

Health Facilities Readiness to Implement Standard Precautions for Infection Prevention and Control in Nepal: A secondary analysis of Nepal Health Facility Survey 2021

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Background

- Healthcare associated Infections (HAIs) are a major concern globally, with significant economic burden and mortality rates, especially in Low- and Middle-Income Countries (LMICs).
- Up to 70% of HAIs can be prevented through effective Infection, Prevention and Control (IPC) measures like hand hygiene and proper equipment sterilization.
- Despite healthcare coverage expansion, LMICs' quality of care hasn't improved proportionately. Few healthcare facilities globally meet minimum IPC requirements.
- Implementing standard precautions, including IPC measures, is crucial for patient safety, HAI prevention, and healthcare worker well-being.
- National IPC guidelines and implementation manuals, such as those launched by the Ministry of Health and Population in Nepal, play a vital role in standardizing IPC practices and achieving **Sustainable Development Goal 3** for universal health and well-being.

Objectives

The study aims:

- To assess readiness of HFs to implement standard precautions for IPC in eight service delivery domains*
- To determine association of readiness of HFs to implement standard precautions for IPC with the characteristics of health facilities.

** Eight service delivery domains includes (a) General outpatient care, b) Child and adolescent vaccination services, c) Child curative care, d) Family planning, e) Antenatal care services, f) Delivery and newborn care, g) Tuberculosis care and h) Non-communicable care)*

Methodology

- **Study design:** Secondary analysis of National Health Facility Survey 2021 data
- **Variables:**

Dependent variable	Independent variables
<p>Readiness score to implement standard precautions for IPC (based on SARA manual using 8 tracer items)</p> <ul style="list-style-type: none">• Guidelines for standard precautions,• Latex gloves,• soap and running water or alcohol-based hand rub,• Single-use disposable/auto-disable syringes,• Disinfectant,• Safe final disposal of sharps,• Safe final disposal of infectious wastes,• Appropriate storage of infectious waste.	<ul style="list-style-type: none">• Location (rural/urban),• Ecological region (Hill/Mountain/Terai),• Province,• Facility type (federal or provincial hospital/local HFs/private hospital),• Presence of external supervision (present/absent),• Quality assurance activities (performed /not performed)• Frequency of health facility meeting (none/sometimes/monthly)• Review of clients' opinion (reviewed/ not reviewed).

Methodology

- **Statistical analysis:**

- We performed a weighted analysis to account for the complex survey design in R.
- We applied a Quantile Regression (QR) analytical approach to evaluate the association between characteristics of HFs and IPC readiness scores with a set of quantiles ranging from 0.1 to 0.9.

Results were presented as beta coefficients and their 95% confidence interval (CI).

Characteristics of Health Facilities

Characteristics of HF (weighted n = 1565)	Categories	All HFs % (95% CI)	Federal/Provincial Hospitals, % (95% CI)	Local HFs, % (95% CI)	Private Hospitals, % (95% CI)
Type of HFs	-	-	1.8 (1.4, 2.2)	90.8 (89.3, 92.1)	7.4 (6.2, 8.9)
Location	Urban	53.3 (49.6, 57.0)	95.9 (89.4, 98.5)	49.0 (45.0, 53.0)	96.1 (93.2, 97.8)
	Rural	46.7 (43.0, 50.4)	4.1 (1.5, 10.6)	51.0 (47.0, 55.0)	3.9 (2.2, 6.8)
Ecological region	Hill	52.3 (48.6, 56.0)	53.5 (43.4, 63.3)	52.6 (48.6, 56.6)	48.6 (40.0, 57.3)
	Mountain	13.4 (11.2, 16.0)	15.3 (9.4, 24.1)	14.1 (11.7, 17.0)	4.3 (1.7, 10.8)
	Terai	34.2 (30.7, 37.9)	31.2 (22.6, 41.3)	33.2 (29.4, 37.3)	47.1 (38.8, 55.6)
Province	Koshi	16.8 (14.1, 19.8)	16.4 (10.2, 25.3)	16.8 (13.9, 20.1)	16.7 (12.3, 22.2)
	Madhesh	15.7 (12.8, 19.2)	10.2 (5.5, 18.2)	16.1 (12.9, 19.9)	12.9 (9.3, 17.7)
	Bagmati	20.5 (17.7, 23.7)	20.5 (13.5, 29.8)	18.7 (15.7, 22.1)	43.1 (34.1, 52.6)
	Gandaki	12.6 (10.5, 15.1)	12.3 (7.0, 20.6)	12.9 (10.6, 15.6)	9.6 (6.7, 13.6)
	Lumbini	15.3 (12.9, 18.1)	16.1 (9.9, 25.2)	15.5 (12.8, 18.6)	12.8 (9.3, 17.4)
	Karnali	8.2 (6.7, 10.0)	11.3 (6.3, 19.4)	8.7 (7.0, 10.7)	1.7 (0.8, 3.6)
	Sudurpaschim	10.8 (9.1, 12.8)	13.3 (7.8, 21.8)	11.4 (9.5, 13.6)	3.1 (1.8, 5.4)

Characteristics of Health Facilities

Characteristics of HF (weighted n = 1565)	Categories	All HFs % (95% CI)	Federal/Provincial Hospitals, % (95% CI)	Local HFs, % (95% CI)	Private Hospitals, % (95% CI)
Availability of services	General outpatient services	100.0	100.0	100.0	100.0
	Child and adolescent vaccination	88.9 (87.3, 90.4)	73.2 (63.6, 81.1)	93.2 (93.2, 95.5)	25.0 (18.3, 33.2)
	Child curative care	99.3 (99.0, 99.6)	99.0 (92.9, 99.9)	99.9 (99.6, 99.9)	93.1 (89.4, 95.6)
	Family planning	97.8 (97.0, 98.4)	95.9 (89.3, 98.5)	99.9 (99.8, 100)	71.8 (63.4, 78.9)
	Antenatal care services	98.3(97.6, 98.8)	96.9 (90.6, 99.0)	99.0 (98.4, 99.4)	90.0 (84.2, 93.8)
	Delivery and newborn care	51.4 (47.7, 55.1)	91.7 (84.1, 95.9)	50.5 (46.5, 54.5)	52.8 (44.1, 61.4)
	Tuberculosis care	79.9 (77.3, 82.3)	100.0	78.4 (75.5, 81.0)	94.1 (88.0, 97.2)
	Non-communicable care	96.9 (95.5, 97.9)	100.0	96.8 (95.3, 97.9)	97.3 (89.2, 99.4)

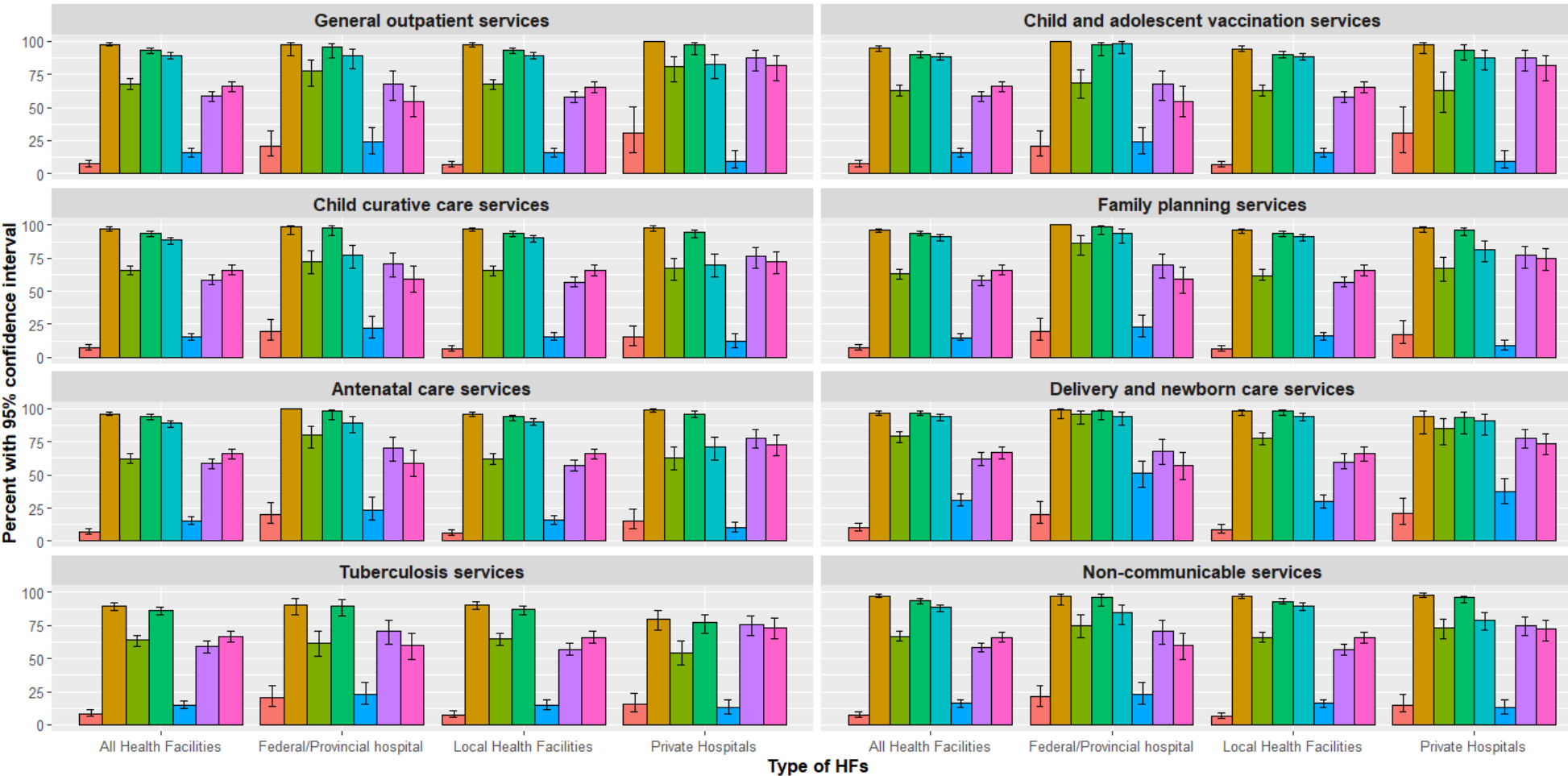
Readiness Score of HFs for Standard Precaution for Infection Prevention and Control

Characteristics of HF	All HFs		Federal/Provincial Hospitals		Local HFs		Private Hospitals	
	Mean ± SD	95% CI	Mean ± SD	95% CI	Mean ± SD	95% CI	Mean ± SD	95% CI
Service area								
General Outpatient services	61.9±16.2	60.7, 63.1	66.7±17.0	63.3, 70.1	61.4±16.1	60.2, 62.7	66.4±16.0	64.0, 68.8
Child and adolescent vaccination	60.5±17.1	59.1, 61.9	66.6±14.2	63.4, 69.9	60.2±17.1	58.7, 61.6	68.7±15.4	64.3, 73.0
Child curative care	61.6±16.0	60.4, 62.9	64.6±16.1	61.1, 68.0	61.5±16.0	60.2, 62.8	64.3±15.7	60.8, 67.8
Family planning area	61.4±16.2	60.2, 62.6	68.8±14.5	65.9, 71.7	61.0±16.2	59.7, 62.3	65.1±15.8	62.0, 68.2
Antenatal care services (ANC)	61.1±16.0	59.9, 62.3	67.5±14.9	64.5, 70.5	60.8±16.0	59.5, 62.1	63.2±15.8	60.4, 66.0
Delivery and newborn care area	67.1±15.6	65.5, 68.7	72.9±15.4	69.7, 76.1	66.5±15.3	64.8, 68.3	71.7±17.5	67.1, 76.3
Tuberculosis care area	55.5±19.6	53.8, 57.1	59.5±19.9	55.5, 63.4)	55.4±19.4	53.5, 57.2	55.6±21.8	51.8, 59.4
Non-communicable care area	61.8±16.2	60.6, 63.0	65.8±18.5	62.1, 69.5	61.5±16.1	60.2, 62.8	65.1±16.5	62.5, 67.7
Overall score of HFs	59.8±15.7	58.6, 60.9	66.6±14.6	63.7, 69.5	59.4±15.7	58.2, 60.7	62.4±15.5	60.0, 64.9

Distribution of IPC Tracer Items for Different Service Delivery Domains

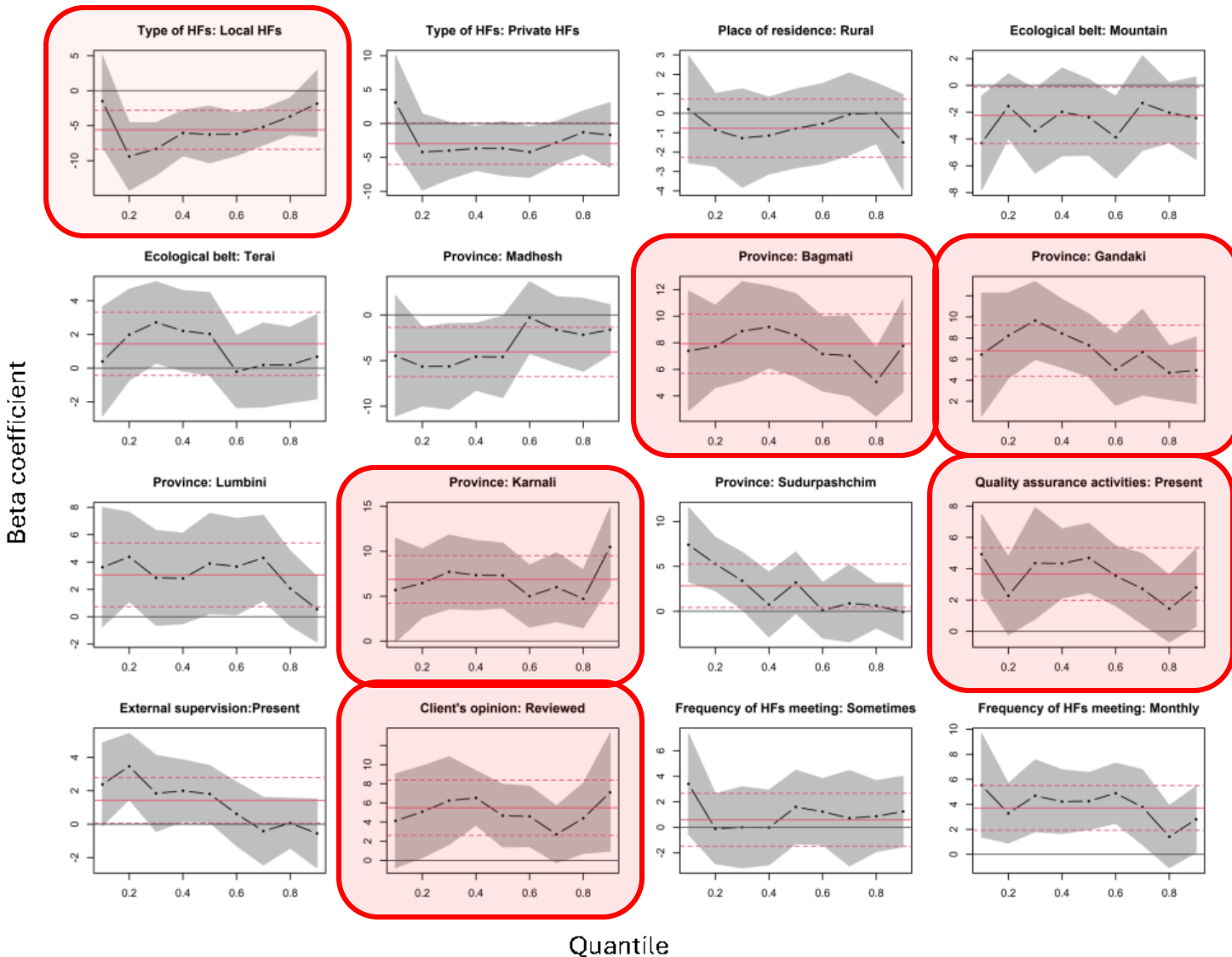
Tracer items

- Guidelines for standard precautions
- Soap and water/alcohol-based hand disinfectant
- Disinfectant
- Latex gloves
- Single-use disposable/auto-disable syringes
- Appropriate storage of infectious waste
- Safe final disposal of infectious wastes
- Safe final disposal of sharps



The guideline for IPC is the weakest domain followed by medical waste disposal in each service delivery domain and in each type of health facility.

Quantile Regression Model to Determine Factors Associated with IPC Readiness at 0.1 to 0.9 Quantiles



- The readiness score of local HFs was significantly lower than federal/provincial hospitals in all quantiles-ranging from 0.2 to 0.8
- The facilities with quality assurance activities have higher readiness scores at all quantiles between 0.3 to 0.7 and below 0.2
- The facilities with the mechanism of reviewing clients' opinion have higher readiness score in quantiles ranging from 0.3 to 0.6 and above 0.7

Conclusion

- The readiness of HFs to implement standard precautions for infection control was high but leaves room for improvement.
- The HFs performing quality assurance activities, HFs with mechanisms for reviewing clients' opinion and HFs from Bagmati, Gandaki, and Karnali had a higher readiness score to implement standard precaution for IPC.
- The results can support policymakers and stakeholders to make informed decisions to improve overall infection prevention and control measures. This will enable the healthcare system to better respond to emerging health threats.

Thank you!



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Photo and bio

- **Brief bio:**

Mr. KC works at HERD International as “Knowledge Management Officer”. He holds a master's degree in Public Health from BRAC University. Since 2018, he has been actively engaged in research and development, with a keen interest on public health, policy development, and health systems.

