Demographic and Health Trends in India (2005–06—2015–16)

Results from Phase 1 of NFHS–4

NFHS–4 RESEARCH COLLABORATORS

A brief exposition of the trends in health, fertility, status of women, nutrition and child mortality between 2005–06 and 2015–16 as have emerged from the National Family Health Survey in 17 states.

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The 2015–16 National Family Health Survey–4 (NFHS–4) was a large-scale survey of a nationally representative sample of around 5,72,000 households. Since the first round of the NFHS, initiated in 1992–93, all four rounds of NFHS (1992–93, 1998–99, 2005–06 and now 2015–16) have been implemented under the aegis of the Ministry of Health and Family Welfare with the International Institute for Population Sciences (IIPS), Mumbai, the nodal agency. Technical support has been provided by ICF International (United States), and the National AIDS Research Institute (Pune, India) since NFHS–3 for the HIV component.

Keeping in mind the various elements that can affect the quality of data, including the size, geography and climate of the country, the entire data collection process has been phased into two segments. Sample households numbering 5,72,000 are being covered in NFHS–4 in over 28,000 primary sampling units (PSUs), of which the sample for the state module is nearly 1 lakh households. The basic sample size for each district was around 860 households in National Rural Health Mission (NRHM)-focused states and 760 households in the other states. However, the sample size was larger in NRHM-focused states where urban and rural estimates will be reported.

The states/group of states and union territories (UTs) covered in Phase 1 are Andhra Pradesh, Bihar, Goa, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Tamil Nadu and Puducherry, Telangana, Tripura, Uttarakhand, and West Bengal and the Andaman and Nicobar Islands.

In Phase II, important states to be covered are Uttar Pradesh, Chhattisgarh; Kerala, Jharkhand, Odisha, Gujarat, Punjab, Rajasthan, states in the North-East and union territories.

National estimates will be generated later from individual level data after merging individual level data from each of the surveyed states and UTs. National estimates will be generated only after all the states and UTs are surveyed (that is after the end of Phase II)

In Phase 1, a little over 2 lakh households were covered, and in each selected household the main respondent was the household head or any knowledgeable adult who is a usual resident. Based on the population size and number of districts in a state/UT, the sample for each state varies from 1,588 households in Goa to 52,042 in Madhya Pradesh.

The six key demographic and health topics presented in this article are household environment, maternal healthcare, fertility and family planning, child health, non-communicable diseases, and women's empowerment. The article presents results for selected indicators. Data are not shown for the remaining indicators including tobacco and alcohol consumption, child immunisation, etc, but the results are available in the state/UT fact sheets, which are available at rchiips.org/nfhs/factsheet_NFHS-4.shtml.

Household Environment

Households with electricity ranged from 59% in Bihar to over 98% in Goa, Puducherry, Sikkim, Haryana, Tamil Nadu, Telangana and Andhra Pradesh. All the 17 states/UTs indicated an increase in the availability of electricity since the 2005–06 NFHS-3. The improvement, as illustrated by the percentage change, ranged from a minimal 3% in Goa to more than double in Bihar. Other states that also showed substantial increase in electricity use were West Bengal (79%), Tripura (35%), Meghalaya (30%), Madhya Pradesh (26%) and Uttarakhand (22%). Bihar has shown an interesting situation unlike any other state/UT. Despite being the state/UT with the lowest proportion of households with electricity (59%) in NFHS–4, the households with electricity had more than doubled (by 111%) since NFHS–3 (28%). The access, as well as the increase in

electricity, is largely concentrated in urban areas, with more than 97% of households having electricity in most states/UTs. Even in urban Bihar, 88% of households have electricity.

NFHS–4 followed the international definition of "improved sources of drinking-water," which comprised supply of piped water into the dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, and community reverse osmosis (RO) plant. In 10 of the 17 states/UTs surveyed, more than 90% of households reported having access to such improved sources. However, access to improved sources of drinking water was found much higher in urban areas than in rural areas in 11 of the 17 states/UTs. The urban–rural differentials were most pronounced in Meghalaya and Madhya Pradesh. The poorest access to improved sources of drinking water reported from urban and rural areas of Manipur, Andhra Pradesh and Telangana. Barring four states (Haryana, Tamil Nadu, Maharashtra and Manipur), all other states recorded improvement in households accessed to improved sources of drinking water since NFHS–3. The most substantial increase was seen in Sikkim (26%), followed by Goa (21% change). The details are in Table 1.

Another important household environment covered in NFHS–4 was access to improved sources of sanitation, which was found much lower than access to improved sources of drinking water. However, the level of access differed widely across states/UTs. Access to improved sanitation was found to be much better in Sikkim (88%), Haryana (79%), Goa (78%), and the Andaman and Nicobar Islands (74%), and lowest in Bihar (25%), Madhya Pradesh (34%), Telangana and Manipur (50% each), West Bengal (51%) and Maharashtra (52%). An important feature that emerged has been the wide urban–rural disparity in access to improved sanitation—more than twice or nearly thrice higher in urban areas than in rural areas of states like Bihar and Madhya Pradesh. Rural areas with the poorest access to improved sanitation are in Madhya Pradesh (19%), Bihar (21%), Tamil Nadu (34%), and Telangana (39%). In contrast, two states with better access to improved sanitation in the rural areas are Sikkim (94%) and Goa (81%). The present seemingly poor state of access to an improved sanitation facility is still much better than since NFHS–3 in some states. States that have shown a major improvement since NFHS–3—on a low base—are Tamil Nadu (133% change), Haryana (98%), Madhya Pradesh (81%), Bihar (73%), Karnataka (74%) and Manipur (65%).

To understand the extent to which a household has been exposed to health risks such as indoor pollution, information was collected on type of fuel used for cooking. In NFHS–4, fuel used for cooking by household qualified as "clean fuel" when using electricity, LPG/natural gas or biogas, while all others are classified as unclean fuels, particularly those categorised as solid fuels. The use of clean fuels ranged from a very low 18% in Bihar to 85% in Puducherry and 84% in Goa. Other states/UTs with low use of clean fuels (less than half of households) were Meghalaya (22%), West Bengal (28%), Madhya Pradesh (30%), Tripura (32%) and Manipur (42%). Most households that use clean fuels are concentrated in urban areas (lowest level of 62% in West Bengal and 63% in Manipur). Use of clean fuels in rural areas is very low in some states—9% in Meghalaya, 10% in Madhya Pradesh, 11% each in West Bengal and Bihar, and 16% in Tripura. Interestingly, despite the current very low usage reported across the states, 13 states have experienced a substantial increase since NFHS–3. States with considerable increase in use of clean fuels are Tamil Nadu (132% change), and 75%–85% change are Karnataka, Tripura, Bihar and Haryana.

Table 1: Percentage of Households with an Improved Source of Drinking Water by State/Union Territory, NFHS-3 (2005–06) and NFHS–4 Phase 1 (2015–16)

States/UTs	Households with Improved Drinking Water Source*				
	Urban	Rural	Total	NFHS-3	% Change
States					
Andhra Pradesh	70.7	73.6	72.7	na	na
Bihar	97.8	98.2	98.2	96.1	2.2
Goa	97.8	93.7	96.3	79.9	20.5
Haryana	88.0	94.3	91.7	95.6	(-) 4.1
Karnataka	89.8	88.9	89.3	86.1	3.7
Madhya Pradesh	96.8	79.5	84.7	74.2	14.2
Maharashtra	97.7	85.6	91.5	92.7	(-) 1.2
Manipur	47.1	38.0	41.6	52.1	(-) 20.2
Meghalaya	85.2	62.9	67.9	63.1	7.6
Sikkim	99.3	96.8	97.6	77.6	25.8
Tamil Nadu	86.9	94.5	90.6	91.4	(-) 0.9
Telangana	80.1	75.6	77.6	na	na
Tripura	97.7	82.8	87.3	76.1	14.7
Uttarakhand	98.9	89.5	92.9	87.4	6.3
West Bengal	93.5	95.1	94.6	93.7	1.0
Union Territories (UTs)					
Andaman and Nicobar Islands	100.0	89.9	94.3	na	na
Puducherry	93.8	99.0	95.4	na	na

* Piped water into dwelling/yard/plot, public tap/standpipe, tube well or borehole, protected dug well, protected spring, rainwater, and community RO plant.

na = not available (data in NFHS-3 was for an undivided Andhra Pradesh, and UTs not covered). (-) shows decline.

Maternal Healthcare

In NFHS–4, an expecting mother is said to have availed of "full antenatal care (ANC)" when she has had at least four ANC check-ups, at least one tetanus toxoid (TT) injection, and had consumed iron folic acid (IFA) tablets or syrup for 100 or more days. Expecting mothers who had received full ANC services were many more in the southern states, including Goa (63%), Tamil Nadu (45%) and Andhra Pradesh (44%), as compared with states in north and east such as Bihar (3%), Tripura (8%) and Madhya Pradesh (11%). As expected, more mothers in urban areas showed better access than rural areas in all states/UTs, except Sikkim. The proportion of mothers who received full ANC has increased substantially since NFHS–3 but a (negligible)

decline in Uttarakhand and Bihar. The largest increase in full ANC has been in Manipur, from 6% in NFHS–3 to 34% in NFHS–4.

The NFHS–4 results also reflected varying levels of institutional delivery, from 51% in Meghalaya to 100% in Puducherry. Again, the southern states/UTs show a much improved situation (over 90%) and Meghalaya, Bihar and Uttarakhand had very low levels. In fact, institutional deliveries had increased in all states/UTs compared to NFHS–3 (from 33% to 69% in Uttarakhand, 36% to 81% in Haryana, and from 20% to 64% in Bihar). Such improvement was also indicated in the proportion of women who had a home delivery assisted by skilled health personnel (doctor/nurse/lady health visitor/auxiliary nurse midwife/ or other health personnel), especially in Bihar and Manipur (8% each), West Bengal (7%) and Haryana (6%), but very low in Puducherry and Tamil Nadu (<1%). In fact, more of home/non-institutional deliveries were assisted by skilled health personnel in rural areas in most states/UTs, barring Goa, Tamil Nadu, Haryana and Sikkim.

Women who delivered by caesarean section (C-section) were found to be as high as 58% in Telangana, Andhra Pradesh (40%) and Tamil Nadu (34%). The C-section deliveries were much higher in urban areas than in rural areas in all the states/UTs except Puducherry, and found more common in private facilities, varying from 25% in Haryana to 75% in Telangana. Overall, the extent of births and births in private facilities delivered by C-section has increased substantially in all the Phase 1 states/UTs.

Fertility and Family Planning

Fertility is best summarised by the total fertility rate (TFR), that is, the number of living children a woman would have during her reproductive lifespan if she were subject to the current age-specific fertility rates. Most of the states/UTs covered in Phase 1 of the survey have achieved replacement level fertility of 2.1 children or less. Those states/UTs that have a higher TFR (above 2.1 children) are Bihar (3.4), Meghalaya (3.0), Manipur (2.6) and Madhya Pradesh (2.3). It should be noted, however, that replacement level fertility has been achieved in the urban areas of all the highest fertility states/UTs other than Bihar.

In NFHS–4, the unmet need for family planning methods exhibited large inter-state variations, from 5% in Andhra Pradesh to 30% in Manipur. Based on the current level of unmet need, states/UTs can be grouped into three categories: (i) lower unmet need of less than 10% in Andhra Pradesh, Telangana, West Bengal, Puducherry and Haryana, (ii) an unmet need between 10% and 19% in Tamil Nadu, Tripura, Karnataka, Madhya Pradesh, Maharashtra, Uttarakhand and Goa, and (iii) higher unmet need of 20% in Bihar, Meghalaya, Sikkim and Manipur.

Between NFHS–3 and NFHS–4, the total unmet need for family planning increased more than twofold in Manipur, but marginally in Goa, Sikkim and Uttarakhand (2–3 percentage points). On the contrary, the unmet need has decreased in Tripura, West Bengal, Tamil Nadu, Maharashtra and Bihar (1%–3%), and more so in Meghalaya (by 15%).

Nutrition and Health of Children

NFHS–4 used three standard indices to depict physical growth and the nutritional status of children under–5: height-for-age (stunting), weight-for-height (wasting) and weight-for-age (underweight). The prevalence of stunting among children under–5 across the states/UTs is the highest in Bihar (48%), followed by Meghalaya (44%) and Madhya Pradesh (42%). On the other hand, stunting among children is the lowest in Goa (20%), followed by 23% in Andaman and Nicobar Islands, Tripura and Puducherry (24% each), Tamil Nadu (27%), Telangana (28%) and Manipur (29%). However, there are profound differences in stunting when analysed by urban–rural residence. Wasting (acute nutritional deficiencies) ranged from 7% in Manipur to 26% in Karnataka, Madhya Pradesh and Maharashtra. The underweight level, a composite index of height-for-age and weight-for-height (the combined effect of acute and chronic malnutrition) sees children in Bihar and Madhya Pradesh as more disadvantaged than children in the remaining states/UTs. Similar to the other two measures of nutritional status, the prevalence of underweight children was found to be much higher among rural children. However, urban–rural differentials were most pronounced in Telangana and the Andaman and Nicobar Islands.

Following the World Health Organization guidelines, children aged 12–23 months have been considered fully vaccinated when they received one dose of BCG vaccine, three doses of DPT and polio vaccine and one dose of measles vaccine. Results showed full vaccination coverage among children was the lowest (54%) in Madhya Pradesh and highest in Goa (88%). Other states/UTs with high/full vaccination coverage are Puducherry (91%), West Bengal (84%) and Sikkim (83%). Other states performing relatively poorly in full vaccination coverage besides Madhya Pradesh are Tripura (55%) and Maharashtra (56%). Interestingly,

in 11 states more rural children received full vaccinations. The rural advantage in immunisation coverage occurred in the Andaman and Nicobar Islands (though based on a small number of cases), but was more pronounced in West Bengal (9% points), followed by Haryana (8%) and Andhra Pradesh (7% points).

Another important feature covered in NFHS–4 was under–5 mortality during the five years preceding the survey. The under–5 mortality level emerged highest in Madhya Pradesh (65 deaths per 1,000 live births), followed by Bihar (58), Uttarakhand (47) and Andhra Pradesh and Haryana (41 each). On the other hand, under–5 mortality was relatively low in Goa (13 per 1,000 live births), Puducherry (16), Manipur (26), Tamil Nadu (27) and Maharashtra (29).

A consistent improvement in both infant and child mortality compared with the previous round of NFHS (2005–06) has been observed in all the states. However, the pattern of decline has not been uniform. The maximum decrease in under–5 mortality (by 30 deaths per 1,000 live births) was observed in Meghalaya (from 70 to 40 deaths per 1,000 live births). Other states such as Madhya Pradesh, West Bengal, Bihar and Tripura, also recorded a large decline, by 26–28 deaths per 1,000 live births. The lowest declines were observed in Goa, Tamil Nadu, Sikkim, Uttarakhand, Haryana, Manipur and Maharashtra.

Non-communicable Diseases

As in the previous rounds, NFHS–4 provides estimates of women and men who are overweight (body mass index (BMI)≥25.0 kg/m^2). Results show that about one-third of women are overweight in Goa, Andhra Pradesh and Tamil Nadu (31%–33%), and slightly more in Puducherry and the Andaman and Nicobar Islands (32–37%). A high proportion of overweight men are found in the Andaman and Nicobar Islands (38%), Puducherry (37%), Sikkim (35%), Andhra Pradesh (34%) and Goa (33%). Interestingly, the proportion of overweight men is considerably higher in urban than rural areas, and in one-third of the 17 states/UTs, the share of overweight men in urban areas is almost twice as high as that in rural areas. Indeed, the emerging feature about overweight (for both men and women) has been the considerable increase observed over the last survey.

For the first time in the NFHS series, NFHS–4 measured blood pressure (BP) and random blood glucose of eligible women and men. The results indicated that among women, the prevalence of blood pressure that is "slightly above normal" (Systolic 140–159 mm of Hg and/or diastolic 90–99 mm of Hg) ranged between 4% and 12% in the 17 states/UTs. The lowest prevalence of "slightly elevated BP" was observed in Bihar and highest in Sikkim. The prevalence of "moderately high" (Systolic 160–179 mm of Hg and/or diastolic 100–109 mm of Hg) BP among women ranged from 1% in Bihar to 3% in Sikkim (the highest).

The prevalence of "slightly above normal" and "moderately high" blood pressures has been considerably higher in men than women. The prevalence of "slightly above normal" BP in men ranged from 8%–21% with the lowest in Bihar and the highest in the Andaman and Nicobar Islands.

A more interesting feature emerged when examining the prevalence of "high" (>140 mg/dl) and "very high" (>160 mg/dl) blood glucose levels in men and women. Among women, a "high" blood glucose level was most prevalent in Goa and the Andaman and Nicobar Islands (9% each), followed closely by Andhra Pradesh, Tripura and Manipur (8% each), and lowest in Bihar (4%). A "very high" blood glucose level among women ranged from 2%–5%, and with highest prevalence in Goa, the Andaman and Nicobar Islands, and Andhra Pradesh. More of men than women have "high" or "very high" blood glucose level. Among men, the prevalence of "high" blood glucose ranged from 6% in Maharashtra, Telangana, Meghalaya and Haryana to 17% in the Andaman and Nicobar Islands. Overall, the prevalence of both BP and blood glucose generally observed was much higher in urban areas.

NFHS–4 also collected information from eligible women and men on the tobacco and alcohol (ab)use. In general, the use of both tobacco and alcohol has been much lower among women than men. However, adult women in the North East showed particularly high use of tobacco products in states like Manipur (49%), Tripura (42%) and Meghalaya (32%), while about one in 10 women reported it in Madhya Pradesh. In six states/UTs a large majority of men used tobacco (72% in Meghalaya, 71% in Manipur 68% in Tripura, 62% in the Andaman and Nicobar Islands and 59% each in Madhya Pradesh and West Bengal). In other states, tobacco usage among men ranged between 14% and 50%.

However, the salient feature observed in tobacco use has been the decline shown by both men and women since the last survey. Alcohol use also varied widely across the states/UTs. For instance, 23% of women in Sikkim reported consuming alcohol, while the use among women ranged between 4% and 9% in Telangana, Manipur, Tripura and Goa. As with tobacco use also, more among men consumed than women, with the highest in Tripura (58%), and lowest in Maharashtra (20%). However, more than half of men in Tripura, Telangana, Sikkim, Manipur and the Andaman and Nicobar Islands consumed alcohol, with no distinct urban–rural differential in alcohol consumption.

Women's Empowerment

More than three-fourths of currently married women participated either alone or jointly in making major household decisions in the states/UTs surveyed. Women participation in decision-making has shown an increase since NFHS–3 in states such as Uttarakhand, Bihar, Sikkim, Tripura, Meghalaya, West Bengal, Madhya Pradesh and Karnataka. Over the years, the rural–urban gap has not widened much in most of the states/UTs.

NFHS–4 results revealed a stark difference in the reporting of experience of spousal violence by women across the states/UTs, but indicated an overall improvement since NFHS–3 in all states, except Meghalaya, Karnataka, Manipur and Haryana. Meghalaya showed an increase in spousal violence from 13% to 29%. States/UTs with a substantial improvement are Tripura and Bihar (decreased by 16 percentage points), Uttarakhand (15%), Sikkim (14%) and Madhya Pradesh (13%). More women in rural areas reported spousal violence (as high as 44%–56%) in Telangana, Tamil Nadu, Manipur, Bihar and Andhra Pradesh.

Information about experience of violence during pregnancy was also collected in NFHS–4 for the first time. Karnataka, Telangana and Tamil Nadu are the states where women are most likely to experience violence during pregnancy.

In the case of ownership of assets/property by women, NFHS–4 found that owning a house and/or land alone or jointly with others was much higher in the rural areas than in urban areas in all the states/UTs, except West Bengal, Maharashtra and Manipur. In Meghalaya, a matrilineal state, 57% of rural women owned a house and/or land. However, a distinct difference of 37 percentage points is seen in ownership by women between the rural areas (67%) and the urban areas (29%). Similarly, compared with NFHS–3, the proportion of women having a personal bank or savings account has increased considerably in NFHS–4, by nearly threefold in Tamil Nadu (77%), Haryana (46%), Madhya Pradesh (37%) and Manipur (35%). All the states/UTs surveyed also registered higher possession of personal bank or savings accounts in urban areas, except Andhra Pradesh, Puducherry and Tamil Nadu where the situation is better among rural women. Besides, in case of a personal mobile phone that women themselves use, more than three-fifths of women reported owning them in Goa (81%), Sikkim (80%), Puducherry (67%), Andaman and Nicobar Islands (67%), Meghalaya (64%), Manipur (63%) and Tamil Nadu (62%). Women having access to a mobile phone is the highest in Goa and Sikkim, and in Goa there was not much difference across the urban and rural divide. States/UTs with low ownership of mobile phones among women are Madhya Pradesh (29%), Andhra Pradesh (36%) and Bihar (41%). The urban–rural contrast was most pronounced in Madhya Pradesh (50% among urban women compared with just 19% among rural women).

Concluding Remarks

As briefly described, NFHS–4 results for 2015–16 from the 17 states/UTs surveyed in Phase 1 clearly indicate a major improvement in some of the crucial population and health indicators since the last survey in 2005–06, including spousal violence and women's participation in decision-making. The encouraging features related to the household environment has been the increase in households electrified, better access to improved sources of drinking water and sanitation, and more use of clean fuel for cooking. Besides, in most states fertility underwent a further decline, reaching the replacement level or below. Surprisingly, the current use of modern contraceptive methods decreased in most states over the last decade. Child nutrition and vaccination coverage showed an improvement in most states, but concerns remain with rural areas. Adult health will be an important issue to address in the future, particularly related to obesity and high blood glucose levels, the use of tobacco and alcohol, as well as violence against women, despite the substantial decline that has taken place over the years.