POPULATION MOBILITY AND PUBLIC HEALTH RISK MAPPING

COVID-19 PREPAREDNESS AND RESPONSE PLAN IN NEPAL (2020)

Lumbini Province

Province 2/3

INTRODUCTION

The Coronavirus disease (COVID-19), firstly detected in China in November 2019, has spread throughout the globe to the scale of a pandemic, declared by the World Health Organization (WHO). In Nepal, the first case of COVID-19 was reported in January 2020. As of 14 November 2020, the total number of confirmed cases in Nepal stands at 206,353, and 1,202 deaths.[1] The Government of Nepal (GoN) has taken several steps to control transmission and mitigate the impact of COVID-19 on the society. Among them, the Population Mobility Mapping (PMM), was selected by the Ministry of Health and Population (MoHP) as part of the national COVID-19 Response and Preparedness Plan. The project covers 3 provinces (*Sudurpashchim Province, Lumbini Province,* and *Province 1)* for a total of 9 municipalities (*Dhangadhi, Bheemdatta, Dasharathchanda, Nepalgunj, Krishna-nagar, Siddharthanagar, Biratnagar, Mechinagar, and Suryodaya*) and was rolled out together with the implementing partner, the Nepal Red Cross Society (NRCS).

POPULATION MOBILITY MAPPING

The PMM was developed through an adaptation of IOM's Displacement Tracking Matrix (DTM) and has been implemented as the response and preparedness to several outbreaks, such as the Ebola Virus Disease (EVD). The aim of the PMM is to understand the dynamics of human mobility and identify the most vulnerable, priority locations within and outside the border. The findings would enable the Government, communities and various actors to prevent the introduction or to limit the spread of infectious diseases and other public health threats, directly affected by human mobility.

[1] *https://covid19.who.int/?gclid=EAIaIQobChMIpu2y9aym6wIVjx0rCh2zNgN6EAAYASAAEgI1zvD_BwE*

OBJECTIVES

PMM has four main objectives:

1. Identify travellers' profiles and mobility patterns with health related impacts.
2. Identify vulnerable places where travellers or mobile populations gather and interact with each other or with local communities, which are at risk of both contracting and spreading infectious diseases and other health threats.
3. Identify priority sites with limited capacities to prepare and respond to public health emergencies.
4. Identify priority public health actions and resource allocations, in order to develop action plans aimed at strengthening public health emergency preparedness and response capacities.

PRELIMINARY ACTIVITIES

4 Trainings
- IOM Kathmandu
- Sudurpashchim Province
- Lumbini Province
- Province 1

Oriented staff
- 18 IOM staff
- 45 NRCS staff

FIELDWORK

9 weeks:
14/08/2020 - 18/10/2020

9 municipalities:
3 in each province

Population:
over 700,000 (census 2011)

Face-to-face interviews:
over 800 individual interviews and focus group discussions

DISCUSSION OF RESULTS - LUMBINI PROVINCE

PHASE I *(7 days)*

The Population Mobility Mapping Exercises saw the participation of **key informants (KIs)** who are knowledgeable of population mobility, from 5 categories; 1) government representatives, 2) agency (specifically NGOs/ INGOs) representatives, 3) community workers, 4) drivers, and 5) vendors.

15 Focus group discussions (FGDs)

71 KIs

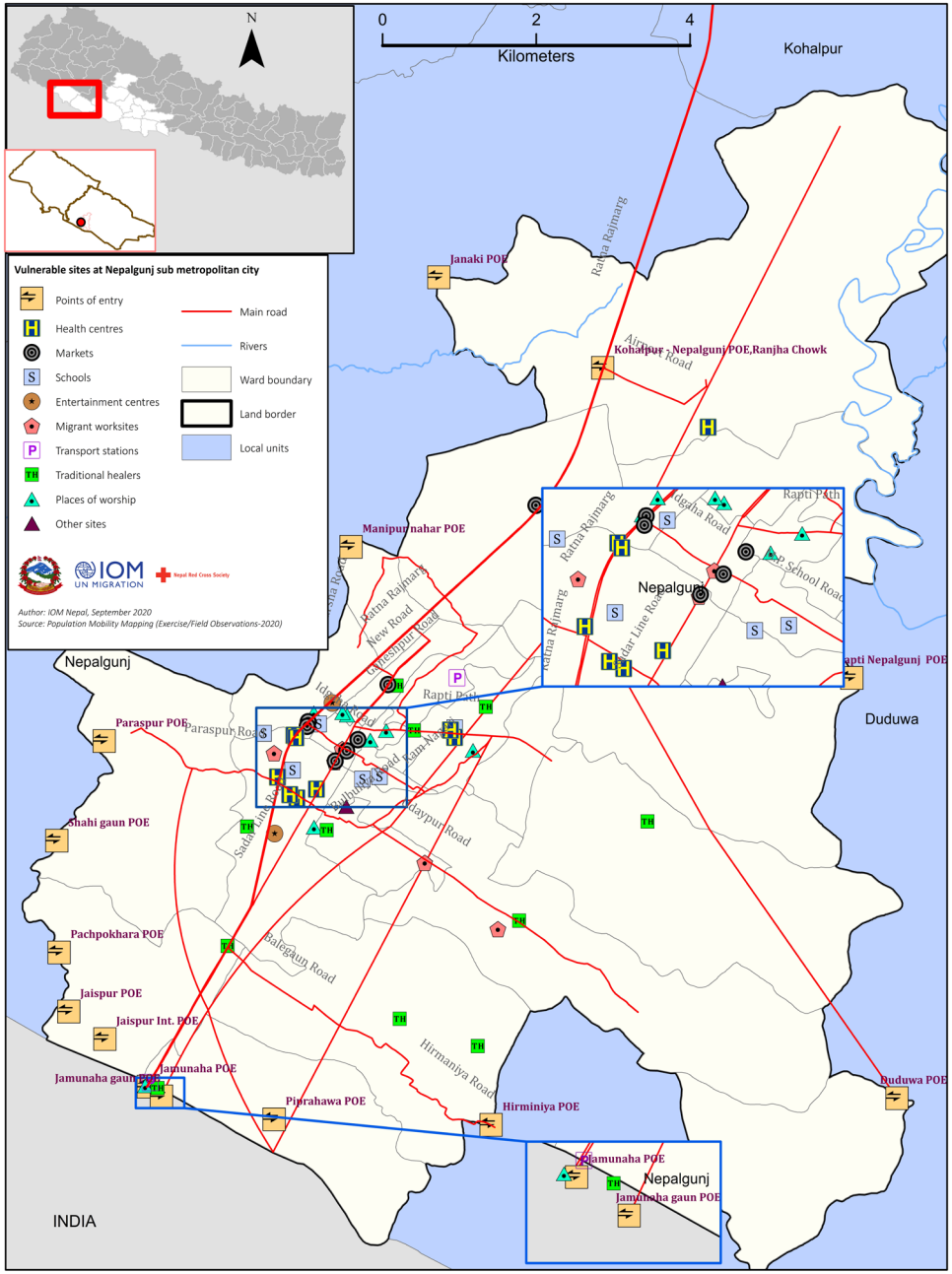
The discussions were facilitated in Nepali, though the information was entered in English. Prior to the start of the FGDs, KIs were informed about IOM's mandate, the scope of the project, and the partnership with GoN and NRCS. All participants were asked to sign a consent form. The information was collected using two main tools – the note taker's guide and a map of the municipality – and was then inserted into the matrix software (Excel) to analyse the priority locations.

PHASE II *(9 days)*

A total of **197 sites** with high population mobility were selected for further assessment involving questionnaires to KIs on site.

- 39 Points of entry (POEs)
- 17 Market centres
- 24 Health centres
- 17 Migrant worksites
- 18 Traditional healers
- 16 Transport stations
- 15 Schools and colleges
- 22 Places of worship
- 15 Entertainment centres
- 14 Other places

Based on the data gathered with KoBo Collect on population movement and the GPS coordinates of vulnerable sites present in each municipality, several maps were created using GIS software (see example of map on the right).



KEY FINDINGS

In this section, some key findings are presented according to municipality.

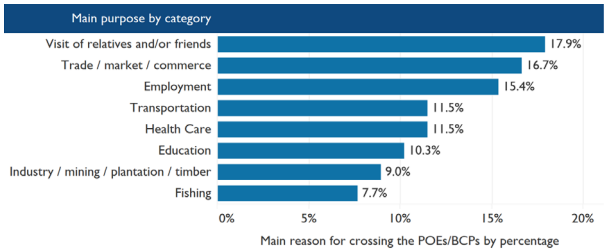
Nepalgunj Sub-Metropolitan City

Status of health infrastructure and distance to the nearest health centre

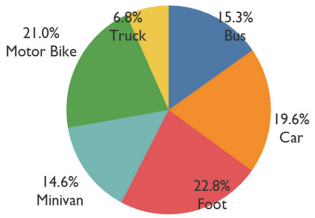
Name of POE	Availability of special equipment to address health issue of PHEIC	Presence of IHR focal point at POE	Presence of IHR from corresponding country	Presence of health community worker	Distance to the nearest health centre [in Km]	Distance from the nearest health centre to the referral centre [in Km]	Distance to the nearest water source [in meters]
Pachpokhara POE	Not available	Not available	Not available	Not available	8.0	8.0	100
Kohalpur-Nepalgunj POE	Not available	Not available	Not available	Not available	6.0	7.0	30
Paraspur POE	Not available	Not available	Not available	Not available	4.0	4.0	5
Manipur Nahar POE	Not available	Not available	Not available	Not available	3.0	3.0	2
Piprahawa POE	Not available	Not available	Not available	Not available	2.0	6.0	
Duduwa POE	Not available	Not available	Not available	Not available	1.5	0.2	3
Sukha Bandargaha POE	Not available	Not available	Not available	Not available	1.3	6.0	1
Janaki POE	Not available	Not available	Not available	Not available	1.0	1.0	25
Jaispur POE	Not available	Not available	Not available	Not available	1.0	5.0	1
Hirminiya POE	Not available	Not available	Not available	Not available	1.0	18.0	80
Shahi Gaun POE	Not available	Not available	Not available	Not available	0.5	3.0	50
Jamunaha Gaun POE	Available	Not available	Not available	Not available	0.0	4.0	1
Rapti-Nepalgunj POE	Not available	Not available	Not available	Not available	0.0	0.0	5
Jamunaha POE	Available	Available	Available	Available	0.0	7.0	10

Distance to the nearest health centre [in Km] (0 1 2 3 4 5 6 7 8 9)
Distance from the nearest health centre to the referral centre [in Km] (0 10 20)
Distance to the nearest water source [in meters] (0 50 100)

Main purpose people cross the POEs or travel



Mode of transport to access all the sites



Type of activity and accommodation at the migrant worksite

Type of activity	Type of accommodation	Type of activities by percentage	Type of accommodation by percentage
Factory	Wooden house	70.0%	85.7%
Mining	Zinc	20.0%	14.3%
Timber logging	'	10.0%	

Type of activities by percentage (0% 20% 40% 60% 80%)
Type of accommodation by percentage (0% 20% 40% 60% 80% 100%)

Krishnanagar Municipality

Status of health infrastructure and distance to the nearest health centre

Name of POE	Availability of special equipment to address health issues of PHEIC	Presence of IHR focal point at POE	Presence of IHR from corresponding country	Presence of health community worker	Distance to the nearest health centre [in Km]	Distance from the nearest health centre to the referral centre [in Km]	Distance to the nearest water source [in meters]
RTO Road POE	Not available	Not available	Not available	Not available	4.0	4.0	2
Kotiya POE	Not available	Not available	Not available	Not available	2.5	2.5	
Bhagawanpur POE	Not available	Not available	Not available	Not available	2.5	2.0	
Yatru Gate POE	Not available	Not available	Not available	Not available	2.0	12.0	50
Laxminagar POE	Not available	Not available	Not available	Not available	2.0	2.0	
Sirsihawa POE	Not available	Not available	Not available	Not available	1.5	4.0	20
Mahadev Gaun POE	Available	Not available	Not available	Do not know	1.5	11.0	100
Thakurapur POE	Not available	Not available	Not available	Not available	1.0	5.0	
Sano Bhansar POE	Do not know	Do not know	Not available	Not available	1.0	1.0	
Link Road POE	Available	Not available	Not available	Not available	1.0	2.0	20
Baghai POE	Not available	Not available	Not available	Not available	1.0	1.0	
Kukurbhukuwa POE	Not available	Not available	Not available	Not available	0.5	2.0	
Jhandenagar POE	Not available	Not available	Not available	Not available	0.5	0.5	11
Bhilmi POE	Not available	Not available	Not available	Not available	0.5	0.5	
Bijaynagar POE	Available	Not available	Available	Available	0.0	10.0	

Distance to the nearest health centre [in Km] (0 2 4)
Distance from the nearest health centre to the referral centre [in Km] (0 5 10 15)
Distance to the nearest water source [in meters] (0 50 100)

Main purpose patients visiting the health centres and visitors from India to the health centres

Main purpose patients visit the health centre	Main purpose visitors coming from India to the health centres	Visiting patients for healthcare	Visitors from India
Typhoid	Material and infrastructure maintenance	21.7%	16.7%
Other	'	17.4%	
Diarrhea	'	17.4%	
Surgery	Visiting patient	8.7%	16.7%
Malaria	'	8.7%	
Immunization	'	8.7%	
Delivery	Treating patient	8.7%	66.7%
Cholera	'	4.3%	
Antenatal and post-natal care	'	4.3%	

Visiting patients for healthcare (0% 10% 20%)
Visitors from India (0% 20% 40% 60% 80%)

Siddharthanagar Municipality

Average entry flow per day, busiest day, and percentage coming from India (September 2020)

Name of POE	Type of POE	Site Status	Average entry flow per day	Average entry flow on the busiest day	Average dual flow	Percentage coming from India
Omsatiya POE	Land border	Informal	2,500	5,000	3,000	25
Hatti Bangain POE	Land border	Informal	2,000	5,000	2,500	0
Belahiya POE	Land border	Formal	2,000	2,500	2,250	30
Airport Area POE	Land border	Informal	1,500	2,000	1,700	40
Dumdumawa POE	Land border	Informal	1,200	2,000	1,400	10
Shantinagar POE	Land border	Informal	1,000	1,500	1,150	10
Rohini POE	Land border	Informal	1,000	1,300	1,130	10
Neudihawa POE	Land border	Informal	1,000	2,000	1,200	50
Meaudihawa POE	Land border	Informal	1,000	2,000	1,200	80
Marchechawar POE	Land border	Informal	300	500	350	90

0K 1K 2K 3K — Average entry flow per day
0K 2K 4K 6K — Average entry flow on the busiest day
0K 1K 2K 3K 4K — Average dual flow
0 50 100 — Percentage coming from India

Common diseases and practices the traditional healers cures, and main reasons people visit the traditional healer's compound

Common diseases traditional healer cures	Type of practices	Common diseases cure [by percentage]	Type of practices [by percentage]
Abdominal pain	Disease cure	26.3%	46.2%
Mental illness	Protection	15.8%	7.7%
Headache	Other	15.8%	7.7%
Skin diseases	'	10.5%	
Other diseases	'	10.5%	
Fever	Mental illness	10.5%	15.4%
Yellow fever	'	5.3%	
Lower abdominal pain	Divination	5.3%	23.1%

0% 10% 20% 30% — Common diseases cure [by percentage]
0% 20% 40% — Type of practices [by percentage]

CHALLENGES

1. Discrepancies in names of locations due to the information provided by KIs and lack of official names of various sites, including POEs.
2. Inaccessibility of some sites by vehicle due to the rough geographical terrain, worsened by heavy rains during monsoon season. Long distances were often covered by foot by the enumerators, despite high weather temperatures.
3. Restricted movement and lockdown created difficulties in reaching KIs and urged for continuous coordination to utilize time efficiently and arrange dispatchment of enumerators to the priority sites.
4. As a result of long historical ties with India and the flat land, part of the population in Krishnanagar Municipality feels more comfortable in speaking in Hindi rather than Nepali language. In order to ensure clear communication, local NRCS enumerators help mediate and translate, when necessary.
5. Enforcement of Standard Operating Procedures (SOPs) and reminders for Infection and Prevention Control (IPC) measures required constant efforts of the field team throughout the activities.

RECOMMENDATIONS

1. Establish health screening stations at POEs and all other priority locations. Body temperature checking should be advised at sites with high population mobility.
2. Set up mechanisms to record people's movement, especially their origin and destination. This is indispensable to trace affected cases, in the event of an outbreak.
3. Strengthen IPC and Water, Sanitation and Hygiene (WASH).
4. Invest in capacity building of health infrastructure. This is especially the case for health posts, often located in remote areas and hardly accessible, even by foot.
5. Focus on risk communication and community engagement. The community should be involved in health-related activities and awareness should be raised on the importance of good sanitary conditions.
6. Develop a health working group for Nepal and corresponding countries at formal POEs for both IHR and PHEIC focal points. This will allow for a better management of travellers' movement, especially for tracking purposes.
7. Conduct training and capacity development of health staff/immigration/security officials at POEs, including development of SOPs.
8. Conduct leadership training for all traditional healers in order to enhance their health practices, and adhere to SOPs within their communities, especially in hostile communities where people rely on them for health and other issues.

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