Understanding health system resilience to respond to COVID-19 in a federalised context:

A case study of health workforce management at sub-national level in Nepal

Dr Sushil Baral, Shophika Regmi

and Prabita Shrestha of HERD International

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Research team members:

HERD International, Nepal: Dr Sushil Baral, Ms Shophika Regmi, Ms Prabita Shrestha, Ms Abriti Arjyal and Mr Suprich Sapkota

Liverpool School of Tropical Medicine, UK: Mr Tim Martineau and Dr Joanna Raven

Queen Margaret University, UK: Dr Maria Bertone and Professor Sophie Witter

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Abbreviations

APHIN	Association of Private Health Institution Nepal
CCMC	COVID-19 Crisis Management Center
CDO	Chief District Officer
CICT	Case Investigation and Contact Tracing
COVID	Coronavirus disease
DCCMC	District COVID-19 Crisis Management Center
DHIS2	District Health Information Software 2
DHO	District Health Office
EDCD	Epidemiology and Control Division
EDP	External Development Partner
EMDT	Emergency Medical Deployment Team
ERRTs	Epidemic Rapid Response Teams
FCHV	Female Community Health Volunteer
GESI	Gender Equality and Social Inclusion
GoN	Government of Nepal
HDU	High dependency units
HEDMU	Health Emergency and Disaster Management Unit
HEOC	Health Emergency Operation Center
HMIS	Health Management Information System
HR	Human resources
HRH	Human resources for health
ICU	Intensive Care Units
INGO	International non-governmental organization
IPC	Infection Prevention and Control
KIIs	Key informant interviews
MoFAGA	Ministry of Federal Affairs and General Administration
MoHP	Ministry of Health and Population
MoSD	Ministry of Social Development
NCDA	Nepal Commission Drug Association
NHRC	Nepal Health Research Council
NHTC	National Health Training Centre
NGO	Non-governmental organization
PHD	Provincial Health Directorate
PPE	Personal protective equipment
RMNCH	Reproductive, maternal, newborn and child health
SOP	Standard operating procedures
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Executive summary

Following the replacement of its unitary government with a federalised system, Nepal is a federal democratic republic comprising three autonomous governance levels - 1 federal level, 7 provinces, and 753 local (municipal) governments. Local governments have devolved power and authority, and the provision of basic health services and other public health programmes are now under their mandate. While it is a big challenge for local governments to deliver routine services while also responding to the COVID-19 pandemic, the pre-existing chronic shortages within the health workforce and unequal and ineffective human resource management add to the problems. The COVID-19 pandemic further challenged the capacity of the federal system to effectively mobilize its resources and meet the ongoing demands while also ensuring the delivery of routine health services.

This study explored the health sector policy, preparedness and responses to COVID-19 in the federal context of Nepal, with a focus on policy provisions and implementation approaches for health workforce management at sub-national level. This study used a mix of policy review and primary data collection through key informant interviews. We interviewed 22 key informants representing all three tiers of government - Kathmandu (federal), Lumbini province (province) and two municipalities of Kapilvastu district (local level) between January and March 2021. We interviewed government stakeholders, elected representatives, health workers, female community health volunteers and representatives from external development partners. Ethical clearance was received from Nepal Health Research Council (NHRC) and the research ethics committee in Queen Margaret University, prior to data collection.

From the review of policy, we found that the government of Nepal formulated 90 policies, guidelines and related documents in preparation for and in response to COVID-19 from January to December 2020. The major focuses of health workforce related policies and guidelines were the management of health workforce through the mobilization of volunteers and health workers on a contract basis, training and orientation of the health workforce, and their physical protection and motivation through the provision of incentives and risk allowance. The health sector policies for COVID-19 were found to be largely formulated at federal level with technical leadership from the Ministry of Health and Population (MoHP) and the COVID-19 Crisis Management Center (CCMC), and through engagement of multiple sectors. However, regular and strategic vertical coordination with other tiers of government (provincial and municipal) was mostly missing owing to the emergency situation and limited time. Lack of clarity in roles and responsibilities was frequently reported at local levels. Different media and channels were used to communicate policies and information from federal to sub-national governments including public channels. However, this was considered a one-way top-down approach resulting in a lack of targeted communication. Health workers experienced difficulties due to delayed communication and the use of inappropriate media, such as telephone, to communicate policies at local levels. A number of challenges were reported in policy implementation, such as delays in budget allocation and distribution by the federal level, lack of coordination to mobilize various structural bodies at the community level, and difficulty establishing and managing quarantine centres by the local governments. However, with increased decision space in the federal system local governments were exercising their power in planning, budgeting, resource allocation and health workforce management to contain COVID-19.

The arrival of COVID-19 further compounded existing shortages within the health workforce in Nepal which were due to a staffing adjustment process that had begun shortly before COVID-19 hit. This shortage was visible in both municipalities. Contact tracing, testing and critical care services were the major areas that witnessed shortages of human resources across the nation during the pandemic. Health facilities did not dedicate health workers to the delivery of COVID-19 and non-COVID services in both municipalities, which ultimately affected delivery of both services resulting in prolonged working hours for health workers. Federal government mobilized the health workforce by recruiting health workers on a short-term basis and mobilizing volunteers, while local governments mainly managed their health workforce through the transfer of health workers in the health facilities within and across the municipalities of the same district. Shortages of PPE were apparent in both municipalities during the initial stages of the pandemic. Also, the experience of social stigma and discrimination was common among the health workforce at that time. No action was implemented to support the mental health of the health workforce. A lack of timely and uniform distribution of risk allowance was another issue that resulted in demotivation among the health workforce.

Despite several constraints - including prolonged working hours with heavy workloads, lack of PPE and risk of contracting COVID-19, a lack of motivation and psychological support, and social stigmatization - the study showed that the health workforce exhibited high morale and continued to deliver health services. Health workers demonstrated their capacity for resilience during the pandemic in order to continue to deliver services in both municipalities. Nevertheless, the current pandemic clearly showed that the health system responses have not been sufficient and effective in dealing with the pandemic. More explicit and targeted policies and guidelines are needed to enable clarity in roles and responsibilities at all three tiers of government. Stronger governance and leadership from national and local governments with careful planning and management is required to support and sustain the health workforce during the pandemic.

1. Introduction

1.1 Background to the study

Federalized structure in Nepal

In September 2015, the new constitution of Nepal was promulgated. This replaced the unitary government and declared the country a federal democratic republic comprising three autonomous governance levels, namely the federal, the provincial, and the local (municipal) levels. In Nepal's new federal structure, health is one of the most decentralized sectors with primary health care functions managed by local governments. The federal government is largely responsible for overall sector policy, public health surveillance, disaster preparedness and delivery of specialized care through national hospitals and public health institutions. The Ministry of Health and Population (MoHP) at federal level provides stewardship to develop national standards and regulatory frameworks. The seven provinces have responsibility for the delivery of basic hospital services and are also responsible for coordinating and developing provincial health policies and plans. Likewise, 753 local governments have devolved power and authority in the federalised system, and the provision of basic health services and other public health programmes is now under their mandate. As Nepal's federalisation is still in its early stage, clarity of function between the three tiers of government has yet to be fully realised, and the capacity of the governing administration and health service delivery units, such as hospitals and primary health care clinics, is yet to become fully operational. [1] In this context, it is a big challenge for the local governments to implement the basic health service provision along with preparing and delivering services effectively in response to COVID-19. This poses a major challenge to local governments to manage health workforce taking into account the skills mix, distribution, productivity and quality of the workforce for managing health related programmes. [2]

The state of the health workforce in Nepal

Despite making progress in terms of its human development index in the last four decades, [3] Nepal faces a chronic shortage in its health workforce in cadres such as doctors, nurses and midwives. The major challenges for the health workforce are shortages of skilled health workers, staff retention, uneven distribution, inadequate funding and lack of capacity strengthening activities. [4,5] The deployment of health workers to the rural and remote areas of the country is a particular challenge, while evidence also shows higher unemployment among health workers (particularly nurses) in urban areas due to oversupply.[6] For example, two thirds of government health workers are serving either the Kathmandu Valley or other larger cities, [5] while rural places are facing shortages of health workers and absenteeism is very common. [5,7]

Shortages within the health workforce has been evident in Nepal for decades, with only 0.17 doctors and 0.50 nurses per 1,000 people (which totals 0.67 doctors and nurses per 1,000 people). This is considerably lower than the WHO recommendation of 2.3 doctors, nurses and midwives per 1,000 people. [8]

Nevertheless, a few articles claim Nepal produces an adequate number of health workers [4,5] but shortages within selected cadres of health workers and weak staff retention are

apparent. This is due to weak coordination among the planner and producer; poor health workforce management information system (MIS) and database, limited financing for the health workforce, inadequate implementation of retention and motivation schemes, legal problems hinder staff recruitment in sanctioned posts, and poor monitoring and evaluation. [3,4] Also, the quality of the health workforce is questioned due to the insufficient planning of capacity strengthening programs and insufficient quality control mechanisms within health workforce-producing institutions. [4] One of the important factors contributing to the shortage of health workers is low motivation, and from a health workforce perspective this was associated with being overburdened with multiple, concurrent tasks. [9] A study conducted in 2013 in three districts of Nepal showed that the major motivational factors for health workers were financial benefits, working environment and capacity development opportunities, while low remuneration, limited capacity development opportunities, poor working environment, non-recognition of performance, and political interference were the reasons for demotivation. [10]

Federalisation and health workforce management

The current public health service delivery structure and health workforce are not sufficient to deliver adequate health services to the growing population. This structure was created at a time when Nepal had a population of only 10 million, compared to the current 30 million population. After federalisation, human resource management emerged as one of the major challenges. With the recent constitutional reform, the local (municipal) governments are delivering health services that were delivered through district health offices in the previous structure. The assigned health personnel at local levels lack skills in management and procurement as they were predominantly trained to deliver health services. Therefore, extensive capacity strengthening around planning, monitoring, evaluation and overall management of the health service delivery is required. [11] The gaps in the health workforce appear to have been exacerbated by to the government's civil servant adjustment process, which is part of the federal transition.

Nepal's federalisation was still in its initial stages when the COVID-19 pandemic started, therefore it is a big challenge for local governments to deliver COVID-19 related services while also ensuring the delivery of routine health services. On other hand, health workers themselves have been suffering from COVID-19 infection and some have died while serving COVID-19-infected individuals, aggravating the shortage of health workers in Nepal and worldwide. [12] For instance, as of 31 December 2020, a data set from International Council of Nurses revealed that over 1.6 million health workers were infected with COVID-19 in about 34 countries. [13] As of 8 May 2021, a total of 152,888 health workers had been infected with COVID-19, representing 3.9% of the total 3,912,156 COVID-19 cases globally, while 1,413 health worker deaths were reported, suggesting that one death occurring for every 100 health workers infected. [12]

Exploring mechanisms for managing the workforce by different tiers of government will help health system planners and decision makers to progress towards a resilient health system. The evidence and learning from this study could be used to inform future health workforce management strategies to be adopted during future epidemics in the country. Therefore, we conducted this study as formative research to understand the COVID-19 policy provisions

(analysing what should be done and what actually is being done) and workforce management mechanisms adopted by the federal, provincial and local governments to implement basic health services along with preparedness and responses to COVID-19. We looked at how different levels interact and whether/how these responses include resilience-building mechanisms. We zoomed in on health workforce management as a tracer domain to understand the health system response in detail.

2. Objectives of the study

2.1. Overall objectives

The overall purpose of this study was to examine health sector policy, preparedness and responses to COVID-19 in the federal context of Nepal, with a focus on policy provisions and implementation approaches for health workforce management at sub-national level. By doing this, we aimed to explore Nepal's health system resilience and lessons learned during the COVID-19 response, and to understand if and how it has demonstrated absorption, adaptation, and transformation to support resilient health systems in line with ReBUILD for Resilience's resilience framework. The study focused on understanding the health workforce management system in a federalised context, as a tracer for the wider health system. We examined the local level for the COVID-19 response and delivery of non-COVID routine health services by choosing rural and urban municipalities.

2.2. Specific objectives

Specific objectives of the study were to:

1. Explore health sector policy provisions and responses to COVID-19, and deepen understanding of policy formulation, communication/dissemination and implementation process against selected elements of the resilience framework (circled in figure below) with a primary focus on health workforce related policies, at all three tiers of government (including the dynamic interactions between all levels).
2. Examine the health workforce management mechanisms adopted at the local level to implement the COVID-19 response, while ensuring delivery of and access to quality routine health care services.

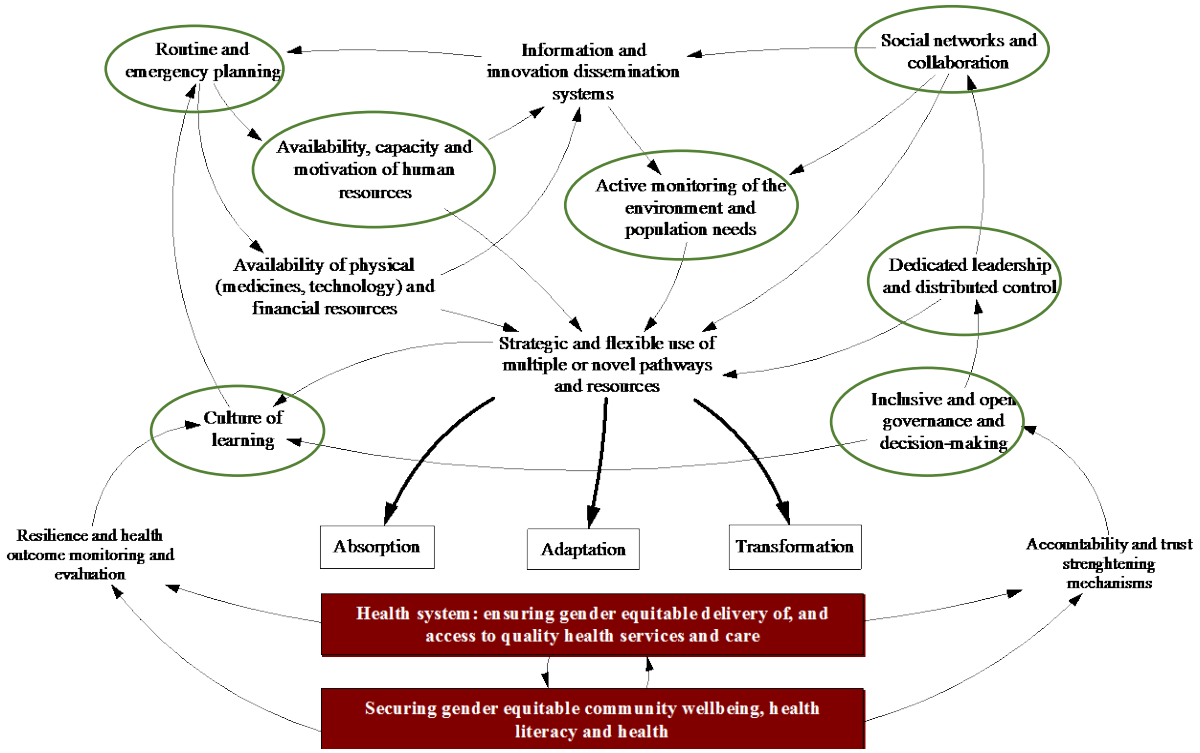

Figure 1. ReBUILD FOR Resilience's resilience framework

3. Methodology

This section describes the design and approach of our study, our study sites and populations, and the overall process of data collection, management and analysis, including ethical considerations.

3.1. Study design

This was a cross-sectional descriptive study using a mix of policy reviews and primary data from qualitative data collection techniques. The conceptual framework (Annex 1) and ReBUILD for Resilience's resilience framework (figure 1) were used to inform overall study design and implementation. We undertook a desk-based review of policies and key informant interviews at federal, provincial and local levels. As shown in Annex 1, the conceptual framework for this study involved elements of the resilience framework (to the left) and the dimensions of the health workforce (to the right) that the study aimed to explore. At the centre of the framework lie the components of an effective health workforce management system that are key to achieving a resilient health system that is able to absorb, adapt and transform shocks of different natures.

3.2. Study sites

As we intended to conduct this study to understand the COVID-19 policy provisions and workforce management mechanisms adopted by the federal, provincial and local governments to implement basic health services along with preparedness and response to COVID-19, we selected the study sites from all three tiers of the government - Kathmandu (federal level), Lumbini Province (provincial level) and two municipalities of Kapilvastu district (local level) as case study sites. This local setting was selected because Kapilvastu, which borders India, was one of the districts with a high number of cases of COVID-19. Moreover, HERD International has previously worked in this province and district and has established networks and relationships with local health officials, enabling us to effectively conduct this study in the COVID-19 context.

3.3. Study methods

We conducted a rapid desk-based review of health sector policies, guidelines, and directives on COVID-19 preparedness and response, formulated at national and sub-national levels from January to December 2020, and then focused on an in-depth review of health workforce-related policies and implementation approaches as a case study of health system resilience during COVID-19. Furthermore, we conducted key informant interviews (KIIs) at federal and sub-national levels to understand the process of policy formulation, communication/dissemination and implementation, the multi-level systemic approaches at all levels of health system in the decentralised context, and the inter-sectoral linkages with other ministries, private sectors, etc.

Sampling – key informant interviews

We conducted 22 KIIs at federal, provincial and local levels, with informants identified based on their engagement with and roles in COVID-19 responses and HERD International's longstanding partnership with them to facilitate readiness to participate. We purposively

selected participants based on their roles in the COVID-19 response and specifically on HRH management. Although we tried to maintain a gender balance while selecting the study participants, 16 participants were males and 6 were females. This may be because of lower numbers of females in leadership and managerial roles at different tiers of government. The list of participants is shown below in *Table 1*. Where possible, we contacted participants first through telephone and informed them about our study and booked their time in advance for interviews.

Table 1. List of study participants at different levels

Level	Informants	No. of informants	
		M1	M2
Local (16)—Kapilvastu Municipality (M1) and Suddhodhan Rural Municipality (M2)	HWs	3	3
	Municipality Health Coordinator	1	1
	Elected local representatives	1	1
	Ward chair	1	1
	Female Community Health Volunteers (FCHVs)	2	2
Province (4)—Lumbini Province	Ministry of Social Development (MoSD)	1	
	Provincial Health Directorate (PHD)	1	
	External Development Partner (EDP)	1	
	District hospital (Doctor)	1	
Federal (2)	MoHP	1	
	EDP	1	
Total		22	

3.4. Data collection

Desk-based review

First, the research team members visited governmental websites on multiple occasions to note all of the COVID-19 policies, guidelines, directives and other documents from January to December 2020. The major websites that have been searched for COVID-19 policies are listed in *Table 2*. In total, 90 COVID-19 policies were listed in a framework that included the name of the policy, relevant themes, publication date, lead organization, source/URL and the purpose of the policy.

Table 2. Websites used for Policy Review

Source	Available URL
Government of Nepal, Ministry of Health and Population, Health Emergency and Disaster Management Unit (HEDMU) and Health Emergency Operation Center (HEOC)	https://heoc.mohp.gov.np/update-on-novel-corona-virus-covid-19/
Government of Nepal, Ministry of Health and Population, Department of Health Services, Epidemiology and Disease Control Division (EDCD)	http://www.edcd.gov.np/news/links-for-covid-19-news-and-information
Government of Nepal, Ministry of Health and Population, Department of Health Services, National Public Health Laboratory	https://www.nphl.gov.np/page/ncov-related-lab-information
Government of Nepal, Ministry of Federal Affairs & General Administration	https://mofaga.gov.np/
Government of Nepal, Ministry of Home Affairs	https://www.moha.gov.np/

Public Health Update	https://publichealthupdate.com/category/nationaldocuments/

Secondly, the policies were rapidly scanned and 13 policies focusing on technical and laboratory process, such as conducting COVID-19 testing, Ayurveda and alternative medicines, etc. were excluded from further review as those documents did not focus on the public health response or health workforce. Moreover, the full version of one document was not available as it was removed from the website.

Key informant interviews

The data collection for the study was conducted from January to March 2021. We developed topic guides for KIIs (Annex 4), which were used flexibly and adaptively depending on the participants and the context, to acquire a breadth and depth of information. Moreover, the researchers responsible for conducting the interviews were engaged throughout the development and contextualization of the tools. Rigorous team discussions were carried out on the topic guide to gain a similar understanding of the topics among the team members. Topic guides were developed in English and translated into Nepali prior to data collection. Topic guides were further revised and adapted iteratively based on the field experiences.

Three core research team members from HERD International conducted face-to-face interviews with key informants at the federal level, provincial level and local level, always following public health standards (physical distancing, use of face masks, handwashing and use of hand sanitizer). In total, 22 KIIs were conducted at federal and provincial levels and with two municipalities, with officials from MoHP, PHD, MoSD, EDPs, elected local representatives, municipality coordinators, ward chairs, health facility in-charges, frontline health workers, and FCHVs. All of these interviews were conducted with voluntary written consent from the participants, in a place and at a time chosen by the participants. Furthermore, anonymity, confidentiality and privacy were ensured during and after data collection.

3.5. Data management and analysis

Desk-based review

The research team discussed the main objectives of the research and methodology and developed a list of a priori themes and sub-themes. These themes and sub-themes were derived from the components of ReBUILD for Resilience's resilience framework and the conceptual framework for this study. Moreover, the list was updated based on the initial scoping of few policy documents. All of the listed policy documents were thoroughly reviewed and data was extracted, managed and organized under defined themes and sub-themes. Policy documents were then analysed using a thematic framework analysis approach developed in reference to ReBUILD for Resilience framework. The data coded under the framework was processed iteratively with regular discussion among research team members. The data was then summarized and organized under defined themes and sub-themes.

Key informant interviews

KIIs were audio-recorded after receiving consent from the key informants. All audio-recorded KIIs (primary data) were transcribed and translated into English for analysis. First, a few transcripts and audio recordings were reviewed by the research team to identify gaps regarding the study objective, ensuring data quality. Relevant feedback was provided, and experiences, practical issues and challenges faced during data collection were shared, discussed and dealt with to ensure quality and timeliness of data. Under the supervision of the research team, well-trained and experienced translators translated Nepali transcripts into English for analysis adhering to the organization's translation guideline. Then, some of the transcribed and translated transcripts, along with their recordings, were checked for accuracy by one of the research team members and corrections were made as required. Translated transcripts was anonymized as soon as possible, using a specific alphanumerical code for each key informant and deleting any mentions of the name/position of the interviewee that could lead to their identification.

Qualitative data were then analysed using a thematic framework analysis approach developed with reference to ReBUILD for Resilience framework. The information was read and re-read and a coding framework was developed using the emerging themes, issues and objectives of this study. The data was coded using a qualitative software, NVivo, under the framework and progressed iteratively with regular discussions between research team members. The team discussed and agreed on the key themes for the analysis of the data. This report was then developed following triangulation of information from the policy review and KIIs. The structure of the report includes findings from the policy review focusing on health workforce-related policy measures, and the policy formulation, communication and implementation process informed mainly through KIIs. The second part of the findings focuses on health workforce management at local levels derived from KIIs.

3.6. Ethical considerations

Ethical clearance was sought from Nepal Health Research Council (NHRC) and the research ethics committee in Queen Margaret University, prior to data collection. The data collection process followed a standard ethical norm, i.e. informing the study participants about the study, taking informed consent from the participants before starting the interview, and informing the participants that their participation is voluntary. Information sheet was provided to all participants. The information sheet supplied included a description of the study, why the participants were selected, the objective and the process of the interviews, potential risks and benefits, the voluntary nature of participation, anonymity of the participants, confidentiality of the data, and contact information for the research team. An informed consent form was used to obtain written consent from the participants. We also obtained written consent from participants to audio-record all of the interviews for the ease of data analysis. The information sheet and consent forms were translated into Nepali and shared with participants before the interview. The research team was committed to following a transparent process of dealing with misconduct, research integrity and data protection throughout the study. All of the recordings and data from interviews were stored in a password-protected computer. Each interview was anonymised and was assigned with an

identification number, and only senior members of the research team had access to these data. We ensured that respondents did not experience any risk in participating in the study as no personal information was collected and the anonymity and confidentiality of the respondents were maintained.

3.7. Limitations

This study was limited to a small number of respondents and their experiences, particularly from two municipalities of a district (Kapilvastu) and therefore the findings may not be representative of other places.

4. Findings

This section presents findings from both the policy review and qualitative data collected at national, provincial and local levels. Findings from the policy review are presented in terms of the trajectory of COVID-19-related policies over a one-year period, focusing on major health workforce-related policies. Likewise, qualitative data from KIIs were analysed in terms of the process of policy formulation, coordination and interplay between different tiers of government, engagement of different sectors in policy formulation, and the mechanisms that were in place for communication and ensuring the effective implementation of policies. The results of the lived experience of health workforce, including health managers and policy makers while responding to COVID-19, are also highlighted along with the challenges and lessons learnt at different stages of policy responses.

4.1. Policy provisions in response to COVID-19: findings from the policy review

4.1.1. Situation with regard to COVID-19 in Nepal

Figure 2 presents the distribution of COVID-19 cases from January 2020-January 2021 in seven provinces of Nepal. Bagmati province, location of the highly-populated capital city, Kathmandu, reported a higher number of cases than all other provinces. After the first lockdown was partially lifted in late May, case numbers rose throughout the period of June-August. The incidence of cases spiked from May to early July, and afterwards fell gradually. This fluctuation in number of cases could be the result of reduced testing throughout the country as per the amended COVID-19 testing guideline approved by the Ministry of Health and Population (MoHP) on 2 June 2020 which stated that no tests are required for asymptomatic cases in quarantine. Later from August, the cases again started to increase. There was a high influx of migrant workers entering Nepal. particularly from India, which could have resulted in this increased number of cases. The curve reached its peak during October, a time when widely celebrated festivals like *Dashain*, *Tihar* and *Chhath* took place in Nepal. The government had relaxed restrictions on transportation in this festive period, allowing public transportation to operate throughout the country.

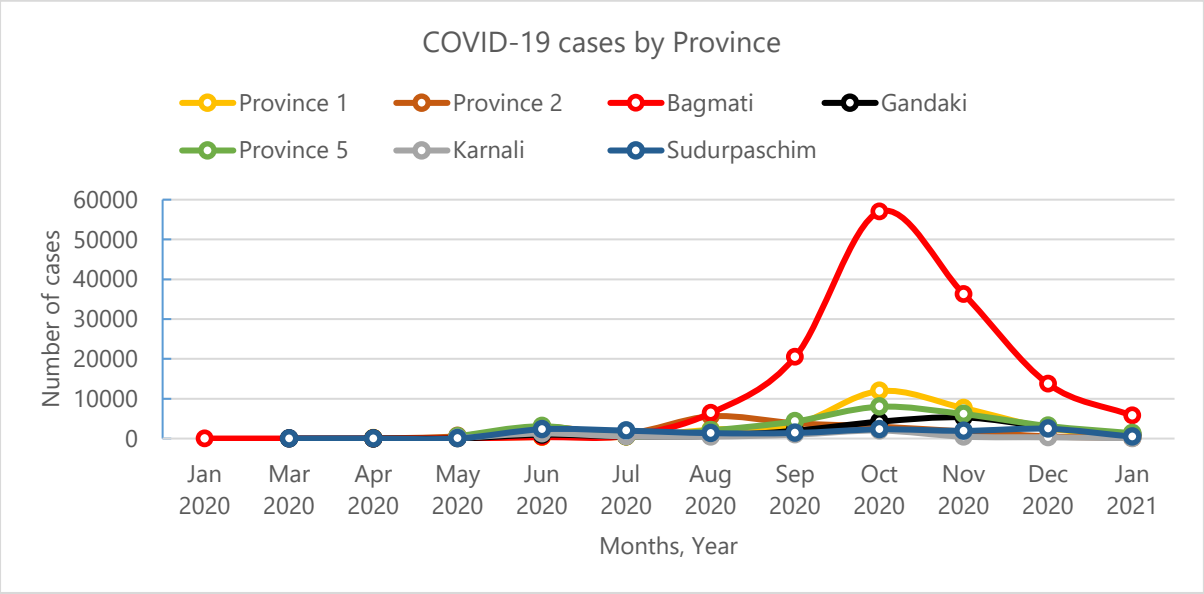

Figure 2: Distribution of COVID-19 cases by province from January 2020 to January 2021

4.1.2. Overview of policy action measures

After the first COVID-19 case in Nepal was confirmed on 23 January 2020, the Government of Nepal (GoN) formulated various national policies and directives from March 2020 in response to the pandemic. From then, and up until December 2020, the government developed 90 policies and other guiding documents and directives regarding COVID-19 preparedness and response, of which the majority of policies were published from March to June 2020. The timeframe of COVID-19 policies, guidelines and directives are presented in *Figure 3*, and the bold highlights are the policies related to the health workforce.

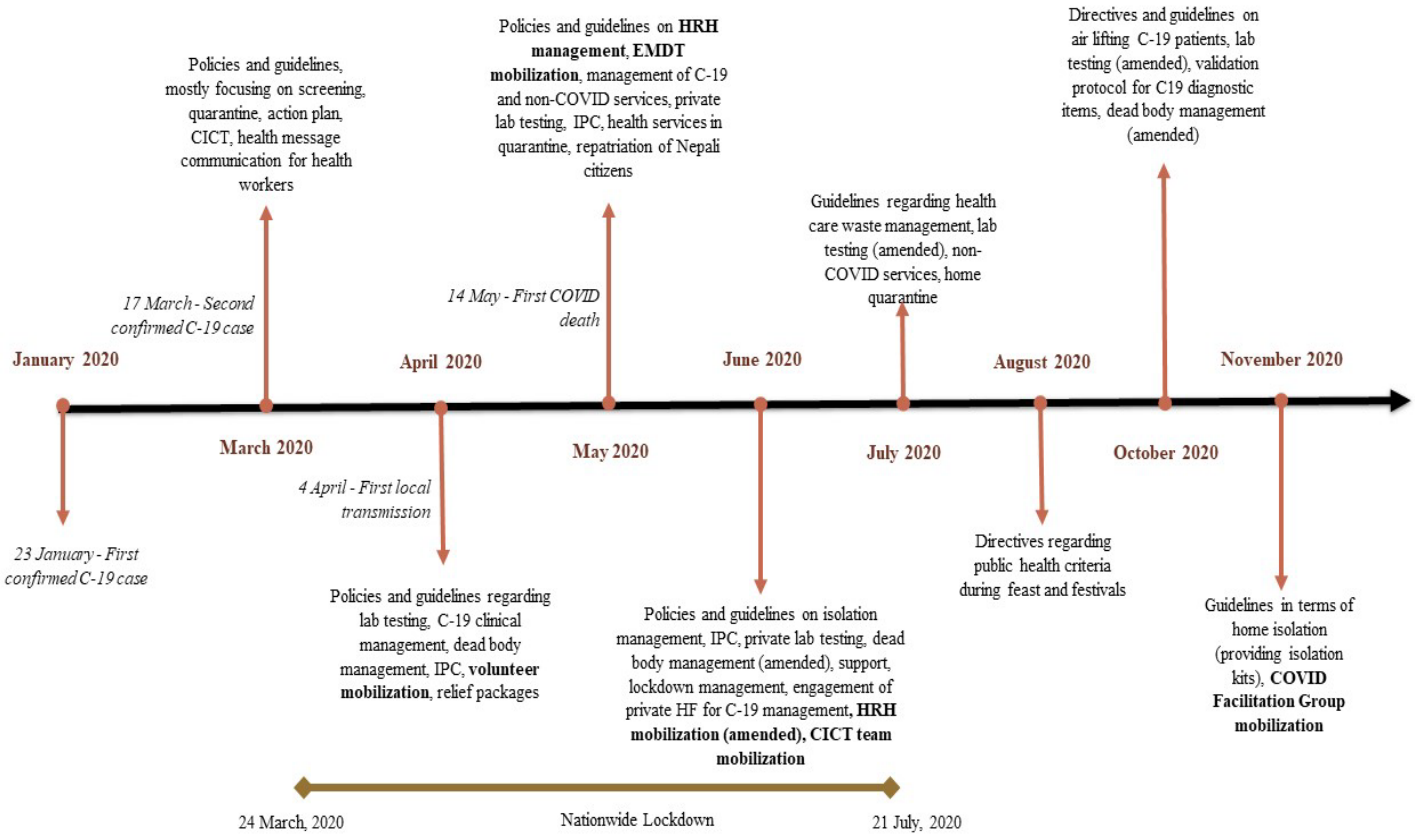

Figure 3.Timeframe of COVID-19 policies and guidelines

As shown in figure 3, the policies and guidelines focusing on screening, case investigations and contact tracing (CICT), quarantine, action planning, and training/orientation for health professionals were developed during March 2020. On 15 March 2020, while the country was in the first stage of COVID-19 transmission, the MoHP developed screening guidelines entitled "Key actions to be taken against COVID-19 infection". [14] With reference to the World Health Organization (WHO) and National Health Training Center, MoHP published a handbook titled "Introduction to Novel Corona Virus Disease (COVID-19)" for health workers. [15] Moreover, the GoN declared the suspension of all international flights and a nationwide lockdown following the confirmation of the second COVID-19 case in the country on 17 March 2020. With the announcement of the first locally-transmitted case in Kailali district on 4 April 2020, the GoN formulated several policies and guidelines in April 2020 regarding lab testing, COVID-19 clinical management, dead body management, infection prevention and control (IPC), volunteer mobilization and relief packages.

The cases started to surge from May 2020 and the government was struggling to manage laboratory testing of samples and case management. Policies centred on the engagement of private sectors were released then. Similarly, policies related to national testing guidelines (amended), health workforce management, management of COVID-19 and non-COVID-19 services, IPC, and health services in quarantine were developed during the month of May.

In July 2020, numbers of policies and guidelines related to home quarantine, health care waste management and testing guidelines (amended) were developed. The government also prepared guidelines regarding public health criteria to be followed during feast and festivals for preventing and controlling COVID-19 infection in August 2020, in preparation for the possibility of rapid transmission during major festivals in September and October. It was when media started reporting news about COVID-19 deaths among the individuals who were under home isolation that the government then formulated policy for providing isolation kits to isolating individuals and also developed guidelines for the mobilization of a COVID Facilitation Team in the community to monitor the regulation of home isolation and quarantine rules along with adherence to public health criteria in November 2020.

4.1.3. Health workforce policy measures

The management of the health workforce in order to deliver quality healthcare services during the pandemic became a huge challenge for the government. In that regard, the GoN formulated several guidelines for the mobilization of not only the health workforce but also volunteers, who played a vital role to supporting the health workforce during the COVID-19 pandemic. Six policies were directly focused on the health workforce while the majority of other policies mentioned the health workforce in COVID-19 preparedness and response, although they had an indirect impact on the health workforce. We highlight below the major focuses of policies and guidelines related to the health workforce during the pandemic in Nepal.

4.1.3.1.Management of the health workforce

The country required huge numbers of health workers for carrying out response measures, however the existing health workforce was not sufficient to even manage COVID-19 cases in clinical settings. Health message communication, case investigation and contact tracing, health screening at border entry points, and quarantine management are the key areas that required mobilization of the health workforce to prevent and control COVID-19, while rapid testing, isolation and treatment of cases were important to manage and prevent death from COVID-19.

Health message communication
Most of the policy documents and guidelines provided health messages not only about COVID-19 but also Reproductive, Maternal, Newborn and Child Health (RMNCH), nutrition, personal hygiene and environmental cleanliness, with the use of various means and media. These documents also described the involvement of health workers, FCHVs, volunteers, youths, local leaders etc for disseminating health messages. [14–21]

Screening, case investigation, tracing and quarantine
Sudurpaschim Province issued "Health Desk Operation Guideline" that referenced the deployment of at least two health workers at border entry points with the responsibility of history taking, measuring body temperatures, providing health awareness in isolation, and

reporting suspected cases and the reason for referral. [17] In terms of CICT, the health sector emergency response plan mentioned the formation and mobilization of CICT teams at local level for screening and testing. [16] Later, CICT team mobilization guidelines directed every local level to form at least one CICT team and mobilize HR from government services as far as possible and if not, mobilize HR on contract. It further stated roles and responsibilities of CICT teams, such as case investigation, contact tracing, counselling, follow-up and referrals among others. [22] Similarly, EDCD developed "Standard Operating Procedures (SOP) for CICT" on 21 March 2020 which mentioned the mobilization of Epidemic Rapid Response Teams (ERRTs) for conducting CICT alongside their other roles and responsibilities. [23] Regarding health workforce mobilization in quarantine, MoFAGA and MoHP developed quarantine guideline and health services management in quarantine respectively, describing the mobilization of health workers, such as doctor, nurse, paramedics, lab assistant, etc, at quarantine centres for managing 100 isolating individuals. [24,25]

Testing and isolation

Although the skilled people required to undertake laboratory functions and laboratory settings were lacking at the beginning of the pandemic, the government gradually expanded laboratories for COVID-19 testing across the country and trained laboratory personnel to conduct testing. Moreover, some documents mentioned health workforce mobilization for sample collection, packaging, reception, transportation and testing along with the composition and roles and responsibilities. [26–28] With regards to health workforce mobilization in isolation, HEOC prepared "Isolation Health Standards" on 29 June 2020 which mentioned the mobilization of one medical officer per 50 infected cases and two nurses/paramedics including two cleaning staffs per 25 infected cases in isolation. Furthermore, it directed the local level to mobilize one health worker for monitoring 50 infected cases living in home isolation. [29]

Clinical management

Many policies and guidelines mentioned the mobilization of the existing health workforce for the clinical management of COVID-19. With regard to the chronic health workforce shortages, these guidelines also outlined alternative ways to mitigate the shortages by managing trained specialist doctors, nurses and paramedics from tertiary and zonal hospitals which are also known as hub hospitals; health workforce pulling through coordination with MoHP, other private, NGO, cooperative or community hospitals; mobilization of student doctors, nurses and other health workers pursuing degrees under the scholarship of the GoN; and hiring new a health workforce on a contract basis. [29–32]

Delivery of routine services

As the country's health system was responding to the COVID-19 pandemic, other routine health services were compromised and so the GoN developed guidelines for ensuring the uninterrupted delivery of routine health services. Among them, a few guidelines mentioned health workforce mobilization in order to continue to deliver routine health services, undertaking standard precautions. [20,33]

4.1.3.2.Volunteer mobilization and community engagement

As the COVID-19 infection rate increased rapidly, the country was unable to handle the pandemic with its existing resources. Therefore, a few documents were developed regarding community involvement and mobilization of community individuals for COVID-19 preparedness and response. [16,18,34,35] However, community engagement was still not sufficient. The main responsibilities of volunteers were to disseminate standard information,

promote healthy behaviours, address social cohesion, combat stigma, and monitor and motivate individuals living in quarantine and isolation to follow the defined standards.

4.1.3.3.Capacity strengthening of the health workforce

COVID-19 is a novel disease, and much research has been conducted to generate new evidence about the condition. As a result, new knowledge and information regarding COVID-19 has been added on a daily basis and health workers must be updated about new knowledge and information in order to successfully treat and manage the pandemic. In this regard, the majority of national documents mentioned training and capacity development activities that should be organised for personnel engaged in COVID-19 management by provincial, district, local or health facility level in coordination with MoHP, EDCD, National Training Center and in collaboration with WHO, UN and other bilateral agencies for their effective mobilization in COVID-19 context. [16,17,22,26–28,32,35–44]

4.1.3.4.Provision of incentives, risk allowance and insurance

The GoN has developed a few policies to provide incentives and risk allowances for health workers to motivate them to work during the pandemic. The response plan mentioned the development of a procedure guide and benefit package to ensure life and health insurance for health workers and support staff mobilized for the COVID-19 response. [16] In this regard, a few directives described the establishment of provision of a risk allowance (as shown in *Annex 2*) for personnel engaged in health desk, quarantine, treatment, lab testing, and contact tracing for the prevention, control and treatment of COVID-19 infection. [45,46] Similarly, an EMDT mobilization guideline mentioned MoHP providing life insurance, Travelling Allowance/Dearness Allowance according to government policy, and COVID-19 hazard allowances if applicable. [32] Also, volunteer mobilization guidelines have provided incentives, insurance and food allowances for volunteers working in the COVID-19 response. [18] Furthermore, another guideline directed hospital authorities to provide one-week holidays for health workers and other HR staff involved directly in COVID-19 treatment after completion of quarantine and a negative COVID-19 test. [39] However, a revised guideline stated the one-week holiday to be given to those who worked for 12 hours a day for 7 days continuously without cutting off other holidays. [47]

4.1.3.5.Protection of physical and mental health of the health workforce

The physical safety of health workers was compromised at the beginning of the pandemic due to a global shortage of Personal Protective Equipment (PPE). This resulted in increases in COVID-19 infections among health workers and the deaths of health workers. Considering this challenge, some guidelines and directives issued in April and May 2020 targeted MoHP, local levels and health facilities to manage PPE and other essential safety items for health workers, support staff and volunteers mobilized in COVID-19 prevention and management. [18,22,39,46] Likewise, a few documents outlined the management of quarantine facilities for health workers and other HR staff involved directly in COVID-19 treatment including the provision of quality, healthy food and water by COVID-19 hospitals, [39,48] however, the amended guideline stated that the hospital should manage such services only for those who are not able to live in their own accommodation. [47] Moreover, a staff mobilization guideline required the hospital authority to prioritize, manage and arrange COVID-19 testing for health workers and other HR staff directly involved in COVID-19 treatment. [39]

In order to support the mental health of the health workforce, the health sector emergency response plan mentioned monitoring any stigma and discrimination, violence and forms of harassment towards health workers engaged in the COVID-19 response, and preventing such acts by taking necessary measures and legal action by the government. Furthermore, it mentioned the establishment of a mechanism at each health facility for the health assessment of HR staff. [16] Also, a few guidelines mentioned the hospital is being responsible for providing counselling services to health workers involved directly in COVID-19 treatment and their family. [16,39,47]

4.1.3.6.Monitoring and supervision of health workforce

Monitoring and supervision is a vital component in pandemic management, and a number of HR mobilization guidelines mentioned the monitoring and supervision of health workers and volunteers engaged in the COVID-19 response. [18,22,23,26,32,35,40,41] For instance, an Emergency Medical Deployment Team (EMDT) guideline stated that the MoHP is responsible for monitoring EMDT and providing guidance, and requesting reports at the end before returning to their hospital. [32] In terms of CICT, Epidemic Rapid Response Teams (ERRTs) Coordinator will oversee all ERRTs while both ERRT Coordinators and Team Supervisors will supervise operations, monitor the completeness of investigations and training, and mobilize resources. [23] Similarly, a volunteer mobilization guideline mentioned the regular monitoring of volunteer teams by Disaster Management Committees, and the ward chairperson is responsible for submitting reports of their work to those concerned at the local level. [18] Moreover, COVID facilitation team mobilization guidelines stated that the local level, with the cooperation of the ward chairperson, is responsible for monitoring the work done by the COVID Facilitation Team in a regular basis. [35]

4.2. Policy formulation, communication and health workforce management: findings from qualitative research

4.2.1. Background information on study participants

Among 22 key informants, 3 were policymakers from the provincial (MoSD and PHD) and federal levels (MoHP), 6 were local representatives, including elected local representatives, ward chair and health coordinator from 2 municipalities, 2 were representatives from EDPs at federal and provincial levels, 7 were health service providers and 4 were FCHVs, who were directly involved in COVID-19 response activities. Among the study participants, 16 were males and 6 were females. They had several years' experience in the health sector, ranging from 3 years to 31 years, while elected local representatives and ward chairs did not have any experience in the health sector. The characteristics of study participants are illustrated below in *Table 3*.

Table 3. Characteristics of study participants

Participant's ID	Age (in years)	Sex	Designation	Level
KII-1_Male_HW_Rural Municipality	26	Male	Health Post Incharge	Community or Health facility level
KII-2_Male_HW_Urban Municipality	42	Male	Health Post Incharge	
KII-4_Female_HW_Urban Municipality	34	Female	ANM	
KII-5_Female_HW_Rural Municipality	38	Female	AHW	
KII-6_Male_HW_Rural Municipality	56	Male	Health Post Incharge	
KII-8_Male_HW_Urban Municipality	43	Male	Health Post Incharge	
KII-10_Female_FCHV_Urban Municipality	54	Female	FCHV	
KII-11_Female_FCHV_Urban Municipality	44	Female	FCHV	
KII-12_Male_Ward Chair_Urban Municipality	43	Male	Ward Chair	
KII-13_Female_FCHV_Rural Municipality	59	Female	FCHV	
KII-14_Male_Ward Chair_Rural Municipality	34	Male	Ward Chair	
KII-20_Female_FCHV_ Rural Municipality	32	Female	FCHV	
KII-15_Male_Elected Representative_ Municipality1	54	Male	Elected local representative	Municipality level
KII-16_Male_Health Coordinator_Municipality1	43	Male	Health Coordinator	
KII-3_Male_Health Coordinator_ Municipality2	46	Male	Health Coordinator	
KII-9_Male_ Elected Representative_ Municipality2	63	Male	Elected local representative	
KII-7_Male_MO_Urban Municipality	28	Male	Medical Officer	Province level
KII-17_Male_MoSD_ Lumbini Province	34	Male	Information Officer	
KII-18_Male_PHD_Lumbini Province	50	Male	Public Health Administrator	
KII-19_Male_EDP_Lumbini Province	41	Male	Provincial Health Officer	
KII-21_Male_EDP_ Federal	43	Male	International Program M&E	Federal level
KII-22_Male_MoHP_ Federal	47	Male	Senior Health Administrator—Policy, Planning and Monitoring Division	

4.2.2. Policy formulation process in response to COVID-19

From the policy review, it was clear that several COVID-19-related policies and directives have been formulated for the effective preparedness and response to COVID-19. There is an established governance structure with different committees and working groups at national and sub-national levels to respond to the pandemic. The policy formulation process involved the engagement of different tiers of government including different ministries and sectors.

4.2.2.1 COVID-19 governance structure

Nepal started experiencing a surge in COVID-19 cases and the GoN took several decisions in preparation for an in response to the pandemic. The federal government formed a steering committee and technical working group for the commencement of the policy formulation process. The steering committee (*later named the Incident Command System*) was primarily responsible for developing and refining policies and guidelines for COVID-19 management, while the technical working group was responsible for managing overall technical aspects of COVID-19 and facilitating the discussion on policy integration with steering committees through the presentation of identified issues which emerged during the technical execution of the policies and guidelines. The Ministry of Federal Affairs and General Administration (MoFAGA) published decisions in April 2020 about the formation of the COVID-19 Crisis Management Center (CCMC) at federal, provincial and local levels to effectively manage the COVID-19 response. In addition to the steering committee, the cabinet and CCMC were mainly responsible for formulating COVID-19 policies and guidelines. The steering committee under MoHP was responsible for developing operational policies whereas CCMC was accountable for developing national level policies. Also, the cabinet was primarily responsible for taking higher-level decisions on policies and guidelines, such as imposing lockdown.

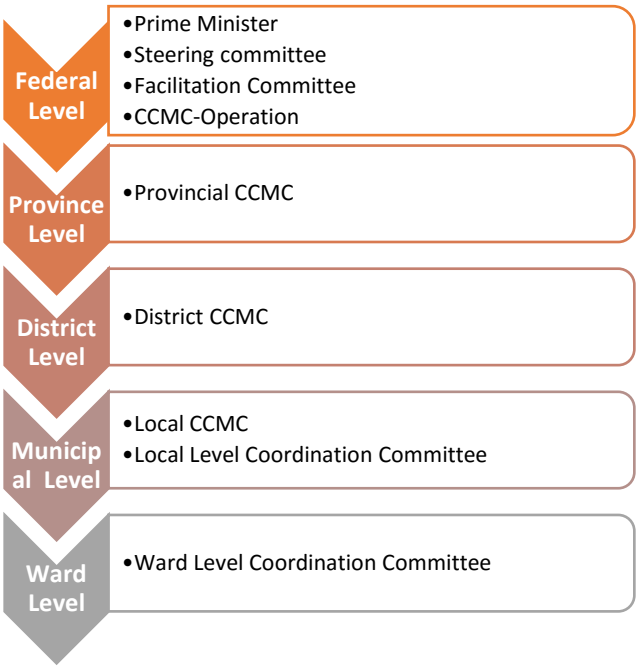

Figure 4. Overall COVID-19 management and response structure

Likewise, MoFAGA issued a document regarding the essential management for COVID-19 preparedness and response on 22 March 2020, describing the formation of the local level coordination committee and ward level coordination committee for mobilizing health workers and FCHVs, ensuring health message communication in accordance with MoHP guidelines, providing suggestions and establishing immediate referral systems, monitoring health desks at border entry points, ensuring self-quarantine and physical distancing etc. [21] The overall COVID-19 management and response structure is shown in *Figure 3*. COVID-19 management and the response structure at federal and sub-national levels are outlined in *Figure 6* and

Table 7 respectively in Annex 3. Moreover, the CCMC management structure is shown in *Figure 7* in Annex 3. [21,49,50]

4.2.2.2. Key actors in the policy formulation process

The federal government largely lead the policy formulation process, with less involvement by provincial government, while local governments were engaged in the implementation of policies and directives for COVID-19 management. The key actors at federal level involved in policy formulation, in addition to the MoHP, were different ministries such as MoFAGA, Ministry of Home Affairs (MoHA), Ministry of Finance, Ministry of Defence, Ministry of Foreign Affairs amongst others. Likewise, multiple sectors, including army, armed police force, National Investigation Department, development partners, I/NGOs etc, were also involved in the COVID-19 response structure. Furthermore, key experts, such as epidemiologists, economists, medical teams, and individual public health and technical experts, were consulted on the policy formulation process.

At provincial level, a few COVID-19 policies were developed under the leadership of MoSD and PHD with the involvement of key actors, such as representatives from Province Management Centre, Province Training Centre, Province Health Laboratory, local organizations, I/NGOs, health experts, such as physician, public health expert, paramedics, nurses and internal community medicine specialists, along with security personnel and economists.

4.2.2.3. Engagement of three tiers of government (vertical collaboration)

Following the federalisation of the country, the provincial and local governments hold power to make their own local policies and plans. However, given the emergency situation and limited time to respond to the pandemic, the federal government led the overall policy development process with little or no consultation with provincial and local governments. The provincial government identified a gap as their direct involvement was not established in the policy formulation process at federal level, although federal government sometimes shared drafts with the provinces in order to collect feedback. Similarly, during policy formulation at the federal level, regular Health Emergency Operation Center (HEOC) meetings were conducted, including at the province level, in which operational subjects and updates were shared and discussed.

> *The regular HEOC meetings were conducted for operational matters and we provided feedback from here for an update and they (federal level) collected it. Sometimes those feedbacks were reflected and sometimes were not reflected.* (KII-17_Male_MoSD_Lumbini Province)

> *Province [government] was less involved in the [policy formulation process] at federal level. Some draft documents were shared [with province] to collect the feedbacks but nobody has time to review those documents and hence, finalized [policies and guidelines] were send at once, whereas some documents were developed and circulated without our concern.* (KII-19_Male_EDP_Lumbini Province)

In terms of the involvement of the local level in the policy formulation process at provincial level, MoSD representatives stated that they coordinated with the local level and had

monthly discussions with health workers of the district hospitals, including District Health Officers and District Chief Administrators. The EDP representative in the province however, mentioned that local level engagement was only present in quarantine management and implementation processes but not in the COVID-19 policy formulation process. Nevertheless, local level representatives, such as mayors, deputy mayors, executive officers, health coordinators and chiefs of health offices, were invited to consultation meetings for developing general health policies in non-COVID contexts.

> *In general, there is a representation of local level in consultation meetings for routine health policy formulation, and provincial public health act formulation. Representatives from municipalities were invited. Mayor of some municipalities while deputy mayor of other municipalities and executive officers, health co-ordinator and chief of health office from some municipalities were engaged. But there was no involvement in the context of COVID-19 policy formulation process...*
> (KII-19_Male_EDP_Lumbini Province)

4.2.2.4. Multi-sector collaboration and partnership

Multi-sectoral collaboration was widely observed in federal and provincial levels during the policy formulation process. Participation from different ministries, like Ministry of Foreign Affairs and General Administration, Ministry of Home Affairs, Ministry of Industry, Commerce and Supplies, Ministry of Communication and Information Technology as well as medical associations, security forces (Nepal Army, Armed Police Force) etc, were reported in policy formulation and response activities. Although there was a delay from government in deciding to involve the private sector in the COVID-19 response, the federal government invited the private health sector into COVID-19 testing and treatment through a reimbursement mechanism; thereby, some private health facilities began to provide COVID-19 services along with routine care. Also, consultation with EDPs, such as WHO, I/NGOs and technical experts, were regularly held at all levels of government during the policy formulation processes.

> *With the rise in COVID-19 cases, government made provision of reimbursement to private health care facilities in its policy. In reimbursement modality, government determined the cost as per case. Also, the cost of human resources of the private sector was incorporated in that predetermined case basis reimbursement cost... The private hospitals agreed upon the government reimbursement policy and some of them even operated as dedicated COVID-19 hospital and some of them operated COVID-19 ward in their hospital to offer critical care to COVID-19 case requiring critical care.*
> (KII-21_Male_EDP_Federal)

Likewise, provincial governments also coordinated and collaborated with other departments and ministries and also with I/NGOs and private sectors, WHO, United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), Red Cross Society, representatives from medical colleges and Association of Private Health Institution of Nepal (APHIN), Nepal Commission Drug Association (NCDA) and other local organizations for technical assistance while developing policies. For example, the province coordinated with education, women, child and senior citizen sector, Ministry of Internal Affairs and Law and

Ministry of Economic Affairs and Planning. Nevertheless, community-level representation was missing at both federal and provincial policy formulation processes.

4.2.2.5. Evidence-based decision making

It is crucial to have an established evidence generation team and mechanism to inform and update COVID-19 response committees and teams in the country in a timely manner, however, this was lacking in Nepal. Despite the lack of a dedicated professional team and mechanism for evidence generation, the federal government demonstrated good efforts to adopt evidence and global learning in policies and guidelines developed at federal level. For example, it considered WHO interim recommendations and WHO—HRH tools and guidelines and adapted them into the national context while developing policies and guidelines. Similarly, the provincial level considered federal policies and WHO technical guidelines while formulating federal policies and guidelines. However, needs identification, in terms of resources such as HRH, logistics, health infrastructure, etc, based on the local context was done on an ad-hoc basis rather than evidence based. The province assumed responsibility for managing 5,000 critical COVID-19 cases and developed a contingency plan to manage COVID-19.

> *At first, PHD made an assumption. We had a concept about how we can treat, if there are 5000 critical cases in Lumbini province. Consequently, we came up with formulating some plan for such situation like, how many HR and equipment are required. Thereafter, we made a contingency plan on assuming how to treat, if there are 5000 cases. We made an action plan according to that to manage [COVID-19] for six months as we were unknown about how long will [COVID-19] last for.*
> (KII-18_Male_PHD_Lumbini Province)

4.2.2.6. Gender and equity in policies and guidelines

Gender and equity is at the heart of this study. The research team tried to capture gender and equity dimensions in the COVID-19 response from its policy review as well as from the qualitative interviews. The policy review revealed that gender and equity-related considerations were not precisely reflected in COVID-19 policies and guidelines. In this regard, the federal-level informant stated they were unable to incorporate gender and equity parameters into policies and guidelines because they focused more on finding ways to respond to the emergency situation rather than considering gender and equity.

> *We had different equity parameters for different programs when we did analysis programs before. We could not adopt those parameters during the emergency. We spent most of our time on finding ways to respond.*
> (KII-21_Male_EDP_Federal)

Moreover, a gap was observed in the consideration of gender and equity in province-level policies and guidelines in the beginning. However, provincial government considered gender and equity in some policies only after several gender-related issues emerged and were reported in quarantine management. For example, common bathing area for males and females, rape cases, etc. that were frequently reported in quarantine centres throughout the country led to a revision of policies to consider gender and equity issues. As a result, some of

quarantine and isolation management guidelines mentioned the arrangement of separate living and essential health services for children, elderly people, pregnant and lactating mothers, people with disability and chronic patients in quarantine centres [24,25] and the arrangement of separate rooms, toilets and bathrooms for males and females along with sanitary pads for females and the provision of female security personnel at female isolation centres. [29,51]

> *There was nothing about thoughts of gender [equality and equity] since it was handled based on case. But there were some issues during quarantine management like increased number of people were kept together, both male and females were kept in the same block, bathing area was also same for both male and females in the quarantine centre. However, gender issue was not addressed in policies. [During quarantine management], we witnessed that problem, so we used to [address] it verbally though it was not mentioned in the policy. Later, the issue had been addressed regarding the rooms of male and female should be separated.*
> (KII-18_Male _PHD_Lumbini Province)

4.2.2.7. Applicability/relevance of national policies in the local context

Local-level respondents clearly had opinions about the inapplicability and irrelevance of national-level policies at the local level because such policies were not developed with consideration given to the local context and lacked coordination with local levels. For instance, differences between urban and rural areas were evident in terms of infrastructure, capacity, etc, therefore the same policy cannot be applicable in both urban and rural settings. Local levels modified the few national policies and guidelines considering the local context where executive members were found to be key actors.

> *I did not find the national policy to be appropriate to local context. Moreover, I felt that national COVID-19 policy was promoting the autocratic style of enforcing the activities.*
> (KII-14_Male_Ward Chair_Rural Municipality_Kapilvastu)

> *While formulating the policies, problems and local level needs have to be addressed. The national level policies are made but that do not match with our local context. Our local level is not that much developed. There are lots of difficulties, such as human resource, finance.*
> (KII-9_Male_ Elected Representative_Municipality2_Kapilvastu)

EDP in the province stated that federal policies were vague as they had a cross-country focus. For instance, national guidelines for CICT mentioned the mobilization of public health professionals, nurse/paramedics and lab technicians/lab assistants for CICT which was not possible at the provincial and local levels because such human resources were not easily available at the community level. Therefore, the province had to adapt guidelines, such as guidelines for isolation centres and SOP regarding CICT, etc, to make them province specific. Similarly, EDP also mentioned the need for adapting national and provincial policies and guidelines into local (municipal) contexts as they might not be relevant to each local context.

> *[National policies and guidelines] cannot be implemented in provincial level. The province level [policies and guidelines] might not be implemented in local level. For*

example, we designed a specific standard for transportation of samples. It might be easy and accessible in the districts like Rupandehi, Kapilvastu, Nawalparasi, Dang but it might not be applicable in Rukum, Rolpa (remote districts). We have faced such [problems] now. So, [policies and guidelines] should be locally specific or should be localized. It will be difficult to implement as it is.
(KII-19_Male_EDP_Lumbini Province)

4.2.3. Policy communication and interaction between the three tiers *(communication to different tiers of government, health workers and the general public)*

The federal government used several approaches and channels for policy communication and dissemination, such as daily national press briefing, situation reports, notices on official websites, social media platforms (for example, Facebook, WhatsApp, and Viber), newspaper, local radio, television etc. Although different media were used, the overall communication process was found to be a one-way, top-down approach. Focused/targeted communication to specific audiences was absent because communication to different levels of government, health workers and public was all done in the same manner. Interactions regarding communication policies between the three tiers of government were largely missing. As a result, provincial and local governments remained less aware of some policies and updates, and therefore had to actively search themselves.

There needs to be targeted audience and focused communication. We just did general communication. After making policies, we should have called ministers of all seven provinces, directors and briefed them about the policy. We should have explained the reason for not doing PCR testing after 14 days and explained them about the evidence on which guidelines are based on. We did not communicate about it.
(KII-22_Male_MoHP_Federal)

The provincial government to some extent was proactively engaged in communicating and updating about policies to local governments via channels such as phone calls, email and physical meetings, although they were sluggish in the initial phase. Furthermore, ad-hoc meetings were conducted between provinces and local levels for coordination. Later, the provincial government also developed a software application featuring COVID-19 information, national policies and official documents to inform and update local governments and health workers.

There was a communication gap. Federal level formulated the guidelines but never informed us about that. We have to search in Facebook, we knew [about the guidelines] through other mediums. We only operated and managed by exploring [the guidelines] through other mediums and self-search.
(KII-18_Male_PHD_Lumbini Province)

At the municipal level, after receiving information regarding COVID-19 policies and guidelines, municipalities invited and then communicated it to ward representatives and health workers in a simple and comprehensive way, while at other times they communicated via phone. They also discussed ways to implement policies and guidelines.

The federal government did not communicate policies formally. The province government sent model of different format through email. It has also mobilized a responsible person [for communication]. [Policies and guidelines] keep on changing but the responsible person does the coordination. They call formally and ask us to enter the situation here in that format and we send the data through email. We also take the direction from there. That is how the information is circulated.
(KII-16_Male_Health Coordinator_Municipality1_Kapilvastu)

Health workers stated that they were not officially informed about any policies from municipality and upper levels and further claimed that it takes a long time for a single guideline to reach health facilities. Likewise, health workers reported that health coordinators in the municipality level communicated policies to them verbally rather than in any written form, which they felt to be ineffective and inhibited understanding. Health workers were instead motivated to search for their own information regarding COVID-19 guidelines and policies from their friends, social media and national and provincial websites. In this regard, the province level admired health workers for their aptitude, rather than them waiting for the higher level to communicate such policies.

Regarding the urgent matter like providing vitamin-A during COVID, we got that information through Facebook only... That information should have been forwarded to us but it was not done. My friends shared it in a Facebook and I saw it there. After that, I printed that and shared with the health workers.
(KII-2_Male_HW_Urban Municipality_Kapilvastu)

While a majority of provincial and local level respondents found digital platforms to be major facilitators and an effective medium for policy communication due to their accessibility, convenience and promptness, a few respondents from the provinces and health facility levels preferred printed documents over electronic documents because everyone, even the technology illiterate, can read printed documents. Also, digital communication was challenged due to a lack of computer and internet access in health facilities and was therefore an unreliable source of information.

Furthermore, there was no mechanism at any level to ensure consistency in understanding and implementation of information delivered to frontline health workers, and municipality officials stated that frontline health workers did not have the same level of understanding about COVID-19. Health workers reported that they did not have same level of understanding because nobody came forward to explain policies and guidelines to them.

All the health workers do not have same level of understanding regarding the policies and guidelines. Some has understood about it very nicely and are even engaged in it. Some has not understood about it. 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. I have heard that it will decrease. I do not think they {health workers} know about these things... Even I do not know about it properly.
(KII-4_Female_HW_Urban Municipality_Kapilvastu)

Regarding policy communications to public, most of the policy documents mentioned health message communication in order to make the public aware about COVID-19 infection and COVID-19-related policies. Policy communication to the public is vital in pandemic situations as it helps to inform and educate the public and prevent the spread of rumours in the community, thereby minimizing fear and anxiety regarding COVID-19. In that regard, the federal government developed several communication channels such as call centres, media briefings, Viber groups and daily message communications through radio and television in order to raise awareness among the general public about COVID-19. Similarly, the local levels were found to be actively engaged in communicating with the public about COVID-19 preventive measures as well as policies and guidelines through the use of different communication means and media, such as community-level mass awareness, radio, television, newspapers, posters, pamphlets, banners, and social medias along with community visits by local representatives. Moreover, the local levels believed that the communication strategies they adopted were effective and had targeted minorities and vulnerable groups within the community.

4.2.4. Policy implementation

This section presents the main findings related to the decision space of sub-national governments, clarity in roles and responsibilities among local managers and frontline health workers, monitoring of policy compliance, reporting mechanisms and challenges which emerged in policy implementation.

4.2.4.1.Decision space of sub-national governments

Federalism has meant that increased power is assigned to sub-national governments, where provincial and local government can make their own policies, plans and programmes aligning to the federal framework. In this decentralised structure, local governments are free to decide on the operational aspects of disease management such as planning, budgeting, resource allocation for COVID-19 managements including health workforce management and so on. Provincial and local governments were found to be exercising this power by allocating budgets for COVID-19 management, establishing isolation and quarantine centres, procuring logistics, hiring health workers, etc. Municipal governments, although not allocated budgets for such pandemic situations, were utilizing internal budgets in such activities. They were locally procuring protective equipment and other logistics. Local governments led on the establishment and management of quarantine centres, while ward levels were also involved in support activities like disinfecting the localities and distributing masks, sanitizers, and soap, including relief materials to community individuals. The municipal and provincial governments were performing their responsibilities, however, there was confusion in understanding roles and responsibilities and the allocation of resources, described in the following section.

4.2.4.2.Clarity in roles and responsibilities among local managers and frontline health workers

Challenges in terms of the implementation of policies and guidelines were reported by municipal governments because of a lack of clarity in the roles and responsibilities of local governments in federal policies. This was admitted by a participant from federal government. This created confusion among municipalities regarding their roles and responsibilities. For instance, municipalities were not clear about managing budgets and HRH for CICT teams' mobilization which profoundly affected the contact tracing and case investigation activities.

Also, a provincial representative (EDP) realized that despite having clear policy, the clarity was not observed in the implementation phase, while the MoSD and PHD stated they were clear about their roles regarding the implementation process of policies and guidelines.

> *The CICT structure that was formed all-round the nation was not activated adequately. There was uncertainty regarding who will offer the budget necessary for training, how the training will be conducted. Municipalities were not clear how to manage budget and from where to manage health personnel to form CICT team.* (KII-21_Male_EDP_Federal)

Similarly, frontline health workers also faced issues because of a lack of clarity in roles and responsibilities as a result of a poor communications process (discussed earlier in the policy communication section). Health workers were not oriented and trained for responding to the COVID-19 pandemic, therefore, they were unaware to conduct COVID-19 response activities such as CICT in the initial phase. For example, they closed OPD services and immunization services due to a lack of proper information about the delivery of routine health services.

> *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.*
> (KII-7_Male_MO_District Hospital_Kapilvastu)

4.2.4.3.Monitoring of policy compliance

The policy compliance monitoring mechanism was not developed at any level of government, however, the federal government recruited and deployed provincial coordinators across the seven provinces in order to assess the need for health infrastructures and human resources to respond to the pandemic. Also, the provincial level mentioned that the MoHP made a visit to the provincial dedicated hospital and laboratories for monitoring.

At provincial level, MoSD and PHD along with WHO were found to be mainly responsible for conducting monitoring and supervision, especially of COVID-19-dedicated hospitals, quarantine centres and border entry points, on an ad-hoc basis rather than regular, planned visits. Similarly, the province formed an isolation centre joint monitoring team and doctors' team to monitor quarantine and isolation centres at the local level. With support from EDPs (such as WHO, UNICEF), the teams were responsible for monitoring the delivery of services and maintenance of standards at quarantine and isolation centres with the use of a monitoring checklist.

Both federal and provincial level were unable to reach community levels to monitor policy compliance. The urban municipality received only one monitoring visit from provincial government during the COVID-19 pandemic. To ensure routine monitoring at local level, the federal government directed the ward level to form a committee for monitoring policy compliance. This led to the formation of ward committees at the rural municipality (no committees were formed in our study urban municipality) comprising a Municipality Chairperson, Administrative Officer, Health Coordinator and executive members who were responsible for monitoring activities related to policy implementation, such as self-

quarantine, institutional quarantine, HRH mobilization in quarantine centres, adoption of public health standards (such as, social distancing, wearing mask and sanitizing/washing hands) by public amongst others.

> *MoHP had mobilized provincial coordinator at first. They stayed at the province for certain duration and did regular follow up. A few assessments were done in health facilities to know about whether they were prepared or not in some aspects. MoHP assisted them in preparing action plan. But MoHP was not able to reach local level for monitoring compliance and asking people to wear masks, although it formed ward wise committee and they did monitoring by themselves.*
> (KII-21_Male_EDP_Federal)

4.2.4.4.Reporting mechanisms

The study found that regular reporting was in practice in both municipalities. The reporting process started with daily updates by health facilities to respective municipalities, mostly virtually and verbally via phone but sometimes in a written form. These provided the municipality with basic demographic information. Based on this information, local levels were responsible for reporting details to the District Health Office (DHO) about numbers of daily positive cases, deaths, people in quarantine and isolation, and swab samples collected for testing. Then, DHO compiled those reports and submitted them to DCCMC, which were then forwarded to PHD. After that, PHD complied all the reports received from all districts under the province and submitted them to MoSD. Ultimately, MoSD reported the details to the Chief Minister Office, CCMC and HEOC for the daily press briefing.

> *The reporting used to come when there was COVID. There was a health worker here who used to update about how many kits they used in a particular day or how many patients were treated in a hospital. The information was provided through phone occasionally if we could not meet, and physically when we met sometimes. We used to meet daily or while coming to the office.*
> (KII-15_Male_Elected Representative_Municipality1_ Kapilvastu)

Reporting on CICT and COVID-19 testing should be done and submitted to federal level by sub-national levels. The federal level made provision for reporting cases under treatment through the Health Management Information System (HMIS) and District Health Information Software 2 (DHIS2) so that budgets to reimburse treatment costs could be released based on that report. However, federal level participants mentioned that they did not receive regular comprehensive and complete data on the cases from sub-national levels. This resulted in the cutting of allowances to be received by health workers for managing COVID-19 cases.

> *We had prepared a reporting system for the hospital but they did not send us any report. They did not tell about the number of patients nor about the number of admitted days in the hospital. How would they get allowance if they have not provided any report nor looked after COVID patients? We had provided allowance to everybody who had actually worked but have not provided to staff not submitting reports as we cannot distribute money without any valid reason.*
> (KII-22_Male_MoHP_Federal)

4.2.4.5.Challenges in policy implementation

Budget allocation and distribution

The provincial and local-level governments faced challenges to implement policies and response activities because of a lack of budget due to delays in budget allocation from the federal level. Sometimes duplication of budgets at some places and insufficient budgets in others were reported which created confusion and difficulties in policy implementation.

> *There was a controversy. Sometimes, federal government directly provided budget for quarantine management to the municipal level, whereas sometimes, budget was sent to province and province sent budget to [municipal level] for quarantine management. Federal, provincial and local government have separate budgets for quarantine and isolation. It was not clear who should allocate what amount of budget and their exact roles, particularly in the context of COVID-19 response.*
> (KII-19_Male_EDP_Lumbini Province)

Coordination

There was a lack of coordinated effort from federal government to mobilize various structural bodies at the community level, such as FCHVs, teachers, community-based organizations and NGOs like Red Cross, and consequently community level interventions were affected. Furthermore, the provincial representative stated that coordination between the three tiers of government and clarity in their roles was disorganised and challenging which affected the overall implementation of response measures. Also, the ward and health facility faced challenges in policy implementation due to a lack of timely communication and support from the municipality.

Management of quarantine centres

As the nation did not have pre-established quarantine and isolation centres this responsibility was given to the local governments which experienced difficulties in establishing and managing such centres in the community. Municipalities established quarantine centres at schools, community halls, hotels and other spaces, which were not sufficient to quarantine thousands of people entering the country from India and other countries. Due to the tremendous numbers of people in quarantine centres, municipalities were unable to properly manage the quarantine centres and people faced many difficulties in terms of getting quality food, space, privacy and safety, which also affected the safety of the health workforce. For example, people suffered because of a lack of quality food, a lack of separate toilets and bathrooms for males and females, increasing risk of infection due to group quarantine, and concerns over personal safety and security.

> *There have also been some weaknesses in the [quarantine] management from the municipality. The people were quarantined in the school where they have to manage the foods by themselves. In the schools, 4 to 5 or even 8 people were quarantined together in one room due to which the chances of transmission of infection to healthy people was high. Also, people have been complaining about the management of quarantine centre.*
> (KII-8_Male_HW_ Urban Municipality_Kapilvastu)

Policy compliance by sub-national governments

COVID-19 was a new and evolving disease, and so the federal government made frequent changes in policies and guidelines over a short period based on global learning. Because of the changes in policies and decisions, federal government did not receive positive responses from all provinces and local governments. For instance, guidelines for testing were amended to state that no testing was required after completing 14 days of isolation, which was denied by the local level which tested all COVID-19 infected people completing a quarantine period. Moreover, due to changes in policies, local governments faced difficulties in implementing response activities, e.g. the policy on the mobilization of volunteers, which was later revised.

> *We received a national directive on how to form a volunteer team and provide facilities during COVID-19 pandemic. Later, after we took a decision and formed a team, we again received another letter from the government due to which we cancelled the mobilization of volunteer team.*
> *(KII-16_Male_ Health Coordinator_Municipality 1_Kapilvastu)*

Furthermore, local governments took action against the decision of the federal government to prevent migrant populations entering the country through border entry points because of the increased risks of transmission of COVID-19 infection. Instead, both local governments brought in migrant populations who were stranded at India border entry points and placed them in quarantine centres.

4.2.5. Health workforce management

This section presents key findings related to the status of availability and the capacity of the health workforce at local levels, and strategies that different tiers of government adopted to manage the shortage of health workforce to ensure delivery of COVID and non-COVID health services, while also focusing on motivation and support to these health workforces.

4.2.5.1.Availability and mobilization

The arrival of COVID-19 further compounded the shortages within the health workforce in Nepal - there was scarcity of human resources across the country, especially to deliver routine critical care services, COVID-19 testing services and conduct contact tracing activities. In addition, participants also reported that the nation lacked epidemiologists who play an important role in planning and in the formulation of policies and response measures. Furthermore, a lack of proper remuneration and necessary infrastructure for skilled human resources also discouraged them working as consultants.

> *Another challenge is remuneration policies because high level technical [human resource] do not prefer to work for the salary which are provided to regular or permanent employees. Thereafter, another challenge is our infrastructure. The area where we constructed institutions for pandemic response, there is shortage of infrastructure for working.*
> (KII-19_Male_ EDP_Lumbini Province)

From the review of policies and documents, it was evident that because of shortages within the health workforce during the pandemic in Nepal, the MoHP initially mobilized health workers delivering basic health services at the peripheral level in COVID-19 response

activities, particularly in quarantine centres, isolation centres and health desks. Later, MoHP issued an interim guideline on the delivery of COVID and non-COVID health services and directed 126 hospitals throughout the country (categorised as hub hospitals, provincial hospitals, medical colleges and private hospitals) to run as COVID-19 clinics and COVID-19 hospitals. [31] In this regard, additional HRH personnel were recruited on a short-term basis by federal and provincial governments for COVID-19 dedicated hospitals. Similarly, local governments also recruited HRH to manage quarantine and isolation centres and also managed HRH through transfers of HRH in the health facilities within the municipality.

The shortage of HRH was apparent in both municipalities before COVID-19. This was primarily due to local governments' staff adjustment processes and staff recruitment which had been completely halted by COVID-19. Despite the insufficient number of health workers and unfulfilled sanctioned positions, the majority of the health facilities somehow managed to deliver routine health services along with COVID-19 services with the available health workforce, however some health facilities had to mobilize office assistants. The health facilities in both municipalities did not dedicate separate health workers for the delivery of routine health services and for COVID-19 services, which affected the delivery of routine health care services more. Because health workers were mobilised in COVID-19 services, some health facilities had to be closed when their health workers were working in quarantine centres. Furthermore, the shortage of HRH was aggravated when health workers working in isolation and quarantine centres started to get infected with COVID-19 and had to stay in isolation.

> *In the scarcity of health worker, we have managed with one health worker to work in every part. A health worker manages the immunization program, family planning, nutrition, and other services by oneself. We have not distributed the task. Everyone is responsible for every work. We did not have [enough human resources] but we worked for 24 hours.*
> (KII-6_Male_HW_Rural Municipality_Kapilvastu)

Health workers with high morale worked overtime to deliver services during COVID-19, resulting in a heavy workload and stress which affected their mental health.

> *It was very difficult for us to manage due to lack of health workers. We had to do double triple duty (for days). Talking about our struggle, we could not even eat properly.*
> (KII-5_Female_HW_Rural Municipality_Kapilvastu)

Although "Guidelines for operation and management of quarantine" recommended the mobilization of six health workers for managing 100 individuals in quarantine centres,[24] only 2-3 health workers were mobilized at quarantine centres on scheduled or on-call bases. Similarly, health workers were mobilized in rotation and on an on-call basis at local level isolation centres.

In order to manage the shortage of (skilled) human resources, the federal government mobilized recent medical graduates and deployed them as emergency medical deployment teams in COVID-dedicated hospitals. Similarly, at the provincial and local levels, health workers along with non-technical personnel were transferred from one

municipality/ward/health facility to another municipality/ward/health facility in the same district, whilst some local levels were in the process of recruiting new health workers.

> *If some health facilities had enough staff or all fulfilled positions, then we mobilized them in a health facility with staff shortage. We also mobilized the non-technical staff there to fulfil the vacant posts and provided them with the facilities of COVID.*
> (KII-16_Male_Health Coordinator_ Municipality1 _Kapilvastu)

However, the provincial government did not undertake initiatives to transfer health workers from low-risk districts to high-risk districts. For example, health workers from Pyuthan, a district with no COVID-19 cases, could have been mobilized in Kapilvastu, a district with high COVID-19 cases.

Moreover, the provincial government recruited HRH personnel for provincial hospitals and COVID-19-dedicated hospitals by providing all facilities (such as salary, risk allowance). Also, it approached federal governments to provide physicians to the provinces, resulting in the deployment of some medical officers to provincial COVID-19-dedicated hospitals from the federal level.

> *We created temporary sanctioned posts since it was not sufficient from the government structure [of health workers], especially for the operation of dedicated COVID-19 hospitals. In addition, we managed salary, risk allowance, food, vehicles which were required for the temporary sanctioned posts.*
> (KII-18_Male_PHD_Lumbini Province)

Also, some international non-governmental organizations (INGOs) deployed their staff to the district hospitals to support COVID-19 management. For instance, United Nations Population Fund (UNFPA) deployed two medical officers to the hospital for almost 45 days.

Mobilization of private health workers

The majority of interview participants reported that there was not a mechanism at local levels to mobilize private health workers during the pandemic. Despite of this, both local governments approached the private sector to mobilize private health workers but there was no willingness from the private sector to engage in public health facilities. Nevertheless, there were a few instances where private health workers worked for COVID-19 management for which the local level provided salaries and motivation packages.

> *We also asked for help with other private sector but no one was willing to come. They used to say that if they will work in the disaster situation by risking their life, and what is its output?... They asked us to provide guarantees for their jobs and then only they will come. They mentioned that they will only come if their conditions are fulfilled otherwise the jobs they already had were enough for them.*
> (KII-16_Male_Health Coordinator_Municipality1_Kapilvastu)

Likewise, the provincial government also coordinated and wrote official letters to private hospitals and mobilized private health workers at COVID-designated hospitals. This process was difficult for the province because private health providers were reluctant to provide COVID-19 services which they stated were the core responsibility of the government.

Further, the federal MoHP provided incentives and risk allowances for private health workers while their salaries were managed by their private health facilities.

> *Private sectors were not mobilized in government sector. But some doctors and nursing staff of UCMS (Universal College of Medical Sciences) Bhairhawa Medical College were deployed to Bhim hospital which was a COVID-19-dedicated hospital. They provided support in that hospital. For mobilization, the province co-ordinated with concerned hospitals and requested human resources as per need. Their salaries were borne by the concerned institution, however, incentives were provided by Ministry (MoHP).*
> (KII-19_Male_EDP_Lumbini Province)

Mobilization of FCHVs

Despite the presence of several guidelines directing the mobilization of FCHVs in the community for supporting COVID-19 management activities,[18,19,21,22,34] FCHVs were not actively involved in COVID-19 preparedness and response activities in either municipality. Local levels were not clear about their roles due to frequent changes in policies on the one hand, and they also thought that FCHVs were vulnerable to COVID-19 infection due to community exposure and their age factor (generally FCHVs are women above 50 years). FCHVs were only assigned to inform local representatives if anyone entered the community from outside, particularly migrants, and to provide assistance in relief distribution programmes conducted by the ward level.

Although the provinces, municipalities and health facilities did not effectively mobilize FCHVs during the pandemic, FCHVs of the urban municipality engaged themselves voluntarily in their respective locality, raising COVID-19 awareness. FCHVs in the rural municipality acted as instructed and were involved in monitoring visitors arriving from outside the community and requesting that those individuals stay in quarantine. Also, FCHVs were engaged in their routine jobs, like the distribution of contraceptive pills and condoms, and the Vitamin A programme during the COVID-19 pandemic.

> *We are not [mobilized in the activities such as preparedness and response to COVID]. We personally worked in our working area. 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 COVID symptoms. We visited door-to-door to [remind] people [to go to the health facility]. We went to the [community] during COVID and gave advice to work safely, wash hands with soap and water.*
> (KII-11_Female_FCHV_Urban Municipality_Kapilvastu)

Gender equality and social inclusion (GESI) considerations in health workforce mobilization

The review of policy documents highlighted that none of the policies and guidelines reflected on GESI considerations while mobilizing the health workforce in COVID-19 prevention, management and treatment. However, some local health facilities management seemed sensitive and considered gender, pregnancy status and age during HRH mobilization. Other health facilities were not able to consider gender even they wanted to due to a scarcity of health workers. Examples of GESI consideration include pregnant and elderly staff not mobilized to front line roles and female staff not mobilized on night shifts.

> *There was also one pregnant staff (Auxiliary Nurse Midwife) here. We did not ask her to work in a frontline and we worked in her place instead. There is also one elderly staff here. We did not even keep him in the frontline and we went instead.* (KII-2_Male_HW_Urban Municipality_Kapilvastu)

4.2.5.2.Capacity strengthening

Adoption of IPC measures is vital for COVID-19 prevention and critical care is essential for COVID-19 treatment. Most of the policies and guidelines concerned orienting and training HRH personnel on the appropriate methods for handwashing, using alcohol-based hand sanitizer and wearing PPE. [16,17,26,32,37,39,42,43] With regard to these measures, a respondent from the federal level reported that the National Health Training Centre (NHTC) undertook to conduct training and crash courses in critical care and IPC for health workers across the country with support from the WHO. However, the training could not be delivered as fully as hoped because the health system was not capacitated to conduct such activities in a time of emergency.

> *Training was provided by ministry (MoHP). NHTC coordinated the training. But it couldn't reach at mass level. 3000 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. The number was not sufficient. IPC should have been provided to all. It is short too since it is a package of only one to two hours (session).* (KII-21_Male_EDP_Federal)

The province, however, provided training on IPC and CICT to health workers at provincial and district levels, although not at the beginning of pandemic. Several training sessions on critical care, patient care, specimen collection and other laboratory work in coordination with EDPs, local NGOs, DHO and district hospital were organised.

> *We provided training and orientation for CICT, IPC and personal protection for health workers. We only did it at province level, but we could not go to municipal level because we had limitations of budget and health workers. Recently, we are providing skill training about how to operate ventilators. I/NGOs which are operating in Lumbini province, supported us in budgeting part.* (KII-18_Male_PHD_Lumbini Province)

Despite having a number of policies stressing the importance of building the capacity of the health workforce, the national and sub-national governments could not manage training or capacity strengthening programs for health workforce at local (municipal) level. Thus, the majority of health workers were neither trained nor oriented on the appropriate use of PPE sets and critical care, which they reported as having to learn in their own time through online informative videos, pamphlets, posters and social media.

> *We did not receive COVID-related training that came from national and governmental level. We self-learned about critical care, how to manage COVID case and how to use PPE by watching videos or taught by others.* (KII-7_Male_MO_District Hospital_Kapilvastu)

However, local levels mentioned they provided training and orientation on COVID-19 including IPC to health workers. When explored further, the rural municipality stated that

training on IPC and PPE use were provided to health workers by the DHO Focal Person and health coordinator. The urban municipality mentioned training on IPC was not conducted for health workers during the COVID-19 crisis, although they reported having initiated the training during the data collection time.

While FCHVs in the urban municipality received orientation on public health standards from health workers, FCHVs in the rural municipality were not trained or oriented about COVID-19 and its preventive measures prior to their mobilization in COVID-19 response activities. Instead they searched and received information by discussing the issues with each other, asking health workers and using various communication media.

4.2.5.3.Motivation and support to health workforce

Incentives and rewards

A few national-level directives such as "About implementation of decision of GoN" and "Risk allowance directive" covered the provision of risk allowances for the health workforce engaged in health desk, quarantine, treatment, lab testing, and contact tracing for the prevention, control and treatment of COVID-19 infection. [45,46] However, there were several complaints from health workers about not receiving risk allowances in both municipalities as per the directive. The MoHP representative also mentioned that health workers who did not submit case reports on time were not given a risk allowance.

The province allocated budget and provided risk allowances to health workers mobilized in COVID-19 dedicated hospitals and other hospitals under the province, but not to health workers at local (municipal) levels as it was not accountable for the local level. Similarly, municipalities had been providing risk allowances to health workers working in COVID-19 and routine health services such as birthing centres. In addition to risk allowances, municipalities also initiated COVID-19 health insurance worth Rupees One Lakh for health workers.

> *We have also managed a certain percentage of risk allowance to the staff mobilized at other places. The nursing staff, mobilized in the birthing centre, were also not far from the risk and were in risk. We provided the COVID allowance to them as well till the time they were mobilized.*
> (KII-16_Male _Health Coordinator_Municipality1_Kapilvastu)

Despite the provision of risk allowances and health insurance, most of the health workers were not completely satisfied and rather demotivated due to a lack of consistency and the late distribution of allowances. For instance, health workers received an allowance once in two to three months but only during lockdown period, and there was no consistency among municipalities in the distribution of risk allowances for health workers (35% risk allowance was distributed in urban municipality whereas 50% risk allowance in rural municipality). There were few health workers who appreciated the effort of the local government as the rural municipality provided them with a food allowance in addition to a risk allowance.

> *The motivational incentive was given up to 100% in other municipalities, but it was very minimum in our municipality which was only 35%. There was no additional motivation except that. Also, there was a provision of insurance for health workers*

of about 1 lakh in other municipality.
(KII-8_Male_HW_ Urban Municipality_Kapilvastu)

There was a provision from the government to provide some percent of [risk] allowance. Municipality provided some allowances for food to the health workers. When other municipality did not provide allowances, our municipality provided 50% allowances. Among all in the Kapilvastu district, our [municipality] did a good work.
(KII-6_Male_HW_Rural Municipality_ Kapilvastu)

In terms of the mobilization of FCHVs in the COVID-19 context, no motivation package nor health insurance was provided for FCHVs in policy. Despite that, the urban municipality and a ward from the rural municipality allocated a certain amount of budget for FCHVs' motivation, acknowledging their volunteering spirit, although FCHVs had not received this motivation package at the time of the interview. Also, FCHVs were encouraged and acknowledged verbally by health workers and local representatives.

We have separated certain budget this time from our (ward) level as a motivation for FCHVs for doing good work during COVID-19. They have helped during COVID. They always have been working voluntarily without taking any money. They do the work assigned by the ward, therefore, we have allocated budget for their motivation which will be provided to them through appreciation in some program.
(KII-12_Male_WC_Rural Municipality _Kapilvastu)

Although the amended version of the staff mobilization guideline provided for an additional week's holiday for health workers working for 12 hours a day for 7 days continuously, [47] the province did not provide any holidays to health workers during the pandemic due to staff shortages and surging cases in the province. Health workers working in COVID-19 dedicated hospitals, especially in isolation wards, had to work without holidays and leave. Likewise, health workers at the local level had to work even on Saturdays when they were mobilized in isolation and quarantine centres.

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.
(KII-2_Male_HW_Urban Municipality_Kapilvastu)

The province also provided several rewards and prizes (badges/medals) to health workers for their excellent work. In addition, local level representatives verbally thanked health workers for delivering health services even during the pandemic.

Physical and mental health

Given the need to ensure the physical safety of health workers, the government emphasized the continuous supply of PPE and other safety equipment for health workers. For instance, a document from Government of Nepal directed the MoHP to arrange and manage PPE to ensure the health security for HR personnel involved in the prevention, control and treatment of COVID-19 before deploying them to the workplace. [46] Therefore, the province and local level set about procuring PPE at their respective levels, thanks to which health workers received adequate and appropriate PPE and were motivated to work at their

workstations. Also, non-government organizations supported local levels by donating PPE. Despite a shortage of PPE in the initial phase of the pandemic, the problem was sorted out later and both provincial and local levels had abundant stocks of PPE.

> *The municipality had supplied sufficient amount of PPE sets, sanitizers and soaps mentioning that we had to be protected. That is also a type of motivation. We are motivated. Also, protective items are also in sufficient amount.*
> *(KII-1_Male_HW_Rural Municipality_Kapilvastu)*

Nevertheless, some health workers (in the urban municipality) mentioned they did not have access to adequate PPE, and were therefore working at the risk their health which raised the issue of an unequal distribution of PPE sets within the municipality.

> *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. So, I went to the health office but even they did not have sanitizer and they provided only 20 masks. There are 8 health workers here so we have to think if we should continue the service of OPD or stop it. We are still working in this risky situation.*
> *(KII-2_Male_HW_Urban Municipality_Kapilvastu)*

Although volunteer mobilization guidelines mentioned the responsibility of the local level to manage essential safety items such as masks, sanitizers and gloves for volunteers during their mobilization in routine health programs,[18] FCHVs claimed they only received safety items when they were mobilized in the Vitamin A distribution programme.

Health workers, working particularly on the front line, were anxious and scared of COVID-19 at the beginning of the pandemic as they were not properly informed or oriented about COVID-19 and its preventative measures. This led to the development of psychological stress and frustration among health workers. In order to address this issue, the government formulated guidelines that referenced the hospital as the entity responsible for providing counselling services to their respective health workers involved directly in COVID-19 treatment, plus their families. [16,39,47] However, neither the local level nor health facilities were found to be organizing any kind of programme for supporting the mental health of health workers. Furthermore, the policy does not mention the role of the municipality or any other authority in monitoring and supervision to ensure such counselling services are provided by the hospitals. One NGO voluntarily conducted a mental health-related training programme for health workers at the rural municipality which outlined information regarding COVID-19 effects on health workers and preventing one how to prevent psychological stress. Also, the province did not have any plan for counselling health workforce at local levels, other than the provision of orientation on psychosocial counselling to those health workers mobilized in isolation centres. In order to mitigate and cope with the stress and psychological impact, health workers themselves tried to engage in diversionary activities such as watching movies, writing poems and articles, chatting with friends, and so on.

> *We were not able to conduct many activities regarding mental health protection. However, the province provided orientation on "mental health and counselling or psychosocial counselling" for the health workers working in*

isolation centers of the districts like Kapilvastu, Rupandehi, Nawalparasi where there was high COVID-19 cases, and to some selected health workers of local level. But we could not conduct [orientation on psychosocial counselling] in all municipalities. Besides that, there has been no specific mental health counselling package to orient or counsel health workers.
(KII-19_Male_EDP_Lumbini Province)

Despite the fear of getting COVID-19 and transmitting it to their own family members, health workers continued to provide health services with enthusiasm. However, instead of receiving positive and encouraging comments for their dedication from people, the majority of health workers endured discrimination and stigmatization from community members at the beginning of the COVID-19 pandemic. Health workers reported that there were several instances where they felt stigmatised and humiliated by their own communities, such as restrictions on using community tap water, public toilets and shopping, and even their entry (road) to their communities were blocked to restrict their entry. Some health workers were also threatened by their neighbours - either leave their job or leave the community - and gestures of hatred were very commonly reported. Reports of such stigma started to appear widely in news media and so the MoHP stepped forward and pledged to act against those contributing to the stigmatization of health workers through coordination with the Chief District Officers. Due to this provision and with time, stigma and discrimination declined.

When the community started restrictive provisions, MoHP started coordinating with CDOs and moved forward the provision of taking actions through respective committees, officials, stakeholders, ward chairperson. So, MoHP took reactive actions and people got the message that they should not interfere with health workers. Some health workers could not go to their home. Some had to even leave their rented apartment. When we (speaking on behalf of federal government) disseminated the information about the penalty in case of such actions through media then finally public followed our notice. But we could not do it proactively since the beginning. We acted as a reactive management.
(KII-21_Male_EDP_Federal)

Supportive supervision

At the provincial level, PHD was responsible for conducting the monitoring and supervision of health workers (particularly those working in ICU and HDU in hospitals) while MoSD was responsible for their supervision in quarantine and isolation centres. The province conducted monitoring and supervision virtually as well as physically during the pandemic. Likewise, paramedics working in isolation centres and dedicated hospitals were monitored and supervised by the federal level, including the MoHP. To support the province government, WHO formed joint monitoring teams in order to check adherence to provincial standards by isolation centres. The team comprising skilled medical officers and public health experts supervised and monitored paramedics mobilized at isolation centres.

Supervision is done by the Health Directorate but not done on a regular basis. There are organizations working in Reproductive Health, under the lead of our Health Directorate, they support [us in supervision]. The virtual meeting is done to know the situation, to get feedback and sometimes we also visit the field for

> *supervision. Thus, supportive supervision is done, like giving advice to manage the particular task which is unmanaged.*
> (KII-18_Male_ PHD_Lumbini Province)

At the local level, the health coordinator in the municipality was primarily responsible for monitoring and supervising health workers at the frontline of service provision, whereas other local representatives, such as the mayor, chief administrative officer and social development officer supported conducting monitoring and supervision. Although health workers in the rural municipality received supervision and feedback from the municipality, they felt the frequency of the supervision was inadequate. Other than at the local level, very few health workers working in quarantine centre were monitored and supervised by the district officials. Also, health workers in the urban municipality reported that they did not receive any monitoring and supervision visits from either the municipality or the district and province during COVID-19 pandemic.

> *Actually, the supervision has not been done from higher level like municipality, district, and administration... If there was a suitable supervision, we would have been motivated, worked more easily, we would not have to face criticisms.*
> (KII-8_Male_HW_Urban Municipality_Kapilvastu)

4.3. Key findings - highlights

Table 4. Key highlights and challenges of the study

	Key highlights	Challenges
Policy formulation	• Policy formulation process for COVID-19 preparedness and response commenced March 2020 • About 90 policies and other guiding documents were developed in the year 2020 • Federal government was mostly responsible for policy formulation, with technical leadership from MoHP and CCMC • Formation of various committees and groups to respond COVID-19 at different tiers • Strong multisectoral collaboration and partnership during policy formulation process was established • Policies were guided by evidence and learnings at global, national and local contexts	• Active participation of province and local government was absent in policy formulation process • Policies developed by federal government were thus less contextualised to local levels • Lack of key experts required for effective policy formulation at all levels • Gender and equity were not considered in policy formulation, however, reactive management during implementation was done when related issues began to be reported
Policy communication	• Aggressive use of various media, such as press briefings, national websites, social media, newspapers, radio and television, to communicate policies and disseminate COVID-19 information to all by federal government • Use of phone calls, email and physical meetings by provinces to communicate with local levels • Local levels used phones and conducted meetings with health workers to communicate policies and guidelines	• One-way, top-down communication approach was used with policy makers, health workers and public all informed using same platforms - was found to be ineffective • Proper policy communication with clarity in roles between the three tiers of government was lacking • Health workers experienced difficulties due to delayed communication and use of inappropriate media, such as telephone, to communicate policies by local levels • No mechanism to ensure consistency in understanding and implementation of information disseminated to health workers

Policy implementation	• Local governments mainly responsible for policy implementation • Use of shared power by province and levels in decision making and responding to the pandemic- budget allocation, logistics procurement, HR recruitment, etc. • Adaptation of federal and provincial policies into local context at municipality and health facilities	• Lack of clarity in roles and responsibilities among local government officials and health workers • No established mechanism to monitor policy compliance, monitoring and supervision in practice • National shortage of PPE and other medical equipment in the initial phase of the pandemic • Poor quarantine and isolation management due to unavailability of pre-established quarantine and isolation centres
Health workforce management	• High morale, enthusiasm, and sense of duty among health workforce despite several challenges • Health workforce management through redeployment and adjustment- - Mobilization of recent medical graduates, (final year) student doctors and other cadres in case management and CICT - Redeployment of health workers from one municipality/ward/health facility to another municipality/ward/health facility of same province - Use of existing HRH with increased duty hours • Mobilization of HWs from private sector in a few places • Deployment of INGOs' staff to the district hospital by those INGOs • Provision of risk allowance and insurance to health workforce to motivate them for service continuity • Training on IPC, critical care, laboratory procedures and CICT was provided to some of the health workforce • Although GESI aspects were not reflected in policy documents, some health facilities considered gender, pregnancy status and age during mobilization of health workforce	• Shortages of skilled health workforce, particularly in critical care management • No dedicated staff for COVID-19 and routine services which affected delivery of routine services and increased risk of infection • Extended working hours for health workforce as they had to attend health facilities and quarantine centres • Majority of health workforce were not trained/oriented about IPC and using PPE sets • Health workforce obliged to work without PPE and other safety measures at the beginning of the pandemic due to shortages of PPE • Lack of timely and uniform distribution of risk allowance, resulting in demotivation and dissatisfaction among health workforce • No actions implemented by province, or local governments for mental safety of health workforce • Experience of social stigma and discrimination was common among health workforce at the beginning of the pandemic

4.4. Key suggestions/recommendations from study respondents

In this section we present key recommendations proposed by our study participants during the data collection. The recommendations are categorised under different themes and according to the level of government.

1. **Preparing the health system prior to disasters to make it resilient**
   Recommendation by the local level
   - Disaster preparedness and response plan should be in place at local level. This can be in line with the provincial and federal plan but tailored to the local context. A pre-identified Rapid Medical Response Team at municipality or district must be formed to respond to the emergency situation.
   - To prepare the health system for the disaster or pandemic, the physical infrastructure and equipment need to be strengthened at all peripheral health facilities. One hospital in each municipality is required to deal with such a pandemic or emergency situation.

   Recommendation by the provincial level
   - Disaster preparedness and response plan in addition to other policies, strategies and guidelines should be formulated before the disaster so as to appropriately handle the crisis.
   - A clear policy with defined roles for each tier of government during the emergency is required because there was a lack of clarity about who should respond and in what capacity in this pandemic.

2. **Policy formulation process**
   Recommendation by the local level
   - Coordination and synergy mechanism must be strengthened between local and provincial governments with more participation of the local government when formulating policies and guidelines at the provincial level.
   - Technical experts should be made available at local levels for developing health-related policies and programs.
   - Inter-sectoral coordination (among district coordination committees, district administration offices, district police offices, urban and rural municipality) although functional should be strengthened.

   Recommendation by the provincial level
   - Centralization is required at the time of the epidemic and a centralized policy should be developed for any disasters and epidemics to maintain consistency in response activities throughout the country.

3. **Policy communication**
   Recommendation by the local level
   - There should be consistency and standardization of the information shared with health workers at all levels. Information communication should be quicker and more effective.

   Recommendation by the federal level
   - Virtual communication platforms should be utilized more to effectively to communicate policies and increase participation of provincial and local governments in policy formulation and dialogues.

- Communication mechanisms should be strengthened by mobilizing professional communicators working in the health sector and by using effective communication channels and modalities to target policy decisions and information at specific groups.

4. **Health workforce management**
   Recommendation by the local level
   - There should be uniformity in benefits and reward packages provided to health workers by the government so as to motivate the health workforce.
   - Mental health support should be provided to health workers who have been working on the frontline.

   Recommendation by the provincial level
   - A policy or guideline regarding the mobilization of health workers at the time of the emergency should be in place at all levels to manage staff shortages and deal with the situation more effectively and strategically.
   - Provinces should be responsible for managing the health workforce deficiency at local levels, e.g. by transferring health workers from districts with low cases numbers to district with high cases numbers, and central government should play facilitating roles and support health workforce management at sub-national levels.

5. **Budget allocation**
   Recommendation by the local level
   - There is decision space for the local government (municipality) to allocate budgets and make decisions locally. However, the ward authority also wanted space in terms of making ward-level budget allocations and decisions.
   - After the recognition of health as a priority agenda, the health budget should be increased to prepare and deal with such emergencies, with a separate budget for emergency responses.
   - Budgets for COVID-19 should be arranged centrally and should be distributed by the federal government to all local levels.

6. **Mobilization of community structures**
   Recommendation by the federal level
   - The federal level could not effectively mobilize existing community structures and individuals, such as FCHVs, teachers, consumer forums, youth-led groups, along with other CBOs/NGOs (such as Red Cross) in COVID-19 preparedness and response activities. These structures should be mobilized in awareness and response activities like contact tracing, awareness etc.
   - CICT team, although formed to be mobilized in areas with high volumes of migrant workers and business trade, were not actively mobilized and there was a lack of training, monitoring and supervision of these teams by the federal level. This is also an area to strengthen by federal government.

5. Discussion

This study explored health sector policy preparedness and responses to COVID-19 in the federal context of Nepal in terms of policy formulation, communication and implementation. The study assessed the country's health system resilience capacities and lessons learned in the COVID-19 response, with a specific focus on health workforce management at the sub-national level.

Health sector policies, guidelines and directives for COVID-19 were found to be largely formulated at federal level, with technical leadership from the MoHP and CCMC and through the engagement of multiple sectors and the formation of committees and groups. However, regular and strategic vertical coordination with other tiers (province and municipal) of governments was mostly reported missing. A lack of clarity in roles and responsibilities was frequently reported by informants at local levels. Different media and channels were used aggressively in communicating policies and COVID-19 information from federal to sub-national governments including to the public. Local-level managers and health workers found this one-way, top-down approach using various sources to be less effective in creating consistency in understanding the information at local levels where there was no mechanism to monitor and ensure effective communication and compliance with policies and decisions. The policy communication process, which was not systemic, timely or directed at the concerned groups, resulted in misunderstanding of information and confusion in the implementation at the ground level, resulting in further delays in action and poor implementation of the policy decisions. Similar findings were reported by another study conducted by Shrestha et al during the initial phase of COVID-19 in Nepal, noting gaps in the government's actions due to a lack of experience of handling similar emergencies in the past. [52] Also, many of these policies developed at the federal level were reported to be not contextual or applicable at local levels, which is in agreement with the study conducted by Wasti et al in Nepal. [53] Gender and equity were not considered in policy formulation, however, reactive management during implementation was done when related issues were reported. Local governments, despite having decision space to develop local policies and guidelines in the federalised context, were mainly relying on policies and directives communicated by the provincial and federal governments and therefore very few national policies were reported as being adapted and contextualised at local levels. This was mainly because the federal government led the emergency response and local governments had limited technical capacity in developing policies and guidelines, and instead were more concentrated on implementing response activities like CICT, managing quarantine and isolation centres, IPC activities, etc.

Another important issue explored by this study was the management of the health workforce during the pandemic. With already stretched human resources, shortages of (skilled) health workers was an apparent problem which led to the delivery of routine health care services being compromised in both municipalities. This problem was not only observed in Nepal [52] but also in other Asian and African countries, like Bangladesh, Nigeria, Uganda, Sierra Leone, Zimbabwe and Cambodia. [54–56] Staff adjustments and unfulfilled sanctioned posts were the main reasons for inadequate the health workforce in the study sites. The Government of Nepal undertook several steps to manage the national scarcity of the health workforce at the outset of the pandemic. As per the government's decisions, redeployment and repurposing

were done by mobilizing recent medical graduates, medical students and other cadres of the health workforce in the management of COVID-19 cases and contact tracing. Moreover, the redeployment of health workers within and across the municipality of the same district was another strategy adopted by local governments to create a balance of health workers in the health facilities within their respective districts. Despite of these actions, the health workforce shortage still affected the delivery of COVID-19 and routine health care services, resulting in prolonged working hours for health workers, which was also seen in other studies in Asia and Africa. [54,56] Furthermore, there is a lack of a functioning human resource information system which results in the country lacking accurate information on the number, characteristics and distribution of the health workforce, effective workforce planning and mobilization. [9] The government should learn from this experience and plan strategies for creating a functional platform for generating comprehensive health workforce data, repurposing and reassigning existing staff, mobilising any inactive health workers, anticipating absenteeism due to the quarantining, ill health or isolation of health workers in emergency situations, and ensuring adequate financial resources for mobilizing additional human resources and providing incentives to motivate and support workers. A systematic review by Gupta et al also concluded that there are gaps where attention is needed for improved protection and preparedness of the health workforce in areas such as psychosocial support, preventing the burnout of the health workforce, and gendered considerations focusing on LMICs.[57]

Adequate physical protection via an uninterrupted supply of protective equipment is another possibility for motivating the health workforce. Although the federal and sub-national governments were dedicated to ensuring the continuous supply of PPE and other safety items for health workers, the shortage of PPE was apparent in both municipalities and across the nation during the initial phase of the pandemic, thereby, health workers were compelled to work without PPE and other protective gear, risking their lives. Similar findings were observed in other studies conducted in Nepal, Bangladesh and India where shortages of protective equipment were largely evident. [52,54,58] Hussain et al found that nurses in Bangladesh received only a couple of unsealed PPE sets once a week which only consisted of a gown and a pair of shoe covers. They purchased N95 masks themselves, and after spraying them with disinfectant or washing them used them again the next day. [54] Similarly, in a study by Sharma et al in India, health workers used helmets, plastic bags and raincoats as protective gear when there was shortage of PPE in the country. [58] Once local governments started procuring logistics and supplies, protective equipment was generally available in the study municipalities during the later stages of COVID-19.

Providing the health workforce with timely, emerging information, training and orientation on infection control and providing psychosocial support to enable their continued and positive responses is another area that demands attention. This study revealed that the majority of health workers were anxious and scared of contracting COVID-19 at the beginning of the pandemic because they lacked adequate information regarding the disease. A study conducted in four fragile and conflict-affected health systems in Uganda, Sierra Leone, Zimbabwe and Cambodia also observed that most health workers were terrified of contracting Ebola. [56] Also, health workers who were working on the frontline were not receiving sufficient information and guidance to deliver services confidently and effectively, while at the same time were being stigmatized and discriminated by their community as the

source of the COVID-19 infection. This was also reported in other studies in Nepal. [52] The training and orientation of large numbers of health workers throughout the country at short notice proved to be challenging for the Government of Nepal, and strategic approaches such as engaging multisector stakeholders and adopting innovative approaches to training should be taken as a lesson learnt. In addition, the provision of effective guidelines and protocols targeting health workers delivering services effectively need to be developed and regularly updated. The uneven and delayed distribution of risk allowances was also identified as resulting in the demotivation of health workers performing their roles in the emergency situation.

Despite several constraints, such as prolonged working hours, heavy workloads, a lack of PPE and the associated risk of acquiring COVID-19, lack of motivation and psychological support, and social stigmatization, the study showed that the health workforce demonstrated high morale and continued the delivery of health services by working day and night. Health workers demonstrated the greatest resilience during the pandemic in order to continue delivering services in both municipalities. However, this requires stronger governance and leadership from the national, but especially the local governments to continually motivate health workers by recognising and appreciating their efforts, providing an environment for supportive supervision, protecting their wellbeing and mental health, providing security against social stigma and discrimination, by managing their working hours efficiently and by enabling enough time for rest and recuperation. According to WHO, 70% of the global health and social workforce are women[59], therefore gender, disability and equity should be given greater consideration.

6. Conclusion

The Government of Nepal developed several policies, guidelines and packages in response to COVID-19 and to support and motivate the health workforce working on the front line. However, the current pandemic clearly showed that the health system responses were not sufficient and effective in dealing with the situation and that the health system should develop resilient capacities to respond to emergency situations and manage the health workforce. More explicit and targeted policies and guidelines are needed to provide clarity in roles and responsibilities at all three tiers of government, and careful planning and management are required to support and sustain the health workforce during the pandemic. Greater engagement of sub-national governments in federal policy decision making and dedicated leadership by the sub-national governments should be practiced as part of a strategic approach to strengthen the health system so that it can absorb stress and adapt to future shocks and emergencies.

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Annexes

Annex 1: Conceptual framework

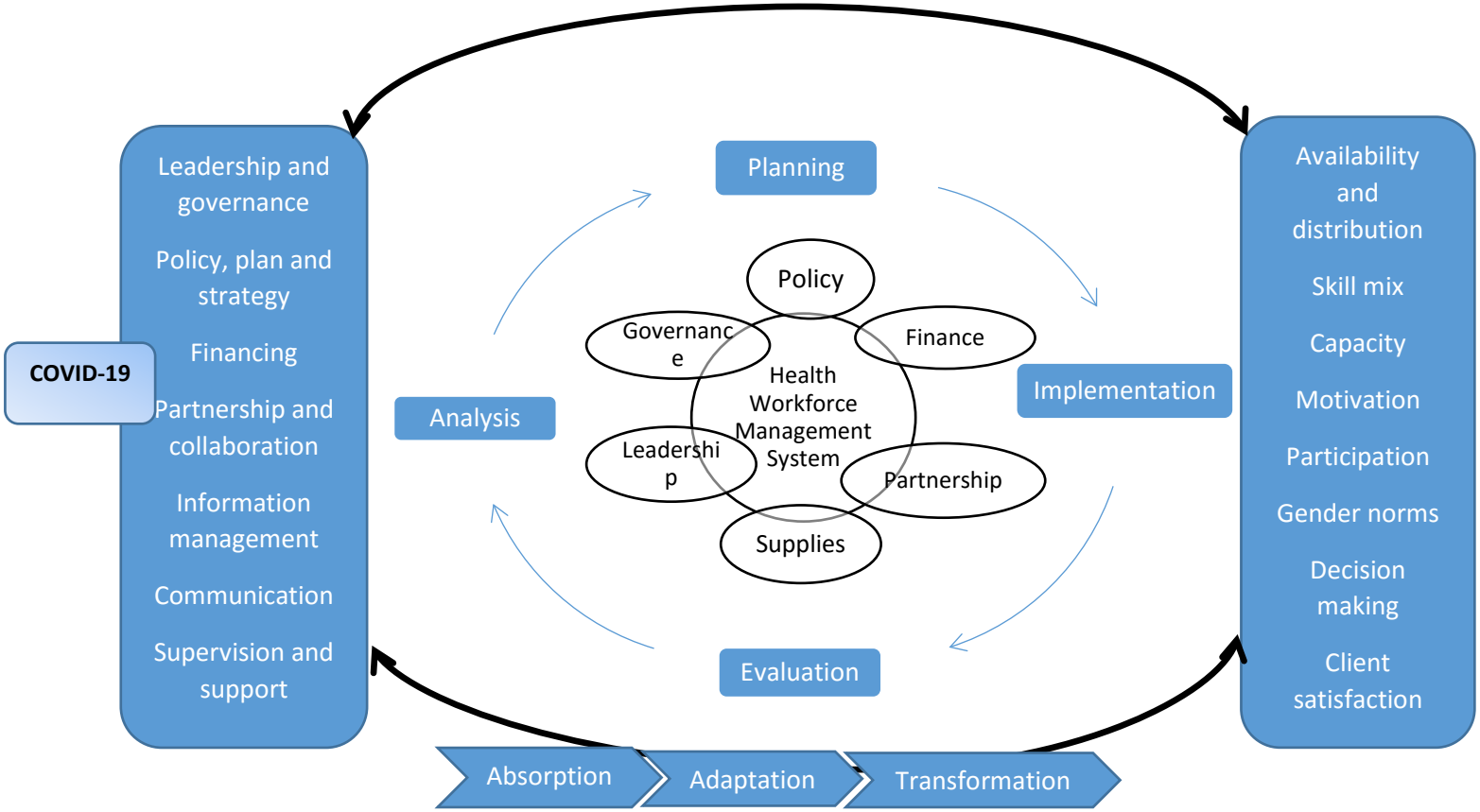

Figure 5. Conceptual framework

Annex 2: Description of risk allowance for personnel engaged in the COVID-19 response

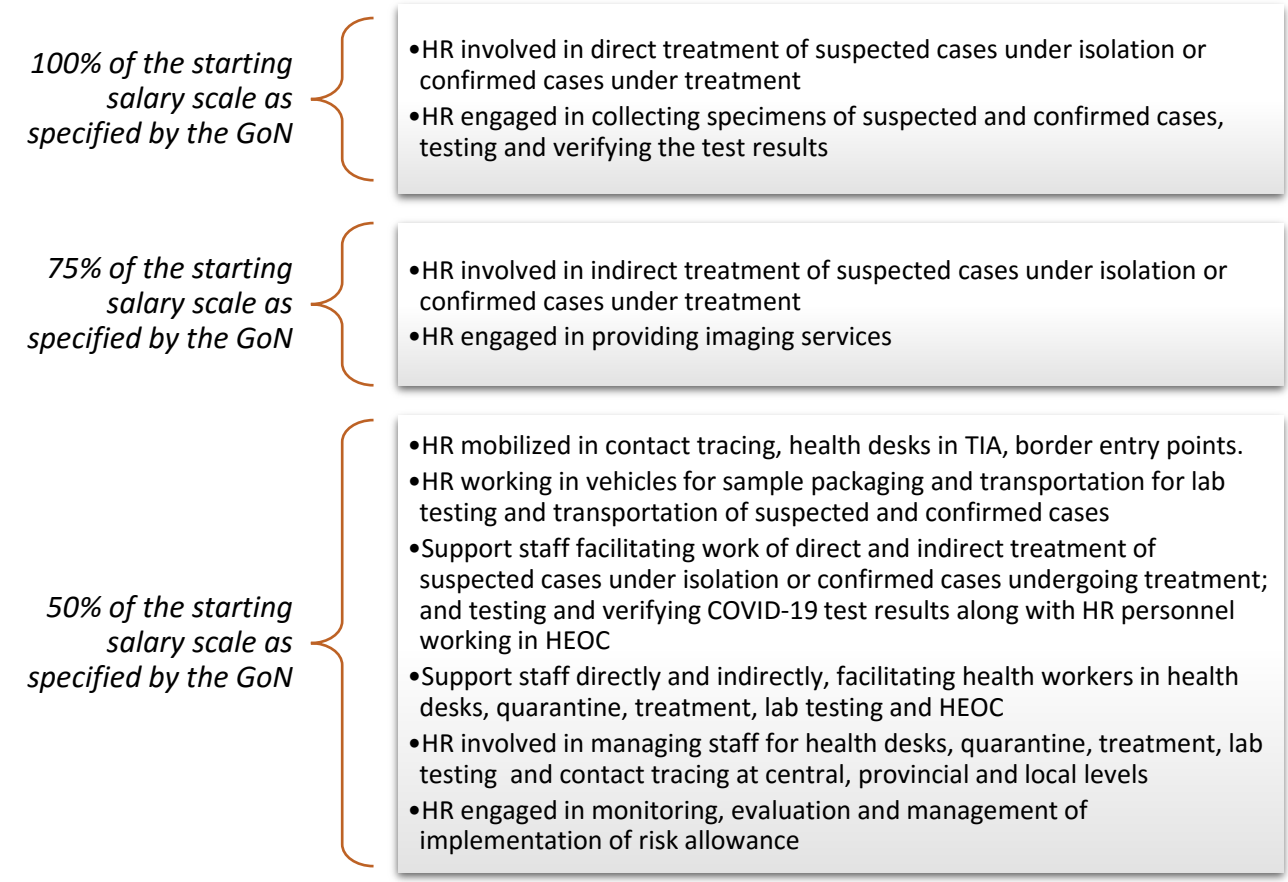

Figure 6. Description of risk allowance for personnel engaged in COVID-19 response

Annex 3: COVID-19 management and response structure at federal and sub-national levels

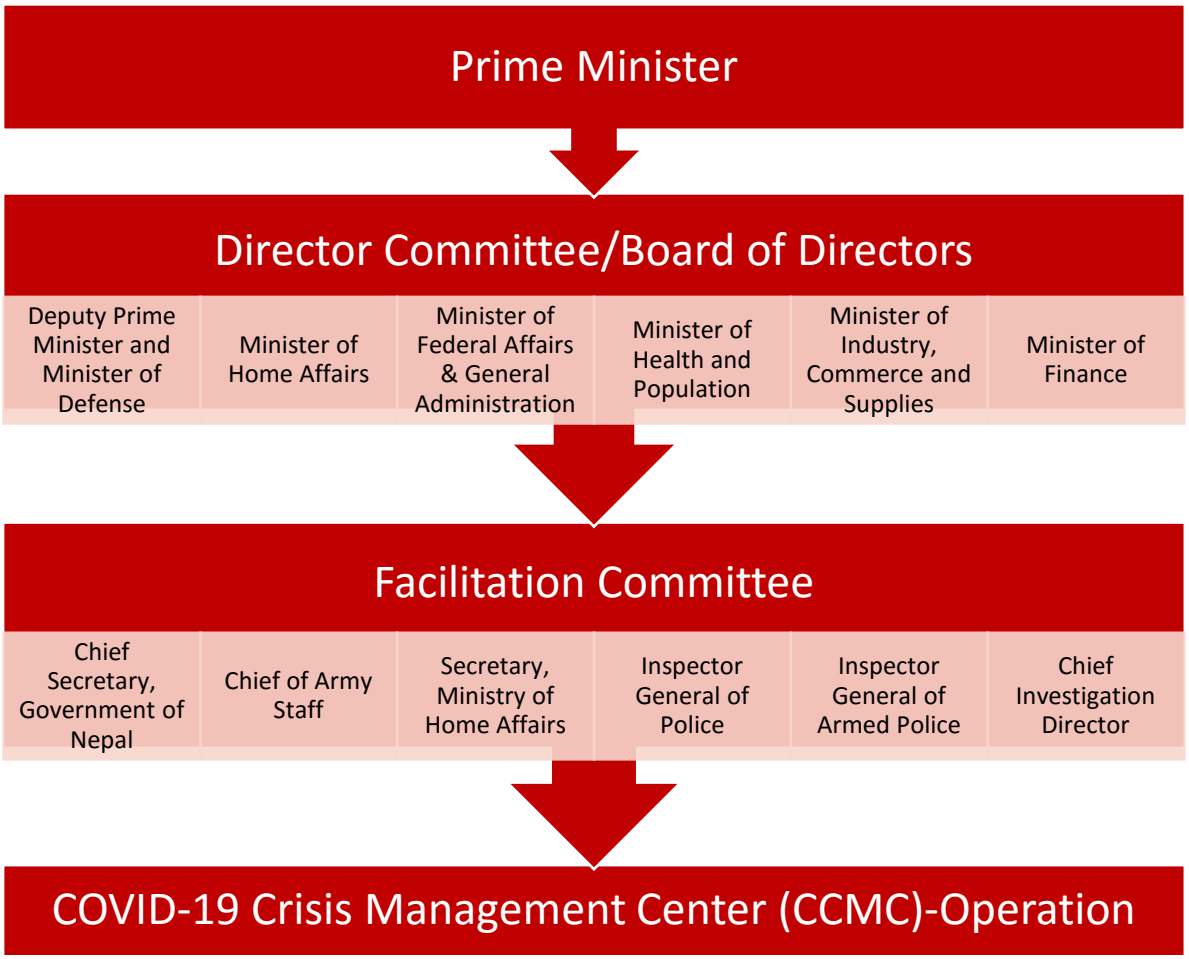

Figure 7. COVID-19 management and response structure at the federal level

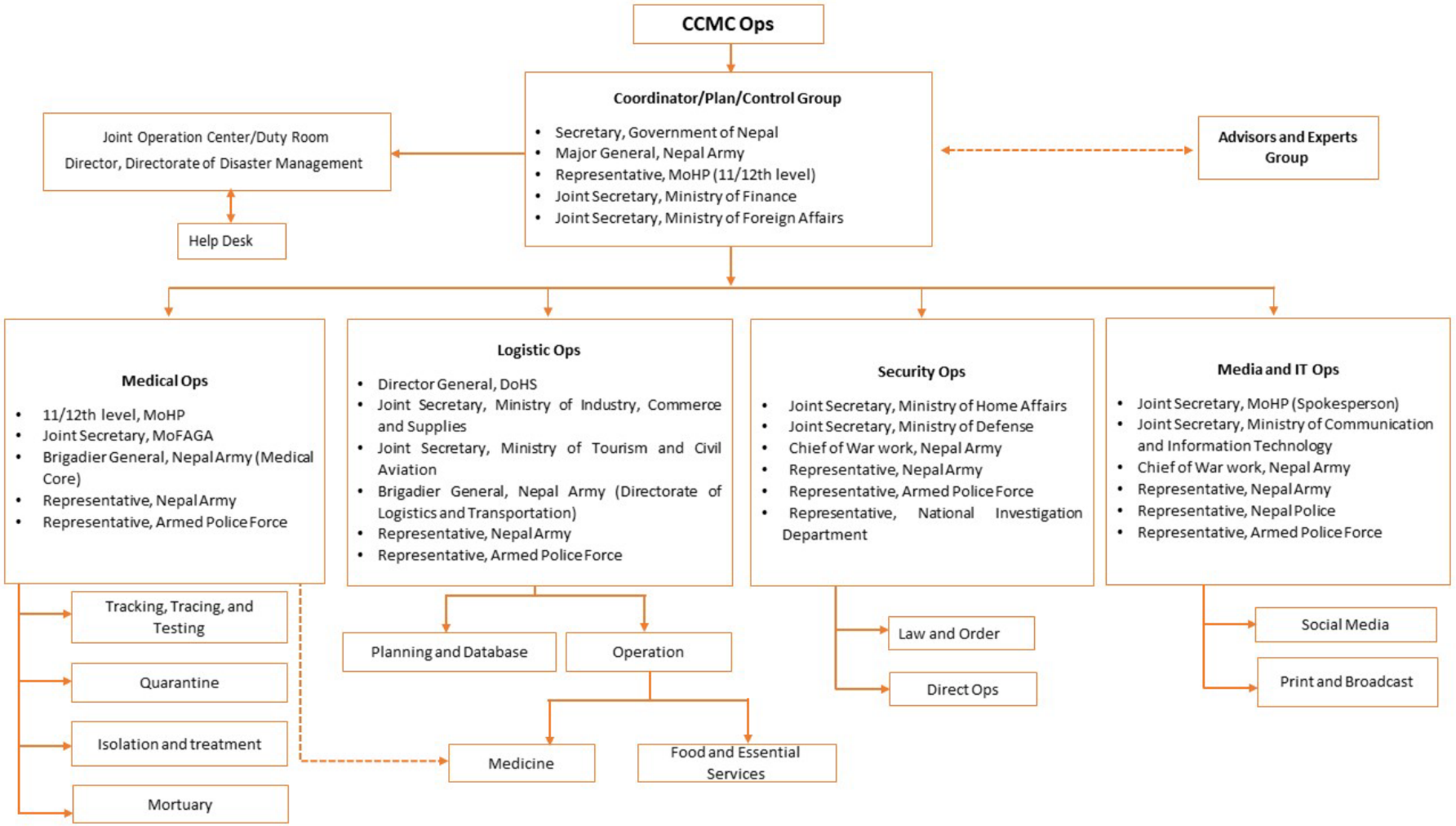

Figure 8. Structure of CCMC operation at federal level

Table 5. COVID-19 management and response structure at sub-national levels

Sub-national levels	COVID-19 management and response structure	
	Name	**Composition**
Provincial level	Provincial CCMC	• Chief Minister • Minister of Social Development (MoSD) • Minister of Internal Affairs and Law • Minister of Economic Affairs and Planning • Chief Secretary • Chiefs- Nepal Army, Nepal Police, Armed Police Force, and National Investigation Department • Heads of local levels with provincial capitals (Mayors)
District level	District CCMC	• Chief District Officer • District Coordination Officer • Other Officials of District Security Committee • Heads of Government Hospitals located at District Headquarters **Advisory Group** • President of District Coordination Committee • District President of Federation of Urban and Rural Municipalities
Local level	Local CCMC	• Municipality Chairperson • Chief Administrative Officer • Health Coordinator • Representative of Security Body (Department)
	Local Level Coordination Committee	• *Coordinator*: Chairperson of respective local level • *Co-coordinator*: Deputy chairperson of respective local level • *Members*: All ward chairpersons; All executive members; All health facility in-charges; Five community volunteers nominated by executive members; Red cross representative of respective local level • *Member-Secretary*: Health coordinator
Ward level	Ward Level Coordination Committee	• *Coordinator*: Ward chairperson or nominated local representative by ward president of respective ward • *Members*: Ward representatives; Representatives of health facilities; School Principal; Five community volunteers nominated by ward • *Member-Secretary*: Ward secretary

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