Nutritional status of under-5 children of Nepal: Secondary analysis of Nepal Demographic and Health Survey Data 2022

Abstract

Introduction

Objectives: To determine the nutritional status of under-5 children, factors associated with stunting, wasting and anemia,

Small area estimation

**Methods**

**Study design:** We analyzed Nepal Health Demographic Survey, 2022 (NDHS 2022) dataset in this study. NDHS 2022 is the nationally representative survey implemented by New ERA under the aegis of the Ministry of Health and Population (MoHP) with the technical support of ICF International. NDHS 2022 was funded by the US Agency for International Development (USAID).

**Study setting:** Nepal is a landlocked country located in Southeast Asia with an area of 147, 516 km2. Nepal has seven administrative provinces, within which lies 753 municipalities (metropolitan cities: 6, sub-metropolitan cities: 11, urban municipalities: 276, rural municipalities: 460). Nepal has three ecological belt-Mountain, Hill and Terai. Based on Census 2021, the total population of Nepal was 29164578 of which 14911027 (51.1 %) were females and 14253551 (48.9 %) were males. The human development index (HDI) of rural and urban parts of Nepal were 0.647 and 0.561 respectively with an overall HDI of Nepal to be 0.587.

**Sample and sampling**

**Data collection:** NDHS 2022 data collection took place from January 5 to June 22, 2022, by 19 teams. Each team consisted of a supervisor, one male interviewer, three female interviewers, and one biomarker specialist.

**Dependent variables**

*Stunting:* Children whose height-for-age z score is below minus two standard deviations (–2 SD) from the median of the reference population are considered to be stunted.

*Wasting:* Children whose weight-for-height z score is below minus two standard deviations (–2 SD) from the median of the reference population are considered to be wasted.

*Anemia:* The children are considered to have anemia if the altitude-adjusted hemoglobin level is <11.0 gm/deciliter.

**Independent variables**

The independent variables assessed in this study included ecological belt (Mountain/Hill/Terai), setting (Urban/Rural), province(Koshi/Madhesh/Bagmati/Gandaki/Lumbini/Karnali/Sudurpaschim), age (in years), ethnicity (Brahmin or Chhetri/ Dalit/Janajati/Madhesi/Other), religion (Hindu/Non-Hindu), marital status (Unmarried/Married or living together/Divorced or non-living), wealth quintile (Poorest/Poorer/Middle/Richer/Richest, education(No education/Basic/Secondary/Higher), occupation (Not working/Agriculture/Professional or technical or manager or clerical), and health insurance(Covered/Not covered), media exposure (Present/Not present).

**Statistical analysis**

We used R version 4.2.0 and RStudio for data cleaning and statistical analysis. We performed weighted analysis to account complex survey design of NDHS 2022. We presented categorical variables as frequency, percent and 95% CI whereas numerical variables as mean and 95% CI. We used univariate and multivariable logistic regression to determine the association of cervical cancer screening and breast cancer screening with independent variables. The results of the logistic regression were presented as crude odds ratio and adjusted odds ratio and their 95% CI. A p-value of <0.05 was considered statistically significant.

**Ethical approval**

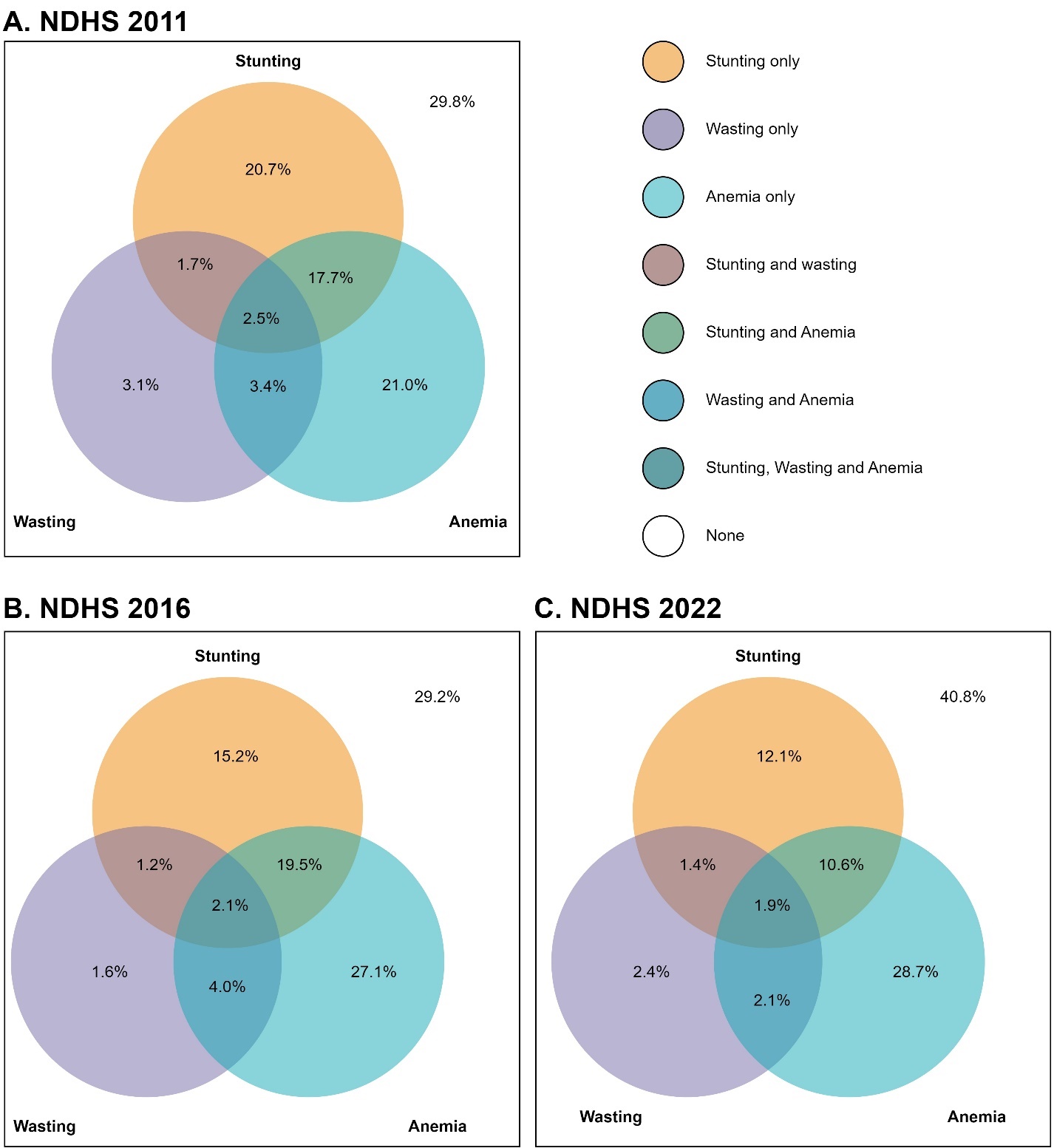
We requested the DHS program for permission to use NDHS 2022 dataset which was granted to download and use NDHS 2022 dataset from https://www.dhsprogram.com. NHDS 2022 obtained ethical approval from the institutional review board of ICF International, United States of America (Reference number: 180657.0.001.NP.DHS.01, Date: 28th April 2022) and the ethical review board of Nepal Health Research Council (Reference number: 678, Date: 30th September 2021).

**Results**

Demographic characteristics of children aged 6 to 59 months

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristic** | **2011 N = 2,257** | **2016 N = 2,155** | **2022 N = 2,335** |
| **Age of child months** |  |  |  |
| 6-8 | 136 (6.0%) | 108 (5.0%) | 118 (5.1%) |
| 9-11 | 111 (4.9%) | 133 (6.2%) | 96 (4.1%) |
| 12-17 | 267 (11.8%) | 223 (10.3%) | 266 (11.4%) |
| 18-23 | 222 (9.8%) | 277 (12.8%) | 226 (9.7%) |
| 24-35 | 502 (22.2%) | 460 (21.3%) | 567 (24.3%) |
| 36-47 | 526 (23.3%) | 489 (22.7%) | 538 (23.0%) |
| 48-59 | 494 (21.9%) | 466 (21.6%) | 524 (22.4%) |
| **Sex** |  |  |  |
| male | 1,150 (50.9%) | 1,116 (51.8%) | 1,202 (51.5%) |
| female | 1,107 (49.1%) | 1,039 (48.2%) | 1,133 (48.5%) |
| **Type of place of residence** |  |  |  |
| Urban | 199 (8.8%) | 1,128 (52.3%) | 1,501 (64.3%) |
| Rural | 2,058 (91.2%) | 1,027 (47.7%) | 834 (35.7%) |
| **Ecological region** |  |  |  |
| Mountain | 180 (8.0%) | 155 (7.2%) | 131 (5.6%) |
| Hill | 913 (40.4%) | 771 (35.8%) | 824 (35.3%) |
| Terai | 1,164 (51.6%) | 1,229 (57.0%) | 1,381 (59.1%) |
| **Education** |  |  |  |
| No education | 1,065 (48.5%) | 767 (36.5%) | 0 (0.0%) |
| Primary | 425 (19.4%) | 410 (19.5%) | 1,675 (94.4%) |
| Secondary | 596 (27.1%) | 658 (31.3%) | 99 (5.6%) |
| Above | 110 (5.0%) | 266 (12.6%) | 0 (0.0%) |
| *Missing* | 61 | 54 | 561 |
| **Province** |  |  |  |
| Koshi |  | 354 (16.4%) | 419 (17.9%) |
| Madhesh |  | 603 (28.0%) | 618 (26.4%) |
| Bagmati |  | 314 (14.5%) | 359 (15.4%) |
| Gandaki |  | 165 (7.7%) | 168 (7.2%) |
| Lumbini |  | 395 (18.3%) | 391 (16.7%) |
| Karnali |  | 137 (6.4%) | 179 (7.7%) |
| Sudurpashchim |  | 187 (8.7%) | 202 (8.6%) |
| **Wealth index combined** |  |  |  |
| Poorest | 587 (26.0%) | 433 (20.1%) | 571 (24.5%) |
| Poorer | 463 (20.5%) | 481 (22.3%) | 513 (22.0%) |
| Middle | 523 (23.2%) | 503 (23.4%) | 483 (20.7%) |
| Richer | 379 (16.8%) | 462 (21.4%) | 424 (18.1%) |
| Richest | 305 (13.5%) | 276 (12.8%) | 344 (14.7%) |

Prevalence of cooccurrence of stunting, wasting and anemia in Nepal



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