

An Assessment of Data Sources to Track Progress towards Global Nutrition Targets in India

OBJECTIVES

Data are essential both to understand the level of malnutrition in a country and to develop strategies to address it. Reliable and recent data are important, as are data that can be compared over time to assess whether strategies are yielding results. Finally, having data available at relevant geographic or administrative units for policy decisions is also critical.

Recently, the World Health Assembly, of which India is a member, endorsed a set of six global nutrition targets (Exhibit 1) to be used globally at the national and subnational levels to track progress in reducing malnutrition (WHO 2014). These targets reflect a set of nutrition outcomes that, if improved, will have

significant impact on short- and long-term human development outcomes. Since the adoption of these targets, the *Global Nutrition Report* (IFPRI 2014, 2015) has attempted to document levels of and trends in these targets for several countries.

Unfortunately, in India, the landscape of data sources on levels and trends in nutrition is complex. While several surveys on nutrition are delivered intermittently, it is unclear which, if any, could yield the required data to track the World Health Assembly targets.

To enable a better understanding of the nutrition data currently available in India, a team from POSHAN assessed the geographic scope, frequency, availability,

EXHIBIT 1 World Health Assembly global nutrition targets and related indicators (WHO 2014)

Target	Indicator
1. Achieve a 40% reduction in the number of children under 5 who are stunted	Number of children under 5 years of age with height-for-age < -2 standard deviations of the World Health Organization's child growth standards median
2. Achieve a 50% reduction in anemia among women of reproductive age	Percentage of pregnant women (15–49 years) with hemoglobin less than 11 grams per deciliter (dL); percentage of non-pregnant women (15–49 years) with hemoglobin less than 12 grams per dL
3. Achieve a 30% reduction in low birth weight	Percentage of children under 5 years with weight at birth less than 2,500 grams (5.5 pounds)
4. Ensure that there is no increase in childhood overweight	Percentage of children under 5 years with weight-for-height > +2 standard deviations of WHO's growth standards median
5. Increase the rate of exclusive breastfeeding (EBF) in the first 6 months to at least 50%	Percentage of children 0 to 5 months of age who are fed only breast milk in the 24 hours preceding the survey
6. Reduce and maintain childhood wasting to less than 5%	Percentage of children under five years of age with severe or moderate wasting, i.e., weight-for-height < -2 standard deviations of WHO's child growth standards median

EXHIBIT 2 Major nutrition-relevant surveys included and excluded from the assessment

Included in review	Not included in review
<ol style="list-style-type: none"> 1. National Family Health Surveys (NFHS) 2. District Level Family Health Surveys (DLHS) 3. Annual Health Surveys (AHS) 4. India Human Development Surveys (IHDS) 5. HUNGaMA (Hunger and Malnutrition) Survey 6. Rapid Survey on Children (RSOC) 	<ol style="list-style-type: none"> 7. Surveys of the National Sample Survey Organization (produce data only on food consumption) 8. Data from the National Nutrition Monitoring Bureau (not intended to derive population-representative prevalence estimates and focuses on in-depth data on dietary intakes and nutritional status)

content, and comparability of data from six major nutrition surveys in India. Based on this assessment, they generated recommendations to improve the Indian nutrition policy community's ability to assess its progress toward achieving the World Health Assembly nutrition targets.

METHODOLOGY

Since 1992, eight unique and multiround population-based household surveys on health have been conducted in India. The authors performed a review of these surveys and narrowed the list to those that generated data on nutritional outcomes; were representative at least at the district, state, or national levels; and were administered in more than one state. The team found six surveys that met these criteria (Exhibit 2).

The team then assessed each of the surveys according to the following criteria and related questions:

- ▶ **Geographic scope:** Did the survey cover a representative sample across India so that national estimates could be derived? Did the survey generate data that would give statistically representative estimates at the state or district levels?
- ▶ **Frequency:** How often was the survey conducted?
- ▶ **Data availability:** Were the survey results published and publicly available? What data were available? How long did it take to access the final report of the survey?
- ▶ **Content:** To what extent did the survey collect data on the World Health Assembly global nutrition targets? What other data were collected?

- ▶ **Comparability:** Was it possible to compare data from multiple rounds of the same survey? Was it possible to compare data from different surveys?

FINDINGS

The findings described below are summarized in Exhibit 3.

Geographic Scope

National. Among the six surveys reviewed, the NFHS, DLHS, IHDS, and RSOC were designed to provide estimates of nutritional status for the entire country. However, among the most recent rounds of these surveys, only three—NFHS 3, IHDS 2, and RSOC—were administered in all the states of India. The IHDS 2, however, was a panel survey that followed up households previously surveyed in the IHDS 1 in 2004. Therefore, only the NFHS 3 and RSOC provided nationally representative estimates.

State. The NFHS, DLHS, AHS, and RSOC were designed to generate estimates of nutritional status by state. The DLHS used to be administered in all states, but the most recent round, DLHS 4, was not administered in nine states with among the highest rates of undernutrition (Bihar, Rajasthan, Madhya Pradesh, Odisha, Chhattisgarh, Uttar Pradesh, Uttarakhand, Jharkhand, and Assam). The AHS was only administered in a subset of high child mortality states (Bihar, Rajasthan, Madhya Pradesh, Odisha, Chhattisgarh, Uttar Pradesh, Uttarakhand, Jharkhand, and Assam). Therefore, the NFHS 3 and the RSOC were the only two surveys that provided state estimates of nutritional status for all states.

EXHIBIT 3 Coverage of major nutrition surveys in India (continued on page 4)

Survey name	Survey rounds	Geographic scope		Frequency	Data availability
		Geographic coverage	Level at which the survey is representative	Years between survey rounds	Time gap between end of survey and full report (report publish date)
National Family Health Surveys (NFHS)	NFHS 1 (1992–93)	All India— 24 states and Delhi National Capital Region (NCR)	National State	NA	2 years (1995)
	NFHS 2 (1998–99)	All India— 25 states		6 years	1 year (2000)
	NFHS 3 (2005–06)	All India— 29 states		7 years	1 year (2007)
	NFHS 4 (2015–16)	All India— 29 states and 6 Union Territories	National State District	> 9 years	(Date Unknown)
District Level Family Health Surveys (DLHS)	DLHS 1 (1998–99)	All India— 504 districts	National State District	NA	1 year (2000)
	DLHS 2 (2002–04)	All India— 593 districts		5 years	2 years (2006)
	DLHS 3 (2007–08)	All India— 601 districts		4 years	1 year (2009)
	DLHS 4 (2012–13)	336 districts and unknown number of Union Territories	District (subset)	5 years	No report available
Annual Health Surveys (AHS)	AHS 1 (2010–11)	9 states (Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan, and Assam)	State (subset) District (subset)	NA	< 1 year (2011)
	AHS 2 (2011–12)			1 year	< 1 year (2012)
	AHS 3 (2012–13)			1 year	< 1 year (2013)
	AHS CAB (2014)			2 years	No report available
India Human Development Survey (IHDS)	IHDS 1 (2004–05)	All India— 33 states and Union Territories that existed in 2004	National	NA	2010
	IHDS 2 (2011–12)	Panel of same households as in IHDS 1	None	7 years	No report available
HUNGaMA Survey	HUNGaMA (2010–11)	112 districts across 9 states	District (only rural)	NA	1 year (2012)
Rapid Survey on Children (RSOC)	RSOC (2013–14)	All India— 29 states	National State	NA	No report available

EXHIBIT 3 Coverage of major nutrition surveys in India *(continued from page 3)*

Survey name and round	Content: Data collected to track World Health Assembly global nutrition targets						Comparability	
	Stunting (Percentage of children <5 years height-for-age <-2 SD)	Wasting (Percentage of children <5 years weight-for-height <-2 SD)	Overweight (Percentage of children <5 years weight-for-height > +2 SD)	Women of reproductive age anaemia	Exclusive breastfeeding ¹	Low birth weight ²	Reference group for child anthropometry	Target group of women respondents
NFHS 1 (1992–93)	NO	NO	NO	NO	NO	NO	<4 years	Ever-married women of age 13–49
NFHS 2 (1998–99)	NO	NO	NO	YES	NO	YES	<3 years	Ever-married women of age 15–49
NFHS 3 (2005–06)	YES	YES	YES	YES	YES	YES	<5 years	All women of age 15–49
NFHS 4 (2015–16)	In progress	In progress	In progress	In progress	In progress	In progress	<5 years	All women of age 15–49
DLHS 1 (1998–99)	NO	NO	NO	NO	NO	YES	NO	Currently married women of age 15–44
DLHS 2 (2002–04)	NO	NO	NO	YES (only pregnant women)	NO	NO	<6 years (only weight-for-age)	Currently married women of age 15–44
DLHS 3 (2007–08)	NO	NO	NO	NO	NO	NO	NO	Ever-married women of age 15–49 & Never-married women of age 15–24
DLHS 4 (2012–13)	YES	YES	YES	YES	YES	YES	<5 years	Ever-married women of age 15–49
AHS 1 (2010–11)	NO	NO	NO	NO	NO	YES	NO	Ever-married women of age 15–49
AHS 2 (2011–12)	NO	NO	NO	NO	NO	YES	NO	Ever-married women of age 15–49
AHS 3 (2012–13)	NO	NO	NO	NO	NO	YES	NO	Ever-married women of age 15–49
AHS CAB (2014)	YES	YES	YES	YES	NO	NO	<5 years	Ever-married women of age 15–49
IHDS 1 (2004–05)	YES	YES	YES	NO	NO	NO	<5 years & 8–11 years	Ever-married women of age 15–49
IHDS 2 (2011–12)	YES	YES	YES	NO	NO	NO	<5 years & 8–11 years	Ever-married women of age 15–49
HUNGaMA (2010–11)	YES	YES	YES	NO	NO	YES	<5 years	Mothers of children < 5 years
RSOC (2013–14)	YES	YES	YES	NO	YES	YES	<5 years	Ever married women of age 15–49

¹ Children aged zero to five months who were exclusively breastfed.

² Out of those children weighed.

District. Only three of the six surveys—DLHS, AHS, and HUNGaMA—generated data at the district level, but no recent survey covered all 640 districts in India. The most recent round of the DLHS and all rounds of the AHS were administered in a subset of districts in the country. The HUNGaMA survey was also conducted in a subset of districts, and only generated data representative for rural areas in each district. NFHS 4 aims to generate district-level data; however, data collection is still underway.

A significant geographic challenge for comparisons of some surveys' data over time has been the reshaping of state and district boundaries: from 24 to 29 states and from 504 to 640 districts. Only the NFHS 3 and RSOC currently enable national and state comparisons with each other. None of the existing surveys enables an assessment of district-level trends in global nutrition targets.

Frequency

Among the surveys that have been conducted more than once, the number of years between each round has ranged from as low as 1 year (AHS 1 to AHS 2) to as high as more than 9 years and counting (NFHS 3 to the current NFHS 4, which is still in progress). The average length of time between each survey round has been 7.0 years each for the NFHS and IHDS, and 4.5 years for the DLHS.

Data Availability

As shown in Exhibit 4, for the latest rounds of completed surveys, data reports and data sets are either readily available in the public domain or unavailable with no information on when a report might be forthcoming, if at all. The availability of each survey's documentation (manuals, questionnaires, sampling information) also varies substantially.

The NFHS 3 and IHDS 2 are the only surveys to have complete documentation and data sets publicly and easily available. The NFHS 3 and HUNGaMA are the only surveys to have complete reports, while the remaining surveys have either summary factsheets or no report at all.

Among the surveys that have been conducted at a national scale, the RSOC, conducted in 2013–2014, currently offers the most recent source of anthropometric data for the entire country and all states. However, the RSOC's findings are currently only available in the form of fact sheets for India and 29 states, limited information on the survey questionnaires and data collection methods is available, and the data are not released in the public domain.

Content

All of the six surveys have varied considerably in the type of data collected, with a few surveys collecting data on all six of the World Health Assembly nutrition targets (Exhibit 5).

The NFHS has consistently been the most comprehensive survey on nutrition in India, having collected data on a broad set of indicators on various topics related to nutrition, including all six nutrition targets in the last two rounds. The first two rounds of the DLHS had a very limited focus on nutrition with only the DLHS 2 collecting data on child weight. More recently, however, the DLHS 4 gathered data on all six of the targets. The AHS previously focused on a limited set of indicators related to maternal and child mortality targets, such as birth rate, mortality rates, and health services utilization; it added nutrition indicators to a subsample in its most recent round and collected data on four of the six nutrition targets. Both rounds of the

EXHIBIT 4 Extent of data availability

Survey name	Full report publicly available online	Data set publicly available online	Survey documentation (manuals, questionnaires, sampling information)
NFHS 3	Yes	Yes	Yes
DLHS 4	No (only by state)	No	Partial (only limited sampling information)
AHS CAB	No (only factsheets)	No	Partial (only sampling information)
IHDS 2	No (only topic-specific reports)	Yes	Yes
HUNGaMA	Yes	No	Partial (only questionnaire and sampling information)
RSOC	No (only factsheets)	No	Partial (only sampling information)

EXHIBIT 5 Overview of global nutrition targets included in major surveys

Survey	Global nutrition targets included
NFHS	All 6 indicators included in NFHS 3
DLHS	All 6 indicators included in DLHS 4, but the EBF indicator definition differed from the World Health Organization's
AHS	4 out of 6 indicators included in AHS Clinical, Anthropometric, and Biochemical (CAB) (EBF and low birth weight not included)
IHDS	3 out of 6 indicators included in IHDS 1 and IHDS 2 (overweight, EBF, and low birth weight not included)
HUNGaMA	4 out of 6 indicators included (overweight and EBF not included)
RSOC	5 out of 6 indicators included (anemia not included)

IHDS, HUNGaMA, and RSOC gathered data on three, four, and five of the targets, respectively.

Comparability

Given the need for the World Health Assembly to track all countries' progress in the same manner, the team reviewed the surveys to see if they were using the same measures as those used globally. The team also reviewed the surveys from round to round to determine if the same measures were used for each round to determine whether the survey could report trends over time. The team reviewed the following three measures: reference age group for anthropometry, target group of survey respondents (which affects the indicators' denominators), and the definition of the exclusive breastfeeding indicator.

Reference age group for anthropometry. All of the most recent rounds of the six surveys used the age reference group of less than five years, which conforms with the global nutrition targets for child anthropometry.

However, among the surveys that have been conducted more than once, the NFHS used a different reference age group each round, making comparisons among each round challenging without an analysis of the raw datasets. The IHDS used the same reference group for child anthropometry (< 5 years and 8–11 years) in both rounds. However, because it surveyed the same households in both rounds, it is statistically inappropriate to use this survey to estimate trends in national prevalence.

Target respondent group. The NFHS 3 and 4 were the only surveys to use the same target respondent

group as the one specified in the global nutrition targets (all women 15–49 years of age).

The IHDS and AHS are the only surveys that have consistently used the same target respondent group for their surveys, with both using ever-married women of age 15–49, thus enabling internal comparisons from round to round. The NFHS and DLHS used different survey respondent groups across rounds, thus limiting internal comparisons, especially regarding women's nutrition.

Definition of exclusive breastfeeding. Some surveys (NFHS, RSOC, and HUNGaMA) have used the currently accepted 24-hour recall-based indicator¹ (WHO 2010), while other surveys (DLHS) have estimated EBF based on recall up to the date of the survey by mothers of children less than six months of age.

In summary, there are important differences across surveys in reference age groups for anthropometry, target respondents, and, in some cases, indicator definitions. In spite of these issues, a comparison of data between the NFHS 3 and RSOC currently allows one to see a trend in global nutrition targets over time for India.

CONCLUSION

The lack of regularly updated, readily accessible, and comparable data sources on nutrition can greatly limit effective nutrition policymaking in India. Policymakers need to develop accurate plans with realistic goals and targets based on data that accurately show trends over time to benchmark progress. Currently, policymakers and technical stakeholders in India rely on diverse sources of data that offer limited options to assess either India's current ability to meet the global nutrition

targets or the country's progress in meeting the targets over time. Based on our review of the multiple available data sources, we conclude the following:

- ▶ To understand the current nutritional status of India at the national and state levels, the NFHS 3 and RSOC provide data on the greatest number of global nutrition targets for the greatest number of states.
- ▶ To understand the nutritional status of India over time at the national and state levels, the NFHS 3 and the RSOC are similar enough to be compared. This is because they share a similar geographic scope, collect data on the same global nutrition targets, and have the recommended reference group for child anthropometry. However, the comparability of the target survey respondents (all versus ever-married) is a potential limitation.
- ▶ To understand the current nutritional status of India at the district level, the DLHS 4 generated data to track all six global nutrition targets, albeit for a limited geographic scope of 336 out of 640 districts in India. The AHS CAB generated data on four of the targets, and for only a subset of districts across India. Assessment of trends at the district level remains a massive challenge, as neither one of these district-level surveys has collected data on all six global nutrition targets using a consistent approach over time.

Based on the findings from this review, the research team has the following recommendations for the nutrition policy community in India:

- ▶ Establish guidance for a single survey that consistently collects data on all six World Health Assembly global nutrition targets and other essential variables.
- ▶ Create a mechanism for more frequent (at least every three years) data collection to ensure that comparable data on these targets are available for strategic decisionmaking and benchmarking of progress at the national, state, and especially district levels.
- ▶ Use the same indicator definitions, reference age groups, and target group of women respondents in each survey round, so that reliable comparisons can be made over time.
- ▶ Release survey reports, questionnaires, and raw data to the public domain rapidly and simultaneously.

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NOTE

1. Percentage of children zero to five months of age who are fed only breast milk in the 24 hours preceding the survey.

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ABOUT POSHAN

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ABOUT RESEARCH NOTES

Research Notes summarize the latest findings from POSHAN-led studies.

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