



# Deeper Analysis to Deconstruct the Contributors to Significant Improvements in Key Nutrition Outcomes, 2016–2022 Nepal DHS Surveys

DHS Further Analysis Reports No. 150

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The DHS Program assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Additional information about The DHS Program can be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA; telephone: +1 301-407-6500; fax: +1 301-407-6501; email: [info@DHSprogram.com](mailto:info@DHSprogram.com); internet: [www.DHSprogram.com](http://www.DHSprogram.com).

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## PREFACE

The 2022 Nepal Demographic and Health Survey (NDHS) was the sixth survey of its kind implemented in the country as part of the worldwide Demographic and Health Surveys (DHS) Program. It was implemented under the aegis of the Ministry of Health and Population (MoHP) of the Government of Nepal with the objective of providing reliable, accurate, and up-to-date data for the country. The survey received funding from the United States Agency for International Development (USAID). The information in the 2022 NDHS has assisted policymakers and program managers in formulating policies, monitoring, and designing programs and strategies for improving health services in Nepal. The 2022 NDHS is a key data source for tracking the progress of the Nepal Health Sector Strategic Plan 2023–2030 and the Sustainable Development Goal indicators.

The 2022 NDHS further analysis reports provide additional in-depth knowledge and insights into key issues that emerged from the 2022 NDHS. This information provides guidance for planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. This further analysis is also an important initiative for strengthening the technical capacity of Nepali professionals in analyzing and using large-scale data to better understand specific issues related to the country's needs. We are glad that in the sixth round of the NDHS, we were able to produce 11 further analysis reports. We urge all policymakers, program administrators, program managers, health workers, and other key stakeholders to optimally use the information from these reports in program planning and management. High-quality evidence should be the basis of the planning, implementation, monitoring, and evaluation of our health programs.

Finally, we appreciate the leadership of the Policy Planning and Monitoring Division, as well as the efforts of many individuals in the MoHP and the Department of Health Services, in generating these reports. We are thankful to USAID Nepal for their continued support in implementing the NDHS and further analysis studies in Nepal.

Hari Prasad Mainali  
Secretary  
Ministry of Health and Population

Dr. Roshan Pokhrel  
Secretary  
Ministry of Health and Population





Government of Nepal

# Ministry of Health & Population



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Ramshahpath, Kathmandu  
Nepal

Date : 12-07-2024

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## FOREWORD

The 2022 Nepal Demographic and Health Survey (NDHS) is the sixth nationally representative comprehensive survey conducted as part of the worldwide Demographic and Health Surveys (DHS) Program in the country. The survey was implemented by New ERA under the aegis of the Ministry of Health and Population (MoHP). Technical support for this survey was provided by ICF, with financial support from the United States Agency for International Development (USAID) through its mission in Nepal.

The standard format of the NDHS final report includes a descriptive presentation of findings and trends but does not describe analytical methods for ascertaining the significance of changes and associations among variables. Although largely sufficient, the final report is limited, particularly in providing answers to “why” questions—answers that are essential in reshaping important policies and programs. After the dissemination of the 2022 NDHS, the MoHP, USAID, and other health development partners convened and agreed on key areas that are necessary for assessing progress, gaps, and determinants in high-priority public health programs being implemented by the MoHP. In this context, 11 further analysis studies have been conducted by Nepali consultants under the direct leadership of the MoHP. The consultants were supported by USAID through USAID Learning for Development and The DHS Program.

The primary objective of the further analysis of the 2022 NDHS is to provide more in-depth knowledge and insights into key issues that emerged from the survey. This information provides guidance for planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. One of the learning objectives of the further analysis is to strengthen the technical capacity of Nepali professionals for analyzing and using data from complex national population and health surveys to better understand specific issues related to country needs.

The further analysis of the 2022 NDHS is the concerted effort of many individuals and institutions, and it is with great pleasure that I acknowledge the work involved in producing this useful document. The participation and cooperation of the officials of the MoHP and the Department of Health Services are highly valued. I would like to extend my appreciation to USAID/Nepal for providing financial support for the further analyses. I would also like to acknowledge The DHS Program for its technical assistance at all stages. My sincere thanks also go to the USAID Learning for Development team for the overall management and coordination of the entire process. My special appreciation goes to the Policy Planning and Monitoring Division, MoHP, for their efforts and dedication to the completion of this further analysis of the 2022 NDHS.

Dr. Tanka Prasad Barakoti  
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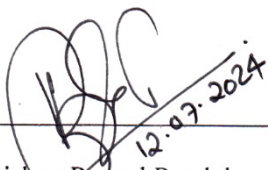
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## ACKNOWLEDGMENTS

The further analysis of the 2022 Nepal Demographic and Health Survey (NDHS) was conducted under the aegis of the Policy Planning and Monitoring Division of the Ministry of Health and Population (MoHP). The United States Agency for International Development (USAID) provided financial support, with technical assistance provided by The Demographic and Health Surveys (DHS) Program. Overall coordination, recruitment of local consultants, facilitation, administration, and logistic support were provided by USAID Learning for Development.

I am indebted to Dr. Bikash Devkota, additional secretary of the MoHP, for providing guidance to complete this analysis. My special gratitude goes to all the co-authors for their input, coordination, data analysis, and writing of reports. My special thanks also go to the co-authors from the MoHP and the Department of Health Services (DoHS) who gave time to ensure that the analysis met our data needs and improved the quality of the reports. My deep appreciation goes to the peer reviewers of the reports: Dr. Bikash Devkota and Dr. Krishna Poudel from the MoHP; Kabita Aryal from the Nursing and Social Security Division; Sagar Dahal, Dr. Abhiyan Gautam, Dr. Uttam Pachya, Dr. Gunanidhi Sharma, Dr. Poma Thapa, and Dr. Bibek Lal from the DoHS; Pradeep Poudel from USAID Learning for Development; Tirtha Tamang from the United Nations Population Fund (UNFPA); Milima Dangol and Bidur Bastola from the USAID Adolescent Reproductive Health Project; Dr. Rahul Pradhan from the World Health Organization (WHO); Abhilasha Gurung, Chahana Singh, and Naveen Poudyal from the United Nations Children's Fund (UNICEF); and Dr. Saroj Dhakal, Dr. Jaganath Sharma, and Dr. Sabita Tuladhar from USAID.

Special thanks to Sabita Tuladhar from USAID for her continuous support of this process. My sincere appreciation to Dr. Kerry MacQuarrie from The DHS Program and Ms. Jade Lamb, Mr. Tarun Adhikari, Mr. Sagar Neupane, and Mr. Lokesh Bhatta from USAID Learning for Development for their hard work in supporting the completion of these 11 further analysis reports.

  
12.07.2024  
Dr. Krishna Prasad Paudel  
Chief, Policy Planning and Monitoring Division  
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## ABSTRACT

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Despite the remarkable improvements in some key child and maternal nutrition outcomes at the national level, large disparities by region, residence, and other background characteristics remain. For example, the prevalence of stunting among children in the poorest households is nearly triple that of those in the wealthiest households (36.9% versus 13.1%), and the prevalence in Karnali province is double that in Bagmati province (35.8% versus 17.6%). Further, improvements have not occurred evenly across regions of the country. Koshi, Karnali, and Sudurpaschim provinces all saw large declines in child stunting, underweight, and wasting between 2016 and 2022, whereas Bagmati and Gandaki provinces experienced more modest declines or even slight increases in some indicators. Lumbini province presents an even greater puzzle, as the prevalence of child wasting (low weight for height) more than doubled from 7.6% in 2016 to 16.2% in 2022, without any corresponding increases in the prevalences of other indicators such as child stunting, underweight, or anemia that often co-exist with wasting since they have common contributors. In fact, all these indicators except wasting improved from 2016 to 2022 in Lumbini province. The steep increase in child wasting in Lumbini province contributed substantially to the weak progress in child wasting, nationally.

We used descriptive analysis to examine trends in socioeconomic, child-intrinsic and nutritional, maternal, health, and environment factors and in any and severe levels of each of the nutrition outcomes from 2016 to 2022, nationally and by province.

**Key words:** stunting, wasting, underweight, anemia, Nepal





## ACRONYMS AND ABBREVIATIONS

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AARR	average annual rate of reduction
ANC	antenatal care
BMI	body mass index
CI	confidence interval
DHS	Demographic and Health Surveys
MIYCN	maternal, infant, and young child nutrition
MNP	micronutrient powders
MoHP	Ministry of Health and Population
MSNP	Multi-Sector Nutrition Plan
NDHS	Nepal Demographic and Health Survey
OR	odds ratio
PNC	postnatal care
SDG	sustainable development goal
UNFPA	United Nations Population Fund
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization



# 1 INTRODUCTION

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The burden of undernutrition and anemia remains unacceptably high in low- and middle-income countries. Child undernutrition refers to conditions characterized by stunting (too short for age), wasting (too thin for height), and underweight (too thin for age). Globally, around 149 million children are stunted and 45 million are wasted.<sup>1</sup> Anemia is a major public health concern, estimated to affect 269 million children age 6–59 and half a billion women age 15–49 worldwide. In 2012, the 65<sup>th</sup> World Health Assembly endorsed a comprehensive nutrition plan for mothers and children and outlined six global targets for nutrition to be met by 2030: reduce stunting, reduce anemia in women of reproductive age, reduce low birthweight, halt obesity, increase exclusive breastfeeding rates, and reduce wasting in children under age 5.<sup>2</sup> Despite continuous efforts to reduce maternal and child malnutrition,<sup>3</sup> faster progress is needed to meet these targets.<sup>4–6</sup>

In Nepal, the government’s National Planning Commission developed and implemented a first multisector nutrition plan (MSNP) 2013–2017 to address the multi-faceted determinants of undernutrition upon release of Nutrition Assessment and Gap Analysis Report in 2009 and the formation of the National Nutrition and Food Security Steering Committee and its coordination committee in 2010.<sup>7</sup> Building on the achievements made under the MSNP 2013–2017, the MSNP 2018–2022 was designed and implemented with the aim to improve maternal, adolescent, and child nutrition by scaling up essential nutrition-specific and sensitive interventions and creating an enabling environment for nutrition.<sup>7</sup> In addition to improvements in socioeconomic outcomes such as growth in gross domestic product, reduction in extreme poverty, and increases in remittance incomes generated through labor migration,<sup>8</sup> the country has seen significant improvements in key nutrition outcomes. Between 2006 and 2022, stunting and underweight among children under age 5 were cut in half; the prevalence of stunting decreased from 49% to 25%, and the prevalence of underweight decreased from 39% to 19%. Similarly, by 2022 the prevalences of anemia among children and adult women had returned to the lower levels seen in 2006–2011 after peaking in 2016.

Despite the remarkable improvements in some key child and maternal nutrition outcomes at the national level, large disparities by region, residence, and other background characteristics remain. For example, the prevalence of stunting among children in the poorest households is nearly triple that of those in the wealthiest households (36.9% versus 13.1%), and the prevalence in Karnali province is double that in Bagmati province (35.8% versus 17.6%). Further, improvements have not occurred evenly across regions of the country. Koshi, Karnali, and Sudurpaschim provinces all saw large declines in child stunting, underweight, and wasting between 2016 and 2022, whereas Bagmati and Gandaki provinces experienced more modest declines or even slight increases in some indicators. Lumbini province presents an even greater puzzle, as the prevalence of child wasting (a measure of short-term deprivation) more than doubled from 7.6% in 2016 to 16.2% in 2022, without any corresponding increases in the prevalences of other indicators such as child stunting, underweight, or anemia that often co-exist with wasting since they have common contributors. In fact, all these indicators except wasting improved from 2016 to 2022 in Lumbini province. The steep increase in child wasting in Lumbini province contributed substantially to the weak progress in child wasting, nationally.<sup>9</sup>

## **1.1 Study Rationale**

Stunting and wasting among children under 5 and anemia in women age 15–49 are indicators of Sustainable Development Goal (SDG) 2. Nepal still has a long way to go to achieve the SDG targets for nutrition. Currently, the national prevalences of stunting, wasting, and underweight for children under age 5 stand at 25%, 8%, and 19%, respectively.<sup>9</sup> The SDG targets for Nepal are to reduce stunting to 15%, wasting to 4%, and anemia to 10% among children under age 5 by 2030. Similarly, the government has set a target to reduce anemia in women of reproductive age to less than 10% on the same timeline.<sup>5</sup> Moreover, the average annual reduction rates were 3.1% for stunting, 2.0% for wasting, and 3.1% for underweight between 2016 and 2022.

To achieve the SDG goals by 2030, the continued efforts of the government and its development partners through policies, programs, and projects are essential to enhance the coverage of nutritional interventions, with a special focus on populations vulnerable to undernutrition. Existing literature on the major drivers of Nepal’s stunting decline over the past two decades suggest several important correlates, including geographic location within the country (for example, living in the mountains or hills versus the plains, or living in urban versus rural areas), wealth index, maternal education, food security, infant and young child feeding practices, access to health services, improved sanitation, immunization, and maternal nutrition.<sup>8</sup>

## **1.2 Objectives**

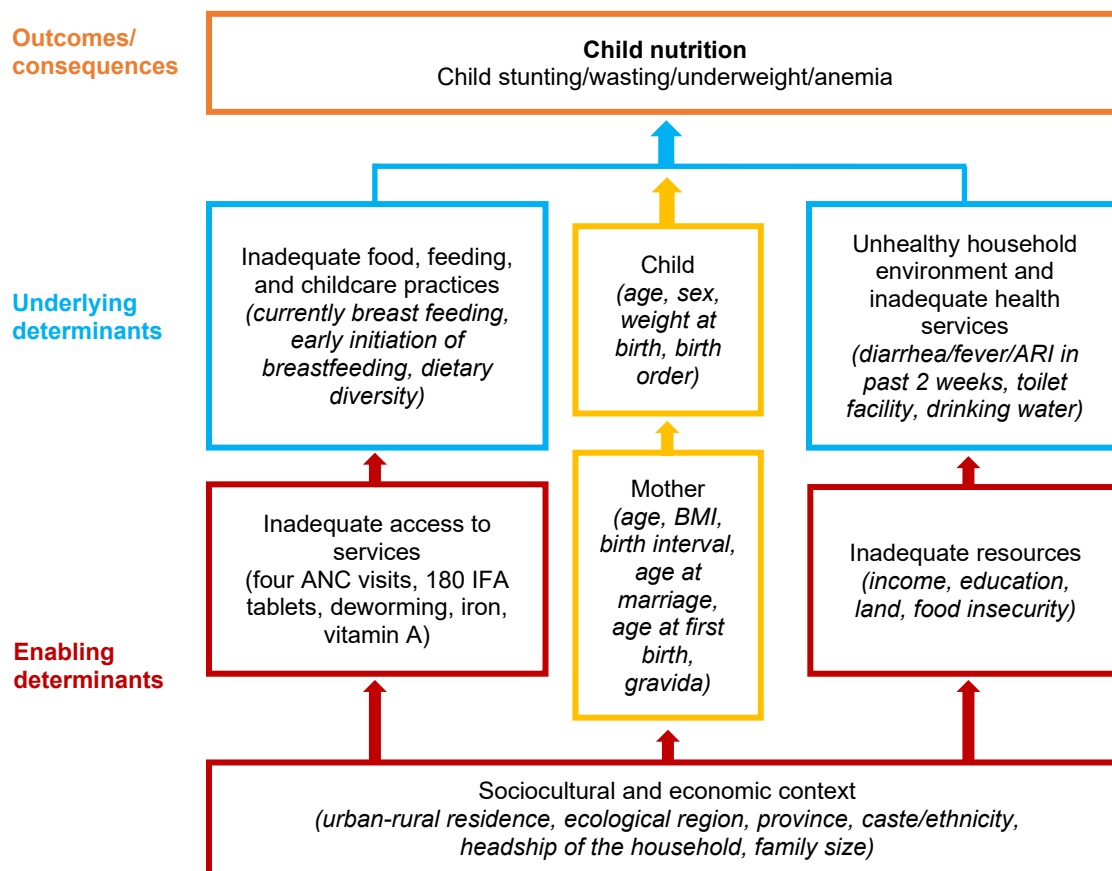
The objective of this study was to provide an in-depth, province-level analysis of stunting, wasting, underweight, and anemia among children under age 5, as well as anemia among women age 15–49, to explain the trends within each province and across socioeconomic, nutritional, and contextual factors. This report is intended for policymakers, program managers, and concerned stakeholders who are working in the field of child nutrition in Nepal.

## 2 METHODS

### 2.1 Conceptual Framework

This study examined the child nutrition outcomes of stunting, wasting, underweight, and anemia alongside underlying and enabling determinants within the sociocultural and economic context in Nepal (Figure 1). It also examined anemia among women of reproductive age from the same perspective.

Figure 1 Simplified conceptual framework for stunting, wasting, underweight among children 0–59 months and anemia among children 6–59 months



ANC = antenatal care; ARI = acute respiratory infection; BMI = body mass index; IFA = iron and folic acid  
Source: Adapted from the United Nations Children's Fund (UNICEF) Conceptual Framework on the Determinants of Maternal and Child Nutrition (2021)<sup>13</sup>

### 2.2 Data Sources

This further analysis used data from the 2016 Nepal Demographic and Health Survey (NDHS) and the 2022 NDHS. The NDHS is a population-based household survey designed to provide estimates of basic demographic and health indicators for the country as a whole and for both urban and rural areas of the different provinces. The NDHS surveys collected information related to household socio-demographic characteristics, maternal and child health, fertility, nutrition, family planning, HIV/AIDS, malaria, mental health, and other country-specific health and population issues. The sampling designs for the 2016 and 2022

NDHS surveys are detailed elsewhere.<sup>9,10</sup> Briefly, they adopted multi-stage cluster sampling to obtain a nationally representative sample of households. In both surveys, each of the seven provinces were divided into rural and urban areas, yielding 14 domains. Wards in the rural areas and wards and subwards in the urban areas were used as the primary sampling units (PSUs). In the first stage of sampling, 383 PSUs in 2016 and 476 PSUs in 2022 were selected with probability proportional to ward size and with independent selection in each sampling stratum. In the second stage, 30 households per cluster were selected with an equal probability systematic selection from a newly created list of households per PSU.

For children’s outcomes, we restricted our analysis to children with complete anthropometric and anemia measurements and other relevant variables. Similarly, for women’s anemia, analysis was restricted to women with complete anemia data and other relevant variables. Data from both 2016 and 2022 NDHS surveys were pooled for the analysis. The final sample sizes for this analysis are presented in Table 1. For stunting, the total weighted sample was 4,871 children age 0–59 months, with 2,349 children in 2016 and 2,522 children in 2022. For wasting, the total sample was 4,864 children, with 2,346 children in 2016 and 2,518 children in 2022. For underweight, the total sample was 4,892 children, with 2,357 children in 2016 and 2,535 children in 2022.

For anemia among children, the total sample was 4,333 children, with 2,093 children in 2016 and 2,240 children in 2022. For anemia among women, the total sample was 5,178 women with 2,531 women in 2016 and 2,647 women in 2022.

**Table 1 Analytical samples of women and children for analysis of key nutrition outcomes, 2016–2022 Nepal DHS surveys**

<b>Sample</b>	<b>2016</b>	<b>2022</b>
Number of households interviewed	11,040	13,786
Household response rate (%)	98.5	99.7
Number of women age 15–49 interviewed	12,862	14,845
Sample for stunting	2,349	2,522
Sample for wasting	2,346	2,518
Sample for underweight	2,357	2,535
Sample for anemia: children (6–59 months)	2,093	2,240
Sample for anemia: women (15–49 years)	2,531	2,647

## 2.3 Study Variables

### 2.3.1 Outcome variables

**Anthropometric outcome variables** included in this study were any or severe stunting, wasting, and underweight among children 0–59 months. Stunting, wasting, and underweight were coded as binary variables with 1 as stunted, wasted, or underweight and 0 as not stunted, not wasted, or not underweight. Based on the World Health Organization (WHO) growth standards,<sup>11</sup> these indicators were defined as follows:

- Stunting: Height-for-age z-scores below –2 standard deviations (SDs)
- Severe stunting: Height-for-age z-scores below –3 SDs
- Wasting: Weight-for-height z-scores below –2 SDs

- Severe wasting: Weight-for-height z-scores below  $-3$  SDs
- Underweight: Weight-for-age z-scores below  $-2$  SDs
- Severely underweight: Weight-for-age z-scores below  $-3$  SDs

**Anemia** was assessed among children age 6–59 months and women age 15–49. Anemia status was coded as a binary variable with 1 as anemic and 0 as not anemic.

Anemia was defined as a blood hemoglobin level below:

- 11.0 g/dl in children
- 12.0 g/dl in nonpregnant women
- 11.0 g/dl in pregnant women

Severe anemia was defined as a blood hemoglobin level below:

- 7.0 g/dl in children
- 8.0 g/dl in nonpregnant women
- 7.0 g/dl in pregnant women

### 2.3.2 Independent variables

As illustrated in the conceptual framework (Figure 1) and based on a prior further analysis that provided more in-depth knowledge and insights into child undernutrition and feeding practices in Nepal,<sup>12</sup> independent background variables for children were grouped into socioeconomic, child-intrinsic and nutritional, maternal, and health and environment factors.

**Socioeconomic factors** included province (Koshi, Madhesh, Bagmati, Gandaki, Lumbini, Karnali, and Sudurpaschim), residence (urban and rural), ecoregion (Mountain, Hill, Terai), wealth quintile (lowest, second, middle, fourth, highest), caste/ethnicity (Brahmin/Chhetri, Terai/Madheshi other, Dalit, Newar, Janajati, Muslim), mother’s education/years of schooling (no education/no schooling, primary/1–5 years of schooling, some secondary/6–9 years of schooling, School Leaving Certificate or higher/10 or more years of schooling), mother’s occupation (not working, non-agricultural, agricultural), household size (four or fewer members, more than four members), head of the household (male, female), women’s decision-making (composite variable derived from three variables: women can refuse sex, can decide about their own health care, and can decide on the use of contraception; categorized as a woman can or cannot make decisions about any of the three variables), mother’s internet use (use of internet in previous 12 months or not), and mobile phone ownership by women.

**Child-intrinsic and nutritional factors** included age in months (<6, 6–11, 12–17, 18–23, 24–35, 36–47, 48–59 months), sex, weight of the child at birth (small/<2.5 kg), normal/2.5–3.49 kg, large/ $\geq 3.5$  kg), early initiation of breastfeeding (infants breastfed within 1 hour of birth or not), exclusive breastfeeding (child exclusively breastfed or not), current breastfeeding status, minimum dietary diversity (child consumed at least five out of eight food groups or not), minimum meal frequency (child fed meals with recommended minimum number of times or not), and minimum acceptable diet (child fed with minimum acceptable diet or not).

**Maternal characteristics** included age (15–24, 25–34, 35–49), age at first marriage or union (<16, 16–19, and 20 and older), age at first birth (<20 and 20 years and older), body mass index (underweight/<18.5, normal/18.5–24.9, overweight/obese/ $\geq$ 25), height (less than 145 cm, 145 cm or more), birth interval (less than 3 years, 3 years or more, no preceding interval), minimum dietary diversity (consuming at least five out of 10 food groups) and smoking status.

**Health and environment factors** included vaccinations (child received all basic vaccines or not); illnesses (any or no illness); treatment of water before drinking; source of drinking water; presence of soap and water at handwashing station or not; improved sanitation facility or not; use of clean or solid cooking fuel; time to nearest health care facility; place of delivery (health facility or home/other); number of antenatal care visits; maternal, infant, and young child nutrition counseling; exposure to media by women; exposure to a health and nutrition program on television or radio; consumption of iron-containing supplements during last pregnancy or not; deworming medication during last pregnancy or not; children’s consumption of iron-containing supplements in past 12 months or not; children’s consumption of vitamin A supplements and deworming medication in past 6 months or not; presence of health mother’s groups in the ward or not; and counseling about breastfeeding during postnatal care visits or not. In addition, variables such as ever received child grant or not and counseling about breastfeeding during antenatal care visits or not were collected only in 2022.

Independent background variables for women were grouped into socioeconomic, maternal, and selected health and environment factors.

## 2.4 Data Analysis

Data from the household member recode data file (PR), the children's recode data file (KR), and the women's recode data file (IR) from each of the two NDHS surveys were used in this analysis. The IR, KR, and PR data files from the surveys were merged, and the newly created datasets were appended to each other.

We used descriptive analysis to examine trends in socioeconomic, child-intrinsic and nutritional, maternal, health, and environment variables and in any and severe levels of each of the nutrition outcomes from 2016 to 2022, nationally and by province.

To further understand the contributors to Nepal’s significant improvements in child nutrition, we explored trends in stunting, wasting, underweight, and anemia among children under age 5 by the independent background variables for children, nationally and by province. For women age 15–49, we explored trends in anemia by the independent background variables for women, nationally and by province. We focused on the independent variables associated with the greatest and smallest changes in the outcome variables from 2016 to 2022 in each province. Percentage point changes and their corresponding *p* values were reported.

Finally, to understand the factors contributing to better nutritional status among children, we conducted multivariate regression analysis to determine any associations between outcome variables and categories of independent variables for children in each province. For women age 15–49, we conducted multivariate regression analysis to determine any associations between anemia and categories of independent variables for women in each province. These multivariate analyses were conducted using the 2022 NDHS dataset. A variance inflation factor was used to detect multicollinearity, and a correlation matrix was created to view



the correlation coefficients between each of the variables in the model to determine which variables to remove.

In a different set of analyses, we examined the extent to which multiple adverse health outcomes coexisted among children. Particularly, we examined the coexistence of stunting and underweight, stunting and wasting, underweight and wasting, stunting and anemia, wasting and anemia, and underweight and anemia. We also examined the extent to which anemia in children coexisted with anemia in women within the same household.

Data analysis was performed using Stata version 18.0. Weighted factors were applied using the “svy” command to account for the complex survey design (stratification, clustering, and sample weights) and for estimation of summary estimates across all variables. Statistical tests were performed at a 95% significance level with  $p < .05$  considered statistically significant.



## 3 RESULTS

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### 3.1 Trends in Independent Variables

#### 3.1.1 National level

A detailed distribution of all the independent variables at the country level is reported in Table 2.

**Socioeconomic factors:** From 2016 to 2022, the proportion of mothers with no education/no schooling decreased significantly from 36% to 23%. During the same period, the proportion of mothers involved in decision-making improved by approximately 17 percentage points. Maternal internet usage surged more than threefold, and ownership of a mobile phone by mothers increased by 6 percentage points.

**Child-intrinsic and nutritional factors:** During the same period, both the proportion of children currently breastfeeding and the proportion of exclusively breastfed children declined (by 8 and 9 percentage points, respectively). Furthermore, indicators of complementary feeding improved, with a 10 percentage-point increase in meeting minimum meal frequency and a 7 percentage-point increase in meeting a minimum acceptable diet during the specified period.

**Maternal factors:** Although the proportion of underweight women decreased by 6 percentage points, the proportion of overweight/obese women increased by approximately 9 percentage points between 2016 and 2022. During the same period, both the proportion of mothers with first marriage or union at age 20 or older and the proportion of mothers with first birth at age 20 or older increased (by 5 and 4 percentage points, respectively). In addition, the proportion of mothers with a birth interval of 3 years or more or with no preceding interval increased by 5 percentage points, and the proportion with maternal consumption of at least five food groups more than doubled during the five-year interval.

**Health and environment factors:** From 2016 to 2022, the proportion of children with any illness in the past 2 weeks increased by approximately 10 percentage points. Within the same period, modest improvements were found in the treatment of drinking water with an appropriate method (3 percentage-point increase), use of improved sources of drinking water (2 percentage-point increase), and use of improved sanitation facility (2 percentage-point increase). The proportion with soap and water at handwashing stations improved by approximately 30 percentage points, and the utilization of clean fuel for cooking increased by 10 percentage points over the same period. Additionally, substantial improvements were seen in access to four or more antenatal care (ANC) visits (12 percentage-point increase), proportion of women less than 30 minutes from the nearest health care facility (25 percentage-point increase), and delivery in a health facility (25 percentage-point increase) from 2016 to 2022. Moreover, the consumption of iron-containing supplements during the last pregnancy significantly improved by 24 percentage points. The proportion of children age 6–23 months who were given iron-containing micronutrient powder (MNP) supplements in the past 12 months increased (by 26 percentage points) from 2016 to 2022, as did the proportion of children age 12–59 months who were given deworming medication in the past 6 months (by 11 percentage points). The proportion of children age 6–59 months who were given vitamin A supplements in the past 6 months showed a more modest improvement within the same period (by 3 percentage points).

**Table 2 Trends in independent variables, 2016–2022 Nepal DHS surveys**

Background variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	21.3	1,022	24	1,198	2.7	
Second	21	1,010	20.6	1,028	-0.4	
Middle	22.3	1,071	20.8	1,037	-1.5	
Fourth	20.3	975	19.2	957	-1.1	
Highest	15	721	15.3	764	0.3	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	28.2	1,354	25.5	1,273	-2.7	
Terai/Madheshi other	20.1	965	19.1	953	-1.0	
Dalit	13.7	656	18.6	928	4.9	
Newar	3.3	159	2.4	117	-0.9	
Janajati	27.6	1,323	28	1,398	0.4	
Muslim	7.1	340	6.3	315	-0.8	
<b>Mother's education</b>						
No education/no schooling	35.5	1,702	22.6	1,127	-12.9	***
Primary/1–5 years of schooling	18.7	899	17.2	855	-1.5	
Some secondary/6–9 years of schooling	24.1	1,156	29.4	1,464	5.3	
SLC or higher/10 and above years of schooling	21.7	1,041	30.9	1,539	9.2	
<b>Mother's occupation</b>						
Not working	42.4	2,035	34.6	1,723	-7.8	***
Non-agricultural	12.2	586	16.8	838	4.6	
Agricultural	45.4	2,178	48.6	2,424	3.2	
<b>Household size</b>						
4 or less	34.3	1,645	38.9	1,938	4.6	**
More than 4	65.7	3,154	61.1	3,047	-4.6	
<b>Head of the household</b>						
Male	71	3,405	68.4	3,409	-2.6	
Female	29	1,393	31.6	1,576	2.6	
<b>Mother's decision-making</b>						
Cannot make decision	55.2	2,468	38	1,862	-17.2	***
Can make decision	44.8	2,005	62	3,037	17.2	
<b>Mother's internet use</b>						
Not used in past 12 months	82.4	3,956	36.1	1,799	-46.3	***
Used in past 12 months	17.6	842	63.9	3,186	46.3	
<b>Mother owns a mobile phone</b>						
No	22.6	1,086	17.1	854	-5.5	***
Yes	77.4	3,712	82.9	4,131	5.5	

*Continued...*

Table 2—Continued

Background variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	9.3	445	10.7	533	1.4	**
6–11	10.4	498	8.7	433	-1.7	
12–17	10.7	513	10.1	501	-0.6	
18–23	10.8	518	9.2	457	-1.6	
24–35	18.9	909	21.3	1,062	2.4	
36–47	19.7	944	20.7	1,034	1.0	
48–59	20.3	972	19.4	965	-0.9	
<b>Sex of child</b>						
Male	52.6	2,526	52.3	2,607	-0.3	
Female	47.4	2,273	47.7	2,378	0.3	
<b>Birthweight</b>						
Small (<2.5 kg)	11.8	351	11.5	276	-0.3	
Normal (2.5–3.49 kg)	58.5	1,735	61.4	1,478	2.9	
Large (≥3.5 kg)	29.7	881	27.2	654	-2.5	
<b>Early initiation of breastfeeding</b>						
Child was not breastfed within 1 hour of birth	44.6	864	44.6	842	0.0	
Child was breastfed within 1 hour of birth	55.4	1,073	55.4	1,048	0.0	
<b>Current breastfeeding status</b>						
Currently not breastfeeding	40.1	1,926	48.1	2,397	8.0	***
Currently breastfeeding	59.9	2,872	51.9	2,588	-8.0	
<b>Exclusive breastfeeding</b>						
Child was not exclusively breastfed	35	156	43.6	232	8.6	*
Child was exclusively breastfed	65	289	56.4	301	-8.6	
<b>Minimum dietary diversity</b>						
Child was not fed with minimum dietary diversity	55.9	854	52.6	732	-3.3	
Child was fed with minimum dietary diversity	44.1	674	47.4	660	3.3	
<b>Minimum meal frequency</b>						
Child was not fed meals recommended minimum number of times	29.8	456	19.8	275	-10.0	***
Child was fed meals recommended minimum number of times	70.2	1,073	80.2	1,117	10.0	
<b>Minimum acceptable diet</b>						
Child was not fed with recommended minimum acceptable diet	65.7	1,004	58.8	818	-6.9	**
Child was fed with recommended minimum acceptable diet	34.3	524	41.2	574	6.9	
<b>Maternal factors</b>						
<b>Mother's age (in years)</b>						
15–24	40.3	1,935	39.1	1,949	-1.2	
25–34	51.3	2,461	52.1	2,599	0.8	
35–49	8.4	403	8.8	438	0.4	

Continued...

Table 2—Continued

Background variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Mother's BMI</b>						
Underweight (<18.5)	19.1	455	13.3	341	-5.8	***
Normal (18.5–24.9)	65	1,554	62.2	1,591	-2.8	
Overweight/obese (≥25)	15.9	381	24.5	628	8.6	
<b>Mother's height</b>						
Less than 145 cm	10.9	261	8.8	224	-2.1	
145 cm or more	89.1	2,126	91.2	2,335	2.1	
<b>Age at first marriage or union</b>						
<16 years	25.1	1,203	19.2	957	-5.9	***
16–19 years	50.9	2,441	51.7	2,578	0.8	
20 and above years	24	1,153	29.1	1,450	5.1	
<b>Age at first birth</b>						
<20 years	52.3	2,511	48	2,395	-4.3	*
20 and above	47.7	2,288	52	2,590	4.3	
<b>Birth interval</b>						
Less than 3 years	47.2	1,383	42.3	1,248	-4.9	*
3 years or more or no preceding interval	52.8	1,544	57.7	1,703	4.9	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	80	3,839	50.4	2,511	-29.6	***
5 or more food groups	20	959	49.6	2,474	29.6	
<b>Mother's smoking status</b>						
Smoking	5.6	267	4.9	243	-0.7	
Non-smoking	94.4	4,531	95.1	4,742	0.7	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	64.5	3,096	64.8	3,232	0.3	
Child (12–23 months) received all basic vaccines	35.5	1,703	35.2	1,753	-0.3	
<b>Any illnesses</b>						
Child had no illness	67.7	3,251	56.9	2,834	-10.8	***
Child had any illness	32.3	1,548	43.1	2,151	10.8	
<b>Treatment of water before drinking</b>						
No treatment	82.3	3,948	78.9	3,931	-3.4	*
Treatment with appropriate method	17.7	851	21.1	1,054	3.4	
<b>Sources of drinking water</b>						
Unimproved sources	4.2	202	1.8	90	-2.4	***
Improved sources	95.8	4,596	98.2	4,895	2.4	
<b>Household with soap and water at handwashing station</b>						
No	60.4	2,892	30.9	1,532	-29.5	***
Yes	39.6	1,896	69.1	3,426	29.5	
<b>Sanitation</b>						
Unimproved sanitation	4.2	1,131	1.8	632	-2.4	***
Improved sanitation	95.8	3,668	98.2	4,353	2.4	

Continued...

Table 2—Continued

Background variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Use of cooking fuel</b>						
Solid fuel	75	3,598	64.9	3,235	-10.1	***
Clean fuel	25	1,200	35.1	1,750	10.1	
<b>Distance to nearest health care facility</b>						
<30 min	48.5	2,321	73.8	3,678	25.3	***
30–60 min	39.7	1,900	21.1	1,054	-18.6	
60+ min	11.8	566	5.1	252	-6.7	
<b>Place of delivery</b>						
Health facility	54.4	2,611	78.9	2,357	24.5	***
Home/other	45.6	2,187	21.1	629	-24.5	
<b>Number of ANC visits</b>						
None	5.7	223	2.6	72	-3.1	***
1–3	24.5	951	15.5	433	-9.0	
4 or more	69.7	2,703	81.9	2,284	12.2	
<b>MIYCN counseling</b>						
No	82.4	3,952	75.3	1,895	-7.1	***
Yes	17.6	846	24.7	621	7.1	
<b>Health mother's groups in the ward</b>						
No	62.1	2,587	62.1	2,458	0.0	
Yes	37.9	1,581	37.9	1,503	0.0	
<b>Counseling about breastfeeding during PNC visits</b>						
No	47.6	1,840	34.8	969	-12.8	***
Yes	52.4	2,029	65.2	1,817	12.8	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television, or newspaper) at all	23.8	1,140	25.6	1,275	1.8	**
Access any of 3 media less than once a week	23	1,103	29	1,448	6.0	
Access any of 3 media at least once a week	53.3	2,556	45.4	2,263	-7.9	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	52.4	2,516	78.5	3,915	26.1	***
Heard/seen any one of the TV/radio H&N programs	47.6	2,283	21.5	1,071	-26.1	
<b>Iron-containing supplements during last pregnancy</b>						
No	58.2	2,256	34.3	957	-23.9	***
Yes	41.8	1,621	65.7	1,834	23.9	
<b>Deworming medication during last pregnancy</b>						
No	30.3	1,177	24.2	677	-6.1	**
Yes	69.7	2,701	75.8	2,114	6.1	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	90.2	1,389	72.2	1,005	-18.7	***
Yes	9.1	140	27.8	388	18.7	

Continued...

Table 2—Continued

Background variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	17.3	751	14.6	652	-2.7	*
Yes	82.7	3,602	85.4	3,800	2.7	
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	26.4	1,019	15.6	628	-10.8	***
Yes	73.6	2,836	84.4	3,391	10.8	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

### 3.1.2 Province level

Although trends for some of the independent variables were uneven across the provinces, trends were similar at the province level for most of the independent variables.

**Socioeconomic factors:** In all provinces, the proportion of mothers with no education/no schooling decreased significantly, with decreases ranging from 7 percentage points in Gandaki province to 21 percentage points in Karnali. The proportion of mothers involved in decision-making improved in all but Madesh province, with increases ranging from 13 percentage points in Koshi province to 29 percentage points in Karnali. Maternal internet usage increased in all provinces, with increases ranging from 38 percentage points in Karnali province to 58 percentage points in Madesh. The increase in maternal ownership of a mobile phone seen at the national level was not reflected at the province level except in Karnali (a 14 percentage-point increase) and Sudurpaschim (an 11 percentage-point increase).

**Child-intrinsic and nutritional factors:** From 2016 to 2022, the national decline in the proportion of children currently breastfeeding was also seen in all provinces, with Gandaki province having the greatest decline (18 percentage points). However, the national decrease in the proportion of exclusively breastfed children was reflected only in Lumbini province (39 percentage points). Indicators of complementary feeding improved inconsistently across the provinces, with a 16 percentage-point increase in meeting minimum meal frequency in Karnali province and a 13 percentage-point increase in meeting a minimum acceptable diet in Koshi province.

**Maternal factors:** During the specified period, only Madesh and Bagmati provinces showed significant decreases in the proportion of underweight women (by 11 and 4 percentage points, respectively) and increases in the proportion of overweight/obese women (by 11.7 and 14 percentage points, respectively). The national increase in the proportion of mothers with an age at first marriage/union of 20 years or older was reflected in four out of seven provinces, with the increases ranging from 3.7 percentage points in Madesh province to 12 percentage points in Lumbini province. In contrast, the national increase in the proportion of mothers with an age at first birth of 20 years or older was reflected only in Lumbini (7 percentage points) and Sudurpaschim (10 percentage points) provinces. Furthermore, the national increase in the proportion of mothers with a birth interval of 3 or more years or with no preceding interval was



reflected only in Koshi and Karnali provinces (10 percentage points each). Maternal consumption of at least five food groups significantly improved in all provinces, with the greatest increase seen in Koshi and Bagmati provinces (40 percentage points each).

**Health and environment factors:** From 2016 to 2022, the national increase in the proportion of children with any illness in the past 2 weeks was reflected in all but Lumbini province, with the greatest increase seen in Karnali province (24 percentage points). Out of the seven provinces, only Madesh and Karnali provinces contributed to the modest improvement found in the treatment of drinking water with an appropriate method (4 and 14 percentage-point increases, respectively); Madesh, Gandaki, and Karnali contributed to the modest improvement found in the use of improved sources of drinking water (2, 4, and 11 percentage-points increases, respectively). Madesh province contributed substantially to the increase in the use of improved sanitation facility (32 percentage points). In all provinces, there was a commendable improvement in the presence of soap and water at handwashing stations, with Lumbini province showing the greatest increase (38 percentage points). The national improvement in the utilization of clean fuel for cooking was solely due to the 17 percentage-point increase in Madesh province. In all but Koshi province, the proportion of women within 30 minutes of the nearest health care facility increased between 2016 and 2022, with a 39 percentage-point increase in Karnali province. From 2016 to 2022, delivery in a health facility improved substantially in all provinces, with increases ranging from 18 percentage points in Bagmati province to 37 percentage points in Karnali province. Additionally, access to four or more ANC visits improved in all but two provinces (Koshi and Bagmati), with a 28 percentage-point increase in Karnali province. Moreover, in all provinces, there was an increase in the proportion of mothers consuming iron-containing supplements during the last pregnancy, ranging from 19 percentage points in Bagmati to 28 percentage points in Lumbini. However, the proportion of children age 6–23 months who were given iron-containing MNP supplements in the past 12 months increased in six out of the seven provinces but slightly decreased in Bagmati province (by 2 percentage points).

Detailed distributions of all the independent variables in each province are reported in Tables A1–A7 in the appendix.

## **3.2 Trends in Outcomes Variables**

### **3.2.1 National level**

The distribution of all outcome variables in 2016 and 2022, as well as their corresponding percentage-point changes from 2016 to 2022 at the country level, are reported in Table 3.

Stunting declined from 36% in 2016 to 25% in 2022, corresponding to a reduction of 11 percentage points. Similarly, severe stunting declined from 12% to 6%, corresponding to a 6 percentage-point reduction. Although wasting did not change significantly within the same period, severe wasting declined by 1 percentage point. Underweight declined from 27% to 19%, representing an 8 percentage-point reduction, whereas the decline in severe underweight was slight (2 percentage points). From 2016 to 2022, the prevalence of anemia in children decreased from 52% to 44%, corresponding to an 8 percentage-point decline. However, there was no difference in the prevalence of severe anemia in children between the two periods. Among women, anemia declined from 46% to 38%, representing a reduction of 8 percentage points. In contrast, severe anemia in women showed a slight increase of 1 percentage point. Given the small

sample sizes for severe wasting and severe anemia in both children and women, caution should be taken while interpreting the percentage-point changes in these outcomes.

**Table 3 Trends in outcomes variables, 2016–2022 Nepal DHS surveys**

Outcome variable	Total				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	64.4	1,512	75.0	1,892	10.6	***
Yes	35.6	837	25.0	630	-10.6	
<b>Severe stunting</b>						
No	88.1	2,070	94.0	2,370	5.9	***
Yes	11.9	279	6.0	152	-5.9	
<b>Wasting</b>						
No	90.2	2,115	92.0	2,317	1.8	
Yes	9.8	231	8.0	200	-1.8	
<b>Severe wasting</b>						
No	98.1	2,302	99.2	2,496	1.1	**
Yes	1.9	44	0.8	21	-1.1	
<b>Underweight</b>						
No	73.1	1,723	81.0	2,053	7.9	
Yes	26.9	634	19.0	482	-7.9	***
<b>Severe underweight</b>						
No	94.5	2,228	96.3	2,441	1.8	*
Yes	5.5	128	3.7	94	-1.8	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	47.8	1,001	55.8	1,251	8.0	***
Yes	52.2	1,092	44.2	989	-8.0	
<b>Severe anemia</b>						
No	99.6	2,084	99.6	2,232	0.0	
Yes	0.4	9	0.4	8	0.0	
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	54.5	1,296	62.4	1,586	7.9	**
Yes	45.5	1,082	37.6	954	-7.9	
<b>Severe anemia</b>						
No	99.9	2,377	99.2	2,521	-0.7	**
Yes	0.1	2	0.8	19	0.7	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year.

### 3.2.2 Province level

Province-level distributions of all outcome variables, as well as corresponding percentage-point changes in these outcomes from 2016 to 2022, are reported in Figure 2.

The prevalence of stunting declined in all but two provinces (Gandaki and Sudurpaschim), and the decline ranged from 7 percentage points in Madesh province to 18 percentage points in Karnali province. Severe stunting also declined in all but two provinces (Gandaki and Lumbini), with the decline ranging from 5 percentage points in Koshi province to 17 percentage points in Karnali province.

From 2016 to 2022, wasting declined in Koshi (8 percentage points), Karnali (4 percentage points) and Sudurpaschim (4 percentage points) but increased by 8 percentage points from 8% to 16% in Lumbini province within the same period. However, the decline in severe wasting seen at the national level was too slight to be reflected in any of the seven provinces.

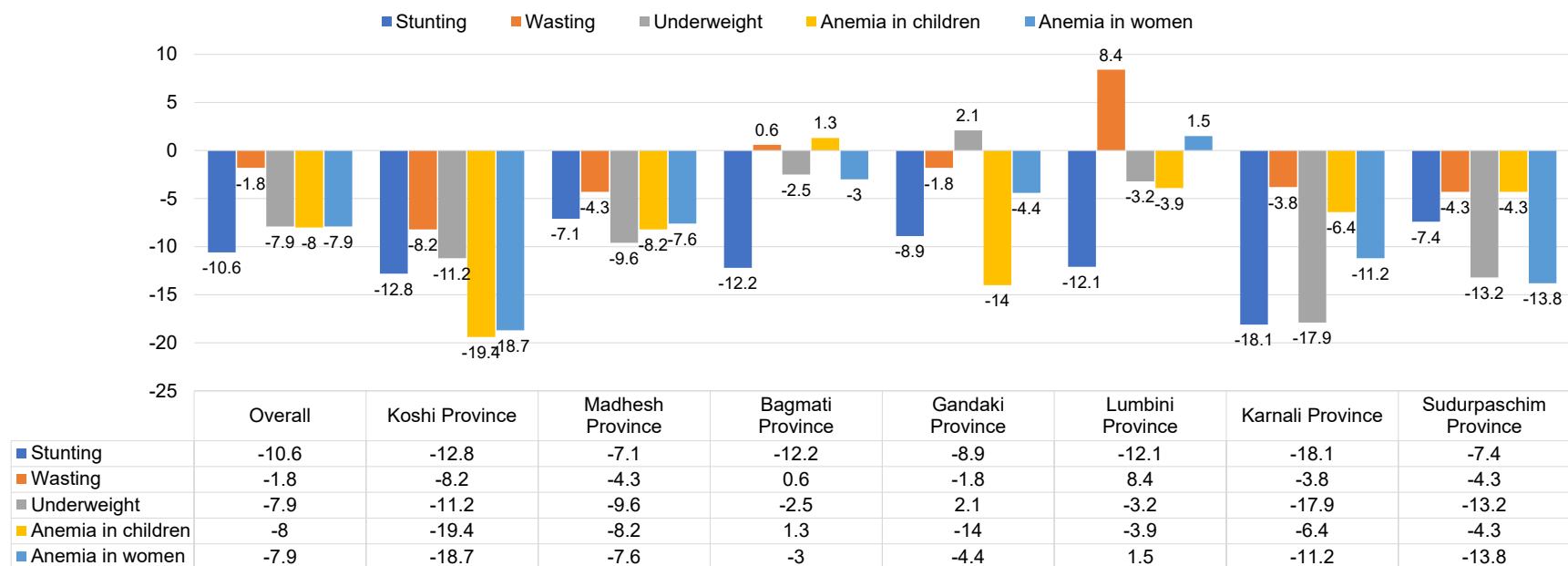
Underweight declined in Koshi (11 percentage points), Madesh (10 percentage points), Karnali (18 percentage points) and Sudurpaschim (13 percentage points) provinces but not in Bagmati, Gandaki, and Lumbini. In contrast, severe underweight declined only in Karnali province (9 percentage points).

Anemia in children declined in Koshi (19 percentage points), Madesh (8 percentage points) and Gandaki (14 percentage points) provinces but not in Bagmati, Lumbini, Karnali, and Sudurpaschim provinces. Similar to the trend seen at the national level, no difference were found in severe anemia in children in any province between 2016 and 2022.

Anemia in women declined only in Koshi (19 percentage points), Karnali (11 percentage points), and Sudurpaschim (14 percentage points) provinces. In contrast, severe anemia in women increased slightly in Lumbini province (2 percentage points), with no changes in the other provinces.

Tables A8–A14 in the appendix show percentage-point changes in the prevalences of stunting, severe stunting wasting, severe wasting underweight, severe underweight, and children and women’s anemia and severe anemia from 2016 to 2022 at the country level and by province.

**Figure 2 Percentage-point change in prevalences of stunting, wasting, underweight, and children’s and women’s anemia, 2016–2022 Nepal DHS surveys**



### 3.3 Trends in Outcomes Variables by Independent Variables

#### 3.3.1 Stunting

##### *Socioeconomic factors*

Figure 3 is a visual representation of socioeconomic factors associated with the greatest and smallest changes in the prevalence of stunting in each province.

In regard to socioeconomic factors, stunting declined the most among children from:

- Households in the middle wealth quintile in Lumbini province (30 percentage points) but increased the most in this same subpopulation in Bagmati province (4 percentage points)
- The Brahmin/Chhetri caste/ethnic group in Karnali province (24 percentage points) but increased the most among those from the Newar caste/ethnic group in Bagmati province (9 percentage points)
- Mothers with some secondary education/6–9 years of schooling in Karnali province (23 percentage points) but increased the most among those from mothers with a School Leaving Certificate (SLC) or higher education/10 years of schooling and above in Madesh province (6 percentage points)
- Mothers with a non-agricultural occupation in Lumbini province (26 percentage points) and declined the least among those from mothers without a job in this same province (4 percentage points)
- Households with more than four members in Karnali province (25 percentage points) and declined the least among those from households with four or fewer members in Madesh province (3 percentage points)
- Households with a female head of household in Lumbini province (26 percentage points) and declined the least in this same subpopulation in Madesh province (5 percentage points)
- Mothers who were not involved in decision-making in Karnali province (24 percentage points) but increased the most among those from mothers who were involved in decision-making in Madesh province (3 percentage points)
- Mothers who used the internet in the past 12 months in Madesh province (13 percentage points) and declined the least in this same subpopulation in Bagmati province (less than 1 percentage point)
- Mothers who did not own a mobile phone in Bagmati province (24 percentage points) but increased in this same subpopulation in Lumbini province (24 percentage points)

**Figure 3 Heat map of socioeconomic factors associated with the greatest and smallest changes in the prevalence of stunting in each province, 2016–2022 Nepal DHS surveys**

Socioeconomic factors	Percentage-point changes in stunting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Wealth quintile</b>							
Lowest	-11.4		-20.1	3.4	-1.2	-20.6	-13.0
Second	-16.5	-6.1	0.7	-14.6	-13.5		-10.5
Middle	-8.3	-11.8	4.1	-4.7	-29.8		3.1
Fourth	-18.9	-12.1	-24.9	-14.1	-8.7		
Highest	-7.2	1.8	-2.3	-6.1	-3.3		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	-10.8		-1.6	-11.9	-16.8	-23.8	-10.7
Terai/Madheshi other		-9.0			-12.7		
Dalit	-10.0	-6.2	-15.7	-4.5	-13.6		-3.5
Newar			8.6				
Janajati	-12.3	0.2	-22.2	-6.2	-7.2		-1.1
Muslim	-16.4	-10.0				0.0	
<b>Mother's education</b>							
No education/no schooling	-17.9	-10.7	-18.9		-3.2	-15.0	5.2
Primary/1–5 years of schooling	-4.6	-3.2	-12.9	1.5	-8.3	-2.8	-19.5
Some secondary/6–9 years of schooling	-6.9	-1.8	-0.3	-4.5	-16.9	-23.2	-3.2
SLC or higher/10 and above years of schooling	-17.8	5.5	-4.7	-15.1	-4.9	-11.7	-9.7
<b>Mother's occupation</b>							
Not working	-13.6	-4.8	-6.6	-11.8	-4.1		-13.1
Non-agricultural	-8.5	-21.6	-24.6		-26.2		
Agricultural	-16.6	-8.2	-8.9	-14.9	-13.8	-20.5	-7.4
<b>Household size</b>							
4 or less	-9.8	-3.0	-12.1	-10.1	-22.4	-5.6	-18.0
More than 4	-15.4	-8.1	-12.6	-8.2	-5.4	-24.7	-2.5
<b>Head of the household</b>							
Male	-10.1	-7.8	-14.7	-9.0	-5.5	-23.4	-6.8
Female	-19.9	-5.2	-7.9	-9.1	-26.2	-8.4	-8.4
<b>Mother's decision making</b>							
Cannot make decision	-10.1	-13.8	-8.8	1.3	-3.9	-23.5	-11.3
Can make decision	-16.5	3.0	-10.2	-9.7	-14.7	-17.8	-6.9
<b>Mother's internet use</b>							
Not used in past 12 months	-6.8	-0.2	-4.6	-3.5	-2.0	-12.3	-2.7
Used in past 12 months	-6.1	-13.3	-0.3	-2.6	-5.8		
<b>Mother owns a mobile phone</b>							
No	-11.1	-3.4	-24.1	-4.5	23.9	-14.3	-7.9
Yes	-10.3	-7.7	-10.1	-8.1	-20.2	-16.5	-5.9

Note: The empty cells correspond to less than 25 observations.  
Color legend: green = lowest; white = midpoint; red = highest.

### ***Child-intrinsic and nutritional factors***

Figure 4 is a visual representation of the child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of stunting in each province.

Regarding child-intrinsic and nutritional factors, stunting declined the most among:

- Children age 48–59 months in Karnali province (29 percentage points) but increased the most among children under age 6 months in Madesh province (18 percentage points)
- Boys in Karnali province (19 percentage points) and declined the least among girls in Madesh province (5 percentage points)
- Children with a normal birthweight in Karnali province (24 percentage points) but increased the most among children with a small birthweight in Madesh province (7 percentage points)
- Children who were not breastfed within 1 hour of birth in Koshi province (17 percentage points) but increased the most in this same subpopulation in Madesh province (9 percentage points)
- Children who were not breastfeeding at the time of the survey in Karnali province (23 percentage points) and declined the least in this same subpopulation in Sudurpaschim province (1 percentage point)
- Children who were not fed with minimum dietary diversity in Sudurpaschim province (24 percentage points) but increased the most among those who were fed with minimum dietary diversity in Madesh province (7 percentage points)
- Children who were fed with a recommended minimum acceptable diet in Bagmati province (23 percentage points) but increased in those who were not fed with a recommended minimum acceptable diet in Madesh province (2 percentage points)

**Figure 4 Heat map of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of stunting in each province, 2016–2022 Nepal DHS surveys**

Child-intrinsic and nutritional factors	Percentage-point changes in stunting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Age of child (in months)</b>							
<6 months	-5.5	17.6	16.3		-7.6		
6–11	-14.5	-4.5	5.1		-21.5		
12–17	-19.8	2.9	-8.6		-0.2		
18–23	-12.0	1.7	-28.0		0.5		
24–35	-14.3	-12.1	-11.9	0.2	-19.2	-26.6	-25.9
36–47	-11.5	-10.7	-14.6	-22.0	-13.2	-14.6	1.9
48–59	-14.6	-20.6	-20.4	-5.9	-19.2	-28.5	2.9
<b>Sex of child</b>							
Male	-10.0	-8.8	-8.6	-11.0	-13.9	-18.6	-6.3
Female	-15.8	-5.3	-15.4	-6.4	-10.4	-17.8	-8.3
<b>Birthweight</b>							
Small (<2.5 kg)	-9.6	6.6			-9.9		
Normal (2.5–3.49 kg)	-18.7	2.1	-5.0	-8.8	-4.9	-24.0	-13.0
Large (≥3.5 kg)	-12.8	-6.3	-19.4		-15.1		-14.0
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	-16.7	8.7	-3.6	-9.8	-8.9		
Child was breastfed within 1 hour of birth	-10.3	0.3	-5.0	-8.1	-4.1	-3.7	-7.2
<b>Current breastfeeding status</b>							
Currently not breastfeeding	-12.1	-12.7	-19.8	-8.6	-12.7	-22.8	-1.3
Currently breastfeeding	-14.1	-2.1	-6.2	-9.9	-12.1	-16.6	-12.2
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed							
Child was exclusively breastfed		17.2					
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	-21.5	-1.7	-9.7		1.4		-24.0
Child was fed with minimum dietary diversity	-5.7	6.9	-17.9	-7.2	-14.3	-17.4	-2.7
<b>Minimum meal frequency</b>							
Child was not fed meals recommended minimum number of times		8.4					
Child was fed meals recommended minimum number of times	-23.9	-2.5	-16.1	-14.4	-1.7	-9.9	-13.1
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	-18.1	1.9	-7.1		-2.4	-14.8	-22.5
Child was fed with recommended minimum acceptable diet	-11.2	-1.9	-22.6	-8.4	-10.9		

Note: The empty cells correspond to less than 25 observations.  
Color legend: green = lowest; white = midpoint; red = highest.



## **Maternal factors**

Figure 5 is a visual representation of maternal factors associated with the greatest and smallest changes in the prevalence of stunting in each province.

In regard to maternal factors, stunting declined the most among children from mothers:

- Age 35–49 in Bagmati province (30 percentage points) and declined the least in this same subpopulation in Koshi province (2 percentage points)
- With a normal body mass index (BMI) in Karnali province (18 percentage points) but increased among children from overweight/obese mothers in Madesh province (2 percentage points)
- With a height less than 145 cm in Koshi province (25 percentage points) and declined the least in this same subpopulation in Madesh province (2 percentage points)
- Whose age at first marriage or union was 16–19 in Karnali province (21 percentage points) but increased among children from mothers whose age at first marriage or union was less than 16 in Sudurpaschim province (3 percentage points)
- Whose age at first birth was 20 or higher in Karnali province (19 percentage points) and declined the least among children from mothers whose age at first birth was less than 20 in Sudurpaschim province (3 percentage points)
- With a birth interval of less than 3 years in Koshi province (25 percentage points) but increased the most among children from mothers with a birth interval of 3 years or more in Sudurpaschim province (4 percentage points)
- Who did not meet minimum dietary diversity in Karnali province (18 percentage points) and declined the least among children from mothers who met minimum dietary diversity in Bagmati province (1 percentage points)

**Figure 5 Heat map of maternal factors associated with the greatest and smallest changes in the prevalence of stunting in each province, 2016–2022 Nepal DHS surveys**

Maternal factors	Percentage-point changes in stunting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Mother's age (in years)</b>							
15–24	-14.5	-4.3	-4.8	-2.2	-5.4	-15.0	-3.3
25–34	-13.7	-8.1	-13.9	-15.3	-16.6	-20.6	-10.8
35–49	-1.9	-18.9	-30.4		-17.7		
<b>Mother's BMI</b>							
Underweight (<18.5)	-6.9	-5.0			-12.9		-12.2
Normal (18.5–24.9)	-13.7	-6.5	-6.2	-9.9	-11.8	-17.7	-6.6
Overweight/obese (≥25)	-10.0	2.4	-11.6	-1.0	-7.5		
<b>Mother's height</b>							
Less than 145 cm	-25.3	-1.6			-16.7		
145 cm or more	-11.0	-7.6	-11.1	-8.6	-11.5	-15.8	-6.9
<b>Age at first marriage or union</b>							
<16 years	-1.2	-5.5	-20.6	-3.7	-19.9	-11.1	3.4
16–19 years	-16.0	-9.2	-17.0	-11.4	-11.4	-21.4	-9.3
20 and above years	-13.5	-0.3	-4.4	-10.1	-5.1	-18.8	-7.3
<b>Age at first birth</b>							
<20 years	-13.4	-6.5	-15.0	-9.1	-18.6	-17.6	-3.3
20 and above	-12.1	-7.9	-9.9	-8.6	-5.7	-19.1	-13.6
<b>Birth interval</b>							
Less than 3 years	-24.5	-4.3	2.4	-20.8	-11.4	-17.4	-11.7
3 years or more or no preceding interval	-3.0	-4.0	-19.5	-7.0	-18.0	-17.6	4.1
<b>Mother's minimum dietary diversity</b>							
Less than 5 food groups	-10.6	-3.9	-16.1	-12.2	-9.3	-17.5	-9.1
5 or more food groups	-3.9	-11.7	-1.4	-1.5	-16.0	-13.0	-5.3
<b>Mother's smoking status</b>							
Smoking			-37.3				
Non-smoking	-13.7	-8.0	-9.3	-7.4	-13.7	-19.0	-6.5

Note: The empty cells correspond to less than 25 observations.  
 BMI = body mass index  
 Color legend: green = lowest; white = midpoint; red = highest.

### Health and environment factors

Figure 6 is a visual representation of health and environment factors associated with the greatest and smallest changes in the prevalence of stunting in each province.

In regard to health and environment factors, stunting declined the most among children:

- Age 12–23 months who received all basic vaccinations in Karnali province (25 percentage points) and declined the least among children who did not receive all basic vaccines in Sudurpaschim province (1 percentage point)

- Who had any illness in the past 2 weeks in Lumbini province (22 percentage points) and declined the least in this same subpopulation in Gandaki province (5 percentage points) and among children who had no illness in the past 2 weeks in Sudurpaschim province (5 percentage points)
- From households that treated water with an appropriate method before drinking in Bagmati province (17 percentage points) and declined the least among those from households that did not treat water before drinking in Madesh province (7 percentage points)
- From households with no soap and water at handwashing stations in Koshi province (21 percentage points) but increased the most in this same subpopulation in Gandaki province (7 percentage points)
- From households that used an unimproved sanitation facility in Koshi province (32 percentage points) and decreased the least among those from households using an improved sanitation facility in Madesh province (1 percentage point)
- From households that used solid fuel for cooking in Karnali province (18 percentage points) but increased among those from households using clean fuel for cooking in Madesh province (1 percentage point)
- Whose mothers could travel to the nearest health care facility in less than 30 minutes in Karnali province (27 percentage points) but increased the most among those whose mothers had to travel more than 60 minutes to the nearest health care facility in Koshi province (7 percentage points)
- Whose mothers did not deliver in a health facility in Bagmati province (22 percentage points) but increased in this same subpopulation in Madesh province (2 percentage points)
- Whose mothers were counseled in the past 6 months about how or what to feed their children in Karnali province (33 percentage points) but increased in this same subpopulation in Bagmati province (17 percentage points)
- From wards with health mother's groups in Karnali and Koshi provinces (22 percentage points) but slightly increased in this same subpopulation in Bagmati province (1 percentage point)
- Whose mothers were not counseled about breastfeeding during postnatal care (PNC) visits in Lumbini province (22 percentage points) but slightly increased in this same subpopulation in Madesh province (less than 1 percentage point)
- Whose mothers had access to any of the three media (radio, television, or newspaper) less than once a week in Bagmati province (33 percentage points) and decreased the least among this same subpopulation in Sudurpaschim province (1 percentage point)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs in Bagmati province (39 percentage points) but increased the most among those whose mothers had heard/seen any one of the TV/radio health and nutrition programs in the same province (5 percentage points)
- Whose mothers received iron-containing supplements during their pregnancy in Bagmati province (16 percentage points) and decreased the least in this same subpopulation in Madesh province (1 percentage point)
- Whose mothers did not receive deworming medication during their last pregnancy in Lumbini province (17 percentage points) but slightly increased in this same subpopulation in Madesh province (less than 1 percentage point)

- Age 6–59 months who were not given vitamin A supplements in the past 6 months in Koshi province (25 percentage points) and decreased the least in this same subpopulation in Madesh province (7 percentage points)
- Age 12–59 months who were not given deworming medication in the past 6 months in Koshi and Bagmati provinces (26 percentage points each) and decreased the least in this same subpopulation in Madesh province (2 percentage points)

**Figure 6 Heat map of health and environment factors associated with the greatest and smallest changes in the prevalence of stunting in each province, 2016–2022 Nepal DHS surveys**

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpa schim
<b>Vaccinations</b>							
Child (12–23 months) not received all basic vaccines	-8.8	-6.3	-10.6	-9.9	-16.1	-13.3	-1.3
Child (12–23 months) received all basic vaccines	-19.8	-9.3	-14.9	-7.7	-6.2	-25.3	-17.3
<b>Any illnesses</b>							
Child had no illness	-10.2	-7.8	-12.9	-8.2	-5.4	-18.8	-5.0
Child had any illness	-13.6	-6.2	-7.5	-5.0	-22.1	-14.5	-10.4
<b>Treatment of water before drinking</b>							
No treatment	-12.1	-6.6	-10.1	-8.9	-10.4	-13.4	-7.2
Treatment with appropriate method	-11.9		-16.7	-8.5	-14.8		
<b>Sources of drinking water</b>							
Unimproved sources							
Improved sources	-12.0	-7.5	-11.2	-8.3	-11.8	-19.7	-6.8
<b>Household with soap and water at handwashing station</b>							
No	-20.5	-2.9	-11.5	7.2	-11.4	-16.9	-7.5
Yes	-5.3	-3.0	-6.8	-4.5	0.3	-10.1	-2.5
<b>Sanitation</b>							
Unimproved sanitation	-31.9	-5.7	-25.4		-16.5		
Improved sanitation	-8.4	-0.9	-10.0	-7.4	-9.1	-19.7	-5.0
<b>Use of cooking fuel</b>							
Solid fuel	-13.6	-6.7	-7.3	-10.8	-12.3	-18.4	-7.7
Clean fuel	-9.1	1.3	-10.2	-1.5	-8.6		-2.8
<b>Distance to nearest health care facility</b>							
<30 min	-14.9	-6.5	-4.0	-4.7	-12.0	-27.4	-7.2
30–60 min	-14.1	2.6	-6.0	-7.2	-8.6	-8.5	-4.9
60+ min	7.0		-26.0				
<b>Place of delivery</b>							
Health facility	-12.6	-3.8	-6.6	-9.7	-8.6	-14.3	-10.7
Home/other	-11.8	2.3	-22.2		-10.7	-5.8	

Continued...

Figure 6—Continued

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpa schim
<b>Number of ANC visits</b>							
None							
1–3	-23.2	-1.5					
4 or more	-8.0	-0.3	-12.6	-7.7	-8.4	-16.2	-8.1
<b>MIYCN counseling</b>							
No	-15.6	-2.3	-20.6	-12.1	-11.0	-14.4	-13.8
Yes	-13.3	-4.0	17.4	-6.2	-9.8	-32.5	-14.0
<b>Health mother's groups in the ward</b>							
No	-11.8	-9.8	-15.7	-9.9	-15.2	-13.6	-10.1
Yes	-21.6	-0.6	0.7	-5.8	-16.4	-21.7	-3.3
<b>Counseling about breastfeeding during PNC visits</b>							
No	-18.0	0.3	-13.6	-9.1	-21.6	-13.3	-19.1
Yes	-7.7	-1.3	-9.9	-10.7	-6.5	-11.1	-3.8
<b>Mother's media exposure</b>							
Access none of the 3 media (radio, television or newspaper) at all	-20.6	-12.3	-22.8		-29.7	-18.4	-15.5
Access any of 3 media less than once a week	-23.4	-8.4	-32.7	-9.8	-9.7	-12.0	-0.5
Access any of 3 media at least once a week	-6.6	-5.1	-4.3	-8.1	-5.7	-18.8	-8.0
<b>Exposure to TV/radio health and nutrition program</b>							
Heard/seen none of the TV/radio H&N programs	-19.1	-6.5	-38.9	-18.3	-17.6	-24.9	-13.0
Heard/seen any one of the TV/radio H&N programs	-9.3	-24.0	5.2	1.0	-12.5	-12.8	-2.8
<b>Iron-containing supplements during last pregnancy</b>							
No	-11.0	-2.5	-3.0	-3.9	-4.8	-13.9	-12.8
Yes	-10.7	-1.0	-16.0	-12.4	-12.6	-14.7	-8.4
<b>Deworming medication during last pregnancy</b>							
No	-11.4	0.1	-10.4		-16.8		
Yes	-12.6	-4.0	-12.6	-4.9	-10.1	-13.7	-6.8
<b>Iron containing MNP supplements for children age 6–23 months in past 12 months</b>							
No	-15.7	1.3	-20.4	-9.3	-4.4	-14.0	-16.5
Yes			9.3				
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>							
No	-25.0	-6.8	-13.0		-13.6		
Yes	-11.1	-10.0	-15.1	-13.2	-13.1	-20.3	-8.5
<b>Deworming for children age 12–59 months in past 6 months</b>							
No	-25.9	-2.0	-25.6		-5.3		-23.0
Yes	-11.4	-12.2	-14.1	-15.1	-14.8	-20.3	-5.4

Note: The empty cells correspond to less than 25 observations.

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Color legend: green = lowest; white = midpoint; red = highest.

### 3.3.2 Wasting

#### **Socioeconomic factors**

Figure 7 is a visual representation of socioeconomic factors associated with the greatest and smallest changes in the prevalence of wasting in each province.

In regard to socioeconomic factors, wasting increased the most among children from:

- Households in the highest wealth quintile in Lumbini province (20 percentage points) but declined the most among households in the middle wealth quintile in Koshi and Bagmati provinces (10 percentage points each)
- The Terai/Madheshi other caste/ethnic group in Lumbini province (23 percentage points) but declined the most among the Dalit caste/ethnic group in Koshi province (26 percentage points)
- Mothers with primary/1–5 years of schooling in Lumbini province (18 percentage points) but declined the most among mothers with no education/no schooling in Koshi province (20 percentage point)
- Mothers with a non-agricultural occupation in Lumbini province (12 percentage points) but declined the most in this same subpopulation in Koshi province (13 percentage points)
- Households with more than four members in Lumbini province (13 percentage points) but declined the most among children from households with four or fewer members in Madesh province (9 percentage points)
- Households with a male head of household in Lumbini province (12 percentage points) but declined the most among children from households with a female head of household in Koshi province (16 percentage points)
- Mothers who were not involved in decision-making in Lumbini province (12 percentage points) but declined the most in this same subpopulation in Koshi province (11 percentage points)
- Mothers who did not use the internet in the past 12 months in Lumbini province (14 percentage points) but declined the most among children from mothers who used the internet in the past 12 months in Koshi province (11 percentage points)
- Mothers who did not own a mobile phone in Lumbini province (23 percentage points) but declined the most in this same subpopulation in Madesh province (9 percentage points)

**Figure 7 Heat map of socioeconomic factors associated with the greatest and smallest changes in the prevalence of wasting in each province, 2016–2022 Nepal DHS surveys**

Socioeconomic factors	Percentage-point changes in wasting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Wealth quintile</b>							
Lowest	-6.5		-0.8	-3.1	6.6	-4.3	-5.5
Second	-6.5	-6.8	6.0		3.2		-0.9
Middle	-9.6	1.1	-9.6	2.6	2.3		-4.8
Fourth	-9.6	-7.3	-2.1	-4.8	15.8		
Highest	-8.3	-3.4	2.9	-8.7	20.2		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	-6.2		2.9	0.1	3.1	-5.1	-2.6
Terai/Madheshi other		-3.7			22.9		
Dalit	-25.8	-6.5	-5.8	-7.1	8.8		-7.0
Newar			4.2				
Janajati	-4.9	-3.1	-1.8	0.5	-2.2		-10.4
Muslim	-28.4	-7.0					
<b>Mother's education</b>							
No education/no schooling	-19.8	-3.7	-1.1		13.5	-6.9	-5.8
Primary/1–5 years of schooling	-5.6	-5.1	-2.7	0.1	17.9		-11.1
Some secondary/6–9 years of schooling	-5.4	-1.9	1.1	-5.4	2.5	-1.9	-2.0
SLC or higher/10 and above years of schooling	-3.9	-6.8	0.5	-1.3	6.3	-5.2	-1.9
<b>Mother's occupation</b>							
Not working	-10.5	-5.1	1.2	0.3	10.0		-0.7
Non-agricultural	-12.8	10.7	1.3		11.9		
Agricultural	-4.2	-5.0	-0.2	0.6	6.6	-3.6	-4.2
<b>Household size</b>							
4 or less	-8.6	-9.4	-0.4	1.3	2.3	-6.3	-3.6
More than 4	-8.0	-2.6	1.6	-4.6	12.5	-2.5	-4.7
<b>Head of the household</b>							
Male	-5.7	-5.3	0.4	-5.8	11.9	-2.5	-3.5
Female	-15.9	-2.4	-1.3	4.0	0.5	-5.4	-5.6
<b>Mother's decision-making</b>							
Cannot make decision	-10.6	-2.5	-3.1	-4.5	12.0	-1.3	-4.3
Can make decision	-7.9	-10.6	3.3	0.0	5.6	-6.6	-6.0
<b>Mother's internet use</b>							
Not used in past 12 months	-7.5	-5.0	-0.7	-0.7	14.2	-3.3	-4.0
Used in past 12 months	-11.1	-1.0	1.8	-4.1	7.1		
<b>Mother owns a mobile phone</b>							
No	-8.4	-9.0	-2.3		22.6		-6.8
Yes	-8.1	-2.2	1.0	-1.3	5.3	-3.3	-3.7

Note: The empty cells correspond to less than 25 observations.

SLC = School Leaving Certificate

Color legend: green = lowest; white = midpoint; red = highest.

### ***Child-intrinsic and nutritional factors***

Figure 8 a visual representation of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of wasting in each province.

Regarding child-intrinsic and nutritional factors, wasting increased the most among:

- Children age 24–35 months in Lumbini province (18 percentage points) but declined the most among children age 6–11 months in Koshi province (24 percentage points)
- Boys in Lumbini province (11 percentage points) but declined the most among girls in Koshi province (13 percentage points)
- Children with a small birthweight in Bagmati province (20 percentage points) but declined the most among children with a normal birthweight in Koshi province (9 percentage points)
- Children who were breastfed within 1 hour of birth in Lumbini province (10 percentage points) but declined the most among those who were not breastfed within 1 hour of birth in Koshi province (17 percentage points)
- Children who were not breastfeeding at the time of the survey in Lumbini province (10 percentage points) but declined the most among those who were breastfeeding at the time of the survey in Koshi province (12 percentage point)
- Children who were not fed with minimum dietary diversity in Bagmati province (9 percentage points) but declined the most in this same subpopulation in Koshi province (17 percentage points)
- Children who were fed with a minimum meal frequency in Lumbini province (4 percentage points) but declined the most in this same subpopulation in Koshi province (17 percentage points)
- Children who were not fed a recommended minimum acceptable diet in Bagmati province (8 percentage points) but declined the most in this same subpopulation in Madesh province (16 percentage points)



**Figure 8 Heat map of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of wasting in each province, 2016–2022 Nepal DHS surveys**

Child-intrinsic and nutritional factors	Percentage-point changes in wasting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Age of child (in months)</b>							
<6 months	-6.5	-15.3	-7.3		12.1		
6–11	-24.2	-18.0	4.1		2.3		
12–17	-22.1	2.8	0.2		-3.0		
18–23	1.0	-9.5	-0.2		11.7		
24–35	-4.0	-0.5	-1.9	4.8	18.1	-5.2	-2.2
36–47	-2.6	-1.8	2.9	-1.4	0.4	-3.5	-0.6
48–59	-3.6	-0.5	2.1	1.0	12.4	4.1	-12.2
<b>Sex of child</b>							
Male	-4.5	-3.3	0.1	-4.4	11.4	-2.6	-5.8
Female	-12.7	-5.4	0.9	0.8	5.4	-5.3	-2.3
<b>Birthweight</b>							
Small (<2.5 kg)	-5.7		19.9		11.9		
Normal (2.5–3.49 kg)	-9.2	-6.2	-1.3	-1.5	15.8	-4.6	-2.9
Large (≥3.5 kg)	-1.3	1.2	-4.4		4.0		-4.5
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	-16.6	-13.1	5.4	-7.4	-1.1		
Child was breastfed within 1 hour of birth	-11.1	-8.4	-4.4		10.2	-6.8	-3.9
<b>Current breastfeeding status</b>							
Currently not breastfeeding	-2.8	0.3	1.8	-1.9	10.0	0.5	-2.8
Currently breastfeeding	-11.5	-8.1	-0.2	-1.6	8.3	-5.8	-4.8
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed			-13.4				
Child was exclusively breastfed		-19.8	-1.7				
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	-17.3	-9.5	8.7		1.3		-6.6
Child was fed with minimum dietary diversity	-12.7	-5.4	-4.5	-2.8	7.7	-1.0	3.2
<b>Minimum meal frequency</b>							
Child was not fed meals recommended minimum number of times		-3.0					
Child was fed meals recommended minimum number of times	-17.4	-10.4	3.0	1.1	4.2	-5.8	-1.6
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	-16.4	-8.5	8.1		6.2	-6.7	-4.9
Child was fed with recommended minimum acceptable diet	-13.5	-6.1	-5.3		0.8		

Note: The empty cells correspond to less than 25 observations.  
Color legend: green = lowest; white = midpoint; red = highest.

## **Maternal factors**

Figure 9 is a visual representation of maternal factors with the greatest and least changes in wasting in each province.

In regard to maternal factors, wasting increased the most among children from mothers:

- Age 35–49 in Lumbini province (30 percentage points) but declined the most among those from mothers age 25–34 in Koshi province (10 percentage points)
- With a BMI < 18.5 in Lumbini province (16 percentage points) but declined the most among those from overweight/obese mothers in Koshi province (10 percentage points)
- With a height less than 145 cm in Lumbini province (20 percentage points) but declined the most in this same subpopulation in Koshi province (17 percentage points)
- Whose age at first marriage or union was 16–19 in Lumbini province (15 percentage points) but declined the most among those from mothers whose age at first marriage or union was 20 or above in Madesh province (13 percentage points)
- Whose age at first birth was 20 or above in Lumbini province (11 percentage points) but declined the most among those from mothers whose age at first birth was less than 20 in Koshi province (10 percentage points)
- With a birth interval of 3 years or more in Lumbini province (12 percentage points) but decreased the most in this same subpopulation in Koshi province (13 percentage points)
- Who met minimum dietary diversity in Lumbini province (10 percentage points) but declined the most among those from mothers who did not meet minimum dietary diversity in Koshi province (9 percentage points)
- Who did not smoke in Lumbini province (8 percentage points) but declined the most among those from mothers who smoked in Koshi province (9 percentage points)

**Figure 9 Heat map of maternal factors associated with the greatest and smallest changes in the prevalence of wasting in each province, 2016–2022 Nepal DHS surveys**

Maternal factors	Percentage-point changes in wasting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Mother's age (in years)</b>							
15–24	-7.0	-4.4	-1.1	-6.1	5.0	-4.8	-3.5
25–34	-10.0	-2.8	1.7	1.2	7.8	-1.9	-4.0
35–49	-6.1	-9.1	0.0		30.2		
<b>Mother's BMI</b>							
Underweight (<18.5)	0.7	-4.7			16.2		-1.0
Normal (18.5–24.9)	-8.2	-3.2	0.3	-3.7	6.5	-4.8	-5.4
Overweight/obese (≥25)	-10.1		0.5	1.9	8.9		
<b>Mother's height</b>							
Less than 145 cm	-16.8	-4.0			20.1		
145 cm or more	-6.8	-4.3	0.5	-2.5	7.3	-4.8	-3.9
<b>Age at first marriage or union</b>							
<16 years	-9.4	1.2	-3.1	-2.7	1.3	1.4	-2.0
16–19 years	-7.9	-5.6	0.4	-0.6	14.9	-8.1	-7.1
20 and above years	-8.4	-12.8	1.8	-1.2	0.4	1.3	-2.5
<b>Age at first birth</b>							
<20 years	-9.5	-2.0	-1.5	-1.3	4.2	-5.4	-7.1
20 and above	-7.3	-8.9	1.8	-2.3	11.4	-1.6	-0.7
<b>Birth interval</b>							
Less than 3 years	-1.7	-5.1	0.6	-9.0	6.2	-4.6	-1.5
3 years or more or no preceding interval	-13.3	-0.1	2.9	0.2	12.4	-2.8	-5.5
<b>Mother's minimum dietary diversity</b>							
Less than 5 food groups	-9.4	-3.9	-0.2	4.1	8.5	-5.6	-4.7
5 or more food groups	-3.2	-9.7	0.5	-8.7	10.2	1.6	-0.8
<b>Mother's smoking status</b>							
Smoking	-9.3		-2.8				
Non-smoking	-8.2	-4.5	0.8	-1.8	7.8	-3.5	-4.5

Note: The empty cells correspond to less than 25 observations.  
 BMI = body mass index  
 Color legend: green = lowest; white = midpoint; red = highest.

### Health and environment factors

Figure 10 is a visual representation of health and environment factors associated with the greatest and smallest changes in the prevalence of wasting in each province.

In regard to health and environment factors, wasting increased the most among children:

- Age 12–23 months who received all basic vaccinations in Lumbini province (10 percentage points) but declined the most among children who did not receive all basic vaccines in Koshi province (9 percentage points)

- Who had no illness in the past 2 weeks in Lumbini province (10 percentage points) but declined the most among children who had any illness in the past 2 weeks in Koshi province (13 percentage points)
- From households that treated water with an appropriate method before drinking in Lumbini province (10 percentage points) but declined the most in this same subpopulation in Koshi province (10 percentage points)
- From households with no soap and water at handwashing stations in Lumbini province (13 percentage points) but decreased the most in this same subpopulation in Koshi province (11 percentage points)
- From households that used an unimproved sanitation facility in Lumbini province (18 percentage points) but decreased the most among those from households using an improved sanitation facility in Koshi province (8 percentage point)
- From households that used clean fuel for cooking in Lumbini province (13 percentage points) but decreased the most among those from households using solid fuel for cooking in Koshi province (9 percentage points)
- Whose mothers could travel to the nearest health care facility in less than 30 min in Lumbini province (10 percentage points) but decreased the most in this same subpopulation in Koshi province (11 percentage points)
- Whose mothers did not deliver in a health facility in Lumbini province (13 percentage points) but decreased the most in this same subpopulation in Koshi province (9 percentage points)
- Whose mothers were counseled in the past 6 months about how or what to feed their children in Lumbini province (18 percentage points) but decreased the most in this same subpopulation in Madesh province (9 percentage points)
- From wards with health mother's groups in Lumbini province (13 percentage points) but decreased the most in this same subpopulation in Koshi province (11 percentage points)
- Whose mothers were counseled about breastfeeding during PNC visits in Lumbini province (15 percentage points) but declined the most among those whose mothers were not counseled about breastfeeding during PNC visits in Koshi province (13 percentage points)
- Whose mothers had access to none of the three media (radio, television, or newspaper) in Lumbini province (13 percentage points) but declined the most among this same subpopulation in Koshi province (17 percentage points)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs in Lumbini province (9 percentage points) but declined the most in this same subpopulation in Koshi province (10 percentage points)
- Whose mothers did not receive iron-containing supplements during pregnancy for their last birth in Lumbini province (15 percentage points) and declined the most in this same subpopulation in Madesh province (10 percentage points)
- Whose mothers received deworming medication during their last pregnancy in Lumbini province (11 percentage points) but declined the most among those whose mothers did not receive deworming medication during their last pregnancy in Koshi province (11 percentage points)

- Age 6–59 months who were not given vitamin A supplements in the past 6 months in Lumbini province (13 percentage points) and declined the most in this same subpopulation in Koshi province (16 percentage points)
- Age 12–59 months who were not given deworming medication in the past 6 months in Lumbini province (16 percentage points) but declined the most in this same subpopulation in Koshi province (9 percentage points)

**Figure 10 Heat map of health and environment factors associated with the greatest and smallest changes in the prevalence of wasting in each province, 2016–2022 Nepal DHS surveys**

Health and environment factors	Percentage-point changes in wasting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Vaccinations</b>							
Child (12–23 months) not received all basic vaccines	-9.1	-4.7	1.9	-4.8	7.5	-4.2	-5.8
Child (12–23 months) received all basic vaccines	-6.9	-3.4	-1.5	1.8	9.5	-3.0	-1.9
<b>Any illnesses</b>							
Child had no illness	-4.7	-4.1	2.5	-2.9	9.9	-3.7	-5.2
Child had any illness	-13.1	-4.7	-2.0	-1.4	5.8	-5.0	-3.5
<b>Treatment of water before drinking</b>							
No treatment	-9.7	-4.2	0.1	-3.3	10.3	-3.1	-4.1
Treatment with appropriate method	-2.6		1.2	0.9	3.4		
<b>Sources of drinking water</b>							
Unimproved sources							
Improved sources	-8.7	-4.5	0.8	-2.2	8.7	-3.6	-3.2
<b>Household with soap and water at handwashing station</b>							
No	-11.1	-6.4	2.2	8.7	12.9	-3.4	0.8
Yes	-2.4	-1.8	0.4	-6.7	9.7	-3.2	-8.4
<b>Sanitation</b>							
Unimproved sanitation	-6.7	-5.6	-4.5		18.1		
Improved sanitation	-7.9	-1.9	1.1	-2.1	7.3	-4.0	-3.7
<b>Use of cooking fuel</b>							
Solid fuel	-8.7	-5.6	1.0	1.6	6.1	-3.5	-3.4
Clean fuel	-6.4	2.3	0.1	-6.8	13.4		-9.1
<b>Distance to nearest health care facility</b>							
<30 min	-11.1	-4.1	0.3	-1.2	10.3	-6.9	-4.4
30–60 min	-6.3	-6.9	-3.4	-0.9	7.6	-5.0	-5.7
60+ min	-2.9		8.9				
<b>Place of delivery</b>							
Health facility	-6.1	-3.2	-0.9	-2.5	13.2	-2.2	-4.3
Home/other	-8.5	-2.5	5.6		13.3	-4.2	
<b>Number of ANC visits</b>							
None							
1–3	-17.7	-8.6					
4 or more	-7.5	-4.4	0.2	-3.4	9.4	-2.7	-3.5

Continued...

Figure 10—Continued

Health and environment factors	Percentage-point changes in wasting by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>MIYCN counseling</b>							
No	-6.4	-3.3	3.5	-3.0	6.7	-3.5	-3.6
Yes	-6.5	-9.0	-4.0	-1.6	18.1	-3.8	-4.8
<b>Health mother's groups in the ward</b>							
No	-7.3	-4.7	1.3	-5.7	4.2	-1.3	-8.8
Yes	-10.7	0.5	0.4	2.6	12.5	-3.1	-3.0
<b>Counseling about breastfeeding during PNC visits</b>							
No	-12.7	-6.8	2.8	6.8	5.0	-4.4	-1.2
Yes	-6.5	-6.0	-1.1	-5.8	14.8	-4.7	-6.3
<b>Mother's media exposure</b>							
Access none of the 3 media (radio, television or newspaper) at all	-17.2	-7.2	0.5		13.3	-4.5	-9.4
Access any of 3 media less than once a week	-6.7	-7.8	-2.1	0.2	6.0	-4.3	0.8
Access any of 3 media at least once a week	-7.2	-0.7	0.9	-1.6	6.1	-3.8	-7.0
<b>Exposure to TV/radio health and nutrition program</b>							
Heard/seen none of the TV/radio H&N programs	-10.1	-4.7	-1.4	-1.8	8.5	-1.7	-4.6
Heard/seen any one of the TV/radio H&N programs	-6.7	1.0	5.4	1.2	4.6	-5.6	-4.0
<b>Iron-containing supplements during last pregnancy</b>							
No	-9.1	-10.1	-4.3	1.0	15.0	-5.1	-4.4
Yes	-8.8	-0.3	3.6	-4.5	9.4	-2.9	-4.4
<b>Deworming medication during last pregnancy</b>							
No	-10.8	-9.5	-0.2		9.3		
Yes	-8.8	-6.0	-0.1	-5.3	10.8	-4.6	-4.5
<b>Iron containing MNP supplements for children age 6–23 in past 12 months</b>							
No	-17.3	-4.5	2.8	1.3	5.0	-6.7	-5.9
Yes			-0.1				
<b>Vitamin A supplements for children age 6–59 in past 6 months</b>							
No	-16.3	-6.7	5.7		12.7		
Yes	-7.2	-1.9	0.7	1.5	7.7	-1.8	-2.6
<b>Deworming for children age 12–59 in past 6 months</b>							
No	-8.6	-4.3	5.3		16.4		2.3
Yes	-4.5	0.0	-0.1	0.6	8.2	-0.8	-4.0

Note: Empty cells correspond to less than 25 observations.

ANC = antenatal care; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care

Color legend: green = lowest; white = midpoint; red = highest.

### 3.3.3 Underweight

#### ***Socioeconomic factors***

Figure A1 is a visual representation of socioeconomic factors associated with the greatest and smallest changes in the prevalence of underweight in each province.

In regard to socioeconomic factors, underweight declined the most among children from:

- Households in the lowest wealth quintile in Bagmati province (29 percentage points) but increased the most among those from households in the middle wealth quintile in the same province (17 percentage points)
- The Dalit caste/ethnic group in Koshi province (25 percentage points) but increased the most among those from the Janajati caste/ethnic group in Gandaki province (12 percentage points)
- Mothers with primary/1–5 years of schooling in Sudurpaschim province (25 percentage points) but increased the most in this same subpopulation in Gandaki province (15 percentage points)
- Mothers with a non-agricultural occupation in Koshi province (26 percentage points) but increased the most among those from mothers without a job in Lumbini province (7 percentage points)
- Households with more than four members in Karnali province (19 percentage points) but increased the most among those from households with four or less members in Gandaki province (5 percentage points)
- Households with a female head of household in Koshi province (20 percentage points) but increased the most among those from households with a male head of household in Gandaki province (5 percentage points)
- Mothers who were involved in decision-making in Karnali province (24 percentage points) but increased the most among children from mothers who were not involved in decision-making in Gandaki province (7 percentage points)
- Mothers who did not use the internet in the past 12 months in Karnali province (14 percentage points) but increased the most in this same subpopulation in Gandaki province (9 percentage points)
- Mothers who did not own a mobile phone in Sudurpaschim province (27 percentage points) but increased the most in this same subpopulation in Lumbini province (22 percentage points)

#### ***Child-intrinsic and nutritional factors***

Figure A2 is a visual representation of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of underweight in each province.

Regarding child-intrinsic and nutritional factors, underweight declined the most among:

- Children age 18–23 months in Madesh province (24 percentage points) but increased the most in this same subpopulation in Lumbini province (9 percentage points)
- Boys in Karnali province (19 percentage points) but increased slightly among girls in Bagmati province (1 percentage point)
- Children with a small birthweight in Koshi province (23 percentage points) but increased the most in this same subpopulation in Lumbini province (13 percentage points)

- Children who were not breastfed within 1 hour of birth in Koshi province (19 percentage points) but increased the most in this same subpopulation in Lumbini province (4 percentage points)
- Children who were breastfeeding at the time of the survey in Karnali province (19 percentage points) and declined the least in this same subpopulation in Bagmati province (2 percentage point)
- Children who were not fed with minimum dietary diversity in Sudurpaschim province (23 percentage points) and declined the least among those who were fed with minimum dietary diversity in Bagmati province (1 percentage point)
- Children who were not fed a recommended minimum acceptable diet in Sudurpaschim province (20 percentage points) but increased the most among those who were fed a recommended minimum acceptable diet in Lumbini province (2 percentage points)

### ***Maternal factors***

Figure A3 is a visual representation of maternal factors associated with the greatest and smallest changes in the prevalence of underweight in each province.

In regard to maternal factors, underweight declined the most among children from mothers:

- Age 25–34 in Karnali province (24 percentage points) but increased the most among those from mothers age 15–24 in Bagmati province (6 percentage points)
- With a BMI < 18.5 in Sudurpaschim province (21 percentage points) but increased the most among those from overweight/obese mothers in Gandaki province (5 percentage points)
- With a height less than 145 cm in Koshi province (27 percentage points) but increased among those from mothers with a height of 145 cm or more in Gandaki province (2 percentage points)
- Whose age at first marriage or union was 16–19 in Karnali province (20 percentage points) but increased the most among those from mothers whose age at first marriage or union was less than 16 in Gandaki province (4 percentage points)
- Whose age at first birth was less than 20 years in Karnali province (20 percentage points) but increased the most in this same subpopulation in Gandaki province (4 percentage points)
- With a birth interval of less than 3 years in Karnali province (23 percentage points) but increased among those from mothers with a birth interval of 3 years or more in Gandaki province (5 percentage points)
- Who met minimum dietary diversity in Madesh province (30 percentage points) but increased the most in this same subpopulation in Gandaki province (5 percentage points)
- Who did not smoke in Karnali province (17 percentage points) and increased in this same subpopulation in Gandaki province (4 percentage points)

### ***Health and environment factors***

Figure A4 is a visual representation of health and environment factors associated with the greatest and smallest changes in the prevalence of underweight in each province.



In regard to health and environment factors, underweight declined the most among children:

- Age 12–23 months who did not receive all basic vaccinations in Karnali province (19 percentage points) but increased the most in this same subpopulation in Gandaki province (4 percentage points)
- Who had no illness in the past 2 weeks in Karnali province (20 percentage points) but increased the most in this same subpopulation in Gandaki province (5 percentage points)
- From households that did not treat water before drinking in Karnali province (14 percentage points) but increased the most in this same subpopulation in Gandaki province (7 percentage points)
- From households with no soap and water at handwashing stations in Karnali province (16 percentage points) but increased the most in this same subpopulation in Gandaki province (19 percentage points)
- From households that used an unimproved sanitation facility in Koshi province (24 percentage points) but increased the most in this same subpopulation in Lumbini province (3 percentage points)
- From households that used solid fuel for cooking in Karnali province (18 percentage points) but increased the most among those from households using clean fuel for cooking in Gandaki province (4 percentage points)
- Whose mothers could travel to the nearest health care facility in less than 30 minutes in Karnali province (27 percentage points) but increased the most among those from mothers whose travel time to the nearest health care facility was more than 60 minutes in Koshi province (8 percentage point)
- Whose mothers did not deliver in a health facility in Karnali province (19 percentage points) but increased the most in this same subpopulation in Gandaki province (29 percentage points)
- Whose mothers were counseled in the past 6 months about how or what to feed their children in Karnali province (29 percentage points) but increased the most in this same subpopulation in Gandaki province (8 percentage points)
- From wards without health mother’s groups in Sudurpaschim province (26 percentage points) but increased the most among those from wards with health mother’s groups in Gandaki province (5 percentage points)
- Whose mothers were not counseled about breastfeeding during PNC visits in Sudurpaschim province (18 percentage points) but increased the most in this same subpopulation in Gandaki province (11 percentage points)
- Whose mothers had access to none of the three media (radio, television, or newspaper) in Sudurpaschim province (32 percentage points) but increased the most among those whose mothers had access to any of the three media at least once a week in Bagmati province (4 percentage points)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs in Bagmati province (20 percentage points) but increased the most among those whose mothers had heard/seen any one of the TV/radio health and nutrition programs in Gandaki province (12 percentage points)
- Whose mothers received iron-containing supplements during pregnancy for their last birth in Karnali province (18 percentage points) but increased the most among those whose mothers did not receive iron-containing supplements during pregnancy for their last birth in Gandaki province (11 percentage points)
- Whose mothers did not receive deworming medication during their last pregnancy in Koshi province (26 percentage points) but increased the most in this same subpopulation in Bagmati province (3 percentage points)

- Age 6–23 months who were not given iron-containing MNP supplements in the past 12 months in Sudurpaschim province (24 percentage points) but increased the most among those who were given iron-containing MNP supplements in the past 12 months in Bagmati province (7 percentage points)
- Age 6–59 months who were given vitamin A supplements in the past 6 months in Karnali province (17 percentage points) but increased the most among those who were not given vitamin A supplements in the past 6 months in Bagmati province (2 percentage point)
- Age 12–59 months who were not given deworming medication in the past 6 months in Koshi province (26 percentage points) but increased the most among those who were given deworming medication in the past 6 months in Gandaki province (2 percentage points)

### 3.3.4 Child anemia

#### ***Socioeconomic factors***

Figure A5 is a visual representation of socioeconomic factors associated with the greatest and smallest changes in the prevalence of child anemia in each province.

In regard to socioeconomic factors, anemia declined the most among children from:

- Households in the middle wealth quintile in Koshi province (28 percentage points) but increased the most among those from households in the fourth wealth quintile in Bagmati province (10 percentage points)
- The Muslim caste/ethnic group in Koshi province (43 percentage points) but increased the most among those from the Dalit caste/ethnic group in Sudurpaschim province (12 percentage points)
- Mothers with primary/1–5 years of schooling in Koshi province (22 percentage points) but increased the most among those from mothers with an SLC or higher/10 and above years of schooling in Lumbini province (8 percentage points)
- Mothers with a non-agricultural occupation in Koshi province (28 percentage points) but increased the most in this same subpopulation in Madesh province (18 percentage points)
- Households with four members or less in Koshi province (25 percentage points) but increased the most in this same subpopulation in Bagmati province (1 percentage point)
- Households with a female head of household in Koshi province (27 percentage points) but increased the most among those from households with a male head of household in Bagmati province (7 percentage points)
- Mothers who were involved in decision-making in Koshi province (26 percentage points) but increased in this same subpopulation in Bagmati province (4 percentage points)
- Mothers who did not use the internet in the past 12 months in Koshi province (21 percentage points) but increased the most in this same subpopulation in Bagmati province (11 percentage points)
- Mothers who did not own a mobile phone in Koshi province (28 percentage points) but increased the most in this same subpopulation in Bagmati province (9 percentage points)

### ***Child-intrinsic and nutritional factors***

Figure A6 is a visual representation of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of child anemia in each province.

Regarding child-intrinsic and nutritional factors, anemia declined the most among:

- Children age 36–47 months in Koshi province (27 percentage points) but increased the most in this same subpopulation and among children age 12–17 months in Bagmati province (12 percentage points)
- Girls in Koshi province (27 percentage points) but increased in this same subpopulation in Bagmati province (12 percentage points)
- Children with a large birthweight in Koshi province (10 percentage points) but increased the most among children with a normal birthweight in Bagmati province (15 percentage points)
- Children who were not breastfed within 1 hour of birth in Koshi province (16 percentage points) but increased the most among those who were breastfed within 1 hour of birth in Sudurpaschim province (10 percentage points)
- Children who were not breastfeeding at the time of the survey in Koshi province (23 percentage points) but increased the most in this same subpopulation in Bagmati province (7 percentage point)
- Children who were fed with minimum dietary diversity in Koshi province (25 percentage points) but increased the most among those who were not fed with minimum dietary diversity in Bagmati province (14 percentage point)
- Children who were fed with a minimum meal frequency in Koshi province (17 percentage points) but increased the most in this same subpopulation in Lumbini province (7 percentage points)
- Children who were fed a recommended minimum acceptable diet in Koshi province (24 percentage points) but increased the most among those who were not fed a recommended minimum acceptable diet in Bagmati province (8 percentage points)

### ***Maternal factors***

Figure A7 is a visual representation of maternal factors associated with the greatest and smallest changes in the prevalence of child anemia in each province.

In regard to maternal factors, anemia declined the most among children from mothers:

- Age 15–24 in Koshi province (21 percentage points) but increased the most among those from mothers age 35–49 in Bagmati province (6 percentage points)
- With a BMI < 18.5 in Koshi province (24 percentage points) but increased the most among those from overweight/obese mothers in Lumbini province (11 percentage points)
- With a height less than 145 cm in Madesh province (37 percentage points) and declined the least among those from mothers with a height of 145 cm or more in Lumbini province (1 percentage point)
- Whose age at first marriage or union was 16–19 in Koshi province (22 percentage points) but increased the most among those from mothers whose age at first marriage or union was 20 or above in Karnali province (13 percentage points)

- Whose age at first birth was 20 and above in Koshi province (20 percentage points) but increased the most in this same subpopulation in Lumbini province (6 percentage points)
- With a birth interval of less than 3 years in Koshi province (24 percentage points) but increased the most in this same subpopulation in Bagmati province (7 percentage points)
- Who met minimum dietary diversity in Koshi province (37 percentage points) but increased among those from mothers who did not meet minimum dietary diversity in Bagmati province (12 percentage points)
- Who smoked in Koshi province (25 percentage points) but increased in this same subpopulation in Bagmati province (33 percentage points)

### ***Health and environment factors***

Figure A8 is a visual representation of health and environment factors associated with the greatest and smallest changes in the prevalence of child anemia in each province.

In regard to health and environment factors, anemia declined the most among children:

- Age 12–23 months who did not receive all basic vaccinations in Koshi province (21 percentage points) but increased the most among those who received all basic vaccinations in Bagmati province (1 percentage point)
- Who had no illness in the past 2 weeks in Koshi province (22 percentage points) but increased the most in this same subpopulation in Bagmati province (1 percentage point)
- From households that did not treat water before drinking in Koshi province (20 percentage points) but increased slightly among those that treated water with an appropriate method before drinking in Bagmati province (1 percentage point)
- From households with no soap and water at handwashing stations in Koshi province (19 percentage points) but increased the most in this same subpopulation in Bagmati province (10 percentage points)
- From households that used an unimproved sanitation facility in Koshi province (34 percentage points) but increased the most among those from households that used an improved sanitation facility in Bagmati province (4 percentage points)
- From households that used solid fuel for cooking in Koshi province (20 percentage points) but increased the most among those from households using clean fuel for cooking in Bagmati province (4 percentage points)
- Whose mothers could travel to the nearest health care facility in 30–60 minutes in Koshi province (23 percentage points) but increased the most among those from mothers whose travel time to the nearest health care facility was more than 60 minutes in Bagmati province (18 percentage point)
- Whose mothers delivered in a health facility in Koshi province (7 percentage points) but increased the most among those whose mothers did not deliver in a health facility in Lumbini province (19 percentage points)
- Whose mothers were counseled in the past 6 months about how or what to feed their children in Koshi province (8 percentage points) but increased the most in this same subpopulation in Bagmati province (39 percentage points)

- From wards with health mother's groups in Gandaki province (22 percentage points) but increased the most among those from wards without health mother's groups in Sudurpaschim province (3 percentage points)
- Whose mothers were counseled about breastfeeding during PNC visits in Koshi province (8 percentage points) but increased the most among those whose mothers were not counseled about breastfeeding during PNC visits in Madesh province (28 percentage points)
- Whose mothers had access to none of the three media (radio, television, or newspaper) in Koshi province (37 percentage points) but increased the most in this same subpopulation in Bagmati province (9 percentage points)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs in Koshi province (22 percentage points) but increased the most in this same subpopulation in Bagmati province (11 percentage points)
- Whose mothers did not receive iron-containing supplements during pregnancy for their last birth in Madesh province (7 percentage points) but increased the most among those whose mothers received iron-containing supplements during pregnancy for their last birth in Lumbini province (12 percentage points)
- Whose mothers did not receive deworming medication during their last pregnancy in Koshi province (10 percentage points) but increased the most in this same subpopulation in Bagmati province (11 percentage points)
- Age 6–59 months who were given vitamin A supplements in the past 6 months in Koshi province (20 percentage points) but increased among those who were not given vitamin A supplements in the past 6 months in Bagmati province (3 percentage points)
- Age 12–59 months who were given deworming medication in the past 6 months in Koshi province (26 percentage points) but increased the most among those who were not given deworming medication in the past 6 months in Bagmati province (6 percentage points)

### 3.3.5 Women's anemia

#### ***Socioeconomic factors***

Figure A9 is a visual representation of socioeconomic factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province.

In regard to socioeconomic factors, anemia declined the most among women:

- From households in the highest wealth quintile in Koshi province (34 percentage points) but increased the most among those from households in the second wealth quintile in Bagmati same province (19 percentage points)
- From the Muslim caste/ethnic group in Koshi province (27 percentage points) but increased the most among those from the Janajati caste/ethnic group in Gandaki province (11 percentage points)
- With some secondary/6–9 years of schooling in Koshi province (27 percentage points) but increased the most among those with no education/no schooling in Lumbini province (15 percentage points)

- With a non-agricultural occupation in Koshi province (24 percentage points) but increased the most among those not working in Lumbini province (9 percentage points)
- From households with four members or less in Koshi province (26 percentage points) but increased the most among those from households with more than four members in Lumbini province (6 percentage points)
- From households with a female head of household in Sudurpaschim province (20 percentage points) but increased the most among those from households with a male head of household in Lumbini province (8 percentage points)
- Who were not involved in decision-making in Koshi province (19 percentage points) but increased in this same subpopulation in Lumbini province (6 percentage points)
- Who did not use the internet in the past 12 months in Koshi province (22 percentage points) but increased the most in this same subpopulation in Bagmati province (13 percentage points)
- Who did not own a mobile phone in Koshi province (27 percentage points) but increased the most in this same subpopulation in Lumbini province (14 percentage points)

### ***Maternal factors***

Figure A10 is a visual representation of maternal factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province.

In regard to maternal factors, anemia declined the most among women:

- Age 25–34 in Koshi province (30 percentage points) but increased the most among women age 35–49 in Lumbini province (36 percentage points)
- With a BMI  $\geq 25$  in Koshi province (31 percentage points) but increased the most among those with a BMI  $< 18.5$  in Lumbini province (9 percentage points)
- With a height less than 145 cm in Koshi province (25 percentage points) and increased the most in this same subpopulation in Lumbini province (14 percentage points)
- Whose age at first marriage or union was less than 16 in Koshi province (32 percentage points) but increased the most in this same subpopulation in Gandaki province (10 percentage points)
- Whose age at first birth was less than 20 in Koshi province (26 percentage points) but increased the most among those whose age at first birth was 20 or above in Lumbini province (8 percentage points)
- With a birth interval of less than 3 years in Gandaki province (36 percentage points) but increased the most in this same subpopulation in Bagmati province (15 percentage points)
- Who met minimum dietary diversity in Sudurpaschim province (30 percentage points) but increased in this same subpopulation in Madesh province (7 percentage points)

### ***Health and environment factors***

Figure A11 is a visual representation of health and environment factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province.

In regard to health and environment factors, anemia declined the most among women:

- From households that did not treat water with an appropriate method before drinking in Koshi province (19 percentage points) but increased the most in this same subpopulation in Lumbini province (3 percentage points)
- From households with soap and water at handwashing stations in Karnali province (26 percentage points) but increased the most among those from households with no soap and water at handwashing stations in Bagmati province (4.2 percentage points)
- From households that used an unimproved sanitation facility in Koshi province (30 percentage points) but increased the most in this same subpopulation in Bagmati province (18 percentage points)
- From households that used clean fuel for cooking in Sudurpaschim province (34 percentage points) but increased the most among those from households using solid fuel for cooking in Bagmati province (9 percentage points)
- Whose travel time to the nearest health care facility was 30–60 minutes in Koshi province (31 percentage points) but increased the most among those whose travel time to the nearest health care facility was more than 60 minutes in Bagmati province (16 percentage point)
- Who did not deliver in a health facility in Koshi province (22 percentage points) but increased the most in this same subpopulation in Lumbini province (18 percentage points)
- Who were not counseled in the past 6 months about how or what to feed their children in Gandaki province (16 percentage points) but increased the most among those who were counseled in the past 6 months in Madesh province (17 percentage points)
- From wards with health mother's groups in Koshi province (26 percentage points) but increased the most among those from wards with no health mother's groups in Lumbini province (2 percentage points)
- Who were not counseled about breastfeeding during PNC visits in Sudurpaschim province (21 percentage points) but increased the most in this same subpopulation in Lumbini province (11 percentage points)
- Who had access to any of the three media (radio, television, or newspaper) less than once a week in Koshi province (24 percentage points) but increased the most among those who had access to none of the three media in Bagmati province (8 percentage points)
- Who had heard/seen any one of the TV/radio health and nutrition programs in Koshi province (25 percentage points) but increased among those who had heard/seen none of the TV/radio health and nutrition programs in Bagmati province (5 percentage points)
- Who received iron-containing supplements during pregnancy for their last birth in Koshi province (23 percentage points) but increased the most in this same subpopulation in Lumbini province (12 percentage points)
- Who did not receive deworming medication during their last pregnancy in Koshi province (22 percentage points) but increased the most in this same subpopulation in Lumbini province (10 percentage points)

### 3.4 Determinants of Outcomes Variables

Determinants of outcome variables were analyzed using the 2022 Nepal Demographic and Health Survey (NDHS) dataset. For each outcome variable, four separate multivariate regression analyses were conducted to examine associations between the outcome variable and each category of the background variables for children (socioeconomic, child intrinsic and nutritional, maternal, and health and environment factors) in each province. For women age 15–49, three separate multivariate regression analyses were conducted to examine associations between anemia and each category of the background variables for women (socioeconomic, maternal, and health and environment factors) in each province.

#### 3.4.1 Determinants of stunting

##### *Socioeconomic factors*

Tables A15–A21 show the associations between stunting and socioeconomic factors in each province.

**In Koshi province**, children of mothers with a non-agricultural occupation had significantly higher odds of stunting [odds ratio (OR) = 3.52] than children of mothers not working/doing domestic work. In addition, children of mothers who owned a mobile phone had significantly lower odds of stunting (OR = 0.40) than children of mothers who did not own a mobile phone (see Table A15).

**In Madesh province**, children who lived in rural areas had significantly higher odds of stunting (OR = 1.73) than children who lived in urban areas, as did children of mothers with some secondary education/6–9 years of schooling (OR = 1.88) compared with children of mothers with no education/no schooling. In addition, children of mothers involved in decision-making had significantly higher odds of stunting (OR = 1.76) than children of mothers not involved in decision-making. However, children from households in the middle (OR = 0.44), fourth (OR = 0.33), and highest (OR = 0.29) wealth quintiles had lower odds of stunting than children from the lowest wealth quintiles (see Table A16).

**In Bagmati province**, no socioeconomic factors were significantly associated with stunting (see Table A17).

**In Gandaki province**, children from households in the middle (OR = 0.26) and fourth (OR = 0.09) wealth quintiles had lower odds of stunting than children from the lowest wealth quintiles. Similarly, children of mothers with a SLC or higher education/10 years of schooling and above had lower odds of stunting (OR = 0.13) than children of mothers with no education/no schooling (see Table A18).

**In Lumbini province**, children from households in the middle wealth quintile had lower odds of stunting (OR = 0.39) than children from the lowest wealth quintile. Similarly, children of mothers who owned a mobile phone had significantly lower odds of stunting (OR = 0.29) than children of mothers who did not own a mobile phone (see Table A19).

**In Karnali province**, children from rural areas had significantly higher odds of stunting (OR = 2.34) than children from urban areas, as did children from households with a female head of household (OR = 2.14) compared with children from households with a male head of household. Furthermore, children of mothers involved in decision-making had higher odds of stunting (OR = 2.14) than children of mothers not involved in decision-making (see Table A20).



**In Sudurpaschim province**, children from the Dalit caste/ethnic group had higher odds of stunting (OR = 2.31) and children from the Janajati caste/ethnic group had lower odds of stunting (OR = 0.36) than children from the Brahmin/Chhetri caste/ethnic group. Moreover, the odds of stunting were higher among children of mothers with non-agricultural occupation (OR = 3.23) than among children of mothers not working/doing domestic work (see Table A21).

### ***Child-intrinsic and nutritional factors***

Tables show the associations between stunting and child-intrinsic and nutritional factors in each province.

**In Koshi province**, children age 24–35 months had significantly higher odds of stunting (OR = 3.92) than children younger than 6 months. However, children with a normal (OR = 0.21) or large (OR = 0.11) weight at birth had significantly lower odds of stunting than children with a small weight at birth (see Table A22).

**In Madesh province**, the odds of stunting were significantly lower among children with a large weight at birth (OR = 0.22) than among children with a small weight at birth (see Table A23).

**In Bagmati province**, the odds of stunting were significantly lower among children with a normal (OR = 0.21) or large (OR = 0.04) weight at birth than among children with a small weight at birth. In addition, children who were breastfed within 1 hour of birth had significantly higher odds of stunting (OR = 5.01) than children who were not breastfed within 1 hour of birth (see Table A24).

**In Gandaki province**, no child and nutritional factors were significantly associated with stunting (see Table A25).

**In Lumbini province**, the odds of stunting were significantly lower among children with a large weight at birth (OR = 0.08) than among children with a small weight at birth (see Table A26).

**In Karnali province**, the odds of stunting were significantly lower among children with a normal (OR = 0.33) or large (OR = 0.24) weight at birth than among children with a small weight at birth (see Table A27).

**In Sudurpaschim province**, the odds of stunting were significantly lower among children with a normal (OR = 0.18) or large (OR = 0.16) weight at birth than among children with a small weight at birth (see Table A28).

### ***Maternal factors***

Tables A29–A35 show the associations between stunting and maternal factors in each province.

**In Koshi province**, the odds of stunting were significantly lower among children of overweight/obese mothers (OR = 0.26) than among children of underweight mothers. However, children of mothers less than 145 cm in height had significantly higher odds of stunting (OR = 3.25) than children of taller mothers (see Table A29).

**In Madesh province**, the odds of stunting were significantly lower among children of mothers age 25–34 (OR = 0.40) and 35–49 (OR = 0.34) than among children of mothers age 15–24. Similarly, children of mothers who met minimum dietary diversity had significantly lower odds of stunting (OR = 0.42).

However, children of mothers less than 145 cm in height had significantly higher odds of stunting (OR = 2.71) than children of taller mothers (see Table A30).

**In Bagmati province**, children of mothers less than 145 cm in height had significantly higher odds of stunting (OR = 4.09) than those of taller mothers. However, the odds of stunting were significantly lower (OR = 0.17) among children of mothers with a birth interval of 3 or more years than among children of mothers with a birth interval less than 3 years (see Table A31).

**In Gandaki province**, no maternal factors were significantly associated with stunting (see Table A32).

**In Lumbini province**, children of mothers less than 145 cm in height had significantly higher odds of stunting (OR = 2.41) than those of taller mothers. However, the odds of stunting were significantly lower (OR = 0.43) among children of mothers with a birth interval of 3 or more years than among children of mothers with a birth interval of less than 3 years (see Table A33).

**In Karnali province**, children of non-smoking mothers had significantly lower odds of stunting (OR = 0.33) than children of smoking mothers, as did children of mothers with an age at first marriage or union of 20 or above (OR = 0.37) compared with children of mothers with an age at first marriage or union of less than 16 (see Table A34).

**In Sudurpaschim province**, children of mothers with an age at first marriage or union of 16–19 (OR = 0.30) and those with mothers with an age of first marriage or union of 20 or above (OR = 0.25) had significantly lower odds of stunting than children of mothers with an age at first marriage or union of less than 16 (see Table A35).

### ***Health and environment factors***

Tables A36–A42 show the associations between stunting and health and environment factors in each province.

**In Koshi province**, children with any illness in the past 2 weeks had significantly lower odds of stunting (OR = 0.11) than children with no illness. Similarly, children from households using an appropriate method to treat water before drinking had significantly lower odds of stunting (OR = 0.08) than children from households with no treatment of water before drinking (see Table A36).

**In Madesh, Bagmati, Gandaki, Karnali, and Sudurpaschim provinces**, no health and environment factors were significantly associated with stunting (see Tables A37–A39 and Table A41–A42).

**In Lumbini province**, children who were given vitamin A supplements in the past 6 months had significantly lower odds of stunting (OR = 0.17) than those who were not given vitamin A supplements, and children who were given deworming medication in the past 6 months had significantly lower odds (OR = 0.06) than those who were not given deworming medication (see Table A40).

## **3.4.2 Determinants of wasting**

### ***Socioeconomic factors***

Tables A43–A49 show the associations between wasting and socioeconomic factors in each province.

**In Koshi, Madesh, Lumbini, and Karnali provinces**, no socioeconomic factors were significantly associated with wasting (see Tables A43–A44 and Tables A47–A48).

**In Bagmati province**, children from the Janajati caste/ethnic group had significantly lower odds of wasting (OR = 0.16) than children from the Brahmin/Chhetri caste/ethnic group. In addition, children of mothers who owned a mobile phone had significantly lower odds of wasting (OR = 0.34) than those of mothers who did not own a mobile phone (see Table A45).

**In Gandaki province**, children from households with more than four members had significantly lower odds of wasting (OR = 0.42) than those from households with four or less members (see Table A46).

**In Sudurpaschim province**, children of mothers with a non-agricultural occupation had significantly lower odds of wasting (OR = 0.16) than children of mothers not working/doing domestic work (see Table A49).

### ***Child-intrinsic and nutritional factors***

Tables A50–A56 show the associations between wasting and child-intrinsic and nutritional factors in each province.

**In Koshi, Bagmati, Gandaki, Lumbini, and Sudurpaschim provinces**, no child-intrinsic and nutritional factors were significantly associated with wasting (see Table A50, Tables A52–A54, and Table A56).

**In Madesh province**, the odds of wasting were significantly lower among children with a normal (OR = 0.11) or large (OR = 0.18) weight at birth than among children with a small weight at birth (see Table A51).

**In Karnali province**, the odds of wasting were significantly lower among children with a normal (OR = 0.12) or large (OR = 0.07) weight at birth than among children with a small weight at birth (see Table A55).

### ***Maternal factors***

Tables A57–A63 show the associations between wasting and maternal factors in each province.

**In Koshi, Bagmati, and Sudurpaschim provinces**, no maternal factors were significantly associated with wasting (see Table A57, Table A59, and Table A63).

**In Madesh province**, children of mothers with a birth interval of 3 years or more had significantly higher odds of wasting (OR = 2.44) than those of mothers with a birth interval of less than 3 years (see Table 58).

**In Gandaki province**, children of mothers with a normal BMI (18.5–24.9) had significantly lower odds of wasting (OR = 0.06) than those of mothers with a BMI < 18.5 (see Table A60).

**In Lumbini province**, the odds of wasting were significantly higher among children of mothers with a height of less than 145 cm (OR = 2.97) than among children of mothers with a height of 145 cm or more (see Table A61).

**In Karnali province**, children of mothers with a normal BMI (18.5–24.9) had significantly lower odds of wasting (OR = 0.04) than those of mothers with a BMI < 18.5 (see Table A62).

### **Health and environment factors**

Tables A64–A70 show the associations between wasting and health and environment factors in each province.

**In Koshi, Bagmati, Gandaki, Karnali, and Sudurpaschim provinces**, no health and environment factors were significantly associated with wasting (see Table A64, Tables A66–A67, and Tables A69–A70).

**In Madesh province**, children of mothers who had access to any of the 3 media (radio, television, or newspaper) had significantly lower odds of wasting (OR = 0.12) than those of mothers who had access to none of the three media. In addition, children of mothers who received iron tablets or syrup during pregnancy for their last birth had significantly lower odds of wasting (OR = 0.17) than those of mothers who did not receive iron tablets or syrup during pregnancy for their last birth (see Table A65).

**In Lumbini province**, children of mothers who had heard/seen selected TV/radio health and nutrition programs had significantly lower odds of wasting (OR = 0.08) than those of mothers who had heard/seen none of the TV/radio health and nutrition programs. In addition, children of mothers who received iron tablets or syrup during pregnancy for their last birth had significantly lower odds of wasting (OR = 0.10) than those of mothers who did not receive iron tablets or syrup during pregnancy for their last birth. Children who were given vitamin A supplements in the past 6 months had significantly lower odds of wasting (OR = 0.00) than those who were not given vitamin A supplements in the past 6 months (see Table A68).

### **3.4.3 Determinants of underweight**

#### **Socioeconomic factors**

Tables A71–A77 show the associations between underweight and socioeconomic factors in each province.

**In Koshi, Bagmati, Karnali, and Sudurpaschim provinces**, no socioeconomic factors were significantly associated with underweight (see Table A71, Table A73, and Tables A76–A77).

**In Madesh province**, children from households in the highest wealth quintile had significantly lower odds of underweight (OR = 0.29) than children from households in the lowest wealth quintile. However, the odds of underweight were significantly higher among children of mothers involved in decision-making (OR = 1.73) than among children of mothers not involved (see Table A72).

**In Gandaki province**, children of mothers with a SLC or higher education/10 years of schooling and above had significantly lower odds of underweight (OR = 0.10) than children of mothers with no education/no schooling, as did children from households with a female head of household (OR = 0.37) compared with children from households with a male head of household (see Table A74).

**In Lumbini province**, children from households with more than four members had significantly higher odds of underweight (OR = 2.18) than those from households with less than four members. However, children of mothers who owned a mobile phone had significantly lower odds of underweight (OR = 0.25) than those of mothers who did not own a mobile phone (see Table A75).

### ***Child-intrinsic et nutritional factors***

Tables A78–A84 show the associations between underweight and child-intrinsic and nutritional factors in each province.

**In Koshi province**, the odds of underweight were significantly lower among children with a large weight at birth (OR = 0.06) than among children with a small weight at birth (see Table A78).

**In Madesh province**, the odds of underweight were significantly lower among children with a normal (OR = 0.27) or large (OR = 0.20) weight at birth than among children with a small weight at birth (see Table A79).

**In Bagmati province**, the odds of underweight were significantly lower among children with a normal (OR = 0.22) or large (OR = 0.07) weight at birth than among children with a small weight at birth (see Table A80).

**In Gandaki province**, no child-intrinsic and nutritional factors were significantly associated with underweight (see Table A81).

**In Lumbini province**, the odds of underweight were significantly lower among children with a normal (OR = 0.30) or large (OR = 0.10) weight at birth than among children with a small weight at birth (see Table A82).

**In Karnali province**, the odds of underweight were significantly higher among girls (OR = 2.26) than boys. However, children with a normal (OR = 0.18) or large (OR = 0.05) weight at birth had significantly lower odds of underweight than children with a small weight at birth. In addition, children who were fed with a minimum meal frequency had significantly lower odds of underweight (OR = 0.00) than those who were not fed with a minimum meal frequency (see Table A83).

**In Sudurpaschim province**, children with a normal (OR = 0.19) or large (OR = 0.12) weight at birth had significantly lower odds of underweight than children with a small weight at birth (see Table A84).

### ***Maternal factors***

Tables A85–A91 show the associations between underweight and maternal factors in each province.

**In Koshi province**, children of mothers who met minimum dietary diversity had significantly lower odds of underweight (OR = 0.34) than those of mothers who did not meet minimum dietary diversity (see Table A85).

**In Madesh province**, children of mothers with a normal BMI (18.5–24.9) had significantly lower odds of underweight (OR = 0.50) than those of underweight mothers, as did children of mothers who met minimum dietary diversity (OR = 0.49) compared with those of mothers who did not meet minimum dietary diversity. However, children of mothers less than 145 cm in height had significantly higher odds of stunting (OR = 2.19) than children of taller mothers (see Table A86).

**In Bagmati and Gandaki provinces**, no maternal factors were significantly associated with underweight (see Tables A87–A88).

**In Lumbini province**, children of overweight/obese mothers had significantly lower odds of underweight (OR = 0.20) than those of underweight mothers, as did children of mothers with a birth interval of 3 years or more (OR = 0.34) compared with those of mothers with a shorter birth interval. However, children of mothers less than 145 cm in height had significantly higher odds of underweight (OR = 2.87) than children of taller mothers (see Table A89).

**In Karnali province**, children of normal weight (OR = 0.15) and overweight/obese (OR = 0.13) mothers had significantly lower odds of underweight than children of underweight mothers, as did children of mothers with a birth interval of 3 years or more (OR = 0.47) compared with those of mothers with a shorter birth interval (see Table A90).

**In Sudurpaschim province**, children of mothers with a BMI of 18.5–24.9 had significantly lower odds of underweight (OR = 0.29) than those of underweight mothers, as did children of non-smoking mothers (OR = 0.07) compared with those of smoking mothers. In addition, children of mothers with an age at first marriage or union of 16–19 had significantly lower odds of underweight (OR = 0.40) than those of mothers with an age at first marriage or union of less than 16 (see Table A91).

### ***Health and environment factors***

Tables A92–A98 show the associations between underweight and health and environment factors in each province.

**In Koshi, Madesh, Bagmati, Gandaki, and Sudurpaschim provinces**, no health and environment factors were significantly associated with underweight (see Table A92–A95 and Table A98).

**In Lumbini province**, children from households using clean fuel for cooking had significantly lower odds of underweight (OR = 0.15) than those from households using solid fuel for cooking, as did children of mothers who had heard/seen selected TV/radio health and nutrition programs (OR = 0.07) compared with those of mothers who had heard/seen none of the TV/radio health and nutrition programs (see Table A96).

**In Karnali province**, children from households using an appropriate method to treat water before drinking had significantly lower odds of underweight (OR = 0.04) than children from households with no treatment of water before drinking (see Table A97).

## **3.4.4 Determinants of child anemia**

### ***Socioeconomic factors***

Tables A99–A105 show the associations between child anemia and socioeconomic factors in each province.

**In Koshi province**, no socioeconomic factors were significantly associated with anemia in children age 6–59 months (see Table A99).

**In Madesh province**, children of mothers with a non-agricultural occupation had significantly higher odds of anemia (OR = 2.72) than those of mothers not working/ doing domestic work, as did children from households with more than four members (OR = 1.71) compared with those from smaller households (see Table A100).

**In Bagmati province**, children from rural areas had significantly lower odds of anemia (OR = 0.38) than children from urban areas (see Table A101).

**In Gandaki province**, the odds of anemia were significantly lower among children of mothers with some secondary education/6–9 years of schooling (OR = 0.14) than among those of mothers with no education/no years of schooling (see Table A102).

**In Lumbini province**, children of mothers with a non-agricultural occupation had significantly lower odds of anemia (OR = 0.39) than those of mothers not working/doing domestic work, as did children of mothers involved in decision-making (OR = 0.53) compared with those of mothers not involved in decision-making (see Table A103).

**In Karnali province**, the odds of anemia were significantly lower among girls (OR = 0.60) than boys (see Table A104).

**In Sudurpaschim province**, the odds of anemia were significantly lower among children from households with a female head of household (OR = 0.52) than among those from households with a male head of household (see Table A105).

### ***Child-intrinsic and nutrition factors***

Tables A106–A112 show the associations between child anemia and child-intrinsic and nutritional factors in each province.

**In Koshi province**, children age 24–35 months had significantly lower odds of anemia (OR = 0.22) than children age 6–11 months, as did girls (OR = 0.29) compared with boys (see Table A106).

**In Madesh and Gandaki provinces**, no child-intrinsic and nutritional factor were significantly associated with anemia in children age 6–59 months (see Table A107 and Table A109).

**In Bagmati province**, children age 18–23 months (OR = 0.13) and 24–35 months (OR = 0.15) had significantly lower odds of anemia than children age 6–11 months (see Table A108).

**In Lumbini province**, children age 24–35 months had significantly lower odds of anemia (OR = 0.20) than children age 6–11 months (see Table A110).

**In Karnali province**, children age 18–23 months (OR = 0.33) and 24–35 months (OR = 0.37) had significantly lower odds of anemia than children age 6–11 months (see Table A111).

**In Sudurpaschim province**, children age 18–23 months (OR = 0.22) and 24–35 months (OR = 0.17) had significantly lower odds of anemia than children age 6–11 months (see Table A112).

### **Maternal factors**

Tables A113–A119 show the associations between child anemia and maternal factors in each province.

**In Koshi province**, children of mothers age 25–34 had significantly lower odds of anemia (OR = 0.27) than those of mothers age 15–24 years, as did children of mothers who met minimum dietary diversity (OR = 0.63) compared with those of mothers who did not meet minimum dietary diversity (see Table A113).

**In Madesh province**, children of mothers less than 145 cm in height had significantly lower odds of anemia (OR = 0.48) than those of taller mothers (see Table A114).

**In Bagmati province**, children of mothers age 25–34 had significantly lower odds of anemia (OR = 0.15) than those of mothers age 15–24 (see Table A115).

**In Gandaki, Lumbini and Karnali provinces**, no maternal factors were significantly associated with anemia in children age 6–59 months (see Tables A116–A118).

**In Sudurpaschim province**, children of mothers with a normal BMI (18.5–24.9) had significantly lower odds of anemia (OR = 0.41) than those of mothers with a BMI < 18.5 (see Table A119).

### **Health and environment factors**

Tables A120–A126 show the associations between child anemia and health and environment factors in each province.

**In Koshi province**, the odds of anemia were significantly lower among children from households with soap and water at handwashing stations (OR = 0.16) than among those from households with no soap and water at handwashing stations (see Table A120).

**In Madesh, Gandaki, and Sudurpaschim provinces**, no health and environment factors were significantly associated with anemia in children age 6–59 months (see Table A121, Table A123, and Table A126).

**In Bagmati province**, the odds of anemia were significantly lower among children from households using an appropriate method to treat water before drinking (OR = 0.06) than among those from households that did not treat water before drinking. Odds were also significantly lower among children from households using an improved sanitation facility (OR = 0.01) compared with those from households using an unimproved sanitation facility (see Table A122).

**In Lumbini province**, children of mothers who had one to three antenatal care visits had significantly lower odds of anemia (OR = 0.02), as did children of mothers who were counseled in the past 6 months about how or what to feed their children (OR = 0.11), children who were given iron-containing supplements in the past 12 months (OR = 0.06), and children who were given deworming medication in the past 6 months (OR = 0.02) when compared with their respective counterparts (see Table A124).

**In Karnali province**, children who were given iron-containing supplements in the past 12 months had significantly lower odds of anemia (OR = 0.13) than those who were not given iron-containing supplements (see Table A125).



### 3.4.5 Determinants of women's anemia

#### ***Socioeconomic factors***

Tables A127–A133 show the associations between women's anemia and socioeconomic factors in each province.

**In Koshi province**, women from households with more than four members had significantly higher odds of anemia (OR = 2.27) than those from smaller households (see Table A127).

**In Madesh, Gandaki, and Karnali provinces**, no socioeconomic factors were significantly associated with anemia in women age 15–49 (see Table A128, Table A130, and Table A132) .

**In Bagmati province**, women from households in the fourth (OR = 0.24) and highest (OR = 0.20) wealth quintiles had significantly lower odds of anemia than those from households in the lowest wealth quintile (see Table A129).

**In Lumbini province**, women from the Terai/Madheshi caste/ethnic group (OR = 3.18) and women from the Janajati caste/ethnic group (OR = 2.37) had significantly higher odds of anemia than those from the Brahmin/Chhetri caste/ethnic group (see Table A131).

**In Sudurpaschim province**, women from households in the middle wealth quintile had significantly higher odds of anemia (OR = 3.30) than those from households in the lowest wealth quintile, as did women from the Janajati caste/ethnic group (OR = 3.85) compared with those from the Brahmin/Chhetri caste/ethnic group (see Table A133).

#### ***Maternal factors***

Tables A134–A140 show the associations between women's anemia and maternal factors in each province.

**In Koshi province**, the odds of anemia were significantly lower among women with a birth interval of 3 years or more (OR = 0.28) than among women with a shorter birth interval (see Table A134).

**In Madesh, Gandaki, Lumbini, and Sudurpaschim provinces**, no maternal factors were significantly associated with anemia in women age 15–49 (see Table A135, Tables A137–A138, and Table A140).

#### ***Health and environment factors***

Tables A141–A147 show the associations between women's anemia and health and environmental factors in each province.

**In Koshi, Madesh, Bagmati, Gandaki, and Karnali provinces**, no health and environment factors were significantly associated with anemia in women age 15–49 (see Tables A141–A144 and Table 146).

**In Lumbini province**, the odds of anemia were significantly lower among women from households using an appropriate method to treat water before drinking (OR = 0.14) than among those from households not using an appropriate method (see Table A145).

**In Sudurpashchim province**, women from households using clean fuel for cooking had significantly lower odds of anemia (OR = 0.01) than did women from household not using clean fuel, as did women who had heard/seen selected TV/radio health and nutrition programs (OR = 0.07) when compared with those who had not (see Table A147).

### **3.5 Coexistence of Multiple Health Outcomes by Independent Background Variables**

We examined the coexistence of stunting and underweight, stunting and wasting, underweight and wasting, stunting and anemia, wasting and anemia, and underweight and anemia nationally using the 2022 NDHS dataset. We also used the 2022 NDHS dataset to examine the coexistence of child anemia and women's anemia within the same household.

#### **3.5.1 Socioeconomic factors**

##### ***Stunting and underweight***

Stunting and underweight coexisted mainly among children:

- From households in the lowest wealth quintile
- From the Muslim caste/ethnic group
- Of mothers with no education/no schooling
- From households with more than four members
- Of mothers who did not use the internet in the past 12 months
- Of mothers who did not own a mobile phone

##### ***Stunting and wasting***

Stunting and wasting coexisted mainly among children:

- From the Muslim caste/ethnic group
- Of mothers with no education/no schooling
- Of mothers not working/doing domestic work
- From households with more than four members
- Of mothers who did not use the internet in the past 12 months
- Of mothers who did not own a mobile phone

##### ***Underweight and wasting***

Underweight and wasting coexisted mainly among children:

- From the Muslim caste/ethnic group
- Of mothers with no education/no schooling
- Of mothers not working/doing domestic work
- From households with more than four members

- Of mothers who were not involved in decision-making
- Of mothers who did not own a mobile phone

### ***Stunting and anemia***

Stunting and anemia coexisted mainly among children:

- From households in the lowest wealth quintile
- From the Dalit caste/ethnic group
- Of mothers with no education/no schooling
- From households with more than four members
- Of mothers who did not use the internet in the past 12 months
- Of mothers who did not own a mobile phone

### ***Wasting and anemia***

Wasting and anemia coexisted mainly among children:

- From the Muslim caste/ethnic group
- From households with more than four members
- Of mothers who were not involved in decision-making
- Of mothers who did not own a mobile phone

### ***Underweight and anemia***

Underweight and anemia coexisted mainly among children:

- From households in the second wealth quintile
- From the Dalit caste/ethnic group
- Of mothers with no education/no schooling
- From households with more than four members
- From households with a male head of household
- Of mothers who were not involved in decision-making
- Of mothers who did not use the internet in the past 12 months
- Of mothers who did not own a mobile phone

### ***Child and mother's anemia***

Child and mother's anemia coexisted mainly in children and mothers:

- From households in the fourth wealth quintile
- From the Terai/Madheshi caste/ethnic group
- When mothers had no education/no schooling

- When mothers were not working/doing domestic work
- From households with more than four members
- From households with a male head of household
- When mothers were not involved in decision-making
- When mothers had not used the internet in the past 12 months
- When mothers did not own a mobile phone

### **3.5.2 Child-intrinsic and nutritional factors**

#### ***Stunting and underweight***

Stunting and underweight coexisted mainly among children:

- Age 24–35 months
- Of female sex
- With a small birthweight
- Who were breastfed within 1 hour of birth
- Who were not fed meals the recommended minimum number of times
- Who were not fed a recommended minimum acceptable diet

#### ***Stunting and wasting***

Stunting and wasting coexisted mainly among children:

- Age 18–23 months
- With a small birthweight

#### ***Underweight and wasting***

Underweight and wasting coexisted mainly among children:

- Age 12–17 months
- With a small birthweight
- Who were breastfed within 1 hour of birth

#### ***Stunting and anemia***

Stunting and anemia coexisted mainly among children:

- Age 12–17 months
- With a small birthweight
- Who were breastfed within 1 hour of birth
- Who were breastfeeding at the time of the survey
- Who were not fed with minimum dietary diversity

- Who were not fed a recommended minimum acceptable diet

### ***Wasting and anemia***

Wasting and anemia coexisted mainly among children:

- Age 12–17 months
- Of male sex
- With a small birthweight
- Who were breastfeeding at the time of the survey

### ***Underweight and anemia***

Underweight and anemia coexisted mainly among children:

- Age 12–17 months
- With a small birthweight
- Who were breastfed within 1 hour of birth
- Who were breastfeeding at the time of the survey
- Who were not fed with minimum dietary diversity
- Who were not fed a recommended minimum acceptable diet

### ***Child and mother's anemia***

Child and mother's anemia coexisted mainly in children and mothers:

- When children were age 12–17 months
- When children were breastfeeding at the time of the survey
- When children were not fed with minimum dietary diversity
- When children were not fed a recommended minimum acceptable diet

## **3.5.3 Maternal factors**

### ***Stunting and underweight***

Stunting and underweight coexisted mainly among children:

- Of underweight mothers
- Of mothers whose height was 145 cm or more
- Of mothers whose age at first marriage or union was less than 16
- Of mothers whose age at first birth was less than 20
- Of mothers whose birth interval was less than 3 years
- Of mothers who did not meet minimum dietary diversity

### ***Stunting and wasting***

Stunting and wasting coexisted mainly among children:

- Of mothers age 35–49
- Of underweight mothers
- Of mothers whose height was 145 cm or more

### ***Underweight and wasting***

Underweight and wasting coexisted mainly among children:

- Of underweight mothers
- Of mothers whose height was 145 cm or more
- Of mothers who did not meet minimum dietary diversity

### ***Stunting and anemia***

Stunting and anemia coexisted mainly among children:

- Of mothers age 15–24
- Of underweight mothers
- Of mothers whose height was 145 cm or more
- Of mothers whose age at first marriage or union was less than 16
- Of mothers whose birth interval was less than 3 years
- Of mothers who did not meet minimum dietary diversity
- Of mothers who smoked

### ***Wasting and anemia***

Wasting and anemia coexisted mainly among children:

- Of underweight mothers
- Of mothers who did not meet minimum dietary diversity

### ***Underweight and anemia***

Underweight and anemia coexisted mainly among children:

- Of underweight mothers
- Of mothers whose height was 145 cm or more
- Of mothers whose birth interval was less than 3 years
- Of mothers who did not meet minimum dietary diversity

### ***Child and mother's anemia***

Child and mother's anemia coexisted mainly in children and mothers:

- When mothers were age 15–24 years
- When mothers were underweight
- When mothers did not meet minimum dietary diversity

### **3.5.4 *Health and environment factors***

#### ***Stunting and underweight***

Stunting and underweight coexisted mainly among children:

- Who had no illness in the past 2 weeks
- From households that did not treat water before drinking
- From households with no soap and water at handwashing stations
- From households that used an unimproved sanitation facility
- From households that used solid fuel for cooking
- Whose mothers did not deliver in a health facility
- Whose mothers had access to none of the three media (radio, television, or newspaper)
- Whose mothers did not receive iron-containing supplements during pregnancy for their last birth

#### ***Stunting and wasting***

Stunting and wasting coexisted mainly among children:

- Age 12–23 months who received all basic vaccinations
- Who had no illness in the past 2 weeks
- From households that did not treat water before drinking
- From households that used an unimproved sanitation facility
- Whose mothers did not deliver in a health facility
- Whose mothers had access to none of the three media (radio, television, or newspaper)
- Age 12–59 months who were not given deworming medication

#### ***Underweight and wasting***

Underweight and wasting coexisted mainly among children:

- Age 12–23 months who received all basic vaccinations
- From households that did not treat water before drinking
- From households with no soap and water at handwashing stations
- From households that used an unimproved sanitation facility

- Whose mothers did not deliver in a health facility
- Whose mothers had access to none of the three media (radio, television, or newspaper)
- Age 6–59 months who were not given vitamin A supplements in the past 6 months

### ***Stunting and anemia***

Stunting and anemia coexisted mainly among children:

- Age 12–23 months who received all basic vaccinations
- Who had no illness in the past 2 weeks
- From households that did not treat water before drinking
- From households with no soap and water at handwashing stations
- From households that used an unimproved sanitation facility
- From households that used solid fuel for cooking
- Whose mothers did not deliver in a health facility
- Whose mothers had access to none of the three media (radio, television, or newspaper)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs
- Whose mothers did not receive iron-containing supplements during pregnancy for their last birth
- Age 12–59 months who were not given deworming medication

### ***Wasting and anemia***

Wasting and anemia coexisted mainly among children:

- Age 12–23 months who received all basic vaccinations
- From households that did not treat water before drinking
- From households with no soap and water at handwashing stations
- From households that used an unimproved sanitation facility
- Age 6–59 months who were not given vitamin A supplements in the past 6 months
- Age 12–59 months who were not given deworming medication

### ***Underweight and anemia***

Underweight and anemia coexisted mainly among children:

- Age 12–23 months who received all basic vaccinations
- From households that did not treat water before drinking
- From households with no soap and water at handwashing stations
- From households that used an unimproved sanitation facility
- From households that used solid fuel for cooking
- Whose mothers did not deliver in a health facility



- Whose mothers had access to none of the three media (radio, television, or newspaper)
- Whose mothers had heard/seen none of the TV/radio health and nutrition programs
- Whose mothers did not receive iron-containing supplements during pregnancy for their last birth
- Age 6–59 months who were not given vitamin A supplements in the past 6 months
- Age 12–59 months who were not given deworming medication

***Child and mother’s anemia***

Child and mother’s anemia coexisted mainly in children and mothers:

- When children age 12–23 months received all basic vaccinations
- From households that did not treat water before drinking
- From households that used an unimproved sanitation facility
- When mothers had access to none of the three media (radio, television, or newspaper)
- When mothers had heard/seen none of the TV/radio health and nutrition programs
- When children age 6–59 months were not given vitamin A supplements in the past 6 months
- When children age 12–59 months were not given deworming medication



## 4 DISCUSSION

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The findings of this study revealed significant improvement in child nutrition in Nepal over the past 5 years, with considerable reduction in key outcome variables. Stunting decreased by 11 percentage points, while underweight and childhood anemia decreased by 8 percentage points each. However, the decrease in wasting was minimal during this period (1 percentage point). Additionally, women's anemia decreased by 8 percentage points. Nevertheless, significant disparities in nutrition outcome variables still exist across provinces.

### 4.1 Trends in undernutrition

#### 4.1.1 Stunting

Between 2016 and 2022, stunting decreased by 13 percentage points in Koshi, 7 percentage points in Madhesh, 12 percentage points in Bagmati, 14 percentage points in Gandaki, 12 percentage points in Lumbini, 18 percentage points in Karnali, and 13 percentage points in Sudurpaschim. However, despite these improvements, in 2022 the prevalence of stunting remained notably high in Karnali (37%), Madhesh (30%), and Sudurpaschim (28%) provinces compared with other provinces (Koshi, 20%; Bagmati, 18%; Gandaki, 20%; and Lumbini, 26%). To achieve the Sustainable Development Goal (SDG) target of 15% stunting by 2030, the country needs to bridge a gap of 10% over the next 8 years, which translates to an average annual rate of reduction (AARR) of 6.2%. Specifically, Karnali, Madhesh, and Sudurpaschim provinces need AARRs of 11.0%, 8.1%, and 7.5%, respectively.

The improvement in stunting varied across provinces, influenced mainly by socioeconomic, maternal, and health and environmental factors. In Koshi province, the most notable reduction in stunting was seen among children from households that used an unimproved sanitation facility; in Madhesh and Bagmati provinces, among children of mothers who had heard/seen none of the TV/radio health and nutrition programs; in Gandaki province, among children of mothers age 36–47; in Lumbini province, among children from households in the middle wealth quintile; in Karnali province, among children of mothers who were counseled in the past 6 months about how or what to feed their children; and in Sudurpaschim province, among children of mothers age 24–35.

#### 4.1.2 Wasting

From 2016 to 2022, wasting decreased by 8 percentage points in Koshi, 4 percentage points in Madhesh, 1 percentage point in Bagmati, 2 percentage points in Gandaki, and 4 percentage points each in Karnali and Sudurpaschim provinces. However, there was an alarming increase of 8 percentage points in wasting in Lumbini province during this period. The prevalence of wasting was notably high in Lumbini (16%) and Madhesh (11%) compared with other provinces. To achieve the SDG target of 4% wasting by 2030, the country needs an AARR of 8.3% each year. Koshi, Bagmati, Gandaki, and Karnali provinces have either reached or are very close to reaching the SDG target. However, Lumbini and Madhesh provinces require AARRs of 16.0% and 11.4%, respectively, to reach the SDG goal.

The improvement in wasting varied across provinces, influenced mainly by socioeconomic, child-intrinsic and nutritional, and health and environmental factors. In Koshi province, the most notable reduction in

wasting was seen among children from the Muslim caste/ethnic group; in Madesh province, among children who were exclusively breastfed; in Bagmati province, among children who were not exclusively breastfed; in Gandaki province, among children who were not breastfed within 1 hour of birth; in Karnali province, among children of mothers age 16–19; and in Sudurpaschim province, among children age 48–59 months. On the other hand, wasting increased in Lumbini province across various groups, with the most notable increase seen among children of mothers age 35–49.

### **4.1.3 Underweight**

Between 2016 and 2022, the prevalence of underweight decreased significantly in Karnali (18 percentage points), Sudurpaschim (13 percentage points), Koshi (11 percentage points), and Madhesh (10 percentage points) provinces. However, despite this progress, the prevalence of underweight remained notably high in Madhesh (27%) and Lumbini (24%) provinces. To achieve the SDG target of 9% underweight by 2030, the country needs an AARR of 8.9% each year. During the same period, Madhesh and Lumbini provinces need AARRs of 12.9% and 11.4%, respectively.

The improvement in underweight varied across provinces, influenced mainly by socioeconomic, maternal, and health and environmental factors. In Koshi province, the most notable reduction in underweight was seen among children of mothers less than 145 cm in height; in Madesh province, among children of mothers who met minimum dietary diversity; in Bagmati province, among children from households in the lowest wealth quintile; in Gandaki province, among children from households that used an unimproved sanitation facility; in Lumbini province, among children from households in the middle wealth quintile; in Karnali province, among children of mothers who were counseled in the past 6 months about how or what to feed their children; and in Sudurpaschim province, among children of mothers who had access to none of the three media.

## **4.2 Trends in anemia**

### **4.2.1 Child anemia**

Between 2016 and 2022, the overall prevalence of child anemia decreased by 8 percentage points. The most significant decline was observed in Koshi province, with a reduction of 19 percentage points. However, the prevalence of child anemia remained notably high in Madhesh (51%) and Lumbini (50%) provinces. To achieve the SDG target of 10% child anemia by 2030, the country needs an AARR of 17.0% each year. During the same period, Madhesh and Lumbini provinces need AARRs of more than 18.0% each.

The improvement in child anemia varied across provinces, influenced by socioeconomic, child-intrinsic and nutritional, maternal, and health and environmental factors. In Koshi province, the most notable reduction in child anemia was seen among children from the Muslim caste/ethnic group; in Madesh and Lumbini provinces, among children of mothers less than 145 cm in height; in Bagmati province, among children age 48–59 months; in Gandaki province, among children from the Brahmin/Chhetri caste/ethnic group; in Karnali province, among children of mothers who had access to none of the three media; and in Sudurpaschim province, among children age 36–47 months.

### **4.2.2 Women's anemia**

Between 2016 and 2022, the prevalence of women's anemia also declined by 8 percentage points. The most significant decline was observed in Koshi province, with a reduction of 19 percentage points. However, the prevalence of women's anemia remained notably high in Madhesh (54%) and Lumbini (48%) provinces. To achieve the SDG target of 10% child or women's anemia by 2030, the country needs an AARR of 15.3% each year. During the same period, Madhesh and Lumbini provinces need AARRs of more than 18.0% each.

The improvement in women's anemia varied across provinces, influenced by socioeconomic, maternal, and health and environmental factors. In Koshi province, the most notable reduction in women's anemia was seen among women from households in the highest wealth quintile; in Madhesh province, among women less than 145 cm in height; in Bagmati province, among women who used the internet in the past 12 months; in Gandaki, among women whose birth interval was less than 3 years; in Lumbini province, among women from households with a female head of household; in Karnali province, among women from households with soap and water at handwashing stations; and in Sudurpaschim province, among women from households that used clean fuel for cooking.

### **4.3 Determinants of outcomes**

Our findings indicate that child birthweight, mother's body mass index (BMI), and proper water treatment methods are consistently predict improvements in child stunting, wasting, and underweight. Conversely, larger family size and increasing child age are common risk factors for increasing stunting, wasting, underweight, and both child and women's anemia. These findings align with those of previous studies conducted in Nepal and other low- and middle-income countries. For instance, research by Tiwari and colleagues based on 2016 Nepal Demographic and Health Survey data identified maternal BMI, child birthweight, and family size as significant factors increasing the risk of stunting and underweight among children in Nepal.<sup>14</sup> Similarly, a community-based cross-sectional study in Eastern Nepal found that children from households consuming untreated water were at significantly increased risk of underweight.<sup>15</sup> An analysis of recent national survey data in Nepal also found that the prevalence of anemia was significantly higher among women lacking sanitation facilities.<sup>16</sup>

Our province-level analysis showed that factors affecting stunting, wasting, underweight, and anemia vary across provinces. In Koshi, child birthweight, mother's BMI, and proper water treatment reduce stunting, with only child birthweight affecting underweight. In Madhesh province, household wealth status was associated with reduced stunting, while child birthweight and mother's BMI were associated with a decline in the prevalence of underweight. Rural residence and lack of maternal involvement in decision-making were associated with increased stunting, while child illness and being from a Muslim or Dalit caste/ethnic increased risks for wasting and underweight. In Bagmati province, child birthweight and birth interval were associated with reduced stunting, while improved sanitation was associated with a decline in anemia. In Gandaki province, household wealth and maternal education were associated with declines in stunting and underweight. In Lumbini province, mother's ownership of a mobile phone, child birthweight, and birth interval were associated with reductions in stunting and underweight. In Karnali province, delivery at home and rural residence were associated with increased stunting and underweight. In Sudurpaschim province,

older age at first marriage or union and child birthweight were associated with declines in stunting and underweight.

The improvements in stunting, wasting, underweight, and anemia among marginalized groups, such as households in the lowest and second wealth quintiles, from disadvantaged caste/ethnic groups, and in geographically marginalized areas like Karnali and Sudurpaschim provinces, could be attributed to the efforts of the Government of Nepal. These efforts include targeting nutritional interventions to marginalized groups in coordination with development partners, based on the Multi-Sector Nutrition Plan.<sup>17</sup> In Lumbini province, wasting notably increased, particularly among Muslim children and those from the Terai/Madheshi other caste/ethnic group. This province holds a significant portion of Nepal's Muslim population, which is often considered vulnerable due to poor health outcomes, lower education levels, limited involvement of women in decision-making, early marriage, high fertility rates, and elevated mortality rates.<sup>18,19</sup> The significant increase in wasting among Muslim children could contribute to the rising prevalence of wasting in this province.

#### **4.4 Multiple health outcomes**

Our findings show that key socioeconomic factors predict the coexistence of multiple health outcomes, including being from households from the lowest and second wealth quintiles, being from Dalit and Muslim caste/ethnic groups, having mothers with no schooling, being from households with more than four family members, having mothers who have not used the internet in the past 12 months, and having mothers without a mobile phone. Child's age 6–23 months, birthweight less than 2.5 kg, minimum dietary diversity, minimum meal frequency, and minimum acceptable diet were identified as key child-intrinsic and nutritional factors predicting the coexistence of multiple health outcomes. In addition, maternal factors such as age 35–49 years, BMI less than 18.5, height less than 145 cm, and birth interval less than 3 years were significant predictors of the coexistence of multiple health outcomes. Furthermore, treatment of water using appropriate methods before drinking, availability of soap and water at handwashing stations, improved sanitation facilities, and the use of clean fuel were identified as key health and environment factors predicting multiple health outcomes. Other contributing factors encompassed maternal health care practices, such as delivering in a health facility, maternal exposure to media, marriage and first birth at age 20 and above, iron-containing supplementation during last pregnancy, provision of vitamin A supplements to children age 6–59 months, and provision of deworming medication to children 12–59 months.

#### **4.5 Study Limitations**

This study had several limitations. The data used came from Demographic and Health Surveys, which were cross-sectional surveys. Therefore, our findings do not provide information about causal relationships. They only show associations between the outcome variables and the independent background variables. In addition, most of the information used in the analysis was collected retrospectively from respondents and may be subject to potential recall and social desirability bias. Furthermore, the study was not adequately powered in some provinces to detect a statistically significant difference between some outcome variables and some independent background variables. Finally, given the period when the report was drafted, we were not able to apply the new adjustments and cutoffs based on the new World Health Organization (WHO) anemia guidelines.

## 5 CONCLUSION

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To the best of our knowledge, this study is the first one to provide an in-depth, province-level analysis of trends and determinants of stunting, wasting, underweight, and child and women's anemia in Nepal. The factors influencing these outcomes variables are different and diverse across provinces, highlighting the complexity of addressing malnutrition. Consequently, implementing a uniform intervention strategy across all provinces or demographic groups may not be the most suitable or cost-effective approach. Instead, targeting tailored interventions toward distinct groups can effectively mitigate disparities among different demographic segments and facilitate significant improvements in stunting, wasting, underweight, and both child and women's anemia in each province. This underscores the importance of aligning nutritional interventions with the specific needs of vulnerable populations within their local contexts, ensuring that interventions are impactful and responsive to the unique challenges faced by each group.

Tailored interventions to address disparities and the specific challenges of each province should focus on high-prevalence areas and marginalized groups, including the households from the lowest wealth quintile, disadvantaged caste/ethnic groups, and geographically isolated regions. We strongly believe that our findings will be useful for context-specific decision-making. Based on the results this study, the following are the key program recommendations:

- Considering socioeconomic disparities, tailored interventions should be developed specifically for Madhesh, Karnali, Lumbini, and Sudurpaschim provinces, where rates of stunting, wasting, underweight, and anemia are notably high.
- Interventions should prioritize the needs of disadvantaged caste/ethnic groups (for example, Dalit, Terai/Madheshi, Muslim, and marginalized Janajati communities) in each province. For instance, in Lumbini province, where the prevalence of wasting and underweight is notably high among Muslim, Dalit, and Terai/Madheshi caste/ethnic groups, specific interventions should be developed to target these communities.
- While anemia prevalence is consistent across rich and poor households, stunting and underweight are significantly higher among low-income households. Therefore, interventions addressing anemia should encompass both socioeconomic groups, whereas efforts to tackle child stunting and underweight should specifically target low-income households.
- Maternal and child health and nutrition practices, including maternal body mass index, maternal dietary diversity, birth interval, number of children, child birthweight, and child minimum meal frequency, play crucial roles in influencing the prevalence of stunting, wasting, underweight, and anemia. Strengthening maternal and child health programs is essential, with a focus on improving maternal health and nutrition, promoting and supporting breastfeeding, and enhancing dietary diversity. These efforts should be achieved by targeting young mothers as well as marginalized and vulnerable families and communities.
- Mother's exposure to media (radio, TV, newspapers) and health and nutrition programs broadcasted on these platforms is associated with improvements in child nutritional status. Therefore, local media should be utilized to raise awareness about nutrition, health, and hygiene, focusing on mothers and caregivers with limited access to information.

- In all provinces, a larger proportion of children from lower wealth quintiles suffer from stunting, wasting, underweight, and anemia. The economic status of households is significantly connected to the nutritional status of both children and mothers. Therefore, livelihood programs for low-income families are essential for improving their ability to access nutritious food. Additionally, empowering women economically and socially is crucial for enhancing the nutritional status of both children and mothers.



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# APPENDIX

Table A1 Trends in independent variables in Koshi province, 2016–2022 Nepal DHS surveys

Background variable	Koshi province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	21.4	166	25.3	214	3.9	
Second	25.3	197	20.4	172	-4.9	
Middle	21.1	164	21.7	183	0.6	
Fourth	21.1	164	21.7	183	0.6	
Highest	11.0	85	10.9	92	-0.1	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	26.1	203	22.9	194	-3.2	
Terai/Madheshi other	6.2	48	10.4	88	4.2	
Dalit	7.4	57	10.5	89	3.1	
Newar	4.4	34	1.5	13	-2.9	
Janajati	46.5	361	47.5	402	1.0	
Muslim	9.4	73	7.2	61	-2.2	
<b>Mother's education</b>						
No education/no schooling	23.3	180	12.9	109	-10.4	*
Primary/1–5 years of schooling	18.5	143	15.7	133	-2.8	
Some secondary/6–9 years of schooling	31.2	242	40.5	342	9.3	
SLC or higher/10 and above years of schooling	27.1	211	30.8	260	3.7	
<b>Mother's occupation</b>						
Not working	41.6	322	29.5	249	-12.1	
Non-agricultural	13.1	101	14.5	122	1.4	
Agricultural	45.4	352	56.1	474	10.7	
<b>Household size</b>						
4 or less	43.1	334	47.0	397	3.9	
More than 4	56.9	441	53.0	448	-3.9	
<b>Head of the household</b>						
Male	73.4	569	71.8	607	-1.6	
Female	26.6	207	28.2	238	1.6	
<b>Mother's decision-making</b>						
Cannot make decision	44.8	325	31.6	264	-13.2	**
Can make decision	55.2	401	68.4	572	13.2	
<b>Mother's internet use</b>						
Not used in past 12 months	77.9	604	39.1	330	-38.8	***
Used in past 12 months	22.1	172	60.9	515	38.8	
<b>Mother owns a mobile phone</b>						
No	20.1	156	16.4	138	-3.7	
Yes	79.9	620	83.6	707	3.7	

Continued...

Table A1—Continued

Background variable	Koshi province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	8.6	66	13.1	110	4.5	**
6–11	13.3	103	8.6	73	-4.7	
12–17	9.3	72	11.4	96	2.1	
18–23	12.6	97	8.5	72	-4.1	
24–35	18.9	147	19.5	165	0.6	
36–47	19.1	148	19.4	164	0.3	
48–59	18.4	142	19.6	166	1.2	
<b>Sex of child</b>						
Male	54.5	423	51.5	435	-3.0	
Female	45.5	353	48.5	410	3.0	
<b>Birthweight</b>						
Small (<2.5 kg)	11.8	60	14.0	60	2.2	
Normal (2.5–3.49 kg)	57.9	297	60.3	257	2.4	
Large (≥3.5 kg)	30.3	155	25.7	110	-4.6	
<b>Early initiation of breastfeeding</b>						
Child was not breastfed within 1 hour of birth	48.2	161	51.5	178	3.3	
Child was breastfed within 1 hour of birth	51.8	173	48.5	167	-3.3	
<b>Current breastfeeding status</b>						
Currently not breastfeeding	38.9	302	45.9	388	7.0	*
Currently breastfeeding	61.1	474	54.1	457	-7.0	
<b>Exclusive breastfeeding</b>						
Child was not exclusively breastfed	47.1	31	45.6	50	-1.5	
Child was exclusively breastfed	52.9	35	54.4	60	1.5	
<b>Minimum dietary diversity</b>						
Child was not fed with minimum dietary diversity	58.6	160	49.0	118	-9.6	
Child was fed with minimum dietary diversity	41.4	113	51.0	123	9.6	
<b>Minimum meal frequency</b>						
Child was not fed meals recommended minimum number of times	29.0	79	18.9	45	-10.1	*
Child was fed meals recommended minimum number of times	71.0	194	81.1	195	10.1	
<b>Minimum acceptable diet</b>						
Child was not fed with recommended minimum acceptable diet	67.0	182	54.4	131	-12.6	*
Child was fed with recommended minimum acceptable diet	33.0	90	45.6	110	12.6	
<b>Maternal factors</b>						
<b>Mother's age (in years)</b>						
15–24	39.1	303	36.7	310	-2.4	
25–34	49.8	387	51.5	435	1.7	
35–49	11.0	86	11.8	100	0.8	

Continued...

Table A1—Continued

Background variable	Koshi province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Mother's BMI</b>						
Underweight (<18.5)	12.6	48	8.2	38	-4.4	
Normal (18.5–24.9)	65.0	248	66.6	311	1.6	
Overweight/obese (≥25)	22.3	85	25.2	117	2.9	
<b>Mother's height</b>						
Less than 145 cm	10.6	40	10.1	47	-0.5	
145 cm or more	89.4	341	89.9	419	0.5	
<b>Age at first marriage or union</b>						
<16 years	16.8	130	12.9	109	-3.9	
16–19 years	45.3	351	49.8	421	4.5	
20 and above years	37.9	294	37.3	315	-0.6	
<b>Age at first birth</b>						
<20 years	42.2	327	38.8	328	-3.4	
20 and above	57.8	449	61.2	517	3.4	
<b>Birth interval</b>						
Less than 3 years	42.2	180	32.4	151	-9.8	*
3 years or more or no preceding interval	57.8	246	67.6	316	9.8	
<b>Birth order</b>						
First born	44.7	347	44.3	374	-0.4	*
2–4	30.3	235	36.9	311	6.6	
5 or more	25.0	194	18.8	159	-6.2	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	80.5	625	40.6	343	-39.9	**
5 or more food groups	19.5	151	59.4	502	39.9	
<b>Mother's smoking status</b>						
Smoking	5.7	44	6.6	56	0.9	
Non-smoking	94.3	732	93.4	789	-0.9	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	62.7	486	65.4	553	2.7	
Child (12–23 months) received all basic vaccines	37.3	289	34.6	292	-2.7	
<b>Any illnesses</b>						
Child had no illness	63.1	490	51.2	432	-11.9	**
Child had any illness	36.9	286	48.8	413	11.9	
<b>Treatment of water before drinking</b>						
No treatment	74.1	575	66.2	559	-7.9	*
Treatment with appropriate method	25.9	201	33.8	286	7.9	
<b>Sources of drinking water</b>						
Unimproved sources	3.9	30	1.4	12	-2.5	
Improved sources	96.1	746	98.6	833	2.5	
<b>Household with soap and water at handwashing station</b>						
No	57.6	444	28.9	242	-28.7	***
Yes	42.4	327	71.1	597	28.7	

Continued...

Table A1—Continued

Background variable	Koshi province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Sanitation</b>						
Unimproved sanitation	15.5	120	8.5	72	-7.0	*
Improved sanitation	84.5	656	91.5	773	7.0	
<b>Use of cooking fuel</b>						
Solid fuel	76.7	595	70.8	598	-5.9	
Clean fuel	23.3	181	29.2	247	5.9	
<b>Time to nearest health care facility</b>						
<30 min	51.0	396	66.3	561	15.3	
30–60 min	37.5	291	24.6	208	-12.9	
60+ min	11.5	89	9.0	76	-2.5	
<b>Place of delivery</b>						
Health facility	60.0	466	81.0	418	21.0	**
Home/other	40.0	310	19.0	98	-21.0	
<b>Number of ANC visits</b>						
None	4.4	29	3.7	18	-0.7	
1–3	18.7	125	14.6	71	-4.1	
4 or more	76.9	513	81.7	399	4.8	
<b>MIYCN counseling</b>						
No	85.0	659	78.5	334	-6.5	
Yes	15.0	117	21.5	91	6.5	
<b>Health mother's groups in the ward</b>						
No	69.6	490	78.0	541	8.4	
Yes	30.4	214	22.0	152	-8.4	
<b>Counseling about breastfeeding during PNC visits</b>						
No	45.0	298	34.9	170	-10.1	*
Yes	55.0	364	65.1	317	10.1	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	18.6	144	19.4	164	0.8	
Access any of 3 media less than once a week	21.2	164	27.4	232	6.2	
Access any of 3 media at least once a week	60.2	467	53.2	449	-7.0	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	43.9	341	78.1	660	34.2	***
Heard/seen any one of the TV/radio H&N programs	56.1	435	21.9	185	-34.2	
<b>Iron-containing supplements during last pregnancy</b>						
No	56.3	375	31.6	155	-24.7	***
Yes	43.7	292	68.4	335	24.7	
<b>Deworming medication during last pregnancy</b>						
No	25.4	169	22.6	110	-2.8	
Yes	74.6	498	77.4	379	2.8	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	94.5	257	75.6	182	-18.9	***
Yes	5.5	15	24.4	59	18.9	

Continued...

Table A1—Continued

Background variable	Koshi province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	14.8	105	15.9	117	1.1	
Yes	85.2	604	84.1	618	-1.1	
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	24.0	146	18.2	121	-5.8	
Yes	76.0	461	81.8	541	5.8	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A2 Trends in independent variables in Madesh province, 2016–2021 Nepal DHS surveys**

Background variable	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	3.0	39	12.7	170	9.7	***
Second	23.1	299	28.3	380	5.2	
Middle	41.4	537	28.1	378	-13.3	
Fourth	23.5	304	20.9	281	-2.6	
Highest	9.0	117	10.1	135	1.1	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	4.1	53	3.5	47	-0.6	
Terai/Madheshi other	55.6	721	52.6	707	-3.0	
Dalit	17.0	220	22.5	302	5.5	
Newar	0.3	4	0.5	7	0.2	
Janajati	8.1	105	5.4	73	-2.7	
Muslim	14.9	193	15.4	207	0.5	
<b>Mother's education</b>						
No education/no schooling	58.8	763	43.9	590	-14.9	**
Primary/1–5 years of schooling	16.6	216	19.0	255	2.4	
Some secondary/6–9 years of schooling	14.2	185	20.6	277	6.4	
SLC or higher/10 and above years of schooling	10.3	133	16.5	222	6.2	
<b>Mother's occupation</b>						
Not working	62.6	812	56.0	753	-6.6	
Non-agricultural	6.0	78	10.1	136	4.1	
Agricultural	31.3	406	33.9	456	2.6	
<b>Household size</b>						
4 or less	20.0	259	25.8	347	5.8	*
More than 4	80.0	1,037	74.2	997	-5.8	
<b>Head of the household</b>						
Male	77.0	999	70.3	945	-6.7	
Female	23.0	298	29.7	399	6.7	
<b>Mother's decision-making</b>						
Cannot make decision	64.1	745	59.2	775	-4.9	
Can make decision	35.9	417	40.8	533	4.9	
<b>Mother's internet use</b>						
Not used in past 12 months	90.7	1,176	32.8	441	-57.9	***
Used in past 12 months	9.3	121	67.2	903	57.9	
<b>Mother owns a mobile phone</b>						
No	30.2	392	25.3	340	-4.9	
Yes	69.8	905	74.7	1,004	4.9	
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	9.2	119	10.2	137	1.0	
6–11	10.4	135	7.0	94	-3.4	
12–17	9.5	123	9.4	127	-0.1	
18–23	10.5	136	10.6	142	0.1	

Continued...



Table A1—Continued

24–35	19.2	249	22.6	304	3.4	
36–47	22.7	295	20.4	275	-2.3	
48–59	18.5	239	19.8	266	1.3	
<b>Sex of child</b>						
Male	53.0	687	53.4	717	0.4	
Female	47.0	610	46.6	627	-0.4	
<b>Birthweight</b>						
Small (<2.5 kg)	13.1	81	8.9	48	-4.2	
Normal (2.5–3.49 kg)	50.4	312	55.8	299	5.4	
Large (≥3.5 kg)	36.5	225	35.2	189	-1.3	
<b>Early initiation of breastfeeding</b>						
Child was not breastfed within 1 hour of birth	54.7	274	44.1	214	-10.6	*
Child was breastfed within 1 hour of birth	45.3	227	55.9	272	10.6	
<b>Current breastfeeding status</b>						
Currently not breastfeeding	45.5	590	51.4	691	5.9	**
Currently breastfeeding	54.5	706	48.6	653	-5.9	
<b>Exclusive breastfeeding</b>						
Child was not exclusively breastfed	41.4	49	35.0	48	-6.4	
Child was exclusively breastfed	58.6	70	65.0	89	6.4	
<b>Minimum dietary diversity</b>						
Child was not fed with minimum dietary diversity	73.2	288	65.3	237	-7.9	
Child was fed with minimum dietary diversity	26.8	106	34.7	126	7.9	
<b>Minimum meal frequency</b>						
Child was not fed meals recommended minimum number of times	37.6	148	26.6	96	-11.0	*
Child was fed meals recommended minimum number of times	62.4	246	73.4	267	11.0	
<b>Minimum acceptable diet</b>						
Child was not fed with recommended minimum acceptable diet	81.3	320	71.1	258	-10.2	*
Child was fed with recommended minimum acceptable diet	18.7	73	28.9	105	10.2	
<b>Maternal factors</b>						
<b>Mother's age (in years)</b>						
15–24	47.5	615	48.7	655	1.2	
25–34	45.0	584	46.7	628	1.7	
35–49	7.5	97	4.6	61	-2.9	
<b>Mother's BMI</b>						
Underweight (<18.5)	32.1	208	21.1	143	-11.0	***
Normal (18.5–24.9)	64.1	416	63.4	429	-0.7	
Overweight/obese (≥25)	3.8	25	15.5	105	11.7	
<b>Mother's height</b>						
Less than 145 cm	12.6	82	11.8	80	-0.8	
145 cm or more	87.4	567	88.2	598	0.8	

Continued...

Table A1—Continued

<b>Age at first marriage or union</b>						
<16 years	37.7	489	28.9	389	-8.8	*
16–19 years	53.5	694	58.6	788	5.1	
20 and above years	8.8	114	12.5	167	3.7	
<b>Age at first birth</b>						
<20 years	68.8	892	65.2	876	-3.6	
20 and above	31.2	405	34.8	468	3.6	
<b>Birth interval</b>						
Less than 3 years	63.9	582	59.5	550	-4.4	
3 years or more or no preceding interval	36.1	329	40.5	374	4.4	
<b>Birth order</b>						
First born	29.8	386	31.0	417	1.2	*
2–4	27.5	357	32.4	436	4.9	
5 or more	42.7	554	36.6	492	-6.1	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	91.1	1,182	63.2	850	-27.9	***
5 or more food groups	8.9	115	36.8	494	27.9	
<b>Mother's smoking status</b>						
Smoking	1.4	18	0.8	11	-0.6	
Non-smoking	98.6	1,279	99.2	1,333	0.6	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	69.8	905	68.6	922	-1.2	
Child (12–23 months) received all basic vaccines	30.2	392	31.4	422	1.2	
<b>Any illnesses</b>						
Child had no illness	66.5	863	59.7	802	-6.8	*
Child had any illness	33.5	434	40.3	542	6.8	
<b>Treatment of water before drinking</b>						
No treatment	99.3	1,287	95.2	1,280	-4.1	***
Treatment with appropriate method	0.7	9	4.8	64	4.1	
<b>Sources of drinking water</b>						
Unimproved sources	2.3	30	0.4	5	-1.9	*
Improved sources	97.7	1,267	99.6	1,339	1.9	
<b>Household with soap and water at handwashing station</b>						
No	70.8	918	39.7	528	-31.1	***
Yes	29.2	378	60.3	802	31.1	
<b>Sanitation</b>						
Unimproved sanitation	55.2	716	23.0	309	-32.2	***
Improved sanitation	44.8	580	77.0	1,035	32.2	
<b>Use of cooking fuel</b>						
Solid fuel	89.4	1,159	72.9	979	-16.5	***
Clean fuel	10.6	138	27.1	365	16.5	
<b>Time to nearest health care facility</b>						
<30 min	67.9	878	85.6	1,150	17.7	***
30–60 min	30.0	388	14.3	193	-15.7	
60+ min	2.1	28	0.1	1	-2.0	

Continued...

**Table A1—Continued**

<b>Place of delivery</b>						
Health facility	38.9	504	66.9	537	28.0	***
Home/other	61.1	792	33.1	266	-28.0	
<b>Number of ANC visits</b>						
None	5.3	50	2.3	17	-3.0	**
1–3	41.0	383	28.1	201	-12.9	
4 or more	53.7	502	69.6	498	15.9	
<b>MIYCN counseling</b>						
No	93.1	1,207	89.0	652	-4.1	
Yes	6.9	90	11.0	80	4.1	
<b>Health mother's groups in the ward</b>						
No	80.6	928	82.0	888	1.4	
Yes	19.4	224	18.0	195	-1.4	
<b>Counseling about breastfeeding during PNC visits</b>						
No	59.9	559	38.1	273	-21.8	***
Yes	40.1	374	61.9	443	21.8	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	38.7	502	40.7	548	2.0	*
Access any of 3 media less than once a week	17.9	232	27.2	365	9.3	
Access any of 3 media at least once a week	43.5	564	32.1	431	-11.4	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	83.4	1,082	95.4	1,283	12.0	***
Heard/seen any one of the TV/radio H&N programs	16.6	215	4.6	61	-12.0	
<b>Iron-containing supplements during last pregnancy</b>						
No	71.7	670	45.2	323	-26.5	***
Yes	28.3	265	54.8	392	26.5	
<b>Deworming medication during last pregnancy</b>						
No	38.4	359	31.6	226	-6.8	
Yes	61.6	575	68.4	490	6.8	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	96.5	380	73.9	268	-22.6	***
Yes	3.5	14	26.1	95	22.6	
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	26.0	306	20.1	242	-5.9	
Yes	74.0	871	79.9	965	5.9	
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	38.6	402	19.4	216	-19.2	***
Yes	61.4	640	80.6	897	19	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A3 Trends in independent variables in Bagmati province, 2016–2022 Nepal DHS surveys**

Background variable	Bagmati province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	23.4	180	15.8	127	-7.6	
Second	15.1	116	13.1	105	-2.0	
Middle	7.8	60	18.1	144	10.3	
Fourth	19.1	147	18.6	149	-0.5	
Highest	34.6	266	34.5	276	-0.1	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	34.3	264	32.5	260	-1.8	
Terai/Madheshi other	0.8	6	1.6	13	0.8	
Dalit	7.7	59	8.7	69	1.0	
Newar	13.4	103	10.3	82	-3.1	
Janajati	43.8	336	46.9	375	3.1	
Muslim		0		0	0.0	
<b>Mother's education</b>						
No education/no schooling	23.9	184	12.5	100	-11.4	*
Primary/1–5 years of schooling	16.3	125	16.9	136	0.6	
Some secondary/6–9 years of schooling	26.1	201	24.4	195	-1.7	
SLC or higher/10 and above years of schooling	33.6	258	46.1	369	12.5	
<b>Mother's occupation</b>						
Not working	37.3	286	29.8	239	-7.5	
Non-agricultural	27.0	208	28.6	229	1.6	
Agricultural	35.7	274	41.6	333	5.9	
<b>Household size</b>						
4 or less	53.5	411	51.5	412	-2.0	
More than 4	46.5	357	48.5	388	2.0	
<b>Head of the household</b>						
Male	70.1	539	71.7	573	1.6	
Female	29.9	229	28.3	227	-1.6	
<b>Mother's decision-making</b>						
Cannot make decision	47.7	348	27.1	212	-20.6	***
Can make decision	52.3	381	72.9	572	20.6	
<b>Mother's internet use</b>						
Not used in past 12 months	69.6	534	28.4	227	-41.2	***
Used in past 12 months	30.4	234	71.6	573	41.2	
<b>Mother owns a mobile phone</b>						
No	11.8	90	10.6	85	-1.2	
Yes	88.2	677	89.4	715	1.2	

Continued...

Table A3—Continued

Background variable	Bagmati province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	8.4	64	10.6	85	2.2	
6–11	10.3	79	9.4	75	-0.9	
12–17	11.8	90	8.9	71	-2.9	
18–23	10.2	78	7.9	63	-2.3	
24–35	17.4	134	21.9	175	4.5	
36–47	17.4	133	22.2	177	4.8	
48–59	24.7	190	19.2	154	-5.5	
<b>Sex of child</b>						
Male	48.3	371	53.0	424	4.7	
Female	51.7	397	47.0	376	-4.7	
<b>Birthweight</b>						
Small (<2.5 kg)	8.8	49	8.3	35	-0.5	
Normal (2.5–3.49 kg)	66.4	371	67.8	282	1.4	
Large (≥3.5 kg)	24.8	139	23.9	100	-0.9	
<b>Early initiation of breastfeeding</b>						
Child was not breastfed within 1 hour of birth	42.6	130	56.0	162	13.4	*
Child was breastfed within 1 hour of birth	57.4	175	44.0	127	-13.4	
<b>Current breastfeeding status</b>						
Currently not breastfeeding	44.0	338	50.6	405	6.6	*
Currently breastfeeding	56.0	430	49.4	395	-6.6	
<b>Exclusive breastfeeding</b>						
Child was not exclusively breastfed	42.0	27	58.6	50	16.6	
Child was exclusively breastfed	58.0	37	41.4	35	-16.6	
<b>Minimum dietary diversity</b>						
Child was not fed with minimum dietary diversity	45.1	111	48.7	102	3.6	
Child was fed with minimum dietary diversity	54.9	136	51.3	107	-3.6	
<b>Minimum meal frequency</b>						
Child was not fed meals recommended minimum number of times	27.3	67	11.8	25	-15.5	**
Child was fed meals recommended minimum number of times	72.7	180	88.2	185	15.5	
<b>Minimum acceptable diet</b>						
Child was not fed with recommended minimum acceptable diet	58.0	143	54.0	113	-4.0	
Child was fed with recommended minimum acceptable diet	42.0	104	46.0	96	4.0	
<b>Maternal factors</b>						
<b>Mother's age (in years)</b>						
15–24	30.2	232	27.4	220	-2.8	
25–34	61.5	472	60.1	481	-1.4	
35–49	8.3	63	12.5	100	4.2	

Continued...

Table A3—Continued

Background variable	Bagmati province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Mother's BMI</b>						
Underweight (<18.5)	8.7	32	4.3	18	-4.4	*
Normal (18.5–24.9)	57.1	212	47.5	195	-9.6	
Overweight/obese (≥25)	34.2	127	48.2	198	14.0	
<b>Mother's height</b>						
Less than 145 cm	9.2	34	5.7	23	-3.5	
145 cm or more	90.8	337	94.3	387	3.5	
<b>Age at first marriage or union</b>						
<16 years	16.5	127	10.4	83	-6.1	
16–19 years	41.4	318	43.9	351	2.5	
20 and above years	42.1	323	45.7	366	3.6	
<b>Age at first birth</b>						
<20 years	38.2	293	35.3	283	-2.9	
20 and above	61.8	475	64.7	517	2.9	
<b>Birth interval</b>						
Less than 3 years	28.5	115	24.4	104	-4.1	
3 years or more or no preceding interval	71.5	290	75.6	321	4.1	
<b>Birth order</b>						
First born	47.2	363	46.5	372	-0.7	
2–4	32.7	251	36.8	294	4.1	
5 or more	20.0	154	16.8	134	-3.2	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	73.7	566	33.9	271	-39.8	***
5 or more food groups	26.3	202	66.1	529	39.8	
<b>Mother's smoking status</b>						
Smoking	8.8	68	7.1	57	-1.7	
Non-smoking	91.2	700	92.9	743	1.7	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	65.8	505	66.3	531	0.5	
Child (12–23 months) received all basic vaccines	34.2	263	33.7	269	-0.5	
<b>Any illnesses</b>						
Child had no illness	64.5	496	54.4	435	-10.1	*
Child had any illness	35.5	272	45.6	365	10.1	
<b>Treatment of water before drinking</b>						
No treatment	60.6	466	66.4	531	5.8	
Treatment with appropriate method	39.4	302	33.6	269	-5.8	
<b>Sources of drinking water</b>						
Unimproved sources	3.7	29	1.8	14	-1.9	
Improved sources	96.3	739	98.2	786	1.9	
<b>Household with soap and water at handwashing station</b>						
No	41.7	320	16.0	127	-25.7	***
Yes	58.3	448	84.0	670	25.7	

Continued...

Table A3—Continued

Background variable	Bagmati province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Sanitation</b>						
Unimproved sanitation	13.2	101	9.1	72	-4.1	
Improved sanitation	86.8	667	90.9	728	4.1	
<b>Use of cooking fuel</b>						
Solid fuel	45.2	347	35.5	284	-9.7	
Clean fuel	54.8	421	64.5	516	9.7	
<b>Time to nearest health care facility</b>						
<30 min	42.7	324	76.3	610	33.6	***
30–60 min	43.3	328	16.3	131	-27.0	
60+ min	14.0	106	7.4	59	-6.6	
<b>Place of delivery</b>						
Health facility	69.4	533	87.4	410	18.0	**
Home/other	30.6	235	12.6	59	-18.0	
<b>Number of ANC visits</b>						
None	6.5	43	4.7	21	-1.8	
1–3	15.1	100	7.5	34	-7.6	
4 or more	78.5	520	87.8	404	9.3	
<b>MIYCN counseling</b>						
No	77.2	593	76.5	272	-0.7	
Yes	22.8	175	23.5	83	0.7	
<b>Health mother's groups in the ward</b>						
No	64.3	393	63.9	367	-0.4	
Yes	35.7	218	36.1	208	0.4	
<b>Counseling about breastfeeding during PNC visits</b>						
No	36.4	240	35.1	161	-1.3	
Yes	63.6	419	64.9	298	1.3	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	11.5	88	16.1	129	4.6	**
Access any of 3 media less than once a week	15.9	122	28.5	228	12.6	
Access any of 3 media at least once a week	72.6	558	55.4	443	-17.2	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	24.8	191	75.0	600	50.2	***
Heard/seen any one of the TV/radio H&N programs	75.2	577	25.0	200	-50.2	
<b>Iron-containing supplements during last pregnancy</b>						
No	49.3	327	30.8	141	-18.5	**
Yes	50.7	336	69.2	318	18.5	
<b>Deworming medication during last pregnancy</b>						
No	45.5	302	32.8	151	-12.7	
Yes	54.5	361	67.2	309	12.7	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	73.2	181	75.3	158	2.1	
Yes	26.8	66	24.7	52	-2.1	

Continued...

Table A3—Continued

Background variable	Bagmati province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	15.8	111	12.0	86	-3.8	
Yes	84.2	593	88.0	630	3.8	
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	27.1	170	16.1	103	-11.0	*
Yes	72.9	455	83.9	537	11.0	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.



**Table A4 Trends in independent variables in Gandaki province, 2016–2022 Nepal DHS surveys**

Background variable	Gandaki province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	22.9	86	19.1	63	-3.8	
Second	21.7	82	13.8	45	-7.9	
Middle	16.4	61	21.4	70	5.0	
Fourth	24.0	90	24.8	81	0.8	
Highest	15.0	56	21.0	69	6.0	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	34.1	128	24.7	81	-9.4	
Terai/Madheshi other	0.0	0	1.5	5	1.5	
Dalit	19.2	72	25.5	84	6.3	
Newar	3.6	13	2.6	9	-1.0	
Janajati	42.8	161	45.3	149	2.5	
Muslim	0.3	1	0.4	1	0.1	
<b>Mother's education</b>						
No education/no schooling	12.3	46	5.5	18	-6.8	**
Primary/1–5 years of schooling	22.8	86	16.9	55	-5.9	
Some secondary/6–9 years of schooling	34.4	129	30.9	101	-3.5	
SLC or higher/10 and above years of schooling	30.6	115	46.8	153	16.2	
<b>Mother's occupation</b>						
Not working	33.4	125	24.0	79	-9.4	*
Non-agricultural	11.9	45	25.1	82	13.2	
Agricultural	54.7	205	50.9	167	-3.8	
<b>Household size</b>						
4 or less	47.6	179	52.1	171	4.5	
More than 4	52.4	197	47.9	157	-4.5	
<b>Head of the household</b>						
Male	58.6	220	59.3	194	0.7	
Female	41.4	156	40.7	134	-0.7	
<b>Mother's decision-making</b>						
Cannot make decision	43.7	160	21.1	69	-22.6	***
Can make decision	56.3	207	78.9	257	22.6	
<b>Mother's internet use</b>						
Not used in past 12 months	60.7	228	17.5	58	-43.2	***
Used in past 12 months	39.3	147	82.5	271	43.2	
<b>Mother owns a mobile phone</b>						
No	13.8	52	5.7	19	-8.1	
Yes	86.2	324	94.3	309	8.1	
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	10.4	39	10.7	35	0.3	*
6–11	9.0	34	9.4	31	0.4	
12–17	12.1	45	7.2	24	-4.9	

Continued...

Table A4—Continued

Background variable	Gandaki province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
18–23	12.8	48	8.3	27	-4.5	
24–35	19.0	71	20.3	67	1.3	
36–47	18.6	70	25.8	85	7.2	
48–59	18.1	68	18.3	60	0.2	
<b>Sex of child</b>						
Male	51.7	194	54.5	179	2.8	
Female	48.3	182	45.5	149	-2.8	
<b>Birthweight</b>						
Small (<2.5 kg)	9.9	27	12.1	20	2.2	
Normal (2.5–3.49 kg)	63.8	171	67.8	110	4.0	
Large (≥3.5 kg)	26.4	71	20.0	32	-6.4	
<b>Early initiation of breastfeeding</b>						
Child was not breastfed within 1 hour of birth	45.2	73	50.8	59	5.6	
Child was breastfed within 1 hour of birth	54.8	89	49.2	57	-5.6	
<b>Current breastfeeding status</b>						
Currently not breastfeeding	31.6	119	49.7	163	18.1	***
Currently breastfeeding	68.4	257	50.3	165	-18.1	
<b>Exclusive breastfeeding</b>						
Child was not exclusively breastfed	31.9	12	36.3	13	4.4	
Child was exclusively breastfed	68.1	27	63.7	22	-4.4	
<b>Minimum dietary diversity</b>						
Child was not fed with minimum dietary diversity	39.7	51	43.5	35	3.8	
Child was fed with minimum dietary diversity	60.3	77	56.5	46	-3.8	
<b>Minimum meal frequency</b>						
Child was not fed meals recommended minimum number of times	18.6	24	17.2	14	-1.4	
Child was fed meals recommended minimum number of times	81.4	104	82.8	67	1.4	
<b>Minimum acceptable diet</b>						
Child was not fed with recommended minimum acceptable diet	49.5	63	48.8	40	-0.7	
Child was fed with recommended minimum acceptable diet	50.5	64	51.2	42	0.7	
<b>Maternal factors</b>						
<b>Mother's age (in years)</b>						
15–24	43.4	163	32.2	106	-11.2	*
25–34	49.3	185	57.7	189	8.4	
35–49	7.2	27	10.1	33	2.9	
<b>Mother's BMI</b>						
Underweight (<18.5)	5.5	10	4.5	8	-1.0	
Normal (18.5–24.9)	67.9	123	59.8	102	-8.1	
Overweight/obese (≥25)	26.7	48	35.7	61	9.0	
<b>Mother's height</b>						
Less than 145 cm	12.7	23	7.1	12	-5.6	
145 cm or more	87.3	158	92.9	159	5.6	

Continued...

Table A4—Continued

Background variable	Gandaki province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Age at first marriage or union</b>						
<16 years	19.9	75	20.1	66	0.2	*
16–19 years	50.9	191	40.7	134	-10.2	
20 and above years	29.2	110	39.2	129	10.0	
<b>Age at first birth</b>						
<20 years	45.7	172	41.8	137	-3.9	
20 and above	54.3	204	58.2	191	3.9	
<b>Birth interval</b>						
Less than 3 years	30.2	59	25.5	44	-4.7	
3 years or more or no preceding interval	69.8	137	74.5	128	4.7	
<b>Birth order</b>						
First born	47.6	179	47.7	156	0.1	
2–4	32.0	120	38.1	125	6.1	
5 or more	20.3	76	14.3	47	-6.0	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	70.4	264	35.8	118	-34.6	***
5 or more food groups	29.6	111	64.2	210	34.6	
<b>Mother's smoking status</b>						
Smoking	6.8	25	5.4	18	-1.4	
Non-smoking	93.2	350	94.6	310	1.4	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	55.3	208	62.2	204	6.9	*
Child (12–23 months) received all basic vaccines	44.7	168	37.8	124	-6.9	
<b>Any illnesses</b>						
Child had no illness	76.8	288	54.5	179	-22.3	***
Child had any illness	23.2	87	45.5	149	22.3	
<b>Treatment of water before drinking</b>						
No treatment	68.2	256	68.0	223	-0.2	
Treatment with appropriate method	31.8	120	32.0	105	0.2	
<b>Sources of drinking water</b>						
Unimproved sources	4.9	18	0.6	2	-4.3	**
Improved sources	95.1	357	99.4	326	4.3	
<b>Household with soap and water at handwashing station</b>						
No	49.7	186	15.9	52	-33.8	***
Yes	50.3	189	84.1	276	33.8	
<b>Sanitation</b>						
Unimproved sanitation	5.7	21	5.6	18	-0.1	
Improved sanitation	94.3	354	94.4	310	0.1	
<b>Use of cooking fuel</b>						
Solid fuel	64.0	240	52.1	171	-11.9	
Clean fuel	36.0	135	47.9	157	11.9	

Continued...

Table A4—Continued

Background variable	Gandaki province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Time to nearest health care facility</b>						
<30 min	45.3	170	75.8	247	30.5	***
30–60 min	38.0	143	20.9	68	-17.1	
60+ min	16.7	63	3.3	11	-13.4	
<b>Place of delivery</b>						
Health facility	68.3	256	86.7	159	18.4	**
Home/other	31.7	119	13.3	24	-18.4	
<b>Number of ANC visits</b>						
None	6.1	20	0.6	1	-5.5	**
1–3	17.1	57	12.5	23	-4.6	
4 or more	76.8	255	86.9	156	10.1	
<b>MIYCN counseling</b>						
No	77.2	290	63.9	89	-13.3	*
Yes	22.8	86	36.1	50	13.3	
<b>Health mother's groups in the ward</b>						
No	57.5	184	52.3	132	-5.2	
Yes	42.5	136	47.7	120	5.2	
<b>Counseling about breastfeeding during PNC visits</b>						
No	36.7	122	36.2	65	-0.5	
Yes	63.3	210	63.8	115	0.5	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	12.0	45	17.2	56	5.2	
Access any of 3 media less than once a week	19.8	74	26.1	86	6.3	
Access any of 3 media at least once a week	68.2	256	56.8	186	-11.4	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	31.5	118	76.7	252	45.2	***
Heard/seen any one of the TV/radio H&N programs	68.5	257	23.3	76	-45.2	
<b>Iron-containing supplements during last pregnancy</b>						
No	55.6	185	35.7	64	-19.9	***
Yes	44.4	148	64.3	116	19.9	
<b>Deworming medication during last pregnancy</b>						
No	24.5	81	21.4	38	-3.1	
Yes	75.5	251	78.6	141	3.1	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	95.9	122	88.1	62	-7.8	***
Yes	4.1	5	11.9	20	7.8	
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	13.1	44	5.6	16	-7.5	**
Yes	86.9	292	94.4	276	7.5	

Continued...

**Table A4—Continued**

Background variable	Gandaki province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	21.9	66	7.7	20	-14.2	***
Yes	78.1	236	92.3	242	14.2	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
 ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate  
 Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A5 Trends in independent variables in Lumbini province, 2016–2022 Nepal DHS surveys**

Background variable	Lumbini province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	17.2	146	19.9	170	2.7	
Second	20.1	171	21.5	183	1.4	
Middle	19.6	167	21.9	187	2.3	
Fourth	24.3	207	21.3	182	-3.0	
Highest	18.7	160	15.5	132	-3.2	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	26.6	227	23.4	199	-3.2	
Terai/Madheshi other	21.9	187	15.8	135	-6.1	
Dalit	15.3	131	23.1	197	7.8	
Newar	0.4	4	0.7	6	0.3	
Janajati	27.7	236	31.7	271	4.0	
Muslim	8.0	68	5.3	45	-2.7	
<b>Mother's education</b>						
No education/no schooling	28.8	246	17.4	148	-11.4	*
Primary/1–5 years of schooling	23.1	196	18.9	161	-4.2	
Some secondary/6–9 years of schooling	27.2	232	33.3	284	6.1	
SLC or higher/10 and above years of schooling	20.9	178	30.4	259	9.5	
<b>Mother's occupation</b>						
Not working	37.2	317	29.5	252	-7.7	
Non-agricultural	10.7	91	14.9	127	4.2	
Agricultural	52.1	443	55.6	474	3.5	
<b>Household size</b>						
4 or less	29.1	247	38.0	324	8.9	*
More than 4	70.9	604	62.0	529	-8.9	
<b>Head of the household</b>						
Male	69.0	588	69.5	593	0.5	
Female	31.0	264	30.5	260	-0.5	
<b>Mother's decision-making</b>						
Cannot make decision	61.3	493	34.4	289	-26.9	***
Can make decision	38.7	311	65.6	550	26.9	
<b>Mother's internet use</b>						
Not used in past 12 months	85.1	725	33.8	288	-51.3	***
Used in past 12 months	14.9	127	66.2	565	51.3	
<b>Mother owns a mobile phone</b>						
No	23.2	198	18.0	154	-5.2	
Yes	76.8	654	82.0	700	5.2	
<b>Child-intrinsic and nutritional factors</b>						
<b>Age of child (in months)</b>						
<6	9.5	81	8.7	74	-0.8	
6–11	9.9	84	9.8	84	-0.1	

Continued...

Table A5—Continued

Background variable	Lumbini province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
12–17	13.2	112	12.1	103	-1.1		
18–23	9.5	81	8.1	69	-1.4		
24–35	19.5	166	21.6	184	2.1		
36–47	17.6	150	20.1	171	2.5		
48–59	20.8	177	19.7	168	-1.1		
<b>Sex of child</b>							
Male	53.7	458	51.2	437	-2.5		
Female	46.3	394	48.8	416	2.5		
<b>Birthweight</b>							
Small (<2.5 kg)	13.9	78	13.1	59	-0.8		
Normal (2.5–3.49 kg)	59.1	331	62.2	279	3.1		
Large (≥3.5 kg)	26.9	151	24.7	111	-2.2		
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	40.0	142	37.4	122	-2.6		
Child was breastfed within 1 hour of birth	60.0	213	62.6	204	2.6		
<b>Current breastfeeding status</b>							
Currently not breastfeeding	38.1	324	45.7	390	7.6	**	
Currently breastfeeding	61.9	527	54.3	463	-7.6		
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed	25.0	20	64.2	48	39.2	***	
Child was exclusively breastfed	75.0	61	35.8	27	-39.2		
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	49.9	138	48.2	123	-1.7		
Child was fed with minimum dietary diversity	50.1	139	51.8	132	1.7		
<b>Minimum meal frequency</b>							
Child was not fed meal with recommended minimum number of times	25.5	71	16.7	43	-8.8	*	
Child was fed meal with recommended minimum number of times	74.5	207	83.3	213	8.8		
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	58.1	161	55.4	141	-2.7		
Child was fed with recommended minimum acceptable diet	41.9	116	44.6	114	2.7		
<b>Maternal factors</b>							
<b>Mother's age (in years)</b>							
15–24	39.2	334	34.9	298	-4.3		
25–34	53.2	453	56.4	481	3.2		
35–49	7.6	65	8.7	75	1.1		
<b>Mother's BMI</b>							
Underweight (<18.5)	22.2	99	17.2	73	-5.0		
Normal (18.5–24.9)	61.7	275	59.5	254	-2.2		
Overweight/obese (≥25)	16.2	72	23.4	100	7.2		
<b>Mother's height</b>							
Less than 145 cm	10.9	48	10.2	44	-0.7		
145 cm or more	89.1	394	89.8	383	0.7		

Continued...

Table A5—Continued

Background variable	Lumbini province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Age at first marriage or union</b>						
<16 years	22.0	187	16.3	139	-5.7	**
16–19 years	56.7	482	50.1	428	-6.6	
20 and above years	21.3	181	33.5	286	12.2	
<b>Age at first birth</b>						
<20 years	48.7	415	41.3	353	-7.4	*
20 and above	51.3	437	58.7	501	7.4	
<b>Birth interval</b>						
Less than 3 years	40.5	207	37.9	181	-2.6	
3 years or more or no preceding interval	59.5	305	62.1	296	2.6	
<b>Birth order</b>						
First born	39.6	337	43.9	374	4.3	
2–4	29.7	253	32.4	276	2.7	
5 or more	30.7	262	23.8	203	-6.9	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	74.3	633	53.3	455	-21.0	***
5 or more food groups	25.7	219	46.7	399	21.0	
<b>Mother's smoking status</b>						
Smoking	3.5	30	7.7	66	4.2	*
Non-smoking	96.5	822	92.3	788	-4.2	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	60.9	519	60.5	517	-0.4	
Child (12–23 months) received all basic vaccines	39.1	333	39.5	337	0.4	
<b>Any illnesses</b>						
Child had no illness	67.6	576	62.5	534	-5.1	
Child had any illness	32.4	276	37.5	320	5.1	
<b>Treatment of water before drinking</b>						
No treatment	83.6	712	79.9	682	-3.7	
Treatment with appropriate method	16.4	140	20.1	171	3.7	
<b>Sources of drinking water</b>						
Unimproved sources	3.4	29	4.1	35	0.7	
Improved sources	96.6	822	95.9	818	-0.7	
<b>Household with soap and water at handwashing station</b>						
No	63.4	538	25.4	217	-38.0	***
Yes	36.6	311	74.6	636	38.0	
<b>Sanitation</b>						
Unimproved sanitation	14.6	124	9.8	84	-4.8	
Improved sanitation	85.4	727	90.2	770	4.8	
<b>Use of cooking fuel</b>						
Solid fuel	71.5	609	63.2	540	-8.3	
Clean fuel	28.5	242	36.8	314	8.3	

Continued...



Table A5—Continued

Background variable	Lumbini province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Time to nearest health care facility</b>						
<30 min	46.2	394	74.3	634	28.1	***
30–60 min	43.2	368	21.1	180	-22.1	
60+ min	10.6	90	4.7	40	-5.9	
<b>Place of delivery</b>						
Health facility	56.9	484	83.6	429	26.7	***
Home/other	43.1	367	16.4	84	-26.7	
<b>Number of ANC visits</b>						
None	4.1	29	1.2	6	-2.9	***
1–3	21.2	148	9.7	46	-11.5	
4 or more	74.7	522	89.1	424	14.4	
<b>MIYCN counseling</b>						
No	81.5	694	70.2	299	-11.3	*
Yes	18.5	158	29.8	127	11.3	
<b>Health mother's groups in the ward</b>						
No	52.8	384	49.6	328	-3.2	
Yes	47.2	343	50.4	333	3.2	
<b>Counseling about breastfeeding during PNC visits</b>						
No	43.8	306	26.9	129	-16.9	***
Yes	56.2	392	73.1	349	16.9	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	21.7	185	25.4	216	3.7	
Access any of 3 media less than once a week	25.8	220	31.3	267	5.5	
Access any of 3 media at least once a week	52.5	447	43.3	370	-9.2	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	52.3	446	76.6	653	24.3	***
Heard/seen any one of the TV/radio H&N programs	47.7	406	23.4	200	-24.3	
<b>Iron-containing supplements during last pregnancy</b>						
No	56.8	397	29.1	139	-27.7	***
Yes	43.2	302	70.9	338	27.7	
<b>Deworming medication during last pregnancy</b>						
No	25.3	177	20.0	96	-5.3	
Yes	74.7	522	80.0	381	5.3	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	90.2	250	70.2	179	-20.0	***
Yes	9.8	27	29.8	76	20.0	
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	13.8	106	11.3	88	-2.5	
Yes	86.2	665	88.7	691	2.5	

Continued...

**Table A5—Continued**

Background variable	Lumbini province				Percentage- point change	p value
	2016		2022			
	%	N	%	N		
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	20.9	144	10.8	75	-10.1	***
Yes	79.1	543	89.2	620	10.1	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A6 Trends in independent variables in Karnali province, 2016–2022 Nepal DHS surveys**

Background variable	Karnali province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
<b>Socioeconomic factors</b>							
<b>Wealth quintile</b>							
Lowest	72.3	228	70.6	259	-1.7		
Second	14.3	45	13.0	48	-1.3		
Middle	5.5	17	5.1	19	-0.4		
Fourth	5.6	18	5.7	21	0.1		
Highest	2.3	7	5.6	21	3.3		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	66.8	211	58.0	212	-8.8	*	
Terai/Madheshi other	0.1	0	0.2	1	0.1		
Dalit	16.6	52	32.4	119	15.8		
Newar	0.1	0	0.0	0	-0.1		
Janajati	16.4	52	9.4	35	-7.0		
Muslim		0		0	0.0		
<b>Mother's education</b>							
No education/no schooling	41.3	130	19.9	73	-21.4	***	
Primary/1–5 years of schooling	17.8	56	13.9	51	-3.9		
Some secondary/6–9 years of schooling	21.6	68	28.4	104	6.8		
SLC or higher/10 and above years of schooling	19.3	61	37.8	138	18.5		
<b>Mother's occupation</b>							
Not working	28.8	91	13.1	48	-15.7	**	
Non-agricultural	10.1	32	20.2	74	10.1		
Agricultural	61.1	193	66.7	244	5.6		
<b>Household size</b>							
4 or less	28.9	91	39.3	144	10.4	**	
More than 4	71.1	224	60.7	223	-10.4		
<b>Head of the household</b>							
Male	73.8	233	61.0	223	-12.8	**	
Female	26.2	83	39.0	143	12.8		
<b>Mother's decision-making</b>							
Cannot make decision	63.1	188	34.3	124	-28.8	***	
Can make decision	36.9	110	65.7	238	28.8		
<b>Mother's internet use</b>							
Not used in past 12 months	95.5	301	57.3	210	-38.2	***	
Used in past 12 months	4.5	14	42.7	156	38.2		
<b>Mother owns a mobile phone</b>							
No	27.2	86	13.0	48	-14.2	**	
Yes	72.8	230	87.0	319	14.2		
<b>Child-intrinsic and nutritional factors</b>							
<b>Age of child (in months)</b>							
<6	10.2	32	9.2	34	-1.0		
6–11	7.9	25	9.9	36	2.0		

Continued...

Table A6—Continued

Background variable	Karnali province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
12–17	9.1	29	9.0	33	-0.1		
18–23	10.8	34	12.5	46	1.7		
24–35	21.8	69	21.3	78	-0.5		
36–47	19.5	61	18.1	66	-1.4		
48–59	20.8	66	20.1	74	-0.7		
<b>Sex of child</b>							
Male	51.1	161	52.9	194	1.8		
Female	48.9	154	47.1	172	-1.8		
<b>Birthweight</b>							
Small (<2.5 kg)	13.8	22	12.9	22	-0.9		
Normal (2.5–3.49 kg)	51.6	81	56.7	96	5.1		
Large (≥3.5 kg)	34.6	55	30.5	52	-4.1		
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	31.6	37	36.2	53	4.6		
Child was breastfed within 1 hour of birth	68.4	81	63.8	94	-4.6		
<b>Current breastfeeding status</b>							
Currently not breastfeeding	34.2	108	44.2	162	10.0	***	
Currently breastfeeding	65.8	207	55.8	204	-10.0		
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed	28.5	9	26.2	9	-2.3		
Child was exclusively breastfed	71.5	23	73.8	25	2.3		
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	47.9	42	50.8	58	2.9		
Child was fed with minimum dietary diversity	52.1	46	49.2	57	-2.9		
<b>Minimum meal frequency</b>							
Child was not fed meals recommended minimum number of times	30.3	27	14.7	17	-15.6	**	
Child was fed meals recommended minimum number of times	69.7	61	85.3	98	15.6		
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	60.4	53	55.4	64	-5.0		
Child was fed with recommended minimum acceptable diet	39.6	35	44.6	51	5.0		
<b>Maternal factors</b>							
<b>Mother's age (in years)</b>							
15–24	42.2	133	45.5	167	3.3		
25–34	49.2	155	45.2	166	-4.0		
35–49	8.7	27	9.3	34	0.6		
<b>Mother's BMI</b>							
Underweight (<18.5)	11.2	17	11.1	21	-0.1		
Normal (18.5–24.9)	80.8	124	74.6	138	-6.2		
Overweight/obese (≥25)	8.0	12	14.3	27	6.3		
<b>Mother's height</b>							
Less than 145 cm	10.6	16	5.9	11	-4.7		
145 cm or more	89.4	137	94.1	174	4.7		

Continued...

Table A6—Continued

Background variable	Karnali province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Age at first marriage or union</b>						
<16 years	30.1	95	24.8	91	-5.3	
16–19 years	53.7	169	57.3	210	3.6	
20 and above years	16.2	51	17.9	66	1.7	
<b>Age at first birth</b>						
<20 years	57.7	182	58.7	215	1.0	
20 and above	42.3	133	41.3	151	-1.0	
<b>Birth interval</b>						
Less than 3 years	54.3	114	44.3	101	-10.0	*
3 years or more or no preceding interval	45.7	96	55.7	128	10.0	
<b>Birth order</b>						
First born	33.5	106	37.6	138	4.1	*
2–4	25.5	81	30.2	111	4.7	
5 or more	40.9	129	32.2	118	-8.7	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	78.7	248	62.1	228	-16.6	***
5 or more food groups	21.3	67	37.9	139	16.6	
<b>Mother's smoking status</b>						
Smoking	10.8	34	6.6	24	-4.2	
Non-smoking	89.2	281	93.4	342	4.2	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	64.3	203	60.6	222	-3.7	
Child (12–23 months) received all basic vaccines	35.7	113	39.4	144	3.7	
<b>Any illnesses</b>						
Child had no illness	77.9	246	54.4	199	-23.5	***
Child had any illness	22.1	70	45.6	167	23.5	
<b>Treatment of water before drinking</b>						
No treatment	86.3	272	72.7	266	-13.6	*
Treatment with appropriate method	13.7	43	27.3	100	13.6	
<b>Sources of drinking water</b>						
Unimproved sources	13.8	44	2.6	9	-11.2	***
Improved sources	86.2	272	97.4	357	11.2	
<b>Household with soap and water at handwashing station</b>						
No	78.9	248	52.0	190	-26.9	***
Yes	21.1	66	48.0	176	26.9	
<b>Sanitation</b>						
Unimproved sanitation	5.0	16	5.9	22	0.9	*
Improved sanitation	95.0	299	94.1	345	-0.9	
<b>Use of cooking fuel</b>						
Solid fuel	92.1	290	83.7	306	-8.4	*
Clean fuel	7.9	25	16.3	60	8.4	

Continued...

Table A6—Continued

Background variable	Karnali province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Time to nearest health care facility</b>						
<30 min	16.6	52	55.7	204	39.1	***
30–60 min	51.3	162	34.2	125	-17.1	
60+ min	32.0	101	10.1	37	-21.9	
<b>Place of delivery</b>						
Health facility	34.9	110	71.5	162	36.6	***
Home/other	65.1	205	28.5	64	-36.6	
<b>Number of ANC visits</b>						
None	14.7	36	2.4	5	-12.3	***
1–3	33.0	81	17.6	37	-15.4	
4 or more	52.3	129	79.9	170	27.6	
<b>MIYCN counseling</b>						
No	72.9	230	66.1	129	-6.8	*
Yes	27.1	85	33.9	66	6.8	
<b>Health mother's groups in the ward</b>						
No	34.0	98	38.0	125	4.0	*
Yes	66.0	190	62.0	204	-4.0	
<b>Counseling about breastfeeding during PNC visits</b>						
No	62.7	154	46.6	98	-16.1	**
Yes	37.3	92	53.4	113	16.1	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	30.6	96	23.7	87	-6.9	*
Access any of 3 media less than once a week	38.3	121	29.7	109	-8.6	
Access any of 3 media at least once a week	31.1	98	46.6	171	15.5	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	44.3	140	59.3	217	15.0	*
Heard/seen any one of the TV/radio H&N programs	55.7	175	40.7	149	-15.0	
<b>Iron-containing supplements during last pregnancy</b>						
No	58.0	143	34.6	74	-23.4	***
Yes	42.0	103	65.4	139	23.4	
<b>Deworming medication during last pregnancy</b>						
No	18.3	45	13.7	29	-4.6	
Yes	81.7	201	86.3	183	4.6	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	95.3	83	78.2	90	-17.1	**
Yes	4.7	4	21.8	25	17.1	
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	10.5	30	17.5	58	7.0	*
Yes	89.5	253	82.5	275	-7.0	

Continued...

**Table A6—Continued**

Background variable	Karnali province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	9.3	24	15.4	46	6.1	*
Yes	90.7	234	84.6	251	-6.1	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A7 Trends in independent variables in Sudurpaschim province, 2016–2022 Nepal DHS surveys**

Background variable	Sudurpaschim province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Socioeconomic factors</b>						
<b>Wealth quintile</b>						
Lowest	42.3	176	44.0	197	1.7	
Second	24.3	101	21.2	95	-3.1	
Middle	15.5	64	12.7	57	-2.8	
Fourth	10.8	45	13.4	60	2.6	
Highest	7.1	30	8.7	39	1.6	
<b>Caste/ethnicity</b>						
Brahmin/Chhetri	65.0	270	62.4	279	-2.6	
Terai/Madheshi other	0.7	3	1.0	5	0.3	
Dalit	15.8	66	15.3	68	-0.5	
Newar	0.0	0	0.2	1	0.2	
Janajati	17.5	73	21.0	94	3.5	
Muslim	1.0	4	0.2	1	-0.8	
<b>Mother's education</b>						
No education/no schooling	36.9	153	19.6	88	-17.3	***
Primary/1–5 years of schooling	18.5	77	14.3	64	-4.2	
Some secondary/6–9 years of schooling	23.9	99	35.7	160	11.8	
SLC or higher/10 and above years of schooling	20.7	86	30.4	136	9.7	
<b>Mother's occupation</b>						
Not working	19.4	81	23.2	104	3.8	*
Non-agricultural	7.3	30	15.2	68	7.9	
Agricultural	73.3	305	61.5	276	-11.8	
<b>Household size</b>						
4 or less	29.7	123	31.8	142	2.1	
More than 4	70.3	293	68.2	305	-2.1	
<b>Head of the household</b>						
Male	62.1	258	60.9	273	-1.2	
Female	37.9	158	39.1	175	1.2	
<b>Mother's decision-making</b>						
Cannot make decision	53.9	208	29.1	129	-24.8	***
Can make decision	46.1	178	70.9	314	24.8	
<b>Mother's internet use</b>						
Not used in past 12 months	93.3	388	54.7	245	-38.6	***
Used in past 12 months	6.7	28	45.3	203	38.6	
<b>Mother owns a mobile phone</b>						
No	27.1	113	15.8	71	-11.3	***
Yes	72.9	303	84.2	377	11.3	

Continued...



Table A7—Continued

Background variable	Sudurpaschim province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
<b>Child-intrinsic and nutritional factors</b>							
<b>Age of child (in months)</b>							
<6	10.5	43	12.8	57	2.3		
6–11	9.2	38	9.2	41	0.0		
12–17	9.9	41	10.6	48	0.7		
18–23	10.4	43	8.7	39	-1.7		
24–35	17.6	73	19.8	89	2.2		
36–47	21.0	87	21.5	96	0.5		
48–59	21.5	90	17.4	78	-4.1		
<b>Sex of child</b>							
Male	56.0	233	49.2	220	-6.8	*	
Female	44.0	183	50.8	227	6.8		
<b>Birthweight</b>							
Small (<2.5 kg)	11.9	35	13.5	34	1.6		
Normal (2.5–3.49 kg)	58.8	172	62.1	155	3.3		
Large (≥3.5 kg)	29.3	86	24.4	61	-4.9		
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	28.7	46	30.0	54	1.3		
Child was breastfed within 1 hour of birth	71.3	115	70.0	127	-1.3		
<b>Current breastfeeding status</b>							
Currently not breastfeeding	34.9	145	44.3	198	9.4	**	
Currently breastfeeding	65.1	271	55.7	249	-9.4		
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed	14.8	6	25.8	15	11.0		
Child was exclusively breastfed	85.2	37	74.2	43	-11.0		
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	52.5	64	45.8	58	-6.7		
Child was fed with minimum dietary diversity	47.5	58	54.2	69	6.7		
<b>Minimum meal frequency</b>							
Child was not fed meals recommended minimum number of times	32.7	40	27.4	35	-5.3		
Child was fed meals recommended minimum number of times	67.3	82	72.6	93	5.3		
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	66.1	81	56.4	72	-9.7		
Child was fed with recommended minimum acceptable diet	33.9	42	43.6	56	9.7		
<b>Maternal factors</b>							
<b>Mother's age (in years)</b>							
15–24	37.0	154	43.3	194	6.3		
25–34	54.1	225	49.0	219	-5.1		
35–49	8.9	37	7.7	35	-1.2		

Continued...

Table A7—Continued

Background variable	Sudurpaschim province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Mother's BMI</b>						
Underweight (<18.5)	19.7	41	18.1	40	-1.6	
Normal (18.5–24.9)	75.0	156	72.6	162	-2.4	
Overweight/obese (≥25)	5.3	11	9.3	21	4.0	
<b>Mother's height</b>						
Less than 145 cm	8.4	17	3.4	7	-5.0	*
145 cm or more	91.6	191	96.6	216	5.0	
<b>Age at first marriage or union</b>						
<16 years	24.3	101	18.0	80	-6.3	*
16–19 years	56.5	235	54.9	246	-1.6	
20 and above years	19.2	80	27.1	121	7.9	
<b>Age at first birth</b>						
<20 years	55.3	230	45.4	203	-9.9	**
20 and above	44.7	186	54.6	245	9.9	
<b>Birth interval</b>						
Less than 3 years	47.1	126	45.7	118	-1.4	
3 years or more or no preceding interval	52.9	141	54.3	140	1.4	
<b>Birth order</b>						
First born	35.6	148	42.1	189	6.5	**
2–4	26.7	111	32.9	147	6.2	
5 or more	37.7	157	25.0	112	-12.7	
<b>Mother's minimum dietary diversity</b>						
Less than 5 food groups	77.2	321	55.1	247	-22.1	***
5 or more food groups	22.8	95	44.9	201	22.1	
<b>Mother's smoking status</b>						
Smoking	11.6	48	2.5	11	-9.1	***
Non-smoking	88.4	367	97.5	437	9.1	
<b>Health and environment factors</b>						
<b>Vaccinations</b>						
Child (12–23 months) not received all basic vaccines	65.1	271	63.5	284	-1.6	
Child (12–23 months) received all basic vaccines	34.9	145	36.5	164	1.6	
<b>Any illnesses</b>						
Child had no illness	70.5	293	56.5	253	-14.0	***
Child had any illness	29.5	123	43.5	195	14.0	
<b>Treatment of water before drinking</b>						
No treatment	91.4	380	86.7	388	-4.7	
Treatment with appropriate method	8.6	36	13.3	59	4.7	
<b>Sources of drinking water</b>						
Unimproved sources	5.4	22	2.8	12	-2.6	
Improved sources	94.6	393	97.2	436	2.6	
<b>Household with soap and water at handwashing station</b>						
No	57.3	238	39.4	176	-17.9	**
Yes	42.7	177	60.6	270	17.9	

Continued...

Table A7—Continued

Background variable	Sudurpaschim province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Sanitation</b>						
Unimproved sanitation	7.7	32	12.1	54	4.4	
Improved sanitation	92.3	384	87.9	394	-4.4	
<b>Use of cooking fuel</b>						
Solid fuel	85.8	357	79.5	356	-6.3	
Clean fuel	14.2	59	20.5	92	6.3	
<b>Time to nearest health care facility</b>						
<30 min	25.8	107	60.7	272	34.9	***
30–60 min	52.7	219	33.2	149	-19.5	
60+ min	21.5	89	6.2	28	-15.3	
<b>Place of delivery</b>						
Health facility	61.8	257	88.0	241	26.2	***
Home/other	38.2	159	12.0	33	-26.2	
<b>Number of ANC visits</b>						
None	4.5	15	1.3	3	-3.2	**
1–3	17.4	59	7.9	20	-9.5	
4 or more	78.1	263	90.8	233	12.7	
<b>MIYCN counseling</b>						
No	67.2	280	49.5	120	-17.7	**
Yes	32.8	136	50.5	123	17.7	
<b>Health mother's groups in the ward</b>						
No	30.1	110	21.0	77	-9.1	
Yes	69.9	256	79.0	291	9.1	
<b>Counseling about breastfeeding during PNC visits</b>						
No	47.6	160	28.7	74	-18.9	***
Yes	52.4	177	71.3	183	18.9	
<b>Mother's media exposure</b>						
Access none of the 3 media (radio, television or newspaper) at all	19.2	80	16.6	74	-2.6	
Access any of 3 media less than once a week	40.8	170	35.9	161	-4.9	
Access any of 3 media at least once a week	40.0	166	47.5	213	7.5	
<b>Exposure to TV/radio health and nutrition program</b>						
Heard/seen none of the TV/radio H&N programs	47.7	199	55.7	249	8.0	
Heard/seen any one of the TV/radio H&N programs	52.3	217	44.3	198	-8.0	
<b>Iron-containing supplements during last pregnancy</b>						
No	47.7	161	23.6	61	-24.1	***
Yes	52.3	176	76.4	196	24.1	
<b>Deworming medication during last pregnancy</b>						
No	13.0	44	10.2	26	-2.8	
Yes	87.0	293	89.8	231	2.8	
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>						
No	93.4	114	51.8	66	-41.6	***
Yes	6.6	8	48.2	62	41.6	

Continued...

Table A7—Continued

Background variable	Sudurpaschim province					
	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>						
No	13.1	49	11.5	45	-1.6	
Yes	86.9	324	88.5	345	1.6	
<b>Deworming for children age 12–59 months in past 6 months</b>						
No	20.3	68	13.6	47	-6.7	*
Yes	79.7	267	86.4	302	6.7	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

ANC = antenatal care; BMI = body mass index; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care; SLC = School Leaving Certificate

Note: Each  $p$  value is the result of a chi-square test of independence between covariate and survey year.

**Table A8 Distributions and patterns of key nutrition outcome variables in Koshi province, 2016–2022 Nepal DHS surveys**

Outcome variable	2016		2022		Percentage-point change	p value
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	66.9	249	79.7	362	12.8	**
Yes	33.1	123	20.3	92	-12.8	
<b>Severe stunting</b>						
No	90.3	336	95.5	434	5.2	*
Yes	9.7	36	4.5	20	-5.2	
<b>Wasting</b>						
No	88.0	326	96.2	436	8.2	***
Yes	12.0	45	3.8	17	-8.2	
<b>Severe wasting</b>						
No	99.1	368	99.2	449	0.1	
Yes	0.9	4	0.8	4	-0.1	
<b>Underweight</b>						
No	75.4	282	86.6	397	11.2	**
Yes	24.6	92	13.4	62	-11.2	
<b>Severe underweight</b>						
No	95.7	357	98.3	451	2.6	
Yes	4.3	16	1.7	8	-2.6	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	45.0	151	64.4	256	19.4	***
Yes	55.0	185	35.6	142	-19.4	
<b>Severe anemia</b>						
No	99.4	334	100.0	398	0.6	
Yes	0.6	2	0.0	0	-0.6	
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	50.1	191	68.8	318	18.7	***
Yes	49.9	191	31.2	144	-18.7	
<b>Severe anemia</b>						
No	100.0	382	99.6	460	-0.4	
Yes	0.0	0	0.4	2	0.4	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year.

**Table A9 Distributions and patterns of key nutrition outcome variables in Madesh province, 2016–2022 Nepal DHS surveys**

Outcome variable	Madhesh province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	63.4	407	70.5	467	7.1	*
Yes	36.6	235	29.5	195	-7.1	
<b>Severe stunting</b>						
No	87.7	563	93.5	619	5.8	**
Yes	12.3	79	6.5	43	-5.8	
<b>Wasting</b>						
No	85.2	548	89.5	593	4.3	
Yes	14.8	95	10.5	70	-4.3	
<b>Severe wasting</b>						
No	97.0	624	99.7	661	2.7	
Yes	3.0	19	0.3	2	-2.7	
<b>Underweight</b>						
No	63.2	407	72.8	485	9.6	**
Yes	36.8	237	27.2	181	-9.6	
<b>Severe underweight</b>						
No	92.1	594	94.7	631	2.6	
Yes	7.9	51	5.3	35	-2.6	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	41.0	239	49.2	294	8.2	*
Yes	59.0	344	50.8	303	-8.2	
<b>Severe anemia</b>						
No	99.5	580	99.7	595	0.2	
Yes	0.5	3	0.3	2	-0.2	
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	38.3	247	45.9	307	7.6	
Yes	61.7	397	54.1	363	-7.6	
<b>Severe anemia</b>						
No	99.7	642	98.4	660	-1.3	
Yes	0.3	2	1.6	11	1.3	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year.

**Table A10 Distributions and patterns of key nutrition outcome variables in Bagmati province, 2016–2022 Nepal DHS surveys**

Outcome variable	Bagmati province				Percentage-point change 2022–2016	p value
	2016		2022			
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	70.3	249	82.5	335	12.2	**
Yes	29.7	105	17.5	71	-12.2	
<b>Severe stunting</b>						
No	89.9	319	95.4	387	5.5	*
Yes	10.1	36	4.6	19	-5.5	
<b>Wasting</b>						
No	96.0	340	95.4	387	-0.6	
Yes	4.0	14	4.6	19	0.6	
<b>Severe wasting</b>						
No	98.6	350	99.6	404	1.0	
Yes	1.4	5	0.4	2	-1.0	
<b>Underweight</b>						
No	86.9	310	89.4	366	2.5	
Yes	13.1	47	10.6	43	-2.5	
<b>Severe underweight</b>						
No	96.5	344	97.0	397	0.5	
Yes	3.5	13	3.0	12	-0.5	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	58.3	183	57.0	199	-1.3	
Yes	41.7	131	43.0	150	1.3	
<b>Severe anemia</b>						
No						
Yes						
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	72.7	269	75.7	304	3.0	
Yes	27.3	101	24.3	98	-3.0	
<b>Severe anemia</b>						
No						
Yes						

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year. Empty rows correspond to no observation.

**Table A11 Distributions and patterns of key nutrition outcome variables in Gandaki province, 2016–2022 Nepal DHS surveys**

Outcome variable	Gandaki province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
<b>Children age 0–59 months</b>							
<b>Stunting</b>							
No	71.3	129	80.2	136	8.9		
Yes	28.7	52	19.8	34	-8.9		
<b>Severe stunting</b>							
No	90.4	164	93.3	159	2.9		
Yes	9.6	17	6.7	11	-2.9		
<b>Wasting</b>							
No	94.0	169	95.8	163	1.8		
Yes	6.0	11	4.2	7	-1.8		
<b>Severe wasting</b>							
No	98.3	177	100.0	170	1.7		
Yes	1.7	3	0.0	0	-1.7		
<b>Underweight</b>							
No	84.5	153	82.4	140	-2.1		
Yes	15.5	28	17.6	30	2.1		
<b>Severe underweight</b>							
No	97.3	176	98.3	167	1.0		
Yes	2.7	5	1.7	3	-1.0		
<b>Children age 6–59 months</b>							
<b>Anemia</b>							
No	54.6	87	68.6	107	14.0	**	
Yes	45.4	72	31.4	49	-14.0		
<b>Severe anemia</b>							
No							
Yes							
<b>Women age 15–49</b>							
<b>Anemia</b>							
No	72.5	132	76.9	131	4.4		
Yes	27.5	50	23.1	39	-4.4		
<b>Severe anemia</b>							
No							
Yes							

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year. Empty rows correspond to no observation.



**Table A12 Distributions and patterns of key nutrition outcome variables in Lumbini province, 2016–2022 Nepal DHS surveys**

Outcome variable	Lumbini province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	62.2	276	74.3	317	12.1	*
Yes	37.8	168	25.7	109	-12.1	
<b>Severe stunting</b>						
No	88.6	394	92.5	394	3.9	
Yes	11.4	51	7.5	32	-3.9	
<b>Wasting</b>						
No	92.2	409	83.8	354	-8.4	**
Yes	7.8	34	16.2	69	8.4	
<b>Severe wasting</b>						
No	98.5	437	97.0	409	-1.5	
Yes	1.5	6	3.0	13	1.5	
<b>Underweight</b>						
No	73.0	324	76.2	324	3.2	
Yes	27.0	120	23.8	102	-3.2	
<b>Severe underweight</b>						
No	95.8	426	93.8	399	-2.0	
Yes	4.2	19	6.2	26	2.0	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	46.6	180	50.5	194	3.9	
Yes	53.4	207	49.5	190	-3.9	
<b>Severe anemia</b>						
No	99.7	386	99.2	380	-0.5	
Yes	0.3	1	0.8	3	0.5	
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	53.9	238	52.4	224	-1.5	
Yes	46.1	204	47.6	204	1.5	
<b>Severe anemia</b>						
No	100.0	442	98.5	421	-1.5	*
Yes	0.0	0	1.5	6	1.5	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year.

**Table A13 Distributions and patterns of key nutrition outcome variables in Karnali province, 2016–2022 Nepal DHS surveys**

Outcome variable	Karnali province				Percentage-point change	p value
	2016		2022			
	%	N	%	N		
<b>Children age 0–59 months</b>						
<b>Stunting</b>						
No	45.3	68	63.4	116	18.1	***
Yes	54.7	82	36.6	67	-18.1	
<b>Severe stunting</b>						
No	74.6	111	91.1	166	16.5	***
Yes	25.4	38	8.9	16	-16.5	
<b>Wasting</b>						
No	92.2	138	96.0	175	3.8	*
Yes	7.8	12	4.0	7	-3.8	
<b>Severe wasting</b>						
No	97.8	146	99.3	181	1.5	
Yes	2.2	3	0.7	1	-1.5	
<b>Underweight</b>						
No	63.8	96	81.7	149	17.9	***
Yes	36.2	54	18.3	33	-17.9	
<b>Severe underweight</b>						
No	88.8	134	97.6	178	8.8	**
Yes	11.2	17	2.4	4	-8.8	
<b>Children age 6–59 months</b>						
<b>Anemia</b>						
No	52.6	69	59.0	98	6.4	8
Yes	47.4	63	41.0	68	-6.4	
<b>Severe anemia</b>						
No						
Yes						
<b>Women age 15–49</b>						
<b>Anemia</b>						
No	63.4	97	74.6	138	11.2	*
Yes	36.6	56	25.4	47	-11.2	
<b>Severe anemia</b>						
No	98.8	130	99.7	166	0.9	
Yes	1.2	2	0.3	1	-0.9	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year. Empty rows correspond to no observation.

**Table A14 Distributions and patterns of key nutrition outcome variables in Sudurpaschim province, 2016–2022 Nepal DHS surveys**

Outcome variable	Sudurpaschim province					Percentage-point change	p value
	2016		2022				
	%	N	%	N			
<b>Children age 0–59 months</b>							
<b>Stunting</b>							
No	64.6	132	72.0	160	7.4		
Yes	35.4	73	28.0	62	-7.4		
<b>Severe stunting</b>							
No	89.5	183	95.0	211	5.5	*	
Yes	10.5	22	5.0	11	-5.5		
<b>Wasting</b>							
No	90.4	185	94.7	210	4.3	*	
Yes	9.6	20	5.3	12	-4.3		
<b>Severe wasting</b>							
No	98.4	201	99.7	221	1.3		
Yes	1.6	3	0.3	1	-1.3		
<b>Underweight</b>							
No	72.9	150	86.1	192	13.2	***	
Yes	27.1	56	13.9	31	-13.2		
<b>Severe underweight</b>							
No	96.0	198	97.9	218	1.9		
Yes	4.0	8	2.1	5	-1.9		
<b>Children age 6–59 months</b>							
<b>Anemia</b>							
No	49.7	90	54.0	104	4.3		
Yes	50.3	91	46.0	88	-4.3		
<b>Severe anemia</b>							
No	99.6	181	98.3	189	-1.3		
Yes	0.4	1	1.7	3	1.3		
<b>Women age 15–49</b>							
<b>Anemia</b>							
No	59.5	123	73.3	164	13.8	*	
Yes	40.5	84	26.7	60	-13.8		
<b>Severe anemia</b>							
No	100.0	207	99.8	223	-0.2		
Yes	0.0	0	0.2	1	0.2		

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Note: Each  $p$  value is the result of a chi-square test of independence between outcome and survey year.

**Table A15 Associations of stunting with socioeconomic factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.73	[0.37, 1.43]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.49	[0.18, 1.33]	
Middle	0.67	[0.30, 1.48]	
Fourth	0.28	[0.07, 1.13]	
Highest	0.44	[0.11, 1.72]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	1.31	[0.46, 3.72]	
Dalit	1.06	[0.31, 3.67]	
Newar	0.96	[0.12, 7.84]	
Janajati	0.83	[0.32, 2.13]	
Muslim	0.77	[0.30, 1.98]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.27	[0.57, 2.81]	
Some secondary/6–9 years schooling	1.50	[0.62, 3.58]	
SLC or higher/10 and above years of schooling	0.53	[0.19, 1.45]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	3.52	[1.44, 8.58]	**
Agricultural	2.01	[0.95, 4.23]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.11	[0.62, 1.96]	
<b>Head of the household</b>			
Male		Ref	
Female	0.73	[0.33, 1.64]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.95	[0.54, 1.64]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.72	[0.36, 1.48]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.40	[0.20, 0.83]	*

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A16 Associations of stunting with socioeconomic factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.73	[1.05, 2.84]	*
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.74	[0.39, 1.40]	
Middle	0.44	[0.22, 0.87]	*
Fourth	0.33	[0.17, 0.64]	**
Highest	0.29	[0.09, 0.94]	*
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	1.80	[0.27, 11.93]	
Dalit	1.79	[0.23, 13.62]	
Newar	0.70	[0.11, 4.33]	
Janajati	1.32	[0.21, 8.24]	
Muslim	1.80	[0.22, 14.77]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.31	[0.72, 2.38]	
Some secondary/6–9 years schooling	1.88	[1.01, 3.50]	*
SLC or higher/10 and above years of schooling	1.02	[0.41, 2.52]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.77	[0.32, 1.87]	
Agricultural	0.90	[0.57, 1.42]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.42	[0.87, 2.31]	
<b>Head of the household</b>			
Male		Ref	
Female	1.11	[0.72, 1.70]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.76	[1.16, 2.67]	**
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.97	[0.62, 1.50]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.72	[0.43, 1.19]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A17 Associations of stunting with socioeconomic factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.91	[0.86, 4.27]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.65	[0.25, 1.71]	
Middle	1.13	[0.33, 3.94]	
Fourth	0.44	[0.07, 2.62]	
Highest	0.66	[0.12, 3.52]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	0.31	[0.08, 1.24]	
Newar	0.98	[0.31, 3.08]	
Janajati	0.58	[0.27, 1.27]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.32	[0.10, 1.04]	
Some secondary/6–9 years schooling	0.99	[0.31, 3.21]	
SLC or higher/10 and above years of schooling	0.77	[0.19, 3.19]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.58	[0.22, 1.51]	
Agricultural	1.56	[0.60, 4.04]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.21	[0.55, 2.65]	
<b>Head of the household</b>			
Male		Ref	
Female	1.13	[0.42, 3.04]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.07	[0.47, 2.43]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.54	[0.21, 1.39]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.96	[0.32, 2.89]	

CI = confidence interval; OR = odds ratio; ref = reference  
 Note: Empty rows correspond to a very small sample size.

**Table A18 Associations of stunting with socioeconomic factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.94	[0.30, 2.93]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.50	[0.16, 1.56]	
Middle	0.26	[0.08, 0.89]	*
Fourth	0.09	[0.01, 0.71]	*
Highest	0.13	[0.01, 1.27]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	0.48	[0.12, 1.97]	
Newar			
Janajati	0.63	[0.21, 1.91]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.72	[0.19, 2.74]	
Some secondary/6–9 years schooling	0.43	[0.11, 1.72]	
SLC or higher/10 and above years of schooling	0.13	[0.02, 0.90]	*
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural			
Agricultural	1.47	[0.28, 7.84]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.71	[0.32, 1.54]	
<b>Head of the household</b>			
Male		Ref	
Female	0.46	[0.18, 1.22]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.75	[0.20, 2.78]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.89	[0.63, 5.68]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.73	[0.17, 3.13]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A19 Associations of stunting with socioeconomic factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.25	[0.67, 2.31]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.71	[0.32, 1.60]	
Middle	0.39	[0.18, 0.88]	*
Fourth	0.73	[0.30, 1.79]	
Highest	0.65	[0.22, 1.92]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	2.22	[0.96, 5.15]	
Dalit	1.21	[0.54, 2.72]	
Newar			
Janajati	0.92	[0.39, 2.14]	
Muslim	2.00	[0.41, 9.81]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.87	[0.32, 2.35]	
Some secondary/6–9 years schooling	0.69	[0.31, 1.50]	
SLC or higher/10 and above years of schooling	0.61	[0.24, 1.58]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.93	[0.40, 2.19]	
Agricultural	1.46	[0.76, 2.80]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.98	[0.98, 3.98]	
<b>Head of the household</b>			
Male		Ref	
Female	0.74	[0.37, 1.46]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.82	[0.46, 1.47]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.79	[0.45, 1.39]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.29	[0.16, 0.53]	***

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.



**Table A20 Associations of stunting with socioeconomic factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	2.34	[1.49, 3.69]	***
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.11	[0.41, 2.99]	
Middle	0.90	[0.30, 2.68]	
Fourth	0.77	[0.34, 1.73]	
Highest	0.49	[0.11, 2.10]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	1.37	[0.79, 2.40]	
Newar			
Janajati	0.52	[0.25, 1.08]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.13	[0.59, 2.16]	
Some secondary/6–9 years schooling	0.61	[0.32, 1.14]	
SLC or higher/10 and above years of schooling	0.85	[0.41, 1.77]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.78	[0.32, 1.89]	
Agricultural	0.86	[0.40, 1.85]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.82	[0.52, 1.29]	
<b>Head of the household</b>			
Male		Ref	
Female	2.14	[1.29, 3.55]	**
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	2.14	[1.34, 3.43]	**
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.58	[0.31, 1.06]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.76	[0.37, 1.54]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A21 Associations of stunting with socioeconomic factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.01	[0.56, 1.81]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.15	[0.63, 2.10]	
Middle	1.34	[0.51, 3.54]	
Fourth	1.31	[0.37, 4.65]	
Highest	0.53	[0.10, 2.66]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	2.31	[1.19, 4.47]	*
Newar			
Janajati	0.36	[0.15, 0.86]	*
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.46	[0.19, 1.11]	
Some secondary/6–9 years schooling	0.61	[0.30, 1.25]	
SLC or higher/10 and above years of schooling	0.47	[0.21, 1.06]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	3.23	[1.15, 9.11]	*
Agricultural	2.10	[0.99, 4.44]	
<b>Household size</b>			
4 or less		Ref	
More than 4	2.02	[0.96, 4.24]	
<b>Head of the household</b>			
Male		Ref	
Female	0.98	[0.57, 1.71]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.31	[0.75, 2.28]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.71	[0.39, 1.31]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.65	[0.34, 1.24]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A22 Associations of stunting with child-intrinsic and nutritional factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95 CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11	0.26	[0.03, 2.61]	
12–17	1.32	[0.26, 6.57]	
18–23	4.25	[0.93, 19.50]	
24–35	3.92	[1.11, 13.78]	*
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.46	[0.19, 1.12]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.21	[0.08, 0.57]	**
Large (≥3.5 kg)	0.11	[0.03, 0.46]	**
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.16	[0.40, 3.38]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	1.43	[0.46, 4.41]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.60	[0.14, 2.48]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A23 Associations of stunting with child-intrinsic and nutritional factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

Characteristics	Madhesh province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11	0.52	[0.15, 1.84]	
12–17	1.10	[0.30, 4.08]	
18–23	1.33	[0.45, 3.92]	
24–35	1.58	[0.60, 4.21]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.53	[0.74, 3.18]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.38	[0.10, 1.39]	
Large (≥3.5 kg)	0.22	[0.06, 0.79]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.17	[0.50, 2.72]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.15	[0.02, 1.05]	
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	1.30	[0.56, 3.02]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.64	[0.25, 1.64]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A24 Associations of stunting with child-intrinsic and nutritional factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11	0.29	[0.04, 2.04]	
12–17	0.57	[0.09, 3.76]	
18–23	0.67	[0.12, 3.62]	
24–35	1.11	[0.28, 4.37]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.95	[0.37, 2.44]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.21	[0.06, 0.72]	*
Large (≥3.5 kg)	0.04	[0.01, 0.21]	***
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	5.01	[1.36, 18.45]	*
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.21	[0.03, 1.64]	
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	0.62	[0.16, 2.38]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.34	[0.19, 9.32]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A25 Associations of stunting with child-intrinsic and nutritional factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6			Ref
6–11	0.38	[0.05, 2.57]	
12–17	1.49	[0.30, 7.48]	
18–23	1.48	[0.29, 7.51]	
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male			Ref
Female	1.44	[0.36, 5.85]	
<b>Birthweight</b>			
Small (<2.5 kg)			Ref
Normal (2.5–3.49 kg)	0.65	[0.11, 3.76]	
Large (≥3.5 kg)	0.08	[0.00, 1.60]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth			Ref
Child was breastfed within 1 hour of birth	1.91	[0.50, 7.22]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding			Ref
Currently breastfeeding	0.42	[0.06, 3.15]	
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times			Ref
Child was fed meals recommended minimum number of times	0.75	[0.13, 4.28]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity			Ref
Child was fed with minimum dietary diversity	0.76	[0.20, 2.85]	

CI = confidence interval; OR = odds ratio; ref = reference  
 Note: Empty rows correspond to a very small sample size.

**Table A26 Associations of stunting with child-intrinsic and nutritional factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11			
12–17			
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.51	[0.25, 1.04]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.41	[0.14, 1.16]	
Large (≥3.5 kg)	0.08	[0.02, 0.34]	**
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	2.04	[0.81, 5.16]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	0.57	[0.23, 1.41]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	2.62	[0.52, 13.23]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A27 Associations of stunting with child-intrinsic and nutritional factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	<i>p value</i>
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11	1.19	[0.31, 4.62]	
12–17	2.32	[0.71, 7.59]	
18–23	1.46	[0.34, 6.29]	
24–35	1.59	[0.58, 4.31]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.25	[0.65, 2.41]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.33	[0.11, 0.97]	*
Large (≥3.5 kg)	0.24	[0.08, 0.78]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	0.98	[0.44, 2.20]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.71	[0.10, 5.21]	
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	0.70	[0.31, 1.55]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.72	[0.60, 4.95]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.



**Table A28 Associations of stunting with child-intrinsic and nutritional in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6		Ref	
6–11	0.43	[0.11, 1.73]	
12–17	0.60	[0.13, 2.72]	
18–23	2.28	[0.55, 9.47]	
24–35	1.52	[0.65, 3.54]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.87	[0.44, 1.74]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.18	[0.06, 0.52]	**
Large (≥3.5 kg)	0.16	[0.05, 0.52]	**
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	0.99	[0.22, 4.42]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.27	[0.02, 4.48]	
<b>Minimum meal frequency</b>			
Child was not fed meals recommended minimum number of times		Ref	
Child was fed meals recommended minimum number of times	2.99	[0.68, 13.02]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	3.06	[0.41, 22.88]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A29 Associations of stunting with maternal factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.22	[0.32, 4.62]	
35–49	1.22	[0.31, 4.85]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.47	[0.20, 1.12]	
Overweight/obese (≥25)	0.26	[0.07, 0.91]	*
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	3.25	[1.23, 8.58]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.96	[0.42, 2.18]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.73	[0.37, 1.44]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.50	[0.16, 1.50]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.57	[0.29, 1.16]	
20 and above years	0.41	[0.13, 1.33]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.14	[0.49, 2.62]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A30 Associations of stunting with maternal factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.40	[0.20, 0.80]	*
35–49	0.34	[0.12, 0.92]	*
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.64	[0.38, 1.07]	
Overweight/obese (≥25)	1.02	[0.52, 1.98]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.71	[1.11, 6.65]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	1.16	[0.70, 1.94]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.42	[0.24, 0.76]	**
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.20	[0.03, 1.27]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.00	[0.56, 1.81]	
20 and above years	1.34	[0.52, 3.42]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.01	[0.51, 2.00]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A31 Associations of stunting with maternal factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.97	[0.12, 8.05]	
35–49	0.51	[0.04, 6.93]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)			
Overweight/obese (≥25)	0.32	[0.02, 5.28]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	4.09	[1.32, 12.61]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.17	[0.06, 0.48]	**
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.93	[0.31, 2.75]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	2.07	[0.32, 13.32]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.80	[0.16, 4.00]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A32 Associations of stunting with maternal factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.55	[0.13, 2.26]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.74	[0.06, 9.46]	
Overweight/obese (≥25)	0.93	[0.06, 15.51]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	4.78	[0.93, 24.65]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.29	[0.07, 1.27]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.91	[0.27, 3.13]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.76	[0.17, 3.44]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.84	[0.26, 2.69]	
20 and above years	0.84	[0.10, 6.81]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.80	[0.11, 5.60]	

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference  
 Note: Empty rows correspond to a very small sample size.

**Table A33 Associations of stunting with maternal factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.11	[0.32, 3.88]	
35–49	2.03	[0.44, 9.41]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.66	[0.29, 1.52]	
Overweight/obese (≥25)	0.45	[0.18, 1.13]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.41	[1.01, 5.72]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.43	[0.23, 0.81]	*
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.18	[0.48, 2.93]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.50	[0.20, 1.22]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.00	[0.35, 2.87]	
20 and above years	1.44	[0.42, 4.92]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.07	[0.43, 2.66]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A34 Associations of stunting with maternal factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.97	[0.40, 2.34]	
35–49	0.76	[0.21, 2.79]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.66	[0.34, 1.27]	
Overweight/obese (≥25)	0.39	[0.13, 1.12]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	1.74	[0.65, 4.61]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.72	[0.41, 1.29]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.63	[0.31, 1.26]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.33	[0.12, 0.94]	*
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.67	[0.37, 1.23]	
20 and above years	0.37	[0.15, 0.87]	*
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.61	[0.78, 3.33]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

BMI = body mass index; CI = confidence interval; OR = odds ratio; ref = reference

Note: Empty rows correspond to a very small sample size.

**Table A35 Associations of stunting with maternal factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.05	[0.40, 2.75]	
35–49	1.90	[0.63, 5.73]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.78	[0.36, 1.72]	
Overweight/obese (≥25)	0.90	[0.25, 3.24]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.74	[0.63, 11.82]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.73	[0.33, 1.65]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.73	[0.87, 3.41]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.70	[0.06, 7.99]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.30	[0.13, 0.70]	**
20 and above years	0.25	[0.07, 0.89]	*
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.87	[0.84, 4.17]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.



**Table A36 Associations of stunting with health and environment factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	0.63	[0.15, 2.57]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	0.11	[0.01, 0.99]	*
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method	0.08	[0.01, 0.70]	*
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel	0.19	[0.01, 6.34]	
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None			
1–3		Ref	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes	1.94	[0.28, 13.49]	0.497
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.06	[0.00, 3.65]	
Access any of 3 media at least once a week	0.12	[0.00, 4.59]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

Table A36—Continued

	Koshi province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	0.41	[0.04, 4.37]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	0.41	[0.11, 1.59]	
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	1.42	[0.17, 11.57]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
 Empty rows correspond to a very small sample size.

**Table A37 Associations of stunting with health and environment factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	1.02	[0.30, 3.42]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	0.72	[0.23, 2.29]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	1.40	[0.30, 6.50]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation	0.77	[0.16, 3.73]	
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other	0.42	[0.14, 1.32]	
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more	0.17	[0.00, 10.46]	
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.19	[0.03, 1.28]	
Access any of 3 media at least once a week	0.23	[0.04, 1.24]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

**Table A37—Continued**

	Madhesh province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	1.39	[0.39, 4.97]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	1.81	[0.40, 8.10]	
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes	0.52	[0.13, 2.10]	

Empty rows correspond to a very small sample size.

**Table A38 Associations of stunting with health and environment factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel			
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other			
<b>ANC visit</b>			
None			Ref
1–3			
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

Table A38—Continued

	Bagmati province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A39 Associations of stunting with health and environment factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel			
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other			
<b>ANC visit</b>			
None			
1–3			Ref
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

**Table A39—Continued**

	Gandaki province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.



**Table A40 Associations of stunting with health and environment factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness	1.15	[0.18, 7.41]	
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water	0.80	[0.15, 4.41]	
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation	1.08	[0.35, 3.29]	
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel	0.51	[0.09, 2.79]	
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min	1.04	[0.13, 8.60]	
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other	1.08	[0.12, 9.93]	
<b>ANC visit</b>			
None			Ref
1–3	0.19	[0.02, 1.99]	
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes	1.03	[0.21, 5.17]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week	0.51	[0.08, 3.17]	
Access any of 3 media at least once a week	0.84	[0.16, 4.33]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs	0.22	[0.02, 2.55]	

Continued...

Table A40—Continued

	Lumbini province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes	0.43	[0.07, 2.57]	
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	0.79	[0.15, 4.16]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	0.17	[0.03, 0.93]	*
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No	0.06	[0.00, 0.91]	*
Yes		Ref	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A41 Associations of stunting with health and environment factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	0.68	[0.10, 4.84]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	0.81	[0.24, 2.67]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method	0.23	[0.03, 1.54]	
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.62	[0.16, 2.39]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel	2.25	[0.55, 9.24]	
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	1.74	[0.47, 6.47]	
60+ min	1.07	[0.14, 8.33]	
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes	1.67	0.38 – 7.28	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.20	[0.03, 1.14]	
Access any of 3 media at least once a week	0.16	[0.02, 1.18]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs	4.52	[1.34, 15.16]	

Continued...

Table A41—Continued

	Karnali province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes	1.14	[0.42, 3.08]	*
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	0.48	[0.05, 4.61]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	3.07	[0.60, 15.84]	
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	0.56	[0.04, 8.08]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes	0.86	[0.10, 7.32]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A42 Associations of stunting with health and environment factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	0.50	[0.04, 6.89]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method	0.02	[0.00, 6.37]	
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None			
1–3		Ref	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs	0.77	[0.09, 6.72]	

Continued...

**Table A42—Continued**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes	1.19	[0.19, 7.53]	
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	0.12	[0.00, 4.79]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A43 Associations of wasting with socioeconomic factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.81	[0.33, 1.98]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.85	[0.12, 6.19]	
Middle			
Fourth	2.45	[0.63, 9.44]	
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	0.57	[0.07, 4.41]	
Dalit	1.04	[0.28, 3.87]	
Newar	-	-	
Janajati	0.51	[0.11, 2.28]	
Muslim			-
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.36	[0.05, 2.45]	
Some secondary/6–9 years schooling	0.51	[0.08, 3.33]	
SLC or higher/10 and above years of schooling	0.56	[0.05, 6.15]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural			
Agricultural	0.77	[0.33, 1.60]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.40	[0.37, 5.36]	
<b>Head of the household</b>			
Male		Ref	
Female	2.16	[0.71, 6.56]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.95	[0.36, 2.50]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.22	[0.18, 8.30]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.57	[0.07, 4.46]	

Empty rows correspond to a very small sample size.

**Table A44 Associations of wasting with socioeconomic factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.86	[0.43, 1.70]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.61	[0.48, 5.43]	
Middle	1.79	[0.52, 6.11]	
Fourth	1.96	[0.49, 7.84]	
Highest	2.41	[0.54, 10.70]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit			
Newar			
Janajati			
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.90	[0.40, 2.02]	
Some secondary/6–9 years schooling	0.89	[0.31, 2.55]	
SLC or higher/10 and above years of schooling	0.65	[0.21, 2.04]	
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	0.73	[0.33, 1.60]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.51	[0.73, 3.14]	
<b>Head of the household</b>			
Male		Ref	
Female	1.69	[0.86, 3.35]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.03	[0.52, 2.04]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.99	[0.46, 2.17]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.93	[0.42, 2.07]	

Empty rows correspond to a very small sample size.



**Table A45 Associations of wasting with socioeconomic factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.13	[0.00, 5.70]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second			
Middle			
Fourth	0.06	[0.00, 7.29]	
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit			
Newar	0.91	[0.13, 6.24]	
Janajati	0.16	[0.03, 0.88]	*
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling			
Some secondary/6–9 years schooling	1.89	[0.35, 10.12]	
SLC or higher/10 and above years of schooling			
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	1.13	[0.30, 4.25]	
<b>Household size</b>			
4 or less		Ref	
More than 4	2.48	[0.63, 9.82]	
<b>Head of the household</b>			
Male		Ref	
Female			
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.49	[0.30, 7.44]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months			
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.34	[0.12, 0.99]	*

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A46 Associations of wasting with socioeconomic factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.01	[0.10, 10.13]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second			
Middle			
Fourth			
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	0.06	[0.00, 2.93]	
Newar	-	-	
Janajati	0.13	[0.02, 1.00]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.05	[0.00, 1.17]	
Some secondary/6–9 years schooling	0.02	[0.00, 2.59]	
SLC or higher/10 and above years of schooling			
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	0.20	[0.02, 1.64]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.42	[0.04, 4.68]	*
<b>Head of the household</b>			
Male		Ref	
Female			
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.64	[0.04, 11.55]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.37	[0.02, 5.71]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A47 Associations of wasting with socioeconomic factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.64	[0.24, 1.65]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.09	[0.38, 3.11]	
Middle	0.78	[0.24, 2.52]	
Fourth	1.63	[0.46, 5.77]	
Highest	2.99	[0.55, 16.39]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	3.48	[0.83, 14.60]	
Dalit	0.86	[0.24, 3.07]	
Newar	-	-	
Janajati	1.17	[0.38, 3.59]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.25	[0.42, 3.76]	
Some secondary/6–9 years schooling	0.84	[0.23, 3.09]	
SLC or higher/10 and above years of schooling	0.72	[0.20, 2.57]	
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	2.25	[0.79, 6.42]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.53	[0.69, 3.41]	
<b>Head of the household</b>			
Male		Ref	
Female	0.60	[0.22, 1.65]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.71	[0.39, 1.31]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.62	[0.31, 1.24]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.61	[0.26, 1.40]	

Empty rows correspond to a very small sample size.

**Table A48 Associations of wasting with socioeconomic factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.62	[0.52, 5.06]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.71	[0.36, 8.02]	
Middle			
Fourth			
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	0.92	[0.34, 2.51]	
Newar			
Janajati	0.30	[0.02, 4.50]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling			
Some secondary/6–9 years schooling			
SLC or higher/10 and above years of schooling			
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	1.43	[0.26, 7.97]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.56	[0.21, 1.48]	
<b>Head of the household</b>			
Male		Ref	
Female	0.33	[0.09, 1.23]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.76	[0.25, 2.33]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.57	[0.19, 1.70]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.46	[0.16, 1.30]	

Empty rows correspond to a very small sample size.

**Table A49 Associations of wasting with socioeconomic factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.28	[0.38, 4.36]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.76	[0.16, 3.53]	
Middle	1.70	[0.34, 8.46]	
Fourth			
Highest	0.72	[0.14, 3.63]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	1.45	[0.43, 4.88]	
Newar			
Janajati	0.83	[0.18, 3.91]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.46	[0.04, 4.90]	
Some secondary/6–9 years schooling	2.73	[0.72, 10.35]	
SLC or higher/10 and above years of schooling	2.72	[0.56, 13.16]	
<b>Mother's occupation</b>			
Not working/domestic work			
Non-agricultural		Ref	
Agricultural	1.64	[0.43, 6.28]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.45	[0.12, 1.64]	
<b>Head of the household</b>			
Male		Ref	
Female	0.73	[0.19, 2.80]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.05	[0.24, 4.54]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.58	[0.16, 2.13]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	2.25	[0.32, 15.78]	

Empty rows correspond to a very small sample size.

**Table A50 Associations of wasting with child-intrinsic and nutritional factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.82	[0.05, 14.11]	
12–17			
18–23	1.46	[0.18, 11.94]	
24–35	0.56	[0.08, 4.10]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.70	[0.13, 3.96]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.76	[0.07, 8.62]	
Large (≥3.5 kg)			
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	3.28	[0.82, 13.04]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.90	[0.12, 6.69]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.36	[0.05, 2.39]	

Empty rows correspond to a very small sample size.

**Table A51 Associations of wasting with child-intrinsic and nutritional factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	2.07	[0.23, 18.65]	
12–17			
18–23	0.71	[0.07, 7.17]	
24–35	1.37	[0.22, 8.67]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.55	[0.49, 4.87]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.11	[0.02, 0.53]	**
Large (≥3.5 kg)	0.18	[0.04, 0.87]	**
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	3.25	[0.73, 14.46]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.44	[0.04, 4.33]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.59	[0.14, 2.53]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.34	[0.11, 1.11]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
Empty rows correspond to a very small sample size.

**Table A52** Associations of wasting with child-intrinsic and nutritional factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS

	Bagmati province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	1.10	[0.18, 6.77]	
12–17			
18–23	0.19	[0.01, 3.30]	
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.59	[0.18, 13.77]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.16	[0.01, 1.75]	
Large (≥3.5 kg)			
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	0.86	[0.11, 6.49]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.19	[0.03, 1.19]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity			

Empty rows correspond to a very small sample size.



**Table A53 Associations of wasting with child-intrinsic and nutritional factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.54	[0.03, 10.80]	
12–17	1.09	[0.08, 15.18]	
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female			
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)			
Large (≥3.5 kg)			
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth			
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.14	[0.01, 1.72]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity			

Empty rows correspond to a very small sample size.

**Table A54 Associations of wasting with child-intrinsic and nutritional factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.34	[0.05, 2.20]	
12–17	0.91	[0.27, 3.01]	
18–23	1.05	[0.19, 5.65]	
24–35	0.96	[0.23, 3.96]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.53	[0.22, 1.25]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.78	[0.29, 2.10]	
Large (≥3.5 kg)	0.18	[0.02, 1.35]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	2.53	[0.74, 8.57]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	2.05	[0.95, 4.41]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.61	[0.16, 2.35]	

Empty rows correspond to a very small sample size.

**Table A55 Associations of wasting with child-intrinsic and nutritional factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	1.93	[0.29, 12.74]	
12–17	0.97	[0.06, 15.75]	
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.26	[0.05, 1.27]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.12	[0.02, 0.71]	*
Large (≥3.5 kg)	0.07	[0.01, 0.78]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	0.58	[0.12, 2.67]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.63	[0.13, 3.06]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.40	[0.14, 13.71]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A56 Associations of wasting with child-intrinsic and nutritional factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11			
12–17			
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.96	[0.24, 3.76]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.48	[0.07, 3.57]	
Large (≥3.5 kg)	0.09	[0.00, 1.72]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	0.63	[0.15, 2.69]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.62	[0.18, 2.10]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.81	[0.34, 9.63]	

Empty rows correspond to a very small sample size.

**Table A57 Associations of wasting with maternal factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.37	[0.05, 2.51]	
35–49	0.07	[0.00, 1.52]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.71	[0.09, 5.63]	
Overweight/obese (≥25)	0.17	[0.01, 3.36]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	0.55	[0.06, 5.23]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	1.11	[0.35, 3.54]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.40	[0.10, 1.54]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.80	[0.31, 10.33]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above			

Empty rows correspond to a very small sample size.

**Table A58 Associations of wasting with maternal factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.50	[0.23, 1.05]	
35–49	0.71	[0.12, 4.14]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.62	[0.28, 1.39]	
Overweight/obese (≥25)	0.54	[0.18, 1.63]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	1.33	[0.58, 3.07]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	2.44	[1.12, 5.34]	*
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.13	[0.54, 2.38]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.69	[0.11, 4.34]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.84	[0.44, 1.59]	
20 and above years	0.82	[0.20, 3.33]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.98	[0.38, 2.50]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
Empty rows correspond to a very small sample size.

**Table A59 Associations of wasting with maternal factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.00	[0.08, 12.92]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)			
Overweight/obese (≥25)	0.27	[0.01, 14.04]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.57	[0.20, 12.29]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.31	[0.03, 3.60]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.90	[0.06, 13.86]	

Empty rows correspond to a very small sample size.

**Table A60 Associations of wasting with maternal factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34			
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.06	[0.00, 0.89]	*
Overweight/obese (≥25)	0.21	[0.00, 10.57]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.25	[0.02, 3.43]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years			
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.



**Table A61 Associations of wasting with maternal factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34			
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.77	[0.34, 1.72]	
Overweight/obese (≥25)	0.62	[0.20, 1.92]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.97	[1.07, 8.28]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.95	[0.41, 2.22]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.99	[0.38, 2.58]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.73	[0.24, 2.25]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.91	[0.29, 2.80]	
20 and above years	0.19	[0.03, 1.14]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	2.75	[0.95, 7.94]	

Empty rows correspond to a very small sample size.

**Table A62 Associations of wasting with maternal factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.31	[0.28, 6.25]	
35–49	0.42	[0.03, 6.87]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.04	[0.01, 0.25]	**
Overweight/obese (≥25)			
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.31	[0.07, 1.41]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups			
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.93	[0.10, 8.80]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.81	[0.06, 11.36]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.99	[0.14, 7.17]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A63 Associations of wasting with maternal factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.26	[0.18, 8.96]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.23	[0.05, 1.11]	
<b>Overweight/obese (≥25)</b>	<b>0.22</b>	<b>[0.03, 1.54]</b>	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.44	[0.09, 2.15]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.50	[0.15, 1.68]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.06	[0.00, 1.03]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years			
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.27	[0.04, 1.73]	

Empty rows correspond to a very small sample size.

**Table A64 Associations of wasting with health and environment factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

Table A64—Continued

	Koshi province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A65 Associations of wasting with health and environment factors in Madhesh province. Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	2.10	[0.29, 15.22]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.34	[0.07, 1.70]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation	0.57	[0.10, 3.32]	
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	0.18	[0.01, 2.75]	
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other	1.21	[0.23, 6.28]	
<b>ANC visit</b>			
None		Ref	
1–3	0.28	[0.03, 2.47]	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.14	[0.02, 1.14]	
Access any of 3 media at least once a week	0.12	[0.02, 0.72]	*
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

Table A65—Continued

	Madhesh province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes	0.17	[0.03, 0.96]	*
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	1.05	[0.12, 9.53]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	0.02	[0.00, 1.28]	
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	1.26	[0.10, 15.83]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes	2.68	[0.46, 15.47]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
 Empty rows correspond to a very small sample size.

**Table A66 Associations of wasting with health and environment factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel			
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other			
<b>ANC visit</b>			
None			Ref
1–3			
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs			

*Continued...*



Table A66—Continued

	Bagmati province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A67 Associations of wasting with health and environment factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel			
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other			
<b>ANC visit</b>			
None			Ref
1–3			
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

**Table A67—Continued**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A68 Associations of wasting with health and environment factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	1.67	[0.21, 13.35]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.22	[0.02, 2.90]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel	1.03	[0.10, 10.45]	
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	1.46	[0.17, 12.69]	
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3	0.59	[0.05, 6.55]	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.82	[0.12, 5.38]	
Access any of 3 media at least once a week	1.53	[0.14, 16.12]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs	0.08	[0.01, 0.56]	*

Continued...

Table A68—Continued

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes	0.10	[0.01, 0.99]	*
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	1.26	[0.12, 13.53]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	1.26	[0.15, 10.66]	
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	0.00	[0.00, 0.10]	**
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A69 Associations of wasting with health and environment factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method	2.51	[0.83, 7.63]	
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.16	[0.01, 2.05]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min	0.28	[0.01, 6.20]	
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes	0.72	[0.07, 7.57]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs	0.18	[0.01, 4.02]	

Continued...

Table A69—Continued

	Karnali province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes	0.82	[0.05, 13.26]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A70 Associations of wasting with health and environment factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

*Continued...*



Table A70—Continued

	Sudurpaschim province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		Ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		Ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A71 Associations of underweight with socioeconomic factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.66	[0.32, 1.38]	0.264
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.56	[0.20, 1.58]	
Middle	1.29	[0.43, 3.83]	
Fourth	0.69	[0.22, 2.20]	
Highest	0.35	[0.06, 1.96]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	0.64	[0.16, 2.66]	
Dalit	1.52	[0.49, 4.71]	
Newar	1.18	[0.11, 13.26]	
Janajati	0.63	[0.23, 1.66]	
Muslim	0.37	[0.06, 2.24]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.20	[0.51, 2.82]	
Some secondary/6–9 years schooling	0.93	[0.35, 2.46]	
SLC or higher/10 and above years of schooling	0.28	[0.07, 1.08]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.27	[0.38, 4.27]	
Agricultural	1.52	[0.65, 3.59]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.55	[0.30, 1.00]	
<b>Head of the household</b>			
Male		Ref	
Female	0.52	[0.24, 1.12]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.90	[0.46, 1.77]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.05	[0.52, 2.09]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.56	[0.22, 1.41]	

Empty rows correspond to a very small sample size.

**Table A72 Associations of underweight with socioeconomic factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.61	[0.96, 2.72]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.22	[0.63, 2.33]	
Middle	0.65	[0.32, 1.32]	
Fourth	0.74	[0.30, 1.78]	
Highest	0.29	[0.09, 0.93]	*
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other			
Dalit			
Newar			
Janajati			
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.69	[0.40, 1.22]	
Some secondary/6–9 years schooling	1.61	[0.85, 3.05]	
SLC or higher/10 and above years of schooling	1.16	[0.57, 2.39]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.64	[0.23, 1.75]	
Agricultural	0.75	[0.46, 1.21]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.65	[0.94, 2.87]	
<b>Head of the household</b>			
Male		Ref	
Female	0.84	[0.51, 1.38]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.73	[1.02, 2.94]	*
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.85	[0.53, 1.37]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	1.41	[0.81, 2.47]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A73 Associations of underweight with socioeconomic factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	2.61	[0.61, 11.19]	
<b>Wealth quintile</b>			
Lowest			
Second	1.90	[0.51, 7.06]	
Middle	5.17	[1.61, 16.55]	**
Fourth	0.87	[0.10, 7.23]	
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	1.83	[0.22, 15.23]	
Dalit	2.22	[0.36, 13.82]	
Newar	1.23	[0.36, 4.28]	
Janajati	0.28	[0.05, 1.49]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.61	[0.04, 9.28]	
Some secondary/6–9 years schooling			
SLC or higher/10 and above years of schooling	1.14	[0.09, 13.99]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.16	[0.32, 4.18]	
Agricultural	1.58	[0.45, 5.55]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.65	[0.53, 5.14]	
<b>Head of the household</b>			
Male		Ref	
Female	0.57	[0.17, 1.97]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.24	[0.31, 4.97]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.42	[0.10, 1.80]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.74	[0.14, 3.99]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A74 Associations of underweight with socioeconomic factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.90	[0.26, 3.10]	
<b>Wealth quintile</b>			
Lowest			
Second	0.38	[0.11, 1.29]	
Middle	0.38	[0.07, 2.04]	
Fourth	0.13	[0.01, 1.13]	
Highest	0.11	[0.01, 1.21]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	1.13	[0.17, 7.53]	
Dalit	0.15	[0.04, 0.60]	**
Newar			
Janajati	0.54	[0.21, 1.42]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.47	[0.12, 1.79]	
Some secondary/6–9 years schooling	0.22	[0.05, 1.03]	
SLC or higher/10 and above years of schooling	0.10	[0.02, 0.57]	*
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.28	[0.24, 6.74]	
Agricultural	0.36	[0.08, 1.69]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.85	[0.41, 1.79]	
<b>Head of the household</b>			
Male		Ref	
Female	0.37	[0.15, 0.92]	*
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.61	[0.16, 2.37]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.44	[0.50, 4.13]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A75 Associations of underweight with socioeconomic factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.21	[0.64, 2.29]	
<b>Wealth quintile</b>			
Lowest			
Second	1.90	[0.86, 4.18]	
Middle	1.03	[0.41, 2.58]	
Fourth	1.96	[0.83, 4.60]	
Highest	3.07	[0.87, 10.85]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other	3.00	[1.04, 8.63]	*
Dalit	1.29	[0.43, 3.90]	
Newar			
Janajati	1.54	[0.62, 3.79]	
Muslim	2.05	[0.63, 6.69]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.69	[0.29, 1.66]	
Some secondary/6–9 years schooling	0.53	[0.20, 1.37]	
SLC or higher/10 and above years of schooling	0.44	[0.17, 1.13]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.18	[0.54, 2.58]	
Agricultural	1.26	[0.60, 2.63]	
<b>Household size</b>			
4 or less		Ref	
More than 4	2.18	[1.07, 4.44]	*
<b>Head of the household</b>			
Male		Ref	
Female	1.32	[0.64, 2.70]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.69	[0.40, 1.21]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.36	[0.74, 2.51]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.25	[0.11, 0.54]	**

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A76 Associations of underweight with socioeconomic factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.39	[0.74, 2.64]	
<b>Wealth quintile</b>			
Lowest			
Second	1.77	[0.67, 4.63]	
Middle	0.50	[0.08, 3.24]	
Fourth	0.55	[0.07, 4.45]	
Highest	0.74	[0.12, 4.38]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other			
Dalit	1.18	[0.60, 2.32]	
Newar			
Janajati	0.33	[0.10, 1.12]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	1.11	[0.53, 2.32]	
Some secondary/6–9 years schooling	0.93	[0.46, 1.89]	
SLC or higher/10 and above years of schooling	0.81	[0.33, 1.96]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.84	[0.22, 3.14]	
Agricultural	0.72	[0.21, 2.44]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.03	[0.46, 2.33]	
<b>Head of the household</b>			
Male		Ref	
Female	1.31	[0.68, 2.53]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.06	[0.60, 1.87]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.49	[0.28, 0.86]	*
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.79	[0.36, 1.73]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A77 Associations of underweight with socioeconomic factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	<i>p</i> value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.35	[0.55, 3.31]	
<b>Wealth quintile</b>			
Lowest			
Second	0.72	[0.24, 2.18]	
Middle	0.46	[0.09, 2.37]	
Fourth	0.29	[0.05, 1.71]	
Highest	0.57	[0.09, 3.48]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other			
Dalit	1.52	[0.76, 3.02]	
Newar			
Janajati	1.01	[0.36, 2.84]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.39	[0.15, 1.05]	
Some secondary/6–9 years schooling	0.93	[0.42, 2.06]	
SLC or higher/10 and above years of schooling	0.48	[0.17, 1.37]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.58	[0.57, 4.35]	
Agricultural	1.18	[0.51, 2.77]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.11	[0.46, 2.67]	
<b>Head of the household</b>			
Male		Ref	
Female	1.06	[0.49, 2.30]	

Empty rows correspond to a very small sample size.



**Table A78 Associations of underweight with child-intrinsic and nutritional factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.91	[0.14, 6.19]	
12–17	1.11	[0.21, 5.98]	
18–23	1.04	[0.22, 4.92]	
24–35	2.35	[0.61, 9.08]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.82	[0.37, 1.82]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.37	[0.11, 1.27]	
Large (≥3.5 kg)	0.06	[0.01, 0.63]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	4.45	[1.51, 13.16]	**
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times			
Child was fed meal with recommended minimum number of times	0.45	[0.09, 2.18]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.46	[0.08, 2.48]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A79 Associations of underweight with child-intrinsic and nutritional factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11			
12–17			
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.89	[0.96, 3.72]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.27	[0.08, 0.89]	*
Large (≥3.5 kg)	0.20	[0.06, 0.66]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.21	[0.53, 2.76]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.50	[0.08, 3.31]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.71	[0.25, 2.04]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.74	[0.32, 1.72]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A80 Associations of underweight with child-intrinsic and nutritional factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.64	[0.04, 9.27]	
12–17			
18–23	0.57	[0.06, 5.09]	
24–35	1.51	[0.21, 10.82]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	2.52	[0.94, 6.78]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.22	[0.05, 0.92]	*
Large (≥3.5 kg)	0.07	[0.01, 0.71]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth			
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.29	[0.05, 1.63]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A81 Associations of underweight with child-intrinsic and nutritional factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.36	[0.04, 3.07]	
12–17	0.76	[0.10, 5.93]	
18–23			
24–35			
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female			
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.61	[0.10, 3.95]	
Large (≥3.5 kg)			
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	2.46	[0.57, 10.74]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.72	[0.15, 3.47]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.40	[0.07, 2.20]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.86	[0.22, 3.43]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A82 Associations of underweight with child-intrinsic and nutritional factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	1.00	[0.15, 6.55]	
12–17			
18–23			
24–35	2.86	[0.71, 11.54]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	0.88	[0.49, 1.58]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.30	[0.11, 0.82]	*
Large (≥3.5 kg)	0.10	[0.02, 0.56]	**
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.52	[0.55, 4.18]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.42	[0.01, 16.86]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	2.24	[0.21, 24.53]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.59	[0.36, 7.03]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A83 Associations of underweight with child-intrinsic and nutritional factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	0.93	[0.22, 4.00]	
12–17	1.72	[0.43, 6.81]	
18–23	0.58	[0.10, 3.29]	
24–35	1.44	[0.44, 4.75]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	2.26	[1.02, 5.01]	*
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.18	[0.07, 0.45]	***
Large (≥3.5 kg)	0.05	[0.01, 0.24]	***
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.14	[0.43, 3.02]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding	0.58	[0.05, 6.21]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.00	[0.00, 0.00]	***
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	0.88	[0.23, 3.38]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A84 Associations of underweight with child-intrinsic and nutritional factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
<6 months		Ref	
6–11	1.85	[0.40, 8.64]	
12–17	2.70	[0.73, 9.96]	
18–23	0.83	[0.18, 3.77]	
24–35	1.81	[0.57, 5.73]	
36–47			
48–59			
<b>Sex of child</b>			
Male		Ref	
Female	1.50	[0.58, 3.86]	
<b>Birthweight</b>			
Small (<2.5 kg)		Ref	
Normal (2.5–3.49 kg)	0.19	[0.07, 0.52]	**
Large (≥3.5 kg)	0.12	[0.02, 0.62]	*
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		Ref	
Child was breastfed within 1 hour of birth	1.47	[1.47, 1.47]	.
<b>Current breastfeeding status</b>			
Currently not breastfeeding		Ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		Ref	
Child was fed meal with recommended minimum number of times	0.00	[0.00, 0.00]	.
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		Ref	
Child was fed with minimum dietary diversity	1.27	[1.27, 1.27]	.

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A85 Associations of underweight with maternal factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.78	[0.24, 2.47]	
35–49	0.17	[0.03, 1.02]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.64	[0.15, 2.71]	
Overweight/obese (≥25)	0.20	[0.03, 1.47]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.53	[0.25, 1.14]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.34	[0.15, 0.74]	**
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.46	[0.11, 1.86]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.68	[0.21, 2.19]	
20 and above years	0.67	[0.13, 3.44]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.84	[0.59, 5.75]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05  
Empty rows correspond to a very small sample size.



**Table A86 Associations of underweight with maternal factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.39	[0.21, 0.74]	**
35–49	0.30	[0.09, 1.04]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.50	[0.30, 0.82]	**
Overweight/obese (≥25)	0.82	[0.35, 1.91]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.19	[1.12, 4.30]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	1.35	[0.75, 2.45]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.49	[0.26, 0.91]	*
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.23	[0.04, 1.20]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.76	[0.45, 1.28]	
20 and above years	1.04	[0.41, 2.64]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.21	[0.61, 2.37]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A87 Associations of underweight with maternal factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.50	[0.12, 2.17]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.66	[0.05, 8.65]	
Overweight/obese (≥25)	0.46	[0.03, 8.22]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.58	[0.16, 2.10]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.05	[0.31, 3.55]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	1.56	[0.21, 11.67]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.28	[0.32, 5.19]	
20 and above years	0.92	[0.15, 5.75]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.36	[0.06, 2.10]	

Empty rows correspond to a very small sample size.

**Table A88 Associations of underweight with maternal factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.50	[0.12, 2.17]	
35–49	2.19	[0.13, 37.87]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.66	[0.05, 8.65]	
Overweight/obese (≥25)	0.46	[0.03, 8.22]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	4.46	[0.81, 24.43]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.58	[0.16, 2.10]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.05	[0.31, 3.55]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	1.56	[0.21, 11.67]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.28	[0.32, 5.19]	
20 and above years	0.92	[0.15, 5.75]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	0.36	[0.06, 2.10]	

Empty rows correspond to a very small sample size.

**Table A89 Associations of underweight with maternal factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34			
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.53	[0.24, 1.18]	
Overweight/obese (≥25)	0.20	[0.08, 0.53]	**
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.87	[1.12, 7.34]	*
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.34	[0.14, 0.83]	*
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	1.40	[0.51, 3.88]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.73	[0.27, 1.96]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.05	[0.45, 2.45]	
20 and above years	0.59	[0.15, 2.42]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.10	[0.47, 2.58]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
 Empty rows correspond to a very small sample size.

**Table A90 Associations of underweight with maternal factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	0.99	[0.42, 2.33]	
35–49	0.98	[0.13, 7.41]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.15	[0.05, 0.40]	***
Overweight/obese (≥25)	0.13	[0.02, 0.96]	*
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm	2.88	[0.95, 8.80]	
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.47	[0.24, 0.94]	*
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.81	[0.31, 2.09]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.66	[0.20, 2.13]	
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	1.11	[0.44, 2.82]	
20 and above years	2.51	[0.60, 10.40]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.14	[0.43, 3.04]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$   
Empty rows correspond to a very small sample size.

**Table A91 Associations of underweight with maternal factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		Ref	
25–34	1.07	[0.34, 3.41]	
35–49	2.67	[0.43, 16.71]	
<b>Mother's BMI</b>			
Underweight (<18.5)		Ref	
Normal (18.5–24.9)	0.29	[0.09, 0.90]	*
Overweight/obese (≥25)	0.37	[0.07, 2.06]	
<b>Mother's height</b>			
145 cm or more		Ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		Ref	
3 years or more or no preceding interval	0.48	[0.19, 1.19]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		Ref	
5 or more food groups	0.96	[0.47, 1.99]	
<b>Mother's smoking status</b>			
Smoking		Ref	
Non-smoking	0.07	[0.01, 0.98]	*
<b>Age at marriage</b>			
Up to age 15 years		Ref	
16–19 years	0.40	[0.17, 0.91]	*
20 and above years	0.50	[0.11, 2.23]	
<b>Age at first birth</b>			
Less than 20 years		Ref	
20 and above	1.02	[0.41, 2.58]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05  
Empty rows correspond to a very small sample size.

**Table A92 Associations of underweight with health and environment factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

**Table A92—Continued**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>IFA during last pregnancy</b>			
Not receive180 IFA		Ref	
Receive180 IFA			
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.



**Table A93 Associations of underweight with health and environment factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	0.30	[0.08, 1.08]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	1.47	[0.51, 4.19]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.35	[0.09, 1.44]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation	0.70	[0.15, 3.21]	
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel	3.74	[0.58, 23.99]	
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	1.43	[0.30, 6.76]	
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other	0.87	[0.32, 2.41]	
<b>ANC visit</b>			
None		Ref	
1–3	0.56	[0.04, 7.33]	
4 or more	0.51	[0.02, 12.07]	
<b>MIYCN counseling</b>			
No		Ref	
Yes	2.00	[0.25, 15.92]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.67	[0.15, 2.90]	
Access any of 3 media at least once a week	0.40	[0.09, 1.75]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

**Table A93—Continued**

	Madhesh province		
	OR	95% CI	<i>p</i> value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA	0.67	[0.16, 2.76]	
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy	2.01	[0.56, 7.18]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	0.37	[0.08, 1.70]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes	1.12	[0.18, 7.05]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes	1.53	[0.29, 7.91]	

Empty rows correspond to a very small sample size.

**Table A94 Associations of underweight with health and environment factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

**Table A94—Continued**

	Bagmati province		
	OR	95% CI	<i>p</i> value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA			
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A95 Associations of underweight with health and environment factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other			
<b>ANC visit</b>			
None		Ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

**Table A95—Continued**

	Gandaki Province		
	OR	95% CI	<i>p</i> value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA			
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A96 Associations of underweight with health and environment factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	0.66	[0.11, 4.16]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.61	[0.08, 4.34]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation	0.19	[0.02, 1.60]	
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel	0.15	[0.03, 0.84]	*
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	2.63	[0.41, 16.84]	
60+ min			
<b>Place of delivery</b>			
Health facility		Ref	
Home/other	0.35	[0.03, 4.70]	
<b>ANC visit</b>			
None		Ref	
1–3	1.09	[0.07, 16.24]	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.98	[0.12, 8.00]	
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs	0.07	[0.01, 0.70]	*

Continued...

**Table A96—Continued**

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA	0.56	[0.10, 2.99]	
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy	0.24	[0.03, 1.96]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	0.50	[0.09, 2.91]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05  
 Empty rows correspond to a very small sample size.



**Table A97 Associations of underweight with health and environment factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		Ref	
Child (12–23 months) received all basic vaccines	0.73	[0.15, 3.60]	
<b>Any illnesses</b>			
Child had no illness		Ref	
Child had any illness	1.69	[0.38, 7.50]	
<b>Treatment of water before drinking</b>			
No treatment		Ref	
Treatment with appropriate method	0.04	[0.00, 0.37]	**
<b>Sources of drinking water</b>			
Unimproved sources		Ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		Ref	
Household with soap and water	0.36	[0.05, 2.69]	
<b>Sanitation</b>			
Unimproved sanitation		Ref	
Improved sanitation	0.21	[0.01, 3.55]	
<b>Use of cooking fuel</b>			
Solid fuel		Ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		Ref	
30–60 min	0.70	[0.14, 3.49]	
60+ min	1.05	[0.11, 9.93]	
<b>Place of delivery</b>			
Health facility		Ref	
Home/other	2.76	[0.32, 23.71]	
<b>ANC visit</b>			
None		Ref	
1–3	0.96	[0.10, 9.73]	
4 or more			
<b>MIYCN counseling</b>			
No		Ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		Ref	
Access any of 3 media less than once a week	0.14	[0.01, 2.26]	
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		Ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

Table A97—Continued

	Karnali province		
	OR	95% CI	p value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA	0.24	[0.07, 0.89]	*
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes	1.28	[0.21, 7.67]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes	0.82	[0.07, 9.55]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A98 Associations of underweight with health and environment factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			Ref
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness			Ref
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment			Ref
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources			Ref
Improved sources			
<b>Handwashing</b>			
Household with no soap and water			Ref
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation			Ref
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel			Ref
Clean fuel			
<b>Access to government health facility</b>			
<30 min			Ref
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility			Ref
Home/other			
<b>ANC visit</b>			
None			Ref
1–3			
4 or more			
<b>MIYCN counseling</b>			
No			Ref
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all			Ref
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs			Ref
Heard/seen any one of the TV/radio H&N programs			

*Continued...*

Table A98—Continued

	Sudurpaschim province		
	OR	95% CI	p value
<b>IFA during last pregnancy</b>			
Not receive 180 IFA		Ref	
Receive 180 IFA			
<b>Deworming</b>			
No deworming during last pregnancy		Ref	
Deworming during last pregnancy			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		Ref	
Yes			
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		Ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		Ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A99 Associations of child anemia with socioeconomic factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.09	[0.69, 1.73]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.99	[0.45, 2.19]	
Middle	1.46	[0.62, 3.46]	
Fourth	1.58	[0.67, 3.71]	
Highest	1.06	[0.30, 3.76]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	1.11	[0.45, 2.73]	
Dalit	1.64	[0.64, 4.20]	
Newar	0.53	[0.06, 4.72]	
Janajati	1.87	[0.93, 3.79]	
Muslim	0.86	[0.31, 2.40]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.76	[0.32, 1.79]	
Some secondary/6–9 years schooling	0.58	[0.26, 1.31]	
SLC or higher/10 and above years of schooling	0.67	[0.29, 1.58]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.59	[0.28, 1.26]	
Agricultural	0.60	[0.32, 1.15]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.49	[0.90, 2.44]	
<b>Head of the household</b>			
Male		Ref	
Female	1.23	[0.69, 2.20]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.72	[0.43, 1.23]	
<b>Mother's internet use</b>			
Not used in past 12 months			
Used in past 12 months	1.02	[0.58, 1.78]	
<b>Mother owns a mobile phone</b>			
No			
Yes	1.06	[0.54, 2.06]	

Empty rows correspond to a very small sample size.

**Table A100 Associations of child anemia with socioeconomic factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.82	[0.51, 1.32]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.52	[0.69, 3.37]	
Middle	1.61	[0.65, 4.00]	
Fourth	1.31	[0.60, 2.86]	
Highest	0.49	[0.15, 1.54]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other	1.08	[0.26, 4.47]	
Dalit	2.01	[0.48, 8.41]	
Newar	1.06	[0.10, 11.26]	
Janajati	2.39	[0.46, 12.54]	
Muslim	1.21	[0.29, 5.04]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.76	[0.50, 1.15]	
Some secondary/6–9 years schooling	0.88	[0.45, 1.70]	
SLC or higher/10 and above years of schooling	1.36	[0.70, 2.63]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	2.72	[1.23, 6.00]	*
Agricultural	0.82	[0.50, 1.33]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.71	[1.08, 2.73]	*
<b>Head of the household</b>			
Male		Ref	
Female	1.51	[0.96, 2.37]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.07	[0.72, 1.61]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.89	[0.53, 1.50]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.76	[0.46, 1.25]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A101 Associations of child anemia with socioeconomic factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.38	[0.18, 0.81]	*
<b>Wealth quintile</b>			
Lowest		Ref	
Second	0.84	[0.39, 1.81]	
Middle	0.43	[0.13, 1.44]	
Fourth	0.52	[0.16, 1.72]	
Highest	0.42	[0.10, 1.73]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other	0.79	[0.06, 10.09]	
Dalit	1.30	[0.30, 5.57]	
Newar	1.56	[0.42, 5.75]	
Janajati	1.03	[0.52, 2.05]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.87	[0.27, 2.79]	
Some secondary/6–9 years schooling	0.92	[0.29, 2.97]	
SLC or higher/10 and above years of schooling	0.95	[0.24, 3.83]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.81	[0.35, 1.85]	
Agricultural	1.74	[0.84, 3.61]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.11	[0.51, 2.41]	
<b>Head of the household</b>			
Male		Ref	
Female	0.57	[0.27, 1.18]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.32	[0.57, 3.08]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.81	[0.31, 2.12]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.96	[0.34, 2.68]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A102 Associations of child anemia with socioeconomic factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.36	[0.59, 3.17]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	4.33	[1.37, 13.72]	*
Middle	1.91	[0.56, 6.51]	
Fourth	2.09	[0.61, 7.23]	
Highest	0.44	[0.08, 2.27]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other	3.33	[0.68, 16.27]	
Dalit	1.16	[0.37, 3.67]	
Newar			
Janajati	1.30	[0.37, 4.65]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.38	[0.07, 2.18]	
Some secondary/6–9 years schooling	0.14	[0.02, 0.92]	*
SLC or higher/10 and above years of schooling	0.36	[0.06, 2.11]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	1.26	[0.29, 5.46]	
Agricultural	0.82	[0.26, 2.57]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.87	[0.36, 2.09]	
<b>Head of the household</b>			
Male		Ref	
Female	1.27	[0.57, 2.80]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.00	[0.43, 2.34]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.92	[0.37, 2.24]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	2.22	[0.37, 13.34]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.



**Table A103 Associations of child anemia with socioeconomic factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.73	[0.41, 1.30]	
<b>Wealth quintile</b>			
Lowest			
Second	0.72	[0.35, 1.51]	
Middle	0.88	[0.42, 1.86]	
Fourth	1.23	[0.46, 3.28]	
Highest	0.42	[0.12, 1.41]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other	1.70	[0.64, 4.48]	
Dalit	0.60	[0.29, 1.25]	
Newar			
Janajati	1.44	[0.75, 2.76]	
Muslim	1.10	[0.37, 3.25]	
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.53	[0.25, 1.10]	
Some secondary/6–9 years schooling	0.71	[0.40, 1.28]	
SLC or higher/10 and above years of schooling	0.72	[0.37, 1.39]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.39	[0.16, 0.94]	*
Agricultural	0.61	[0.30, 1.23]	
<b>Household size</b>			
4 or less		Ref	
More than 4	1.41	[0.88, 2.26]	
<b>Head of the household</b>			
Male		Ref	
Female	1.42	[0.77, 2.61]	
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	0.53	[0.31, 0.90]	*
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	1.41	[0.84, 2.37]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	0.80	[0.39, 1.63]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A104 Associations of child anemia with socioeconomic factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	<i>p</i> value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	1.12	[0.67, 1.88]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.32	[0.66, 2.62]	
Middle	0.69	[0.19, 2.48]	
Fourth	1.27	[0.50, 3.20]	
Highest	1.55	[0.53, 4.56]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		Ref	
Terai/Madheshi other			
Dalit	1.53	[0.88, 2.64]	
Newar			
Janajati	0.66	[0.28, 1.58]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.76	[0.36, 1.64]	
Some secondary/6–9 years schooling	0.97	[0.48, 1.98]	
SLC or higher/10 and above years of schooling	0.94	[0.38, 2.31]	
<b>Mother's occupation</b>			
Not working/domestic work		Ref	
Non-agricultural	0.46	[0.20, 1.06]	
Agricultural	0.70	[0.34, 1.43]	
<b>Household size</b>			
4 or less		Ref	
More than 4	0.90	[0.58, 1.39]	
<b>Head of the household</b>			
Male		Ref	
Female	0.60	[0.37, 0.98]	*
<b>Mother's decision-making</b>			
Cannot make decision		Ref	
Can make decision	1.01	[0.64, 1.62]	
<b>Mother's internet use</b>			
Not used in past 12 months		Ref	
Used in past 12 months	0.98	[0.53, 1.81]	
<b>Mother owns a mobile phone</b>			
No		Ref	
Yes	2.10	[0.95, 4.61]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A105 Associations of child anemia with socioeconomic factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		Ref	
Rural	0.85	[0.43, 1.65]	
<b>Wealth quintile</b>			
Lowest		Ref	
Second	1.06	[0.40, 2.79]	
Middle	0.86	[0.24, 3.04]	
Fourth	1.68	[0.64, 4.41]	
Highest	2.06	[0.56, 7.59]	
<b>Caste/ethnicity</b>			
Brahmin/chhetri		Ref	
Terai/Madheshi other	1.93	[0.44, 8.51]	
Dalit	1.68	[0.64, 4.38]	
Newar			
Janajati	2.91	[1.15, 7.37]	*
<b>Muslim</b>			
Mother's education			
No education/no schooling		Ref	
Primary/1–5 years of schooling	0.88	[0.40, 1.93]	
Some secondary/6–9 years schooling	0.89	[0.44, 1.81]	
SLC or higher/10 and above years of schooling	0.70	[0.30, 1.64]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	0.75	[0.29, 1.92]	
Agricultural	0.92	[0.49, 1.75]	
<b>Household size</b>			
4 or less		ref	
More than 4	0.71	[0.40, 1.29]	
<b>Head of the household</b>			
Male		ref	
Female	0.52	[0.30, 0.91]	*
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	0.73	[0.44, 1.21]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	0.69	[0.35, 1.39]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	1.35	[0.59, 3.11]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A106 Associations of child anemia with child-intrinsic and nutritional factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	1.05	[0.28, 3.97]	
18–23	0.34	[0.09, 1.26]	
24–35	0.22	[0.08, 0.65]	**
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	0.29	[0.16, 0.54]	***
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	1.44	[0.51, 4.07]	
Large (≥3.5 kg)	0.83	[0.26, 2.67]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	0.81	[0.31, 2.10]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding	11.67	0.49–278.08	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.53	[0.24, 1.18]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	0.48	[0.15, 1.55]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A107 Associations of child anemia with child-intrinsic and nutritional factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	0.86	[0.23, 3.27]	
18–23	0.73	[0.20, 2.69]	
24–35	0.50	[0.18, 1.33]	
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	1.20	[0.66, 2.19]	
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	0.40	[0.07, 2.20]	
Large (≥3.5 kg)	0.28	[0.05, 1.58]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	0.87	[0.36, 2.06]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding	1.24	[0.14, 10.80]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.70	[0.30, 1.66]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	1.06	[0.36, 3.12]	

Empty rows correspond to a very small sample size.

**Table A108 Associations of child anemia with child-intrinsic and nutritional factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	0.45	[0.09, 2.17]	
18–23	0.13	[0.02, 0.79]	*
24–35	0.15	[0.05, 0.43]	**
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	3.60	[1.36, 9.52]	*
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	0.75	[0.19, 2.90]	
Large (≥3.5 kg)	0.35	[0.09, 1.29]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	0.87	[0.35, 2.19]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding	5.10	[0.69, 37.39]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.48	[0.15, 1.55]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	1.10	[0.23, 5.28]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A109 Associations of child anemia with child-intrinsic and nutritional factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17			
18–23	1.22	[0.25, 5.87]	
24–35	0.44	[0.10, 1.93]	
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	1.37	[0.27, 6.89]	
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	0.64	[0.08, 4.80]	
Large (≥3.5 kg)	0.49	[0.08, 2.89]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	1.26	[0.31, 5.03]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.45	[0.14, 1.43]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	0.84	[0.07, 10.22]	

Empty rows correspond to a very small sample size.

**Table A110 Associations of child anemia with child-intrinsic and nutritional factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	0.85	[0.26, 2.76]	
18–23	0.62	[0.17, 2.19]	
24–35	0.20	[0.07, 0.58]	**
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	1.26	[0.63, 2.51]	
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	1.14	[0.40, 3.23]	
Large (≥3.5 kg)	0.61	[0.16, 2.37]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	1.26	[0.48, 3.33]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding			
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.48	[0.19, 1.26]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	0.92	[0.22, 3.83]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.



**Table A111 Associations of child anemia with child-intrinsic and nutritional factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	1.09	[0.35, 3.45]	
18–23	0.33	[0.12, 0.93]	*
24–35	0.37	[0.15, 0.93]	*
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	1.30	[0.57, 2.96]	
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	1.92	[0.63, 5.84]	
Large (≥3.5 kg)	1.23	[0.39, 3.84]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	0.64	[0.32, 1.28]	
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding	0.80	[0.11, 5.61]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	1.21	[0.52, 2.82]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	0.69	[0.27, 1.82]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A112 Associations of child anemia with child-intrinsic and nutritional factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Child-intrinsic and nutritional factors</b>			
<b>Age of child (in months)</b>			
6–11		ref	
12–17	0.47	[0.12, 1.79]	
18–23	0.22	[0.06, 0.76]	*
24–35	0.17	[0.05, 0.60]	**
36–47			
48–59			
<b>Sex of child</b>			
Male		ref	
Female	0.86	[0.39, 1.87]	
<b>Birthweight</b>			
Small (<2.5 kg)		ref	
Normal (2.5–3.49 kg)	1.28	[0.46, 3.56]	
Large (≥3.5 kg)	1.14	[0.31, 4.14]	
<b>Early initiation of breastfeeding</b>			
Child was not breastfed within 1 hour of birth		ref	
Child was breastfed within 1 hour of birth	2.83	[1.02, 7.82]	*
<b>Current breastfeeding status</b>			
Currently not breastfeeding		ref	
Currently breastfeeding	1.41	[0.15, 13.17]	
<b>Minimum meal frequency</b>			
Child was not fed meal with recommended minimum number of times		ref	
Child was fed meal with recommended minimum number of times	0.67	[0.26, 1.70]	
<b>Minimum dietary diversity</b>			
Child was not fed with minimum dietary diversity		ref	
Child was fed with minimum dietary diversity	0.71	[0.21, 2.40]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A113 Associations of child anemia with maternal factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.27	[0.09, 0.81]	*
35–49	0.28	[0.06, 1.23]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.97	[0.26, 3.67]	
Overweight/obese (≥25)	1.85	[0.36, 9.41]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.80	[0.24, 2.68]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	1.92	[0.84, 4.38]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.63	[0.30, 1.29]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.05	[0.37, 2.99]	
20 and above years	1.08	[0.22, 5.20]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.98	[0.34, 2.85]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A114 Associations of child anemia with maternal factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.75	[0.35, 1.59]	
35–49	0.55	[0.18, 1.67]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	1.01	[0.54, 1.89]	
Overweight/obese (≥25)	0.97	[0.45, 2.10]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.48	[0.23, 0.97]	*
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	0.96	[0.59, 1.55]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.59	[0.34, 1.01]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.77	[0.16, 3.68]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.29	[0.76, 2.18]	
20 and above years	1.35	[0.48, 3.80]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	1.06	[0.56, 2.01]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A115 Associations of child anemia with maternal factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.15	[0.04, 0.57]	**
35–49	0.16	[0.02, 1.07]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)			
Overweight/obese (≥25)	0.64	[0.03, 14.38]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	1.89	[0.64, 5.59]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	2.54	[0.90, 7.12]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	1.17	[0.42, 3.26]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.49	[0.18, 1.35]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	0.39	[0.05, 2.89]	
20 and above years	0.61	[0.06, 6.65]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	1.38	[0.57, 3.33]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A116 Associations of child anemia with maternal factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	1.12	[0.23, 5.50]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	1.21	[0.20, 7.26]	
Overweight/obese (≥25)	0.56	[0.07, 4.47]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.79	[0.13, 4.77]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	1.03	[0.30, 3.54]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	1.17	[0.46, 2.96]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.52	[0.09, 2.97]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	0.60	[0.15, 2.44]	
20 and above years	1.43	[0.16, 12.38]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.52	[0.08, 3.22]	

Empty rows correspond to a very small sample size.

**Table A117 Associations of child anemia with maternal factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.44	[0.14, 1.38]	
35–49	0.37	[0.06, 2.22]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.54	[0.22, 1.34]	
<b>Overweight/obese (≥25)</b>	<b>0.76</b>	<b>[0.28, 2.06]</b>	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.79	[0.31, 2.03]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	0.82	[0.44, 1.52]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	1.07	[0.48, 2.40]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.60	[0.25, 1.46]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.82	[0.71, 4.66]	
20 and above years	1.47	[0.48, 4.54]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	2.25	[0.89, 5.69]	

Empty rows correspond to a very small sample size.

**Table A118 Associations of child anemia with maternal factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.52	[0.21, 1.28]	
35–49	0.46	[0.15, 1.40]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	2.20	[0.83, 5.81]	
Overweight/obese (≥25)	1.79	[0.44, 7.38]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	1.95	[0.64, 5.93]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	1.25	[0.67, 2.32]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	1.59	[0.95, 2.67]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.65	[0.26, 1.63]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.29	[0.74, 2.27]	
20 and above years	2.18	[0.80, 5.98]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	1.38	[0.68, 2.82]	

Empty rows correspond to a very small sample size.



**Table A119 Associations of child anemia with maternal factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.38	[0.14, 1.05]	
35–49	0.62	[0.16, 2.50]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.41	[0.18, 0.93]	*
Overweight/obese (≥25)	0.26	[0.06, 1.25]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.36	[0.06, 2.10]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	0.80	[0.42, 1.50]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.91	[0.45, 1.85]	
<b>Mother's smoking status</b>			
Smoking			
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.67	[0.61, 4.61]	
20 and above years	3.00	[0.63, 14.25]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	1.21	[0.56, 2.62]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A120 Associations of child anemia with health and environment factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines	3.35	[0.75, 15.07]	
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	0.84	[0.22, 3.24]	
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	2.04	[0.50, 8.38]	
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	0.16	[0.03, 0.92]	*
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.57	[0.07, 4.80]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.33	[0.05, 2.15]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	1.28	[0.10, 15.85]	
<b>ANC visit</b>			
None		ref	
1–3	0.29	[0.04, 2.39]	
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes	1.22	[0.24, 6.10]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.30	[0.04, 2.06]	

Continued...

Table A120—Continued

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	1.83	[0.40, 8.41]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	1.00	[0.24, 4.17]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	0.66	[0.13, 3.25]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes	0.43	[0.06, 3.28]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	2.43	[0.45, 12.95]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05  
Empty rows correspond to a very small sample size.

**Table A121 Associations of child anemia with health and environment factors in Madhesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madhesh province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines	0.22	[0.04, 1.09]	
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	2.44	[0.67, 8.81]	
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	1.19	[0.31, 4.54]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.50	[0.15, 1.72]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	1.03	[0.26, 4.06]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.92	[0.19, 4.47]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	2.40	[0.59, 9.73]	
<b>ANC visit</b>			
None		ref	
1–3	0.33	[0.06, 1.85]	
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes	0.99	[0.13, 7.24]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week	2.14	[0.37, 12.36]	
Access any of 3 media at least once a week	1.05	[0.29, 3.85]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.76	[0.04, 15.15]	

Continued...

Table A121—Continued

	Madhesh province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	1.93	[0.62, 5.98]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	0.38	[0.08, 1.72]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	0.89	[0.19, 4.20]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes	0.89	[0.20, 3.90]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	1.15	[0.36, 3.69]	

Empty rows correspond to a very small sample size.

**Table A122 Associations of child anemia with health and environment factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	0.43	[0.06, 3.19]	0.397
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	0.06	[0.01, 0.52]	0.012
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.01	[0.00, 0.64]	0.030
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.51	[0.02, 12.34]	0.671
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	2.15	[0.27, 16.80]	0.454
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other			
<b>ANC visit</b>			
None		ref	
1–3	0.17	[0.00, 11.10]	0.390
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.03	[0.00, 1.07]	

Continued...

Table A122—Continued

	Bagmati province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	0.08	[0.01, 1.17]	
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	1.32	[0.12, 14.70]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	0.03	[0.00, 0.79]	*

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A123 Associations of child anemia with health and environment factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines			
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other			
<b>ANC visit</b>			
None		ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes			
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs			

*Continued...*



Table A123—Continued

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes			
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A124 Associations of child anemia with health and environment factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines			
Child (12–23 months) received all basic vaccines		ref	
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	0.07	[0.00, 1.14]	
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources	0.16	[0.00, 6.27]	
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	0.20	[0.01, 5.78]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.03	[0.00, 1.58]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other			
<b>ANC visit</b>			
None		ref	
1–3	0.02	[0.00, 0.50]	*
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes	0.11	[0.01, 0.81]	*
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week	0.39	[0.04, 3.53]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs			

Continued...

Table A124—Continued

	Lumbini province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.13	[0.01, 1.84]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	0.06	[0.01, 0.45]	**
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes			
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	0.02	[0.00, 0.69]	*

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A125 Associations of child anemia with health and environment factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines	0.91	[0.23, 3.53]	
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	0.95	[0.23, 3.91]	
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	1.04	[0.21, 5.18]	
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	1.48	[0.34, 6.45]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation			
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.78	[0.18, 3.42]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	5.49	[1.60, 18.82]	**
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	0.66	[0.13, 3.36]	
<b>ANC visit</b>			
None		ref	
1–3	0.16	[0.01, 3.00]	
4 or more	0.48	[0.02, 9.41]	
<b>MIYCN counseling</b>			
No		ref	
Yes	1.74	[0.54, 5.62]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week	1.25	[0.18, 8.86]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	1.47	[0.26, 8.19]	

Continued...

Table A125—Continued

	Karnali province		
	OR	95% CI	p value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.58	[0.10, 3.34]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	0.13	[0.02, 0.70]	*
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes	0.38	[0.06, 2.48]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	0.46	[0.11, 1.83]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A126 Associations of child anemia with health and environment factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Vaccinations</b>			
Child (12–23 months) not received all basic vaccines		ref	
Child (12–23 months) received all basic vaccines	1.05	[0.07, 16.14]	
<b>Any illnesses</b>			
Child had no illness		ref	
Child had any illness	0.57	[0.13, 2.53]	
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources	0.25	[0.01, 8.93]	
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.97	[0.12, 7.84]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.30	[0.03, 3.36]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.22	[0.03, 1.76]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	1.08	[0.08, 14.41]	
<b>ANC visit</b>			
None		ref	
1–3			
4 or more	0.69	[0.03, 17.45]	
<b>MIYCN counseling</b>			
No		ref	
Yes	1.40	[0.32, 6.10]	
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week	0.59	[0.02, 14.61]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.18	[0.04, 0.73]	*

Continued...

Table A126—Continued

	Sudurpaschim province		
	OR	95% CI	<i>p</i> value
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	1.14	[0.24, 5.55]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>			
No		ref	
Yes	2.22	[0.46, 10.80]	
<b>Vit. A supplements for children age 6–59 in last 6 months</b>			
No		ref	
Yes	0.64	[0.07, 5.60]	
<b>Deworming for children age 12–59 in last 6 months</b>			
No		ref	
Yes	0.35	[0.09, 1.47]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A127 Associations of maternal anemia with socioeconomic factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.94	[0.51, 1.71]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	1.60	[0.64, 3.97]	
Middle	1.67	[0.62, 4.47]	
Fourth	1.53	[0.51, 4.62]	
Highest	0.92	[0.24, 3.51]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other	1.76	[0.65, 4.78]	
Dalit	1.06	[0.40, 2.81]	
Newar			
Janajati	0.67	[0.31, 1.44]	
Muslim	1.02	[0.45, 2.31]	
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	1.22	[0.39, 3.80]	
Some secondary/6–9 years schooling	0.71	[0.21, 2.40]	
SLC or higher/10 and above years of schooling	0.87	[0.28, 2.75]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	0.85	[0.36, 1.99]	
Agricultural	0.90	[0.55, 1.48]	
<b>Household size</b>			
4 or less		ref	
More than 4	2.27	[1.23, 4.21]	*
<b>Head of the household</b>			
Male		ref	
Female	0.88	[0.54, 1.44]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	1.26	[0.65, 2.47]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	1.33	[0.68, 2.59]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	1.04	[0.45, 2.39]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.



**Table A128 Associations of maternal anemia with socioeconomic factors in Madesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madesh province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.99	[0.56, 1.75]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	0.66	[0.25, 1.72]	
Middle	1.21	[0.45, 3.19]	
Fourth	1.39	[0.48, 4.04]	
Highest	2.37	[0.71, 7.92]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other	0.78	[0.24, 2.55]	
Dalit	1.43	[0.41, 4.97]	
Newar	1.87	[0.37, 9.51]	
Janajati	1.55	[0.40, 6.09]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	0.73	[0.36, 1.48]	
Some secondary/6–9 years schooling	1.02	[0.48, 2.17]	
SLC or higher/10 and above years of schooling	0.65	[0.29, 1.42]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	2.06	[0.94, 4.48]	
Agricultural	1.35	[0.82, 2.22]	
<b>Household size</b>			
4 or less		ref	
More than 4	1.18	[0.69, 1.99]	
<b>Head of the household</b>			
Male		ref	
Female	1.36	[0.62, 2.98]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	0.75	[0.42, 1.33]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	0.85	[0.50, 1.44]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	1.21	[0.73, 1.98]	

Empty rows correspond to a very small sample size.

**Table A129 Associations of maternal anemia with socioeconomic factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.63	[0.22, 1.80]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	1.08	[0.37, 3.18]	
Middle	0.46	[0.12, 1.77]	
Fourth	0.24	[0.06, 0.97]	*
Highest	0.20	[0.04, 0.93]	*
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other			
Dalit	0.45	[0.07, 3.00]	
Newar	1.07	[0.39, 2.90]	
Janajati	0.81	[0.36, 1.82]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	0.93	[0.19, 4.51]	
Some secondary/6–9 years schooling			
SLC or higher/10 and above years of schooling			
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	3.56	[0.94, 13.49]	
Agricultural	1.57	[0.44, 5.62]	
<b>Household size</b>			
4 or less		ref	
More than 4	1.47	[0.72, 2.98]	
<b>Head of the household</b>			
Male		ref	
Female	1.14	[0.48, 2.66]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	1.15	[0.46, 2.87]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	0.74	[0.29, 1.88]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	0.61	[0.19, 1.96]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A130 Associations of maternal anemia with socioeconomic factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	1.32	[0.43, 4.01]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	1.08	[0.41, 2.87]	
Middle	2.43	[0.73, 8.11]	
Fourth	1.21	[0.35, 4.20]	
Highest			
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other			
Dalit	2.05	[0.36, 11.73]	
Newar			
Janajati			
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	1.19	[0.13, 10.49]	
Some secondary/6–9 years schooling	2.22	[0.37, 13.33]	
SLC or higher/10 and above years of schooling	1.41	[0.23, 8.74]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	1.39	[0.32, 5.95]	
Agricultural	2.11	[0.31, 14.25]	
<b>Household size</b>			
4 or less		ref	
More than 4	0.82	[0.33, 2.04]	
<b>Head of the household</b>			
Male		ref	
Female	0.68	[0.32, 1.44]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	1.60	[0.55, 4.69]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	1.24	[0.36, 4.32]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	1.35	[0.19, 9.48]	

Empty rows correspond to a very small sample size.

**Table A131 Associations of maternal anemia with socioeconomic factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.62	[0.30, 1.28]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	1.94	[0.81, 4.68]	
Middle	1.97	[0.76, 5.09]	
Fourth	1.31	[0.45, 3.80]	
Highest	1.24	[0.37, 4.15]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other	3.18	[1.09, 9.29]	*
Dalit	1.40	[0.45, 4.29]	
Newar			
Janajati	2.37	[1.07, 5.25]	*
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	0.62	[0.30, 1.28]	
Some secondary/6–9 years schooling	0.67	[0.29, 1.59]	
SLC or higher/10 and above years of schooling	0.74	[0.28, 1.97]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	0.70	[0.32, 1.50]	
Agricultural	0.82	[0.43, 1.56]	
<b>Household size</b>			
4 or less		ref	
More than 4	1.14	[0.59, 2.21]	
<b>Head of the household</b>			
Male		ref	
Female	0.66	[0.34, 1.27]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	0.64	[0.35, 1.16]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	1.11	[0.55, 2.22]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	0.72	[0.28, 1.86]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A132 Associations of maternal anemia with socioeconomic factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.97	[0.49, 1.92]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	0.56	[0.25, 1.26]	
Middle	0.42	[0.10, 1.82]	
Fourth	1.50	[0.28, 8.08]	
Highest	0.27	[0.05, 1.40]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other			
Dalit	1.22	[0.60, 2.50]	
Newar			
Janajati	0.91	[0.36, 2.30]	
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	1.53	[0.56, 4.18]	
Some secondary/6–9 years schooling	1.14	[0.40, 3.24]	
SLC or higher/10 and above years of schooling	1.92	[0.60, 6.19]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	2.36	[0.73, 7.65]	
Agricultural	2.56	[0.88, 7.49]	
<b>Household size</b>			
4 or less		ref	
More than 4	0.76	[0.39, 1.47]	
<b>Head of the household</b>			
Male		ref	
Female	1.07	[0.57, 2.03]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	0.75	[0.40, 1.38]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	1.17	[0.58, 2.36]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	0.78	[0.32, 1.90]	

Empty rows correspond to a very small sample size.

**Table A133 Associations of maternal anemia with socioeconomic factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Socioeconomic factors</b>			
<b>Residence</b>			
Urban		ref	
Rural	0.64	[0.32, 1.29]	
<b>Wealth quintile</b>			
Lowest		ref	
Second	1.40	[0.54, 3.68]	
Middle	3.30	[1.25, 8.72]	*
Fourth	1.74	[0.61, 4.93]	
Highest	1.18	[0.25, 5.49]	
<b>Caste/ethnicity</b>			
Brahmin/Chhetri		ref	
Terai/Madheshi other			
Dalit	0.68	[0.29, 1.60]	
Newar			
Janajati	3.85	[1.70, 8.74]	**
Muslim			
<b>Mother's education</b>			
No education/no schooling		ref	
Primary/1–5 years of schooling	1.13	[0.40, 3.16]	
Some secondary/6–9 years schooling	1.34	[0.57, 3.14]	
SLC or higher/10 and above years of schooling	0.47	[0.15, 1.47]	
<b>Mother's occupation</b>			
Not working/domestic work		ref	
Non-agricultural	0.28	[0.06, 1.30]	
Agricultural	0.90	[0.36, 2.23]	
<b>Household size</b>			
4 or less		ref	
More than 4	1.28	[0.57, 2.88]	
<b>Head of the household</b>			
Male		ref	
Female	0.62	[0.28, 1.40]	
<b>Mother's decision-making</b>			
Cannot make decision		ref	
Can make decision	0.82	[0.37, 1.82]	
<b>Mother's internet use</b>			
Not used in past 12 months		ref	
Used in past 12 months	0.54	[0.25, 1.16]	
<b>Mother owns a mobile phone</b>			
No		ref	
Yes	0.77	[0.31, 1.89]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A134 Associations of maternal anemia with maternal factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.68	[0.12, 3.72]	
35–49	0.93	[0.06, 14.93]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)			
Overweight/obese (≥25)	2.15	[0.46, 10.11]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	1.34	[0.30, 5.98]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	0.28	[0.08, 0.94]	*
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	1.66	[0.62, 4.44]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	0.56	[0.11, 2.92]	
20 and above years	1.19	[0.15, 9.25]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.67	[0.09, 4.96]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A135 Associations of maternal anemia with maternal factors in Madesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madesh province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.88	[0.37, 2.12]	
35–49	0.55	[0.07, 4.47]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	1.50	[0.57, 3.96]	
Overweight/obese (≥25)	2.08	[0.54, 8.06]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.75	[0.25, 2.20]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval 3 or more	1.38	[0.63, 3.02]	
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.69	[0.32, 1.50]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	0.83	[0.22, 3.12]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	1.24	[0.61, 2.55]	
20 and above years	0.52	[0.08, 3.21]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.92	[0.29, 2.95]	

Empty rows correspond to a very small sample size.



**Table A136 Associations of maternal anemia with maternal factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.35	[0.08, 1.54]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.68	[0.12, 3.85]	
Overweight/obese (≥25)			
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval			
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.65	[0.11, 3.78]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	0.55	[0.04, 7.32]	
20 and above years	0.03	[0.00, 6.76]	
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above			

Empty rows correspond to a very small sample size.

**Table A137 Associations of maternal anemia with maternal factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34			
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)			
Overweight/obese (≥25)			
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval			
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups			
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years			
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above			

Empty rows correspond to a very small sample size.

**Table A138 Associations of maternal anemia with maternal factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.83	[0.21, 3.30]	
35–49			
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.49	[0.11, 2.10]	
Overweight/obese (≥25)	0.47	[0.08, 2.73]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.69	[0.09, 5.13]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	1.45	[0.35, 5.94]	
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.61	[0.16, 2.34]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	1.89	[0.23, 15.49]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	3.64	[0.95, 13.96]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	1.92	[0.57, 6.49]	

Empty rows correspond to a very small sample size.

**Table A139 Associations of maternal anemia with maternal factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	<i>p</i> value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.17	[0.05, 0.62]	**
35–49	0.42	[0.07, 2.52]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.65	[0.14, 3.15]	
Overweight/obese (≥25)	0.46	[0.04, 5.13]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm	0.27	[0.02, 4.58]	
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	1.58	[0.69, 3.60]	
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.89	[0.30, 2.64]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking	1.21	[0.32, 4.57]	
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	2.55	[0.80, 8.06]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.43	[0.11, 1.66]	

\*\*\**p*<.001, \*\**p*<.01, \**p*<.05

Empty rows correspond to a very small sample size.

**Table A140 Associations of maternal anemia with maternal factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Maternal factors</b>			
<b>Mother's age (in years)</b>			
15–24		ref	
25–34	0.50	[0.17, 1.46]	
35–49	0.74	[0.11, 4.78]	
<b>Mother's BMI</b>			
Underweight (<18.5)		ref	
Normal (18.5–24.9)	0.30	[0.07, 1.35]	
Overweight/obese (≥25)	0.30	[0.04, 2.11]	
<b>Mother's height</b>			
145 cm or more		ref	
Less than 145 cm			
<b>Birth interval</b>			
Less than 3 years		ref	
3 years or more or no preceding interval	0.62	[0.23, 1.67]	
3 or more			
<b>Mother's dietary diversity</b>			
Less than 5 food groups		ref	
5 or more food groups	0.41	[0.16, 1.08]	
<b>Mother's smoking status</b>			
Smoking		ref	
Non-smoking			
<b>Age at marriage</b>			
Up to age 15 years		ref	
16–19 years	2.89	[0.55, 15.15]	
20 and above years			
<b>Age at first birth</b>			
Less than 20 years		ref	
20 and above	0.63	[0.21, 1.96]	

Empty rows correspond to a very small sample size.

**Table A141 Associations of maternal anemia with health and environment factors in Koshi province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Koshi province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment			
Treatment with appropriate method	1.49	[0.33, 6.70]	
<b>Sources of drinking water</b>			
Unimproved sources			
Improved sources	0.09	[0.00, 3.79]	
<b>Handwashing</b>			
Household with no soap and water			
Household with soap and water	0.84	[0.13, 5.29]	
<b>Sanitation</b>			
Unimproved sanitation			
Improved sanitation	0.11	[0.00, 6.39]	
<b>Use of cooking fuel</b>			
Solid fuel			
Clean fuel	1.02	[0.18, 5.68]	
<b>Access to government health facility</b>			
<30 min			
30–60 min	0.52	[0.16, 1.70]	
60+ min			
<b>Place of delivery</b>			
Health facility			
Home/other	0.40	[0.06, 2.94]	
<b>ANC visit</b>			
None			
1–3	3.27	[0.75, 14.23]	
4 or more			
<b>MIYCN counseling</b>			
No			
Yes	1.16	[0.31, 4.32]	
<b>Health mother's group in the ward</b>			
No		ref	
Yes	0.50	[0.10, 2.43]	
<b>Receipt of child grant</b>			
No		ref	
Yes	1.68	[0.41, 6.99]	
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	0.82	[0.28, 2.43]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes	0.67	[0.23, 1.96]	

Continued...

**Table A141—Continued**

	Koshi province		
	OR	95% CI	<i>p</i> value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week	0.79	[0.16, 4.01]	
Access any of 3 media at least once a week	0.54	[0.08, 3.45]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.60	[0.06, 5.57]	
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.33	[0.07, 1.50]	
<b>Deworming medication during last pregnancy</b>			
No			
Yes			

Empty rows correspond to a very small sample size.

**Table A142 Associations of maternal anemia with health and environment factors in Madesh province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Madesh province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	0.97	[0.39, 2.44]	
<b>Sanitation</b>			
Unimproved sanitation			
Improved sanitation	0.54	[0.17, 1.76]	
<b>Use of cooking fuel</b>			
Solid fuel			
Clean fuel	1.37	[0.36, 5.17]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.45	[0.08, 2.49]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	1.10	[0.26, 4.73]	
<b>ANC visit</b>			
None		ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No			
Yes	0.71	[0.10, 4.75]	
<b>Health mother's group in the ward</b>			
No		ref	
Yes	1.36	[0.48, 3.88]	
<b>Receipt of child grant</b>			
No		ref	
Yes	1.25	[0.61, 2.53]	
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	0.98	[0.53, 1.84]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes	1.22	[0.56, 2.67]	

Continued...



Table A142—Continued

	Madesh province		
	OR	95% CI	<i>p</i> value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week	0.89	[0.18, 4.42]	
Access any of 3 media at least once a week	0.41	[0.12, 1.45]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.55	[0.04, 7.86]	
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.48	[0.13, 1.74]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	1.17	[0.31, 4.37]	

Empty rows correspond to a very small sample size.

**Table A143 Associations of maternal anemia with health and environment factors in Bagmati province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Bagmati province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.01	[0.00, 0.29]	*
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.12	[0.01, 2.11]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min			
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other			
<b>ANC visit</b>			
None		ref	
1–3			
4 or more	0.00	[0.00, 2.41]	
<b>MIYCN counseling</b>			
No		ref	
Yes	0.38	[0.01, 15.12]	
<b>Health mother's group in the ward</b>			
No		ref	
Yes	2.57	[0.58, 11.49]	
<b>Receipt of child grant</b>			
No		ref	
Yes			
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	3.61	[0.93, 14.00]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes			

Continued...

Table A143—Continued

	Bagmati province		
	OR	95% CI	<i>p</i> value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs			
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No			
Yes	0.46	[0.04, 4.89]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A144 Associations of maternal anemia with health and environment factors in Gandaki province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Gandaki province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method			
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources			
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	0.47	[0.03, 8.24]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.22	[0.01, 7.50]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel			
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.44	[0.03, 6.05]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other			
<b>ANC visit</b>			
None		ref	
1–3			
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes			
<b>Health mother's group in the ward</b>			
No		ref	
Yes			
<b>Receipt of child grant</b>			
No		ref	
Yes			
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes			
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes			

Continued...

**Table A144—Continued**

	Gandaki province		
	OR	95% CI	<i>p</i> value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs			
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes			
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			

Empty rows correspond to a very small sample size.

**Table A145 Associations of maternal anemia with health and environment factors in Lumbini province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Lumbini province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	0.14	[0.02, 0.96]	*
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources	1.40	[0.20, 9.60]	
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	0.89	[0.20, 4.02]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.24	[0.04, 1.48]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.71	[0.21, 2.40]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.79	[0.16, 3.91]	
60+ min	0.40	[0.02, 10.03]	
<b>Place of delivery</b>			
Health facility		ref	
Home/other	1.64	[0.23, 11.89]	
<b>ANC visit</b>			
None		ref	
1–3	2.04	[0.35, 11.73]	
4 or more			
<b>MIYCN counseling</b>			
No		ref	
Yes	2.21	[0.58, 8.45]	
<b>Health mother's group in the ward</b>			
No		ref	
Yes	1.31	[0.35, 4.86]	
<b>Receipt of child grant</b>			
No		ref	
Yes	1.49	[0.40, 5.56]	
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	1.13	[0.33, 3.83]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes	0.63	[0.23, 1.74]	

Continued...

Table A145—Continued

	Lumbini province		
	OR	95% CI	p value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week	2.21	[0.51, 9.51]	
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	1.20	[0.19, 7.72]	
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	1.13	[0.34, 3.73]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	2.14	[0.45, 10.07]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A146 Associations of maternal anemia with health and environment factors in Karnali province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Karnali province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	0.42	[0.10, 1.66]	
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources	1.24	[0.03, 61.16]	
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water	2.52	[0.63, 10.13]	
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.53	[0.04, 6.43]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.62	[0.07, 5.25]	
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	2.76	[0.60, 12.85]	
60+ min	0.77	[0.13, 4.56]	
<b>Place of delivery</b>			
Health facility		ref	
Home/other	0.63	[0.16, 2.53]	
<b>ANC visit</b>			
None		ref	
1–3	0.25	[0.01, 5.43]	
4 or more	0.36	[0.03, 4.45]	
<b>MIYCN counseling</b>			
No		ref	
Yes	0.57	[0.20, 1.59]	
<b>Health mother's group in the ward</b>			
No		ref	
Yes	0.22	[0.08, 0.56]	**
<b>Receipt of child grant</b>			
No		ref	
Yes	0.67	[0.24, 1.89]	
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	0.86	[0.32, 2.34]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes	0.73	[0.32, 1.66]	

Continued...



Table A146—Continued

	Karnali province		
	OR	95% CI	p value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week	1.78	[0.26, 12.02]	
Access any of 3 media at least once a week	1.58	[0.23, 11.01]	
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.17	[0.03, 1.10]	
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.55	[0.11, 2.90]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes	0.33	[0.06, 1.78]	

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Table A147 Associations of maternal anemia with health and environment factors in Sudurpaschim province: Results from multivariate logistic regression, 2022 Nepal DHS**

	Sudurpaschim province		
	OR	95% CI	p value
<b>Health and environment factors</b>			
<b>Treatment of water before drinking</b>			
No treatment		ref	
Treatment with appropriate method	0.74	[0.10, 5.57]	
<b>Sources of drinking water</b>			
Unimproved sources		ref	
Improved sources	0.02	[0.00, 1.14]	
<b>Handwashing</b>			
Household with no soap and water		ref	
Household with soap and water			
<b>Sanitation</b>			
Unimproved sanitation		ref	
Improved sanitation	0.14	[0.01, 3.43]	
<b>Use of cooking fuel</b>			
Solid fuel		ref	
Clean fuel	0.01	[0.00, 0.37]	*
<b>Access to government health facility</b>			
<30 min		ref	
30–60 min	0.18	[0.02, 2.01]	
60+ min			
<b>Place of delivery</b>			
Health facility		ref	
Home/other	2.34	[0.14, 39.70]	
<b>ANC visit</b>			
None		ref	
1–3			
4 or more	2.81	[0.12, 68.61]	
<b>MIYCN counseling</b>			
No		ref	
Yes			
<b>Health mother's group in the ward</b>			
No		ref	
Yes	0.85	[0.27, 2.68]	
<b>Receipt of child grant</b>			
No		ref	
Yes	0.66	[0.20, 2.16]	
<b>Counseling about breastfeeding during ANC</b>			
No		ref	
Yes	1.28	[0.39, 4.17]	
<b>Counseling about breastfeeding during PNC</b>			
No		ref	
Yes	2.09	[0.74, 5.94]	

Continued...

Table A147—Continued

	Sudurpaschim province		
	OR	95% CI	p value
<b>Mother's media exposure</b>			
Access none of the 3 media (radio, television or newspaper) at all		ref	
Access any of 3 media less than once a week			
Access any of 3 media at least once a week			
<b>Exposure to TV/radio health and nutrition program</b>			
Heard/seen none of the TV/radio H&N programs		ref	
Heard/seen any one of the TV/radio H&N programs	0.07	[0.01, 0.80]	*
<b>Iron-containing supplements during last pregnancy</b>			
No		ref	
Yes	0.58	[0.05, 6.56]	
<b>Deworming medication during last pregnancy</b>			
No		ref	
Yes			

\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$

Empty rows correspond to a very small sample size.

**Figure A1 Heat map of socioeconomic factors associated with the greatest and smallest changes in the prevalence of underweight in each province, 2016–2022 Nepal DHS surveys**

Socioeconomic factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpas chim
<b>Wealth quintile</b>							
Lowest	-0.8	-20.7	-29.0	11.1	-4.9	-22.0	-17.0
Second	-21.1	-7.1	4.9		-0.3		-11.3
Middle	-7.3	-12.4	16.7	-2.3	-26.4		-23.0
Fourth	-13.3	-9.3	0.4	0.0	5.7		
Highest	-12.2	-11.8	4.3	-3.0	15.4		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	-11.4		2.0	1.5	-7.3	-24.4	-13.6
Terai/Madheshi other		-11.4			0.4		
Dalit	-25.4	-4.4	8.6	-12.4	-0.7		-23.0
Newar			11.6				
Janajati	-7.0	1.7	-11.3	12.3	-6.0		-7.0
Muslim	-21.6	-14.9					
<b>Mother's education</b>							
No education/no schooling	-18.8	-9.2	-18.0		5.3	-18.5	-7.7
Primary/1–5 years of schooling	-0.9	-11.5	-4.1	15.4	-2.3		-25.0
Some secondary/6–9 years of schooling	-3.9	-4.4	10.0	1.7	-5.9	-15.0	-12.6
SLC or higher/10 and above years of schooling	-17.4	-6.8	2.4	-3.2	4.1	-17.1	-8.9
<b>Mother's occupation</b>							
Not working	-11.0	-6.5	2.1	0.9	7.4		-11.3
Non-agricultural	-25.6	-22.9	-0.9		5.6		-14.4
Agricultural	-7.7	-11.6	-8.7	1.0	-11.2	-24.5	-14.0
<b>Household size</b>							
4 or less	-4.9	-8.2	-0.4	5.0	-8.1	-15	-14.7
More than 4	-16.0	-9.5	-5.9	-0.2	1.0	-19.3	-12.6
<b>Head of the household</b>							
Male	-7.8	-8.6	-4.4	5.3	0.1	-18.7	-13.1
Female	-20.3	-11.1	-2.0	-3.0	-10.3	-16.5	-13.8
<b>Mother's decision-making</b>							
Cannot make decision	-6.9	-11.8	-3.7	7.4	3.8	-14.1	-15.6
Can make decision	-16.8	-8.5	1.1	3.0	-6.4	-23.8	-12.3
<b>Mother's internet use</b>							
Not used in past 12 months	-9.1	-5.0	0.9	9.1	-1.1	-14.2	-11.5
Used in past 12 months	-6.5	-8.3	4.5	1.5	7.4		
<b>Mother owns a mobile phone</b>							
No	-15.0	-16.6	-23.1		22.3		-26.5
Yes	-8.7	-6.4	0.2	3.6	-8.5	-16.8	-8.8

SLC = School Leaving Certificate

Note: Empty cells correspond to less than 25 observations.

Color legend: green = lowest; white = midpoint; red = highest.

**Figure A2 Heat map of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of underweight in each province, 2016–2022 Nepal DHS surveys**

Child-intrinsic and nutritional factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
<b>Age of child (in months)</b>							
<6 months	-3.8	-4.8	3.0		2.2		
6–11	-6.0	-1.2	3.2		-18.5		
12–17	-22.3	-4.8	-2.1		6.8		
18–23	-7.9	-24.2	-17.7		9.1		
24–35	-14.7	-6.7	-0.7	4.8	0.4	-20.4	-12.3
36–47	-9.3	-6.2	-0.1	-1.4	-16.3	-15.2	-11.9
48–59	-16.6	-16.8	-3.4	1	-3.8	-21.9	-17.1
<b>Sex of child</b>							
Male	-9.1	-12.9	-5.6	-4.4	-5.8	-18.6	-12.2
Female	-13.6	-6.0	1.1	0.8	-1.0	-17.1	-14.3
<b>Birthweight</b>							
Small (<2.5 kg)	-22.8				12.9		
Normal (2.5–3.49 kg)	-10.9	-1.7	3.7	-1.5	3.7	-15.1	-13.0
Large (≥3.5 kg)	-12.5	1.2	-0.2		-4.0		-8.4
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	-19.1	-9.5	-7.0	-7.4	3.7		
Child was breastfed within 1 hour of birth	0.1	-12.0	0.1		0.2	-7.2	-12.7
<b>Current breastfeeding status</b>							
Currently not breastfeeding	-8.8	-7.0	-3.7	-1.9	-3.0	-16.2	-11.1
Currently breastfeeding	-12.9	-11.8	-1.5	-1.6	-2.5	-18.9	-14.6
<b>Exclusive breastfeeding</b>							
Child was not exclusively breastfed							
Child was exclusively breastfed		-8.1					
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	-9.4	-11.0	-11.3		-2.3		-23.4
Child was fed with minimum dietary diversity	-12.1	-9.2	-1.3	-2.8	4.6	-14.1	-7.0
<b>Minimum meal frequency</b>							
Child was not fed meals recommended minimum number of times		-2.3					
Child was fed meals recommended minimum number of times	-15.0	-14.8	-6.1	1.1	4.0		-16.2
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	-7.6	-8.4	-10.1		1.2	-18.5	-19.7
Child was fed with recommended minimum acceptable diet	-18	-16.5	-1.7		1.6		

Note: Empty cells correspond to less than 25 observations.

Color legend: green = lowest; white = midpoint; red = highest.

**Figure A3 Heat map of maternal factors associated with the greatest and smallest changes in the prevalence of underweight in each province, 2016–2022 Nepal DHS surveys**

Maternal factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpas chim
<b>Mother's age (in years)</b>							
15–24	-4.5	-6.0	5.8	5.3	1.7	-11.9	-10.9
25–34	-18.4	-10.7	-7.7	-0.2	-6.8	-23.7	-14.3
35–49	-5.7	-23.6	-6.6		-3.8		
<b>Mother's BMI</b>							
Underweight (<18.5)	-12.3	-8.9			0.7		-20.8
Normal (18.5–24.9)	-10.5	-8.9	0.5	2.2	-3.7	-18.1	-12.0
Overweight/obese (≥25)	-7.3		-0.5	4.9	1.5		
<b>Mother's height</b>							
Less than 145 cm	-26.8	-3.9			-0.1		
145 cm or more	-8.9	-10.2	-1.1	1.5	-3.0	-16.7	-11.0
<b>Age at first marriage or union</b>							
<16 years	0.8	-2.2	-11.3	4.0	-17.2	-19.1	-10.1
16–19 years	-11.6	-12.1	-1.1	1.8	2.6	-20.0	-12.8
20 and above years	-16.1	-14.9	-0.5	2.0	-0.2	-9.7	-14.5
<b>Age at first birth</b>							
<20 years	-10.1	-5.9	-2.6	4.2	-7.3	-20.3	-10.9
20 and above	-11.9	-17.0	-1.7	0.5	1.2	-14.8	-16.2
<b>Birth interval</b>							
Less than 3 years	-5.6	-7.5	-7.1	-10.0	-6.4	-22.8	-5.1
3 years or more or no preceding interval	-10.8	-6.1	-4.8	4.8	-6.8	-16.3	-11.6
<b>Mother's minimum dietary diversity</b>							
Less than 5 food groups	-9.4	-5.3	-7.0	3.4	-1.6	-19.0	-13.0
5 or more food groups	-0.4	-29.5	4.3	4.5	-2.6	-9.9	-13.2
<b>Mother's smoking status</b>							
Smoking			-4.4				
Non-smoking	-11.8	-10.4	-2.2	4.0	-4.2	-16.7	-12.3

Note: Empty cells correspond to less than 25 observations.  
Color legend: green = lowest; white = midpoint; red = highest.

**Figure A4 Heat map of health and environment factors associated with the greatest and smallest changes in the prevalence of underweight in each province, 2016–2022 Nepal DHS surveys**

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
<b>Vaccinations</b>							
Child (12–23 months) not received all basic vaccines	-10.5	-6.8	-2.5	4.3	-7.8	-19.1	-14.0
Child (12–23 months) received all basic vaccines	-12.1	-16.2	-2.4	-0.7	3.8	-16.1	-11.8
<b>Any illnesses</b>							
Child had no illness	-5.9	-10.6	-3.6	4.5	3.3	-20	-10.5
Child had any illness	-18.1	-8.3	1.1	-2.6	-13.7	-16.3	-18.3
<b>Treatment of water before drinking</b>							
No treatment	-9.8	-9.2	0.3	4.4	-1.9	-14	-13.7
Treatment with appropriate method	-11.3		-7.8	-2.4	-3.7		
<b>Sources of drinking water</b>							
Unimproved sources							
Improved sources	-11.4	-9.6	-0.7	2.1	-1.8	-18.7	-11.7
<b>Household with soap and water at handwashing station</b>							
No	-10.0	-8.9	-6.6	18.9	-3.0	-15.6	-9.9
Yes	-8.0	-1.6	3.3	2.1	8.2	-13.2	-11.9
<b>Sanitation</b>							
Unimproved sanitation	-24.0	-12.7	-20.8		2.9		
Improved sanitation	-6.6	-3.6	0.6	2.4	-2.6	-19.0	-12.1
<b>Use of cooking fuel</b>							
Solid fuel	-11.7	-9.2	-4.2	2.5	-3.3	-18.0	-12.8
Clean fuel	-8.9	-3.3	2.5	3.6	-0.7		-13.1
<b>Distance to nearest health care facility</b>							
<30 min	-13.2	-9.4	4.0	3.6	-1.0	-26.6	-12.6
30–60 min	-13.5	-6.8	-8.0	4.1	-1.3	-16.4	-13.1
60+ min	7.9		-5.8				
<b>Place of delivery</b>							
Health facility	-11.2	-1.5	3.7	-4.9	5.0	-10.8	-10.7
Home/other	-9.8	-9.3	-14	28.9	-4.4	-19	
<b>Number of ANC visits</b>							
None							
1–3	-14.6	-17.9					
4 or more	-9.3	-3.0	-2.0	-1.8	3.9	-16.7	-9.3
<b>MIYCN counseling</b>							
No	-16.6	-8.4	-4.8	-3.1	-1.2	-18.2	-15.1
Yes	-0.6	-14.3	-3.4	8.1	3.4	-28.6	-20.5
<b>Health mother's groups in the ward</b>							
No	-6.3	-11.4	-5.4	3.4	-2.9	-8.0	-25.8
Yes	-24.2	-0.1	0.3	4.6	-8.6	-22.8	-6.7

Continued...

Figure A4—Continued

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudurpaschim
<b>Counseling about breastfeeding during PNC visits</b>							
No	-14.4	-15.2	-10.5	10.7	-14.1	-17.9	-17.8
Yes	-9.6	-1.1	2.7	-7.6	8.9	-12.8	-10.5
<b>Mother's media exposure</b>							
Access none of the 3 media (radio, television or newspaper) at all	-13.0	-16.6	-14.6		-7.7	-12.6	-31.5
Access any of 3 media less than once a week	-20.6	-14.8	-16.6	0.6.0	0.6	-24.9	-4.3
Access any of 3 media at least once a week	-7.2	-3.1	4.2	2.2	-4.7	-13.2	-11.5
<b>Exposure to TV/radio health and nutrition program</b>							
Heard/seen none of the TV/radio H&N programs	-14.1	-9.3	-20.4	-3.3	-6.6	-20.3	-16.2
Heard/seen any one of the TV/radio H&N programs	-12.3	-16.7	10.4	12.3	-5.5	-16.1	-10.8
<b>Iron-containing supplements during last pregnancy</b>							
No	-6.7	-11.3	6.0	11.4	8.4	-14.1	-12.2
Yes	-11.9	-2.7	-7.5	-9.7	0.2	-17.9	-13.7
<b>Deworming medication during last pregnancy</b>							
No	-26.0	-14.8	2.9		1.4		
Yes	-7.2	-7.3	-6.4	-1.1	1.3	-15.3	-11.6
<b>Iron-containing MNP supplements for children age 6–23 months in past 12 months</b>							
No	-15.4	-6.7	-10.9	2.5	3.6	-20.1	-24.0
Yes			6.9				
<b>Vitamin A supplements for children age 6–59 months in past 6 months</b>							
No	-16.5	-2	2.4		-8.1		
Yes	-10.8	-11.6	-3.7	1.7	-3.2	-16.9	-13.1
<b>Deworming for children age 12–59 months in past 6 months</b>							
No	-25.5	-5.7	-0.4		-0.5		-14.5
Yes	-9.6	-12.5	-4.0	2.2	-2.4	-17.6	-12.3

ANC = antenatal care; H&N = health and nutrition; MIYCN = maternal, infant, and young child nutrition; MNP = micronutrient powder; PNC = postnatal care

Note: Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest



**Figure A5 Heat map of socioeconomic factors associated with the greatest and smallest changes in the prevalence of child anemia in each province, 2016–2022 Nepal DHS surveys**

Socioeconomic factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Wealth quintile</b>							
Lowest	-7.9		5.3	-15.5	-0.7	-11.2	-8.1
Second	-21.4	-2.7	8.6		-2.0		4.3
Middle	-27.9	-3.2	7.6	-21.6	-18.5		
Fourth	-21.8	-17.1	9.7	-13.0	3.4		
Highest	-8.9	-15.9	-5.7		1.7		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	-22.2		-1.0	-28.8	5.8	-7.0	-11.8
Terai/Madheshi other		-12.3			-8.2		
Dalit		-3.5	4.8	-9.1	-14.2		12
Newar			4.7				
Janajati	-14.0	-0.6	3.1	-9.6	-2.9		3.4
Muslim	-42.5	-0.5				0.0	
<b>Mother's education</b>							
No education/no schooling	-23.0	-3.6	7.2		-1.2	-18.9	3.6
Primary /1–5 years of schooling	-21.8	-16.9	3.0	-3.7	-4.1		
Some secondary/6–9 years of schooling	-13.4	-19.7	0.5	-19.8	-11.5	4.2	-9.1
SLC or higher/10 and above years of schooling	-17.0	2.0	1.3	-15.5	7.8	2.0	-13.6
<b>Mother's occupation</b>							
Not working	-16.7	-15.1	2.3	-18.9	1.8		-11.7
Non-agricultural	-27.6	17.5	-4.9		-9.5		
Agricultural	-16.7	-2.9	3.4	-14.0	-4.4	-3.5	-1.6
<b>Household size</b>							
4 or less	-25.3	-7.3	1.4	-18.2	-4.6	-3.5	-3.3
More than 4	-14.8	-7.8	0.7	-11.3	-2.2	-8.0	-4.8
<b>Head of the household</b>							
Male	-17.0	-9.4	7	-15.1	-6.2	-3.6	-0.6
Female	-26.3	-5.0	-10.3	-12.3	0.4	-9.6	-9.3
<b>Mother's decision-making</b>							
Cannot make decision	-10.2	-9.8	-9.4		-0.1	-8.8	-2.6
Can make decision	-25.5	-3.7	4.1	-19.7	-4.1	-1.0	-4.1
<b>Mother's internet use</b>							
Not used in past 12 months	-20.5	-5.0	11.0	-9.1	-7.6	-6.9	-1.0
Used in past 12 months	-13.5	-6.9	0.6	-12.7	10.3		
<b>Mother owns a mobile phone</b>							
No	-28.3	-0.1	9.1		-19.1		-5.3
Yes	-16.5	-10.8	0.9	-13.7	1.9	0.3	-3.3

Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest

**Figure A6 Heat map of child-intrinsic and nutritional factors associated with the greatest and smallest changes in the prevalence of child anemia in each province, 2016–2022 Nepal DHS surveys**

Child-intrinsic and nutritional factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Age of child (in months)</b>							
6–11	-3.5	-10.9	0.7		6.5		
12–17	-19.8	0.3	12.4		-10.8		
18–23	-26.0	4.4	-9.9		11.7		
24–35	-7.1	-11.1	-0.7	-17.5	-10.4	-3.4	-2.9
36–47	-26.5	-12.4	12.4	-13.3	-4.6	-14.3	-18.5
48–59	-17.8	-6.3	-11.7	-2.0	-4.0	-4.4	-1.8
<b>Sex of child</b>							
Male	-12.0	-4.7	-6.7	-22.0	0.0	-12.6	1.2
Female	-26.6	-12.1	11.5	-6.5	-8.7	-0.3	-9.7
<b>Birthweight</b>							
Small (<2.5 kg)	8.4				5.9		
Normal (2.5–3.49 kg)	-7.6	7.9	14.7	4.7	9.7	10.4	4.8
Large (≥3.5 kg)	-10.4	1.2	0.2		3.2		
<b>Early initiation of breastfeeding</b>							
Child was not breastfed within 1 hour of birth	-15.7	-3.6	5.6	-6.4	0.2		
Child was breastfed within 1 hour of birth	-12.3	0.8	3.7		5.3	-10.0	9.9
<b>Current breastfeeding status</b>							
Currently not breastfeeding	-22.7	-7.2	7.3	-8.1	-1.7	-8.7	-3.1
Currently breastfeeding	-11.9	-6.1	-3.6	-3.6	-2.6	1.6	-1.7
<b>Minimum dietary diversity</b>							
Child was not fed with minimum dietary diversity	-5.4	-0.8	14.4		8.7		5.9
Child was fed with minimum dietary diversity	-24.6	-4.5	-5.6	-0.6	-2.0	-2.5	0.1
<b>Minimum meal frequency</b>							
Child was not fed meal with recommended minimum number of times		-6.2					
Child was fed meal with recommended minimum number of times	-17.1	0.2	-2.1	-6.4	6.5	-5.9	1.8
<b>Minimum acceptable diet</b>							
Child was not fed with recommended minimum acceptable diet	-7.2	-1.3	8.3	-3.4	8.2	-6.0	0.4
Child was fed with recommended minimum acceptable diet	-23.7	-3.2	-0.6	-0.8	-0.8		

Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest

**Figure A7 Heat map of maternal factors associated with the greatest and smallest changes in the prevalence of child anemia in each province, 2016–2022 Nepal DHS surveys**

Maternal factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Mother's age (in years)</b>							
15–24	-21.3	-5.1	-2.8	-18.5	-1.0	-5.4	1.0
25–34	-20.8	-12.3	3.9	-9.4	-6.1	-10.7	-10.3
35–49	-7.5	-4.9	6.3		-2.4		
<b>Mother's BMI</b>							
Underweight (<18.5)	-23.9	-9.5			-1.7		4.5
Normal (18.5–24.9)	-19.4	-7.5	7.4	-14	-7.2	-5.6	-6.6
Overweight/obese (≥25)	-17.3		-4.2	-11	11.3		
<b>Mother's height</b>							
Less than 145 cm	-3.1	-37.0			-34.3		
145 cm or more	-21.2	-4.2	-1.1	-14.3	-0.6	-6.8	-3.4
<b>Age at first marriage or union</b>							
<16 years	-11.8	-14.4		-0.5	-19.3	-1.6	-5.1
16–19 years	-21.6	-5.1	0.9	-18.3	-2.6	-16.1	-8.6
20 and above years	-20.0	-5.6	6.1	-14	5.3	12.8	0.1
<b>Age at first birth</b>							
<20 years	-16.1	-9.6	0.3	-13.6	-15.6	-6.0	-5.4
20 and above	-22.1	-4.7	2.3	-14.3	6.2	-5.7	-4.9
<b>Birth interval</b>							
Less than 3 years	-23.6	-9.3	6.5		2.3	-10.9	3.8
3 years or more or no preceding interval	-11.6	-14.2	-0.5	-12.3	-7.2	-0.7	-17.0
<b>Mother's minimum dietary diversity</b>							
Less than 5 food groups	-12.3	-6.3	12.3	-9.8	-1.1	-6.1	-1.4
5 or more food groups	-36.9	-13.0	-18.8	-21.8	-8.1	-13.3	-15.8
<b>Mother's smoking status</b>							
Smoking	-25.3		33.1				
Non-smoking	-18.9	-8.2	-1.5	-15.3	-6.1	-4.8	-4.0

Empty cells correspond to less than 25 observations.  
Color legend: green=lowest; white=midpoint; red=highest

**Figure A8 Heat map of health and environment factors associated with the greatest and smallest changes in the prevalence of child anemia in each province, 2016–2022 Nepal DHS surveys**

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Vaccinations</b>							
Child (12–23 months) not received all basic vaccines	-21.1	-6.1	1.1	-13.1	-7.6	-7.8	-8.9
Child (12–23 months) received all basic vaccines	-15.8	-13.5	1.2	-10.3	0.8	-2.7	-1.1
<b>Any illnesses</b>							
Child had no illness	-22.1	-7.3	1.3	-16.8	-1.8	-4.9	-4.9
Child had any illness	-15.3	-9.7	0.9	-8.2	-8.7	-16.0	-6.4
<b>Treatment of water before drinking</b>							
No treatment	-19.7	-7.8	0.0	-14.2	-4.7	-9.9	-4.0
Treatment with appropriate method	-18.3		1.3	-13.9	2.5		-8.3
<b>Sources of drinking water</b>							
Unimproved sources							
Improved sources	-19.7	-8.6	2.0	-14.2	-5.2	-6.8	-5.2
<b>Household with soap and water at handwashing station</b>							
No	-18.5	-5.4	10.2	-15.4	-9.4	-5.9	-2.2
Yes	-16.6	-11.0	1.3	-6.3	1.7	-3.1	-7.7
<b>Sanitation</b>							
Unimproved sanitation	-34.3	0.9	-20.2		1.2		
Improved sanitation	-16.0	-9.4	3.8	-13.4	-3.1	-6.6	-5.0
<b>Use of cooking fuel</b>							
Solid fuel	-19.6	-7.5	-0.2	-11.9	-5.9	-6.8	-4.3
Clean fuel	-18.6	-3.8	4.0	-14.4	0.7		
<b>Distance to nearest health care facility</b>							
<30 min	-21.5	-6.5	1.1	-19.3	-0.8		-7.8
30–60 min	-23.4	-13.9	-7.1	-7.2	-8.8	-1.1	-6.1
60+ min	-1.4		18.0				
<b>Place of delivery</b>							
Health facility	-7.0	6.5	7.5	2.0	4.2	16.1	1.5
Home/other	6.6	-2.2	14.5		18.7	-3.1	
<b>Number of ANC visits</b>							
None							
1–3	-20.4	-9.1					
4 or more	-2.7	-3.3	9.3	2.9	8.8	4.5	2.4
<b>MIYCN counseling</b>							
No	-1.4	1.2	11.8	4.6	12.3	0.3	8.3
Yes	-7.6		38.5	-2.9	8.8	7.7	10.7
<b>Health mother's groups in the ward</b>							
No	-18.3	-10.1	1.7	-9.2	-15.8	0.5	2.7
Yes	-17.1	-2.7	-9.7	-22.2	0.7	-8.8	-4.5

Continued...

Figure A8—Continued

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Counseling about breastfeeding during PNC visits</b>							
No	-0.7	27.8	10.4	4.0	-3.5	2.7	7.1
Yes	-8.1	21.4	4.5	-2.3	6.1	7.2	0.8
<b>Mother's media exposure</b>							
Access none of the 3 media (radio, television or newspaper) at all	-36.5	-2.5	9.4	-21.4	-20.6	-24.2	0.2
Access any of 3 media less than once a week	-16.3	-13.2	-0.7	-15.1	-11.9	-1.3	-6.1
Access any of 3 media at least once a week	-16.2	-12.4	-1.5	-13.1	7.7	1.3	-4.4
<b>Exposure to TV/radio health and nutrition program</b>							
Heard/seen none of the TV/radio H&N programs	-21.6	-7.4	10.8	-13.7	-16.0	-12.0	0.8
Heard/seen any one of the TV/radio H&N programs	-20.2	-7.3	-9.4	-13.0	2.6	-2.1	-10.4
<b>Iron-containing supplements during last pregnancy</b>							
No	-3.5	-7.2	11.7		-7.1	6.3	8.5
Yes	-7.0	2.6	6.8	-3.4	12.1	3.2	1.1
<b>Deworming medication during last pregnancy</b>							
No	-10.4	5.0	11.0		8.9		
Yes	-3.0	-6.1	3.6	-2.0	1.6	3.7	3.0
<b>Iron containing MNP supplements for children age 6–23 in last 12 months</b>							
No	-10.2	-1.7	2.6	-3.5	10.3	-4.3	7.4
Yes			9.6				
<b>Vitamin A supplements for children age 6–59 in last 6 months</b>							
No	-17	-7.7	2.8		-3.2		
Yes	-20.2	-8.6	1.1	-14.0	-3.8	-8.7	-4.7
<b>Deworming for children age 12–59 in last 6 months</b>							
No	-18.2	4.0	6.1		1.1		-15.8
Yes	-20.1	-8.7	0.3	-16.0	-2.4	-9.2	-3.5

Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest

**Figure A9 Heat map of socioeconomic factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province, 2016–2022 Nepal DHS surveys**

Socioeconomic factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Wealth quintile</b>							
Lowest	-18.8		5.3	1.9	-2.9	-9.8	-18.5
Second	-15.0	-20.2	19.3		1.1		-8.4
Middle	-19.6	-4.6	9.4	5.1	6.3		-5.4
Fourth	-12.9	-2.5	-2.1	-8.0	-1.8		
Highest	-34.1	17.6	-19.0	-4.4	9.1		
<b>Caste/ethnicity</b>							
Brahmin/Chhetri	-20.2		-12.5	-23.9	-9.9	-12.5	-19.5
Terai/Madheshi other		-11.5			5.9	0.0	
Dalit	-27.7	-7.2	10.3	-1.1	4.5		-13.9
Newar			-0.2			0.0	
Janajati	-19.2	0.9	1.0	11.3	2		4.2
Muslim	-26.5	-0.5				0.0	
<b>Mother's education</b>							
No education/no schooling	-21.9	-5.3	-5.7		14.9	-17.9	-11.1
Primary /1–5 years of schooling	-17.9	-20.9	-5.0	-4.1	2.6	-2.4	4.8
Some secondary/6–9 years of schooling	-26.7	-2.2	10.8	3.2	-8.5	-11.9	-21.5
SLC or higher/10 and above years of schooling	-4.7	-2.2	-13.9	-8.2	2.5	-7.1	-22.4
<b>Mother's occupation</b>							
Not working	-18.6	-13.6	-6.6	-3.7	9.2		-19.0
Non-agricultural	-23.8	3.1	-1.7		-12.8		
Agricultural	-16.1	-1.1	-1.3	-4.3	-0.1	-9.1	-9.5
<b>Household size</b>							
4 or less	-25.8	-10.2	-4.7	-0.3	-5.4	-12.3	-14.1
More than 4	-13.8	-6.8	-0.9	-8.1	6.2	-11.0	-13.6
<b>Head of the household</b>							
Male	-18.6	-11.3	-3.7	1.4	8.1	-11.5	-9.4
Female	-18.2	1.7	-2.6	-13.3	-13.4	-11.3	-20.3
<b>Mother's decision-making</b>							
Cannot make decision	-18.8	-5.5	-2.5	-13.7	6.2	-9.8	-15.2
Can make decision	-17.8	-11.8	-5.9	1.1	0.5	-9.6	-11.2
<b>Mother's internet use</b>							
Not used in past 12 months	-21.5	-7.2	13.4	-5.0	4.7	-12.8	-11.3
Used in past 12 months	-7.4	-19.4	-20	-5.0	4.8		
<b>Mother owns a mobile phone</b>							
No	-27.4	-18.7	11.7	9.1	13.5		-16.9
Yes	-16.0	-3.1	-4.3	-6.2	-1.1	-12.3	-11.7

Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest

**Figure A10 Heat map of maternal factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province, 2016–2022 Nepal DHS surveys**

Maternal factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Mother's age (in years)</b>							
15–24	-14.9	-3.4	1.4	-1.5	-2.2	-3.8	-8.3
25–34	-30.4	-12.2	-5.9	-7.0	-0.4	-19.3	-16.3
35–49	18.2	-2.5	1.5		35.7		
<b>Mother's BMI</b>							
Underweight (<18.5)	-16.2	-18.7			8.8		-11.7
Normal (18.5–24.9)	-14.6	-2.9	-5.3	-9.0	1.7	-14.3	-13.5
Overweight/obese (≥25)	-31.3		-3.5	3.6	0.0		
<b>Mother's height</b>							
Less than 145 cm	-25.1	-22.9			14.1		
145 cm or more	-18.1	-5.3	-2.8	-3.0	0.2	-13.4	-12.3
<b>Age at first marriage or union</b>							
<16 years	-32.0	3.0	1.8	10.2	-13.2	-7.2	-22.6
16–19 years	-19.0	-15.2	4.9	-10.9	4.3	-10.8	-8.7
20 and above years	-11.5	-5.1	-11.1	-5.2	5.3	-19.7	-16.1
<b>Age at first birth</b>							
<20 years	-25.6	-5.9	-3.8	-0.2	-6.9	-5.4	-15.6
20 and above	-13.2	-11.1	-2.2	-7.8	7.5	-20.3	-10.2
<b>Birth interval</b>							
Less than 3 years	-21.6	-14.5	15.4	-36.4	-2.9	-14.8	-8.3
3 years or more or no preceding interval	-23.2	-1.8	-2.0	5.2	5.2	-13.2	-17.8
<b>Mother's minimum dietary diversity</b>							
Less than 5 food groups	-17.6	-8.3	3.5	1.2	4.7	-9.3	-6.2
5 or more food groups	-22.4	6.9	-14.5	-2.1	-4.3	-12.2	-29.8
<b>Mother's smoking status</b>							
Smoking			4.4	-13.5			
Non-smoking	-17.8	-8.1	-4.0	-3.8	0.5	-10.7	-12.0

Empty cells correspond to less than 25 observations.  
Color legend: green=lowest; white=midpoint; red=highest

**Figure A11 Heat map of health and environment factors associated with the greatest and smallest changes in the prevalence of women's anemia in each province, 2016–2022 Nepal DHS surveys**

Health and environment factors	Percentage-point changes by province						
	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur-paschim
<b>Treatment of water before drinking</b>							
No treatment	-18.8	-7.6	1.8	-5.1	2.7	-8.5	-14.2
Treatment with appropriate method	-16.3		-10.7	-2.8	-0.4		
<b>Sources of drinking water</b>							
Unimproved sources							
Improved sources	-17.2	-7.3	-2.6	-4.0	0.6	-10.5	-14.8
<b>Household with soap and water at handwashing station</b>							
No	-23.9	-12.6	4.2	2.6	3.2	-4.7	-21.6
Yes	-15.3	0.2	-4.9	-3.4	-1.9	-25.7	-9.1
<b>Sanitation</b>							
Unimproved sanitation	-29.9	-0.7	18.4		13.5		
Improved sanitation	-16.0	-10.7	-4.8	-4.4	0.2	-10.1	-16.5
<b>Use of cooking fuel</b>							
Solid fuel	-16.2	-10.0	8.6	-3.5	2.9	-10.6	-10.2
Clean fuel	-26.5	3.6	-9.8	-3.3	-1.9		-34.4
<b>Distance to nearest health care facility</b>							
<30 min	-14.1	-3.8	-13.3	-8.2	7.3	-7.7	-17.6
30–60 min	-31.4	-11.2	9.0	3.8	-10.1	-9.2	-13.2
60+ min	-23.3		16.0				
<b>Place of delivery</b>							
Health facility	-13.1	-3.8	-5.2	-7.8	0.1	-14.1	-11.9
Home/other	-22.2	-6.1	-2.7		18.2	-4.4	
<b>Number of ANC visits</b>							
None							
1–3	8.1	-10.8					
4 or more	-19.9	-2.1	-4.9	-10.2	3.4	-11.5	-11.1
<b>MIYCN counseling</b>							
No	-13.1	-3.0	-0.2	-16.2	2.9	-7.8	-14.1
Yes	-3.4	7.2	-9.0	-10.4	-1.8	-4.5	-5.5
<b>Health mother's groups in the ward</b>							
No	-19.5	-9.6	-3.9	-5.5	1.9	-1.8	-5.6
Yes	-26	-4.9	-1.1	-6.1	-1.7	-19.5	-13.6
<b>Counseling about breastfeeding during PNC visits</b>							
No	-14.2	-7.0	-4.3	0.2	11.4	-6.6	-21.4
Yes	-16.8	-5.0	-5.6	-12.2	5.1	-13.6	-7.2
<b>Mother's media exposure</b>							
Access none of the 3 media (radio, television or newspaper) at all	-5.4	-2.1	7.5		-3.4	-3.9	-22.1
Access any of 3 media less than once a week	-24	-17.8	0.8	4.2	-5.7	-18.3	-7.2



Access any of 3 media at least once a week	-20.8	-6.4	-6.2	-4.7	7.2	-7.2	-15.4
<b>Exposure to TV/radio health and nutrition program</b>							
Heard/seen none of the TV/radio H&N programs	-18.2	-7.7	5.0	-3.8	-0.6	-12.6	-8.0
Heard/seen any one of the TV/radio H&N programs	-25.4	-15.4	-3.8	-12.5	-1.4	-11.7	-20.6
<b>Iron-containing supplements during last pregnancy</b>							
No	-2.0	-5.2	2.5	10.5	0.3	-10.6	-13.3
Yes	-23.0	-1.1	-12.1	-21.0	12.2	-8.7	-11.2
<b>Deworming medication during last pregnancy</b>							
No	-21.5	-5.8	-4.9	2.0	10.0		
Yes	-13.4	-5.1	-5.3	-9.5	5.1	-11.1	-12.5

Empty cells correspond to less than 25 observations.

Color legend: green=lowest; white=midpoint; red=highest