of staff.

Extensive planning was done to support the health workers ranging from personal protection to capacity development. However, as observed in many countries globally, the rapid evolution of the pandemic and the limited country capacity to mobilize health workforce, few of these plans were fully implemented – at least during the study period. Health workers were largely left to fend for themselves which naturally had implications for the level and quality of services they could provide. While the federal government worked to establish support through risk incentives, in practice it often took time to reach the municipalities in the decentralised context. Morale of health workers can be enhanced (43) if financial compensation is provided related to the extra work or additional risks staff undertake. Ensuring the

compensation is both timely and equitably shared across all levels of HWs is a key area for system strengthening (44, 45).

Unique to the challenge of addressing the pandemic in Nepal was the backdrop of the decentralisation process as part of the implementation of the Federalisation Law (5). This provided extra challenges as well as opportunities. Managers at lower tiers may have had more ‘decision space’ for managing staff due to the decentralised structures (46,47) (though in times of crisis, managers in the periphery tend to stretch the limits of their ‘room for manoeuvre’ anyway) (46, 48).

However, the transition from one structure to another – especially if protracted as is often the case with decentralisation (47, 49) puts the system at risk in general, but specifically regarding the health workforce as they are redeployed to different management levels. It would be logical to identify technical mitigation strategies related to the decentralisation process in case of potential shocks and include these in health workforce governance plans (50). However, it is also recognised that political imperatives may trump technical planning during major structural upheavals (51).

Responding to various types of shock requires 'adaptive capacity' at multiple system levels, including the health workers themselves (52). In Nepal, the response to the COVID pandemic was most visible at the subnational level, where the frontline health workers, local leaders and managers demonstrated a high level of adaptation. Health workers demonstrated significant individual flexibility by reorganizing workflows and expanding their scope of work to manage quarantine centres and community surveillance. This was extended to local governance level, where municipalities engaged in coordination and collaboration for managing pandemic responses, demonstrating a systemic adaptability that prioritized immediate operation needs.

Adaptive capacity development for long-term system resilience relies on information coming from feedback loops (53). This was lacking between government tiers, so the federal government was not aware of how national policies and plans were being implemented and might need to be modified. Despite the communication gaps, local managers utilized their ‘decision space’ within their own resource constraints. Additional general and workforce management skills would increase their adaptive capacity for future challenges (54, 55). Furthermore, reliance by the workforce on social media and digital platforms to fill knowledge gaps suggests that such sources partially compensated for formal mechanisms (54, 56). These innovations could be transformed into systemic strengths if future governance becomes more proactive (53, 57).

Limitations and strengths

The limited period covered by the data collection provides findings from the early pandemic response (and preliminary findings were quickly shared with decision-makers to support the evolving policy process). This provided a focus on how the newly decentralised system functioned during the most vulnerable and immature phase of the response to the pandemic. The findings from the early governance phases highlight key lessons for future shocks. Additionally, although the study focused on two

municipalities of a district as representative sites, by analysing cases across the municipalities, province and federal level, the research offers valuable insights into the dynamics of health workforce governance structures and relationships. It also raises critical questions for policy makers regarding whether the coordination and feedback loops are currently sufficient or remain vulnerable to future shocks. From our experience of using the framework presented by Coates et al for our analysis, it provides useful prompts for viewing the health workforce and related management decision in times of key pressures on the health system, and “enhancing health workforce resilience and sustainability”(4).

5. Conclusion

Like other countries, Nepal faced health workforce challenges for delivering COVID-related services including shortages of staff, skills and related support. Existing staff shortages were worsened because of the structural reorganisation following the federalisation process. While this combination of vulnerabilities made the COVID-19 response more challenging, some small, but positive response elements emerged. Because of the increased decision space for managers at subnational level, coupled with motivated and resourceful health workers willing to work in difficult circumstances, some of the issues were mitigated, at least during the initial period of the pandemic. Better understanding of health workforce management practices and more effective support, supervision and monitoring systems across all levels of the system would have strengthened the health workers’ response in the early stages of the pandemic.

Abbreviations

CICT Case Investigation and Contact Tracing

EDP External Development Partner

FCHV Female Community Health Volunteers

HEOC Health Emergency Operation Centre

HRH Human resources for health

ICU Intensive Care Unit

IPC Infection Prevention and Control

KII Key Informant Interviews

MOHP Ministry of Health and Population

NGO Non-government Organisation

NHTC National Health Training Centre

OPMCM Office of the Prime Minister and Council of Ministers

PHD Provincial Health Directorate

PPE Personal Protection Equipment

PSC Public Service Commission

PTT Patient Transport Team

Declarations

Supplementary Information

None

Ethics approval and consent to participate:

Ethical clearance was received from Ethical Review Board, Nepal Health Research Council (NHRC) with reference number 688/2020P and the research ethics committee in Queen Margaret University before data collection. All procedure involving human participants were conducted in accordance with relevant guidelines and regulations of the institutional and national research committees. Informed written consent was obtained from all participants prior to interviews. Anonymity, confidentiality and privacy were ensured during and after data collection.

Consent for publication:

Not applicable

Competing interests:

The authors declare that they have no competing priorities.

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Author Contribution

SR, TM and SB conceptualised and designed the study, developed the data collection tools, and drafted the manuscript. SS and SR conducted empirical interviews, reviewed the literature, and carried out qualitative analysis. MPB, JR, AR and SW critically reviewed the analysis and manuscript. All authors read and approved the final manuscript.

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Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to confidentiality and ethical restrictions but are available from the corresponding author on reasonable request.

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Footnotes

1. The proportion of government employees working in the health sector was not reported.
2. Estimate derived by authors from staffing ratios provided in the documentation.

Tables

Table 1
Changes in institutional responsibilities for health workforce management, education and training in Nepal following federalisation.

Institution	Pre-federalisation	Post-federalisation
Ministry of Health	Direct authority over the national policies and regulation, national health workforce management including placement, salary and benefits for all health cadres.	Responsible for national health policy, standards and regulation; management of federal health institutions; coordination of health workforce policy across all tiers; provision of federal health financing including intergovernmental fiscal transfers that support salary and benefits of health workforce.
Provincial Ministry of Health / Ministry of Social Development (new structure)	Not existing.	Responsible for implementation of provincial health policies; provincial health workforce planning and management; oversight of provincial hospitals and health institutions; coordination with local governments; identification of workforce needs and support for deployment and retention within the province.
Public Service Commission	National Public Service Commission (PSC) with centralized recruitment for the entire country. Province level PSC was not existing.	Provincial PSC (new structure) was established in addition to National PSC. While the National PSC now conducts recruitment examinations and recommends candidates for federal civil service positions, including positions in federal health institutions and federal hospitals, Provincial PSC is responsible for recruitment of candidates for provincial health service positions; conducts exams and recommends candidates for local-level health service positions based on requests from municipalities.
Health Professional Councils (eg. Nepal Medical Council, Nepal Nursing Council, Nepal Health Professional Council, etc)	Regulation of professional education, setting curriculum standards and registering education institutions; accreditation, and licensing of health professional at national level.	Continue to regulate professional education, accreditation, licensing, registration and professional standards nationwide; role largely unchanged but increasingly required to coordinate with federal, provincial and local governments.
National Health Training Centre (NHTC)	Centralised coordination of in-service training, including training needs assessment, curriculum development, standardisation and delivery of training programmes at national level.	Continues to provide national leadership for capacity development, curricula and technical support; works through provincial health training centres to deliver in-service training across all levels.

Source: Nepal Law Commission (5)

Institution	Pre-federalisation	Post-federalisation
Health Office (district level)	Management and deployment of staff to all health facilities within the district.	Focused on public health, coordination, supervision, technical support functions including capacity strengthening and logistics distribution; no longer responsible for direct management of health facilities and health workforce.
Municipalities	Limited role in health service delivery; no authority over health workforce recruitment, deployment or management.	753 local governments responsible for delivery and management of basic health services and local health facilities; supervision and management of local health staff including health workers; assessment of staffing needs and recruitment of temporary or contract staff and volunteers for service delivery.
Source: Nepal Law Commission (5)		

Table 2
Overview of informants

Level	Informants	No. of informants	
		Mun1	Mun2
Local (16)— two municipalities	Health workers	3	3
	Municipality Health Section Chief	1	1
	Elected local representatives	1	1
	Ward chair	1	1
	Female Community Health Volunteers (FCHVs)	2	2
Province (4)—Lumbini Province	Provincial Ministry of Health official	1	
	Provincial Health Directorate (PHD) official	1	
	External Development Partner (EDP)	1	
	Hospital – medical officer	1	
Federal (2)	Ministry of Health and Population (MOHP) official	1	
	EDP	1	
Total		**22** (6 women, 16 men)	

Table 3

Categorisation of health workforce policies and actions, adapted from Coates et al, 2021 (4)

Term	Explanation
1. *increasing numbers* of workers	In Coates et al this is stated narrowly as '*within a cadre*'; we took a broader lens and included volunteers and anyone else who contributes to the service.
2. *increasing the flexibility* of health workforce	Coates et al referred to 'flexibility' as '*of workers across cadres*'; we took a broader view to include human resource management actions by managers such as redeployment (using the same staff in different locations), reallocation of roles, managing leave (to reduce absence), etc.
3. *increasing the support* of health workers in practice	To support, protect and incentivise HWs to enable them to cope with the conditions of COVID-19 (including reducing absenteeism and retention -this partially overlaps with 'increasing numbers'); to develop new capacities needed.

Table 4
New functions and/or facilities introduced with staffing requirements and sources.

Month 2020	Facility /Function	Staffing requirements and potential source	Policy	Issuing body
March	Screening, surveillance and reporting, case management, infection prevention and control, risk communication and laboratory sample collection and transport	Formation of different teams i.e., epidemic rapid response team, coordinator and teams, contact follow up team including hot-line agents and data management teams; source not stated	Standard Operating Procedure for Case Investigation and contact Tracing of COVID-19, Interim Version March 2020 (32)	MOHP
March	Case investigation and contact tracing (CICT)	A public health professional (lead); a health worker (paramedics/nurse); and a lab tech/assistant. 3,225 HWs for 1075 CICTs; source not stated	Standard Operating Procedure for Case Investigation and contact Tracing of COVID-19, Interim Version March 2020 (32) and CICT Teams Mobilization and Management Guideline 2077 (June 2020) (22)	MOHP
April	Volunteer mobilisation and relief packages (ward level)	Formation and mobilization of COVID-19 Prevention Group (including ward president, HW, FCHV, police, volunteers) in community for raising awareness.	Guidelines for volunteer mobilization for the prevention and control of the corona pandemic. (30)	MOHP
April	COVID-19 Patient transport team (PTT)	1 paramedic/nursing staff in one ambulance, 1 health worker from Rapid Response Team(RRT) at Call centre (100) to be managed by Health Office at district	COVID-19 Patient transport team (PTT) guideline, Health Emergency Operation Center (HEOC) (19)	HEOC/ MOHP
April	Management of quarantine centres	Supervisor (MPH/MD Comm Med) (1), MO (1) Staff Nurse (1), Paramedics (1), Lab tech (1), Pharmacist (1) and Paramedics for ambulance (2) and ambulance driver (1) for ambulance services at quarantine center for managing 100 individuals in quarantine); source not stated	Standards for operation and management of quarantine center, Office of Prime Minister and Council of Ministries (OPMCM) April 2020 (20)	OPMCM

Month 2020	Facility /Function	Staffing requirements and potential source	Policy	Issuing body
May	Establishment of case investigation and contact tracing teams (CICT Teams) at the local level	To be led by a public health professional with two HWs. Health staff from the Nepal Red Cross and other partner agencies could be included in the team.	Health Sector Emergency Response Plan (31)	MOHP
May	Checking returning migrants for COVID-19 at national borders	Immigration and border/port health staff following training and orientation on screening and managing symptomatic travellers on infection prevention and control; using existing non-health staff	Health Sector Emergency Response Plan (31)	MOHP
May	Laboratory testing	Engagement of the private sector with the Nepal Public Health Laboratory to increase laboratory services	Health Sector Emergency Response Plan (31)	MOHP
June	Staffing requirements for CICT Teams Mobilization	To cover all 753 municipalities in the country, a total of 1075 CICT Teams would be needed inferring an overall increase of 3,225 HWs. Use of Female Community Health Volunteers (FCHV) to support of the CICT Teams "for monitoring and follow-up where applicable."	CICT Teams Mobilization and Management Guideline 2077 (10 June 2020). (22) Health Sector Emergency Response Plan (31)	MOHP
June	COVID-19 isolation centres	Provides ratio of HWs to patients: for 50 infected people – 1 medical officer, 2 security personnels; and for 25 infected people – 2 nurse/ paramedics, 2 cleaning staff. Duty roster of 12–12 hours.	Health standards for COVID-19 Infected people in isolation 29 June 2020 (28)	MOPH
September	Interim Intensive care unit (ICU)	Estimated the nurse-to-patient ratio for different levels of ICU, and provision of one attendant/housekeeping staff for every 6 beds. Formation of Airway team of 4 members (Sr. Doctor who is available, Airway assistant Nurse, Nurse Assistant and Runner).	Interim Intensive care unit (ICU) protocol for the care of patients with COVID-19 Nepal Medical Council (NMC) (6 September 2020) (23)	MOPH
October	National Laboratory Testing	No reference to staffing Provision of free testing for frontline workers	National Laboratory Testing Guideline Version 5 (13	MOPH

Month 2020	Facility /Function	Staffing requirements and potential source	Policy	Issuing body
			October 2020) (24)	
November	Mobilization of COVID Facilitation Group at the Community Level	COVID Facilitation Team comprising of local members, but not specified	Guidelines for Mobilization of COVID Facilitation Group at the Community Level (November 2020) (25)	MOPH