Assessment of Supply Chain Management System of Prioritized Neglected Tropical Disease's Drugs and Diagnostics during COVID-19 in Nepal

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Background

- Corona Virus Disease-2019 (COVID-19) impacted delivery of health services and system as a whole.(1)

- Progression of COVID-19 significantly raised the risk of spreading Neglected Tropical Diseases (NTDs).

- More than 7 in 10 countries with NTDs are lower-income and lower-middle income countries.(2)

- NTD is held responsible for 19 million disability adjusted life years accounting for 1% of the Global Burden of Disease.(3)

- A full supply of NTD drugs is critical in realizing elimination goal, with vision 2030 in sight.(4)

- However, COVID-19 safety measures implemented all around the globe threatened the supply of essential medicine and medical commodities including that of NTDs.(5)

Background Contd.

- Nepal; Predominantly mountainous country with more than quarter of population living under poverty.

- Currently endemic for eight NTDs, attributable to limited access to health services.

- NDHS reported 187 case of Kala-azar in 200/11. (6)

- **42 504** confirmed dengue cases were reported and 51 deaths between January and October 2022.(7)

- 2044 active cases of leprosy were under treatment and receiving Multi Drug Therapy (21/22).

Rational

- Pandemic caused major setback in Nepal's health system; health service delivery being the one.

- Lack of previous research and evidence on supply chain management system of any kind of drugs, especially among NTDs.

Objectives

General objectives:

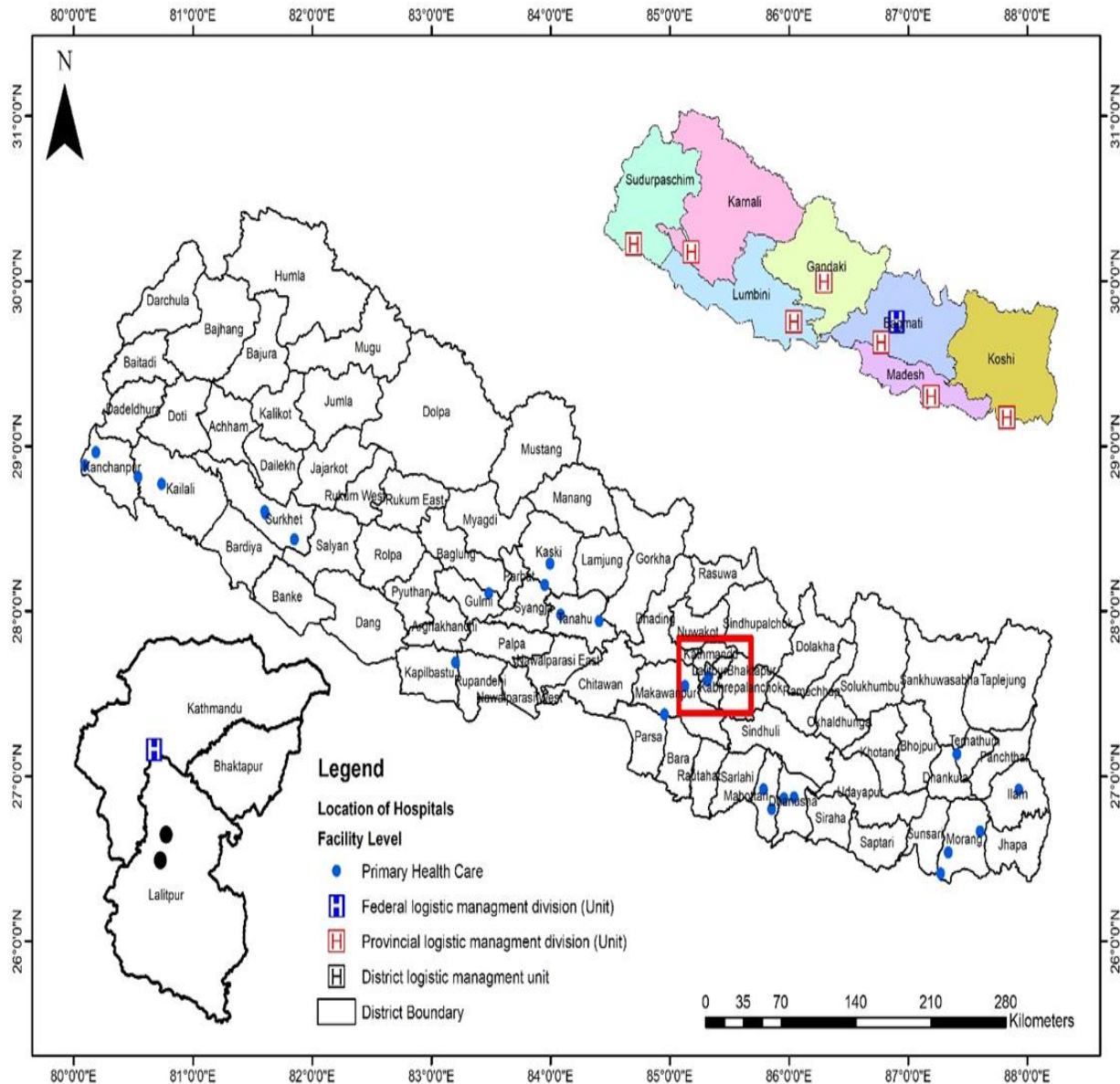- To assess the supply chain management system of NTDs in Nepal during COVID-19

Specific objectives:

- To conduct the Supply chain management system at

a. Federal Level

b. Provincial Level

c. District Level

d. Service delivery point (PHC)

- To assess client prospective on service delivery

Methodology

Study sites

Federal level

- Logistic Management Section; Department of Health Services

Provincial Level

- Provincial Health Directorate (PHD)and Provincial Health Logistic Management Center (PHLMC)

District Level

- District Health Office and Logistic Management Division

Service Delivery point

- Primary Health Centers

Client Exist Interview

- Clients utilizing NTD health care services

Data collection Tools and Techniques

- **Logistic System Assessment Tool (LSAT)** (8)

1. Federal Level

2. Provincial Level

3. District Level

4. Service delivery Point

LSAT indicators

S.N.	List of indicators	Federal level	Provincial level	District level
1.	Organizing and Staffing	*		
2.	Logistic Management Information System	*	*	*
3.	Product Selection	*		
4.	Forecasting	*		
5.	Obtaining Supplies and Procurement	*		
6.	Inventory Control Procedure	*	*	*
7.	Warehousing and Storage	*	*	*
8.	Transportation and Distribution	*	*	*
9.	Organizational Support for Logistics	*	*	*
10.	Product Use	*	*	*

Logistic Indicator Assessment Tool (LIAT)

30 PHC from all over Nepal were selected as recommended.(9)

Indicators implied to analyze LIAT at PHCs were categorized into:

- Health facility that received products ordered
- Health facilities that maintain proper storage condition
- Health facilities experiencing stock out
- Health facilities having near term product availability.

Client Exit Interview

5 service users of NTDs from each province was randomly selected from each province.

5 point Likert scale; '1-Highly satisfied', '2-Satisfied', '3-Average', '4-Dissatisfied', '5-Highly Dissatisfied' was used

to asses:

- Availability and Accessibility of services
- Behavior of the health professional
- Infrastructure of the health facility

Ethical Consideration

- Ethical approval was obtained from Nepal Health Research Council and Department of Health Services.

Results

- **e-LMIS** and procurement were found to be 100% efficient.

- **Organizing and Staffing, Forecasting, ICP, Warehousing and Storage** and **Organizational Support for Logistics** had the performance between 80%-95%.

- **Product Selection, Product Use,** and **Transportation and Distribution** had the performance between 65%-80%.

Logistic system indicator assessment at Federal Level
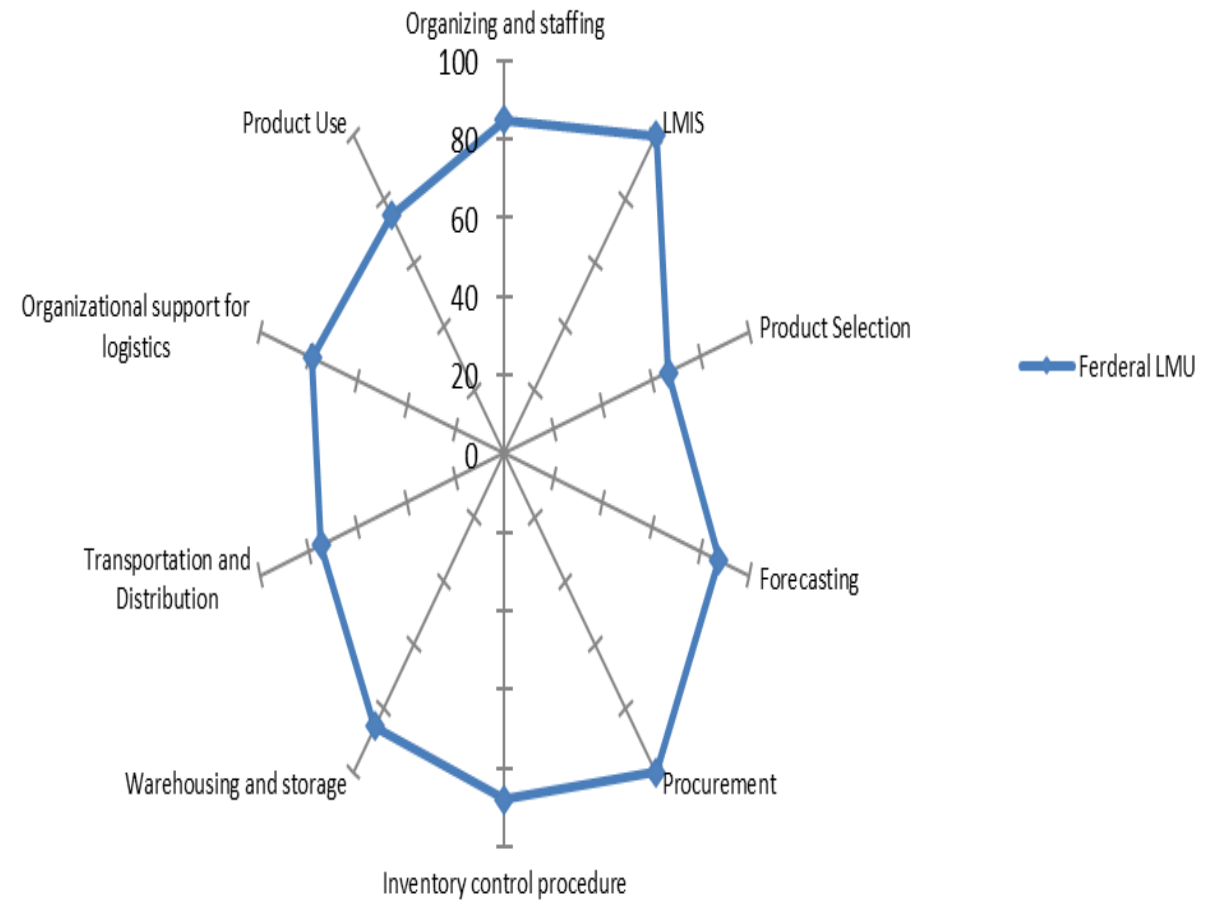
Results

- In terms of **e-LMIS**, Sudurpaschim Province reported100% efficiency whereas Madhesh Province has lowest performance (80.7%)

- **ICP** was found significantly efficient in Bagmati Province (94.4%) and lowest in Madhesh Province (61.1%)

- **Warehousing and Storage** were found efficient in Bagmati Province (85.7%) whereas it was found lowest in Lumbini province (42.8%)

- Koshi province and Bagmati Province had 100% efficiency in **Transportation and Distribution**. However, lowest efficiency regarding transportation efficiency was found in Madhesh and Lumbini Province (50%)

- **Product Use and Selection** was found to be most efficient in Sudurpaschim and Lumbini province(90%). Lowest being Madhesh province with less than 50%.

- **Organizational Support for Logistics** was found to be most efficient in Koshi and Gandaki province, whereas it was found lowest in Karnali and Madhesh province.


Comparision of Logistic System indicators at provincial level
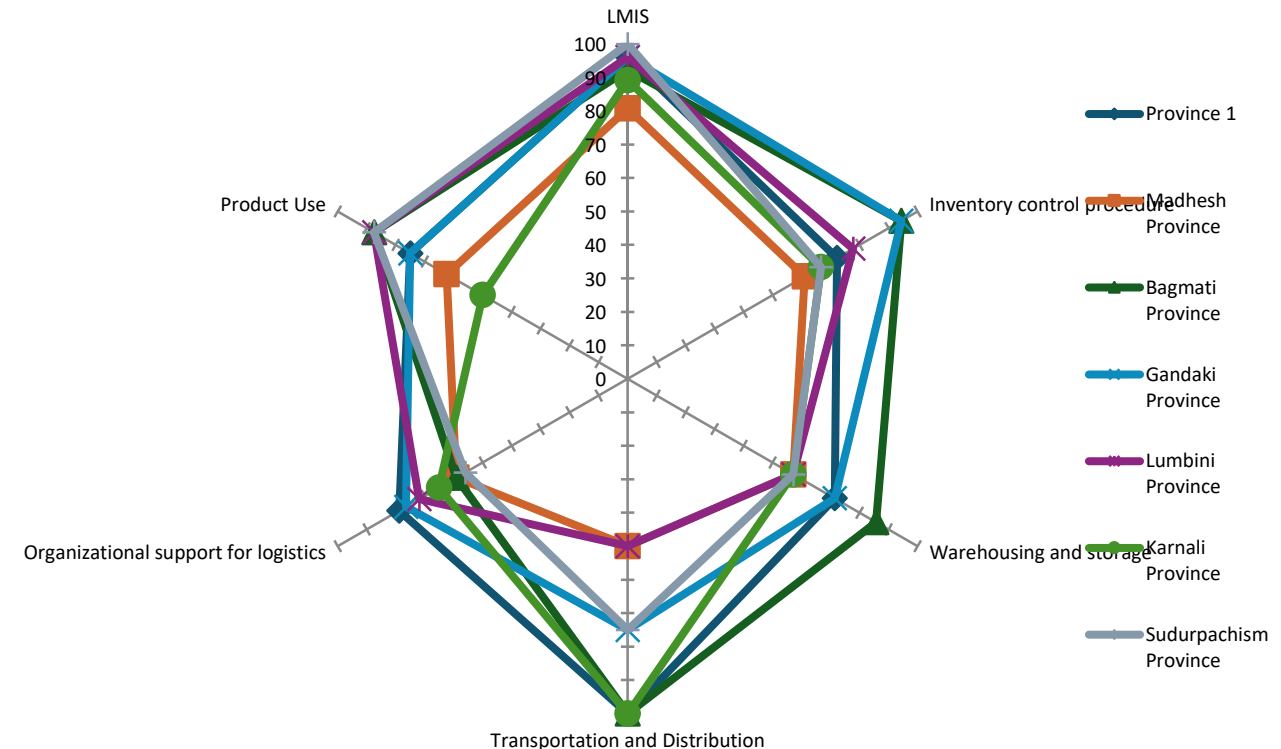
Results

- In terms of **e-LMIS**, district selected from Karnali, Lumbini and Koshi were found utilizing e-LMIS at 100%, the lowest being Madhesh Province (80%).

- **ICP** was found significantly efficient in Bagmati Province (88.9%) and lowest in Madhesh Province (80%).

- **Warehousing and Storage** were found efficient in districts of Bagmati and Karnali Province (80%) Whereas, it was found lowest among districts of Madhesh province (58.1%)

- Districts of Gandaki and Sudurpaschim province had 100% efficient **Transportation and Distribution**, however the lowest was reported among districts of Madhesh and Karnali Province (50%)

- **Product use and Selection** was found most efficient in Karnali and Bagmati province(88%). The lowest being various districts of Madhesh and Gandaki province with nearly 50%.

- **Organizational Support for Logistics** was found most efficient in Koshi and Gandaki province. Whereas, the lowest were reported in Sudurpaschim province with just below 50%.

Comparision of Logistic system indicators at dictricts level
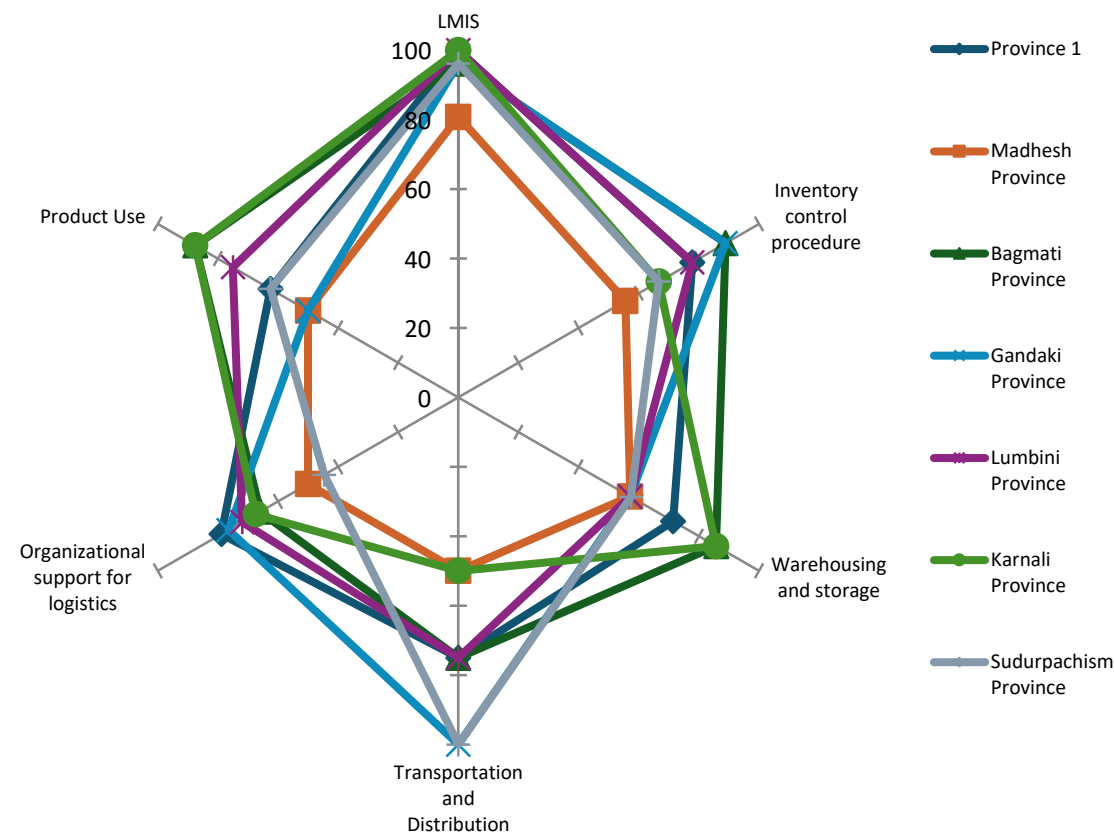
Results

- **Health Facilities that received the products ordered**

More than three quarters (77.8%) of HF received Drugs and Diagnostics that was demanded.

- **Health Facilities that maintained proper storage**

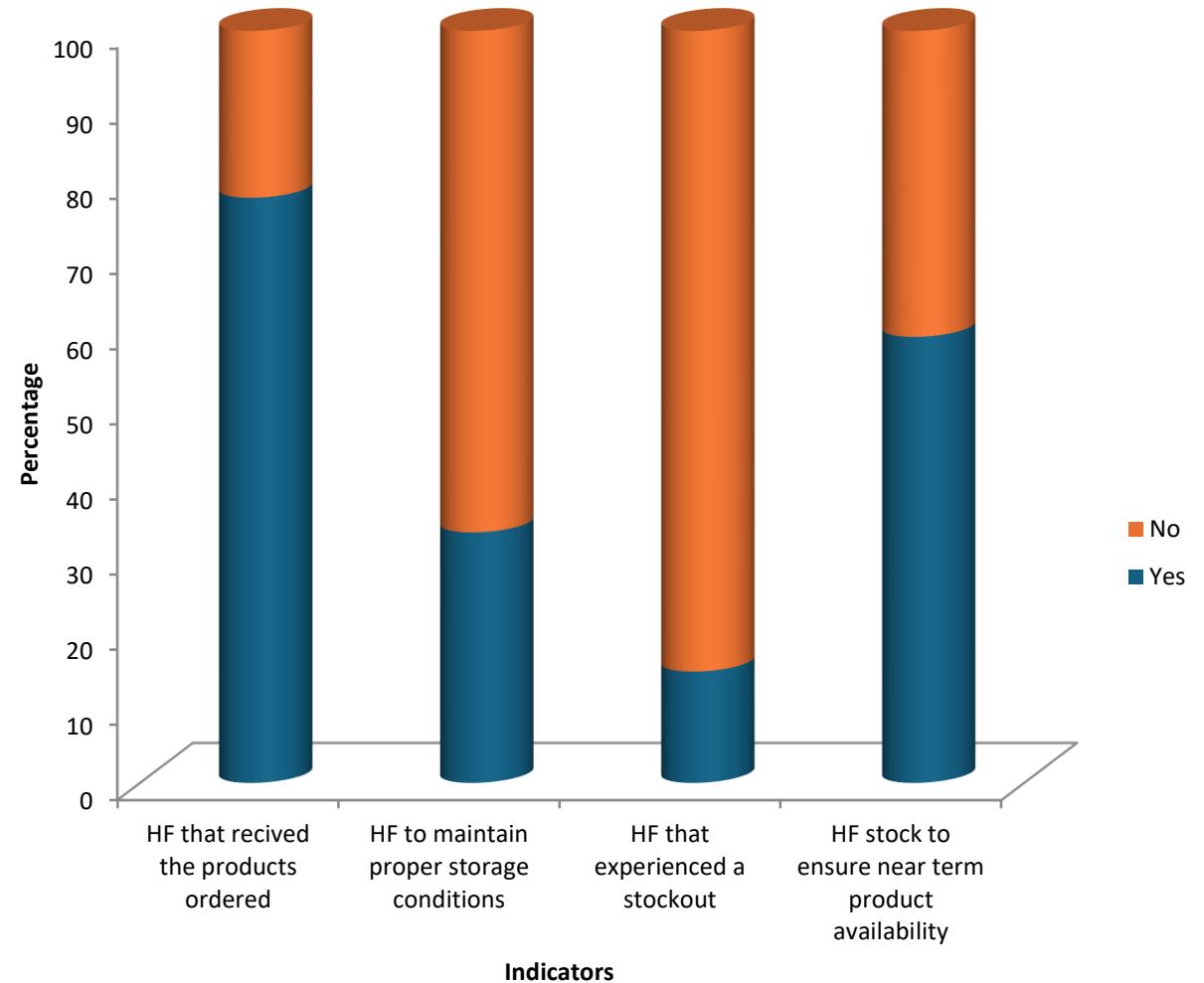One third (33.3%) of HF maintained proper storage condition

- **Health Facilities that experienced stock out**

Only 14.8% of the HF have faced stock-out.

- **Health facilities to ensure near term product availability**

More than one half (59.3%) of the HF reported near-term product availability.

LIAT Indicator assessment at Service delivery points
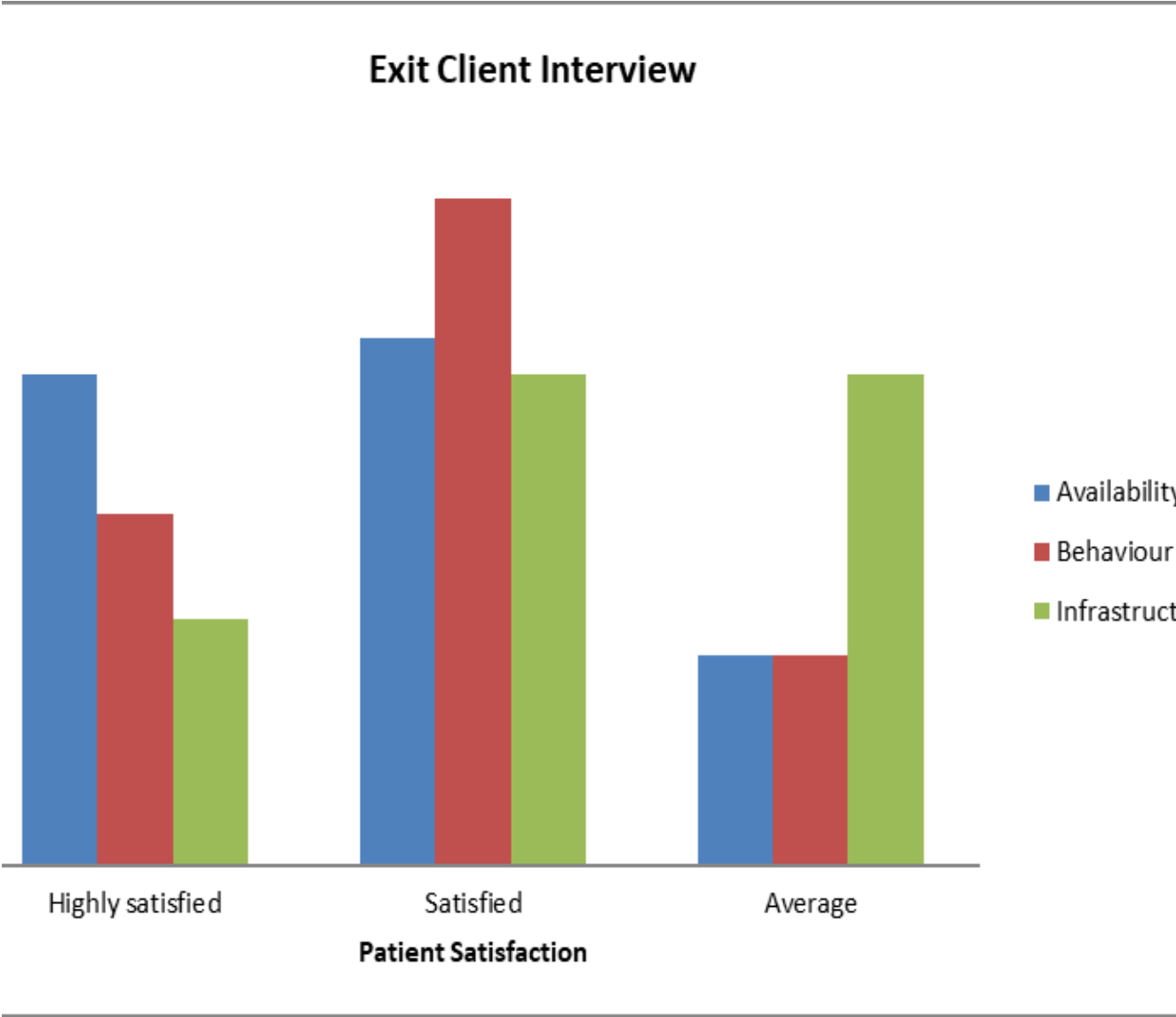
Results

- ## Availability of Health Heath Services

Less than half of the population (42.9%) were found satisfied with the availability of Health services.

- ## Behaviour of Health Professional

More than half of the population (54.3%) were satisfied with the behaviour of health professionals during service uptake.

- ## Infrastructure

More than one-third (40%) of the population were found satisfied with the infrastructure of Health Facilities.

Exit Client Interview

Legend: Availability, Behaviour, Infrastruct

Patient Satisfaction: Highly satisfied, Satisfied, Average

Conclusions

- The COVID-19 pandemic has exposed both strengths and weaknesses in the SCM of NTDs drugs and diagnostics in Nepal

- Federal and provincial system showed robust e-LMIS and supply system. However, at district level discrepancies were found to have existed.

- Existing gap suggest a need for targeted intervention ensuring efficient performance at all service indicators.

- Overall, this study underscores the importance of resilient and well coordinated SCM system, supported by adequate resources, training, and infrastructure to maintain health care services during crises.

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Acknowledgement

Author's Biography

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