Factors associated with multiple forms of undernutrition among under five children in Nepal

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Project team

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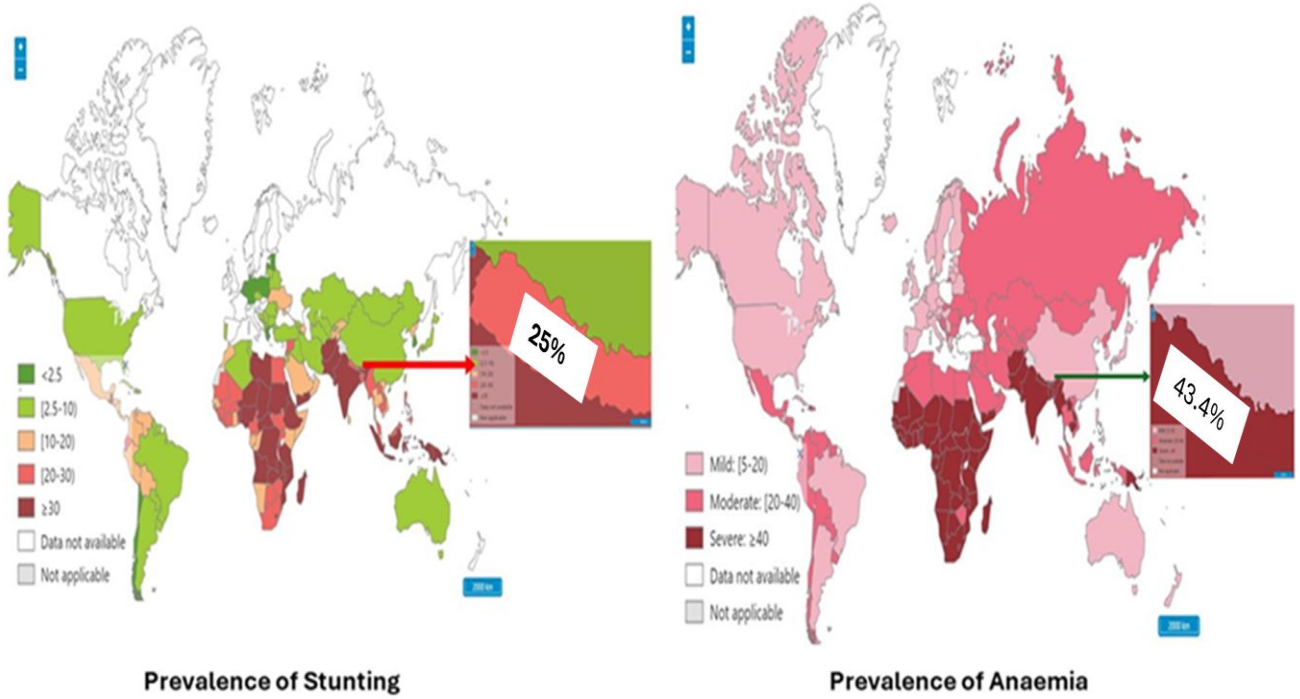
Background

- Child undernutrition for those below 5 years of age is a significant global health issue
- Often measured using key indicators:
  - Stunting (low height-for-age, HAZ<-2 SD)
  - Anaemia (low haemoglobin concentration, <110 g/L)

- Globally 150 million children are stunted and 269 million are anaemic (WHO,UNICEF 2025,2019)
- The prevalence of comorbid stunting and anaemia in LMIC is estimated to be varying from 2.6% to 43% (Trans et al. 2018)



Prevalence of Stunting (2022) and Anaemia (2019) among children under five years
World Health Organization; The global health observatory

SDG2 Target: Eliminate all forms of malnutrition, 40% reduction of stunted children by 2025
Progress was slow and projected to reduce by 22% only

Project description

Phase 1

To explore available evidence on the impact of community-focused interventions, programmes, and policies on child growth and /or anaemia in LMIC

Systematic review of systematic reviews

Phase 2

To map the coexistence of child growth failure and anaemia in Nepal by studying the associated household, maternal, child and population factors that determine these co-morbid conditions in Nepal

Quantitative secondary data analysis

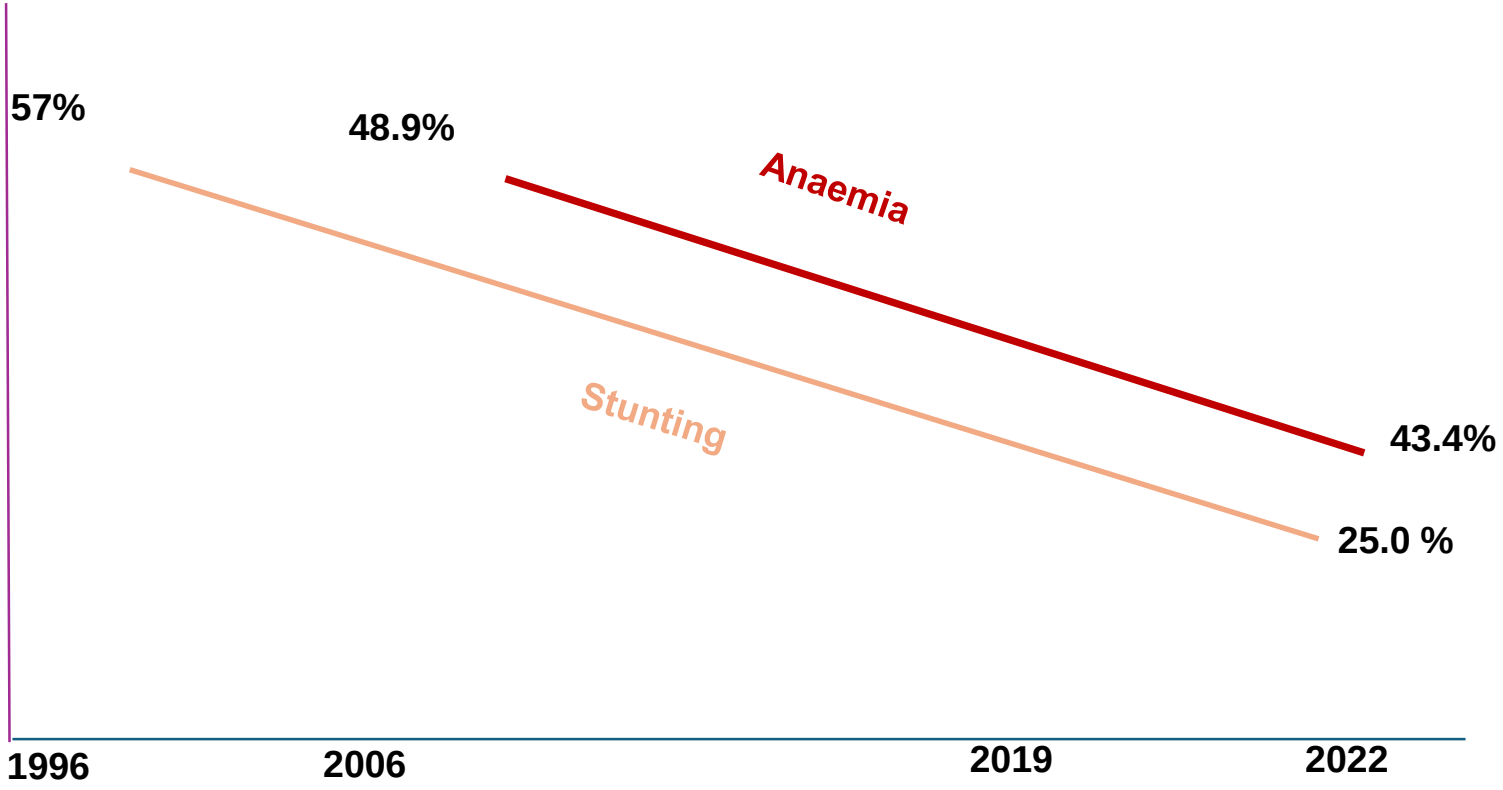
Phase 3

To explore the barriers and facilitators in developing, implementing, and monitoring community-focused interventions aimed at addressing child growth failure and anaemia in Nepal

Qualitative focus group discussions and key informant interviews with stakeholders

Design an evidence-based policy-driven Intervention Framework

Stunting and Anaemia in Nepal among children under 5 years



Source: DHS Nepal,2022

Kathmandu post

Rationale

- Anaemia and stunting share common risk factors and can co-occur
- Nepal has implemented various policies, programmes, and interventions
- National success has not been translated to addressing multiple forms of undernutrition at the community level yet
- Comprehensive approach needed to tackle underexplored comorbid stunting and anaemia

Objectives

- Determine the prevalence of comorbid stunting and anaemia among under-5 children in Nepal

- Identify the factors associated with comorbid stunting and anaemia among under-5 children in Nepal

Methodology

Data Source: Nepal's Demographic and Health Survey (NDHS) 2022

A total of 2305 sample (unweighted), with complete record for stunting and anaemia, sampling weights applied

Descriptive statistics and cross tabulation were done using SPSS version 29.0.1.0

Potential factors with p-value <0.05 obtained in bivariable analysis entered the four-level hierarchical logistic regression model (Nagelkerke R square)

Sociodemographic profile

- **Age:** Under 2 years: 31%
  2-5 years: 69%
- **Sex:** Male: 51%
  Female: 49%

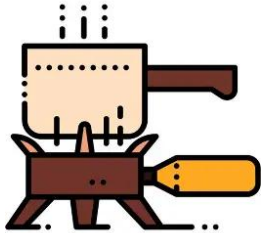
- Population distribution of children **high in Madhesh** and **low in Sudurpaschim**
- **65% reside in urban** areas

- About **41%** had completed their **secondary or higher education**
- Nearly **50% of mothers** worked in **agricultural sector**

- **46%** children belonged to **poor wealth category**

DRINKING WATER FACILITIES

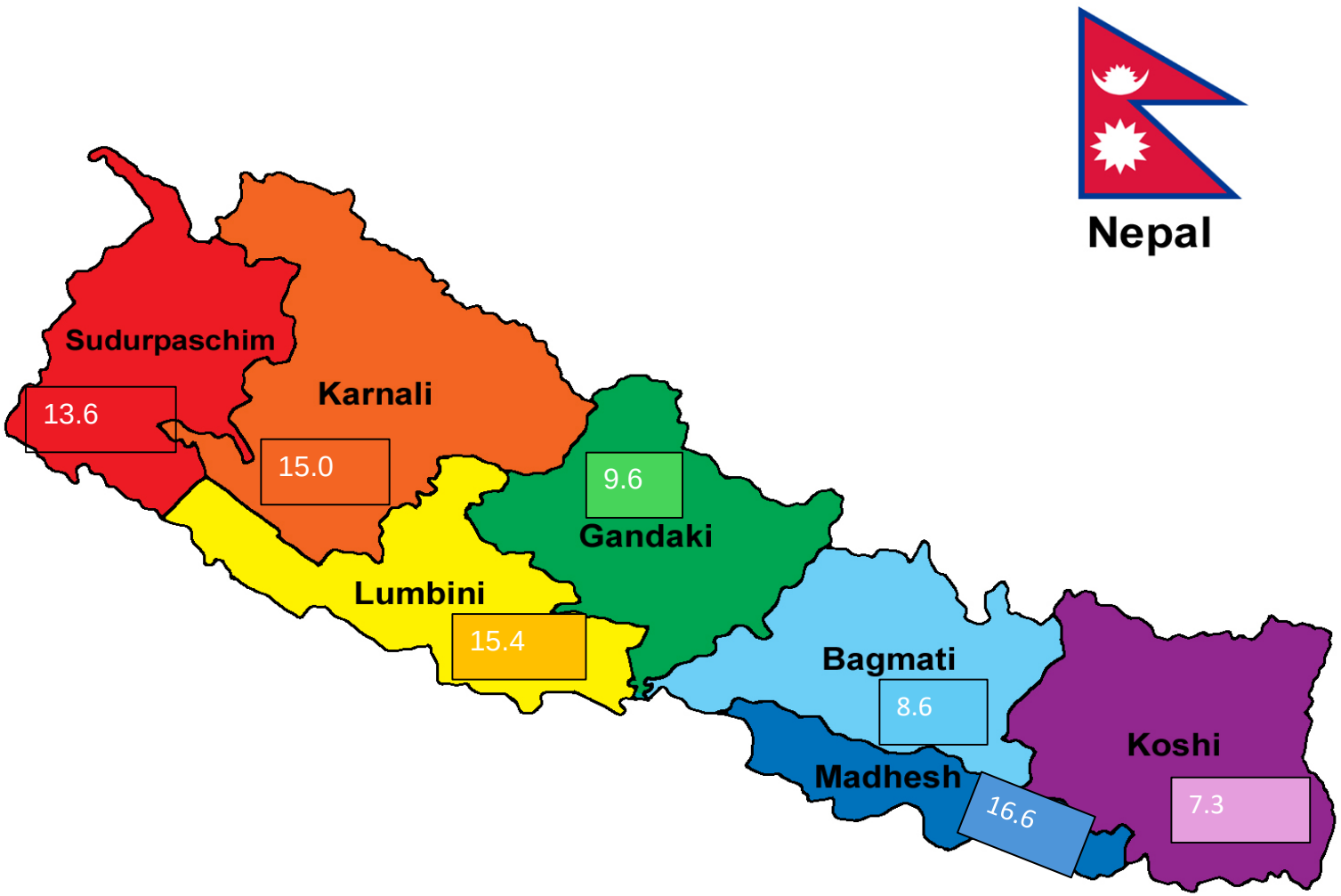
- **98%** household had access to **improved** water sources



- **Majority (67%)** of household used unclean solid fuel

- 90% did not have health insurance

Prevalence of comorbidity of stunting and anaemia by province in Nepal in 2022



- **Highest in Madhesh** Province followed by Lumbini and Karnali Province.
- Madhesh:stunting;29%; anemia 51% (NDHS,2022)
- Lumbini: stunting:25%; anemia 49%(NDHS,2022)
- Karnali: stunting 36%; anemia 40%(NDHS,2022)
- Comorbidity of undernutrition:**12%**

Factors associated with comorbidity of undernutrition

Child factors	Mother factors	Household factors	Geographical factors
▪ Child age***** ▪ Birth order sex***** ▪ Had diarrhoea recently (Last two weeks) ▪ Drug for intestinal parasites and Vitamin A (last 6 months)	▪ Maternal anaemia* ▪ Maternal height* ▪ Maternal education level* ▪ Maternal age ▪ Maternal occupation	▪ Wealth index* ▪ Religion* ▪ Ethnicity* ▪ Type of toilet facilities* ▪ Type of cooking fuel* ▪ Source of drinking water ▪ Covered by health* insurance	▪ Province* ▪ Type of residence*

Hierarchical regression models

Model I (R^2 =4)	Model II (R^2 =14)	Model III (R^2 = 17)	Model IV (R^2 =18)
Child factors Child age* Birth order*	**Child factors** Child age* Birth order*	**Child factors** Child age* Birth order*	**Child factors** Child age* Birth order*
	Mother factors Maternal anaemia* Maternal height* Maternal education level*	**Mother factors** Maternal anaemia* Maternal height* Maternal education level*	**Mother factors** Maternal anaemia* Maternal height* Maternal education level*
		Household factors Wealth index* Religion* Ethnicity* Type of toilet facilities* Type of cooking fuel* Covered by health insurance*	**Household factors** Wealth index* Religion* Ethnicity Type of toilet facilities* Type of cooking fuel* Covered by health insurance*
			Geographical factors Province* Type of residence*

Conclusion

- This study suggests a substantial burden of **comorbid stunting and anaemia** among under-five children in Nepal and presents regional differences for policy context with **higher burden in Madhesh Province**
- It demonstrates that comorbid stunting and anaemia is not driven by a single risk factor, but by interconnected child, maternal, household and geographical determinants
- Coordinated and context-specific nutrition, maternal health and socio-environmental policies and interventions are needed

Takeaway messages

- It is crucial to focus on addressing child undernutrition in Madhesh and Lumbini province, along with Karnali Province
- Nepal needs to be prepared for addressing multiple forms of undernutrition together
- Integrated and tailored approaches required to tackle undernutrition
- This time Nepal could be an example by addressing undernutrition through government led approaches

THANK YOU

Help shape the next generation of undernutrition interventions. Share your experience, insights, and views by joining our collaborative effort.

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Usha Ghimire is a PhD Scholar at the University of Aberdeen, UK, researching child nutrition and health policy. She has led public health programmes focused on community-level interventions for mothers and children in low- and middle-income countries. She contributed to COVID-19 health programme development in Nepal and worked closely with the Ministry of Health and Population. She has also supported research and policy initiatives through the Nepal Health Research Council and Kathmandu University–Dhulikhel Hospital, advancing evidence-based and scalable solutions for vulnerable communities.

Research interest: health policy, reproductive maternal and child health, interventions

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