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# Development in Bihar: Predicaments and Prospects of Health Indices

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## Abstract

The article aims at understanding the developmental process in Bihar and compares it with the national average. After a general comparison of developmental discourse, the focus is on health challenges. We look at the health indicators and delineate the sociological reasons for their poor accountability. We feel that lack of investment in health infrastructure and human resource; meagre program implementation and lack of monitoring and regulatory mechanisms; along with inertia for change from unhealthy social practices are the reasons for Bihar's poor performance. Nevertheless, we feel that Bihar has huge potential and the province has in itself the potential to overcome all hurdles for a better tomorrow.

## Keywords

India, Bihar, development, health, health indicators, health system, IPHS

## Introduction

Bihar has a proud history.<sup>1</sup> Even in 1950 Bihar was described as the second best governed state in India after Uttar Pradesh.<sup>2</sup> Since then, due to several reasons, the situation in Bihar has deteriorated although in the recent years a couple of silver linings are visible. In the last few decades its performance on all accounts of human development has drastically gone down (IIPS 2007–08; NFHS-3). Presently it is one of the most underdeveloped states in India. Most of the socio-economic indicators in Bihar, like per capita income, public expenditure on health, literacy rate, gross-enrolment ratio, age at first marriage of girls, immunization rate among pregnant women and newborn children, institutional delivery rate, malnutrition among children, percentage of population having access to toilets, etc., are recorded considerably lower than the national average (Government of India 2011; PFI 2007; World Bank 2005).

The low level of socio-economic indicators tend to adversely affect availability and accessibility of health provisions which in turn affects the health status and health seeking behaviour of its population. On the one hand Bihar registers the highest population growth (Government of India 2011) in the country and, therefore, demands for all services, including essential health services is rising. When the public

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health system fails to provide essential health care services, population at large is left at the discretion of open and unregulated market services. The situation becomes worse in Bihar because of the lowest per capita income, and nearly half of population living below the poverty line.

Nevertheless, a silver lining is projected with the change in governance which is reflected in the State's higher economic growth. The state has witnessed a gross domestic product (GDP) growth rate of over 14 per cent thrice in the past five years (*India Today* 2011). Today, Bihar is one of the best performing states in the country in terms of rate of growth in GDP, very close to that of the fastest growing states like Gujarat, Maharashtra and Tamil Nadu. But this growth has come up mostly in infrastructure and tourism sector, and not in the sectors which advance human development.

## Context

Some regions of India (for example, Kerala) have achieved human development indicators close to that of the developed western world, while a few states like Bihar still have their human development indicators closer to the underdeveloped regions of the world. Other than the inter-regional dichotomy in the developmental process of the state, the social category wise developmental indicators and health status are also the poorest among the eastern states (Raj & Raj 2004). The State of Bihar, after Jharkhand being carved out of it in 2001, has an area of 94,163 sq. km. and a population of 103.8 million (Government of India 2011) in which the male and female populations are 54,185,347 and 49,619,290 respectively. The deficit of female population in Bihar was reported at 4,566,057 in 2011. Bihar is divided into nine administrative divisions, 38 districts, 101 sub divisions, 534 blocks and 44,874 revenue villages. The State has a population density of 1102 per sq. km. as against the national average of 382. For the first time in 2011 Bihar's density of population reached highest among all the 28 states of India. The decadal population growth rate of Bihar was 25.1 per cent against 17.6 per cent for the country and therefore, the population of the state continues to grow at a much faster rate than the national rate (Government of India 2011). The details are mentioned in Table 1.

The urban population formed only 11.3 per cent of the total population in Bihar. This marks Bihar the second least urbanised state in India, after Himachal Pradesh. Though the number of statutory/census towns in Bihar increased from 130 to 199 during 2001 and 2011, the rate of urbanization in Bihar

**Table 1.** Selected Demographic Indicators of India and Bihar

S. No.	Item	India	Bihar
1	Total population (in Millions)	1210.2	103.8
2	Decadal Population Growth (in %)	17.6	25.1
3	Female Literacy Rate (in %)	65.5	53.33
4	Sex Ratio (females per 1,000 males)	940	916
5	Child Sex Ratio (females per 1,000 males)	914	933
6	Urbanization Ratio (%)	31.2	11.3

Source: Census 2011.

increased by only 0.8 per cent, from 10.5 per cent to 11.3 per cent. In contrast, the level of urbanization in India increased by 3.4 per cent, from 27.8 per cent to 31.2 per cent during the decade. Poor urbanization data speaks volumes about the underdevelopment of a State, especially about poor rate of industrialization resulting in very small dependence on organized manufacturing and service sectors and therefore heavy dependence on agriculture mostly in the form of under employment and hidden unemployment. This gets reflected in the per capita income of the State and population living below poverty line. As Bihar's per capita annual income (at current prices) in 2010–11 was estimated at only ₹20,069 (*The Economic Times* 2011), which was at marginal ₹7914 in 2004–05; while the national per capita annual income (at current prices) was estimated at ₹53,331 in 2010–11 (Government of India 2012). Nearly half of Bihar's population lives below poverty line (BPL)<sup>3</sup>, while the national poverty estimate is 26.1 per cent.

With poor urbanization, dismal industrialization and a vast pool of unskilled human resources, Bihar is left as an agrarian economy with vast fertile land for agriculture, which is inundated by untapped water resources. Despite that advantage, Bihar does not contribute significantly, even to the agricultural economy of the State, although it is referred to as a 'sleeping giant' (National Commission on Farmers 2006: 256) because of its unutilized agricultural potential. The Commission (2006) concluded that Bihar and other eastern parts of India present uncommon potential for becoming another 'fertile crescent', as the present fertile crescent (Punjab, Haryana and western Uttar Pradesh) have reached a state of economic and ecological distress (Kumar 2010).

Another very important indicator of human development, that is, literacy rate, in the 2001 census Bihar had only 47 per cent literacy, which increased to 64 per cent in 2011, while for India it was 65 per cent and 74 per cent respectively during the reference period. Bihar had a remarkable 18 per cent low literacy rate from the national average in 2001, the gap reduced to 10 percentage points by the 2011 Census. Overall male and female literacy rates in Bihar in the 2001 census were 59.7 per cent and 33.1 per cent respectively, which increased to 73 per cent and 53 per cent respectively for men in women in 2011; while for India overall male and female literacy increased to 82 per cent and 65 per cent respectively. The data suggests the considerable burden of illiteracy, especially among women in rural areas.

As far as higher education is concerned, Gross Enrolment Ratio (GER)<sup>4</sup> of Bihar is among the lowest in India. As per the National Sample Survey Organisation (NSSO 66th round), the present GER in India is around 17 per cent, much below the recommended 30 per cent mark, while for Bihar it is barely around 7 per cent. Bihar has the lowest number of educational institutions per million population in the country. In terms of degree colleges for science, arts and commerce, Bihar has just 73 institutions per million population, whereas at the all-India level it the average is 105 institutions. In states like Andhra Pradesh it is 237, 171 in Maharashtra, 152 in Orissa, 132 in Rajasthan and 105 in Uttar Pradesh (Kumar 2012). In technical education, the situation is more adverse in Bihar. For Bihar with a population of more than 100 million, there was a requirement of at least 40 universities, whereas at present there are only 12 universities in the State including one university each for Arabic–Persian, Agriculture and Sanskrit. Education in general and higher education in particular is the key for nurturing entrepreneurship and innovation in a region, which is considered a basic necessity for unfolding socio-economic development in a region. In the case of Bihar, lagging behind in higher education has severe ramifications as it hinders in developing a critical mass of educated entrepreneurs and innovators and, therefore the development of the State on all accounts does not take off as it is expected.

## Health Challenges

Bihar has several health challenges. We begin by looking at the health status because health status reflects socio-economic development. Health status is shaped by a variety of factors, that is, level of income and standard of living, housing, sanitation, water supply, education, employment, health consciousness and personal hygiene. Also the coverage, availability, accessibility, acceptability and affordability of health services play a vital role in improving health status. The poor health status can be due to inadequate nutrition, lack of protected water supply, and overcrowded and insanitary housing conditions. These conditions are conducive to deficiency diseases, airborne diseases, faecal<sup>5</sup> related and waterborne diseases, which dominate the morbidity and mortality pattern in less developed regions (PFI 2007). Therefore, the relationship between health and poverty or health and development is complex and multifaceted. Poverty and poor development in their various dimensions could be a manifestation as well as a determinant of poor health of an individual and community.

The state of health in India is not adequate and satisfactory even after six decades of independence. Public expenditure on health has only marginally increased. Even in recent years the same trend continues from less than 1 per cent of GDP in 2006–07 to an estimated 1.4 per cent of GDP by the end of the Eleventh Five year Plan (2007–12) (Prime Minister of India 2012). The National Commission on Microeconomics and Health (2005) reported that out of the total expenditure on health, households undertook nearly three-fourths of all the health spending in the country. Availing health care, especially in the private sector is a big blow to the lower-income Indian families because more than two-thirds of the Indian population earns less than \$2 a day and are deprived of basic needs (World Bank, in Kaminsky & Long 2011: 562). In the case of Bihar, the condition is even worse, which is mostly indicative by looking at the health-related indicators of the state and comparing the same with the national average. Though the status of health services in Bihar is still inadequate, substantial improvements have been recorded in this sector in recent years (Government of Bihar 2012).

One of the ‘neglected diseases’ of the world, *kala-azar*, which is preventable with a little focus on health educational practices and economic upliftment, makes heavy sickness, loss of active human resources and mortality take its toll in Bihar. The incidence of *kala-azar* in India is among the highest in the world (Bora 1999). As per the World Health Organization (WHO) estimates some 350 million people in 88 countries are at the risk of developing *kala-azar* and about 500,000 people suffer from it, out of which 165 million people are estimated to be at risk in India; the reported number of cases is around 20,000 and the number of deaths is about 200 per year. The estimated number of cases is much higher. Bihar is the worst affected with 33 districts endemic. It is also found in the neighbouring states of West Bengal with 10 districts affected, Jharkhand with 5 districts endemic and Uttar Pradesh with 4 districts (WHO-India 2012). About 90 per cent of these patients are poor and live in the rural areas of Bihar (Mishra 2009). Most of these patients belong to the socially marginalized section and they lack illiteracy and education. Nearly two-thirds of *kala-azar* cases are women and children, and among income earners five months of work are lost due to illness (Kala-Azar Field Research 2012).

Key health indicators which can highlight status of health in a state are Crude Birth Rate (CBR), Crude Death Rate (CDR), Total Fertility Rate (TFR), Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR). Details are mentioned in Table 2. CBR in Bihar (28.5 per '000) was recorded considerably higher than the national average (22.5 per '000), and contrary to that CDR in the State was marginally better than the national average by 2009. Therefore having more births and less deaths as compared with the national average is the basic reason of high population growth in Bihar. In spite of being the

**Table 2.** Selected Health Indicators of India and Bihar

S. No.	Item	India	Bihar	Source
1	Crude Birth Rate (per 1,000)	22.5	28.5	SRS 2009
2	Crude Death Rate (per 1,000)	7.3	7.0	
3	Total Fertility Rate	2.6	3.9	
4	Infant Mortality Rate (per 1,000)	50	52	
5	Maternal Mortality Ratio (per 100,000)	212	261	SRS 07–09

**Note:** SRS: Sample Registration System; NSSO: National Sample Survey Organisation

poorest state in the terms of per capita income and having the least literacy rate, the IMR in Bihar was 52 per thousand live births in 2009, close to the national average of 50 per thousand live births. Between 2005 and 2009, the IMR in India was reduced from 58 to 50. This pace of decline was higher for Bihar, as the IMR for Bihar decreased from 61 in 2005 to 52 in 2009. Bihar has also recorded a considerable drop in Maternal Mortality Ratio (MMR) from 312 in 2004–06 to 261 in 2007–09, in case of India the reduction has been from 254 in 2004–06 to 221 in 2007–09. In the case of Total Fertility Rate (TFR), which is the average number of children expected to be born per woman during her reproductive period, Bihar lags far behind the national average. As per the Sample Registration System (SRS) 2009 Bihar's TFR was 3.9, while the national rate was 2.6. TFR of Bihar is the highest in India, though it has improved from 4.3 in 2004 to 3.9 in 2009. Kerala, which has the lowest TFR rate of 1.7 per cent, its higher literacy rate and human development is said to be main reasons behind achieving this success, especially female literacy.

Bihar accounts for nearly 58 per cent malnutrition among children, which is above the national average of 46 per cent. The situation gets compounded as 80 per cent of children below five years of age are malnourished. Nearly two-thirds of women in the child-bearing age are malnourished in the State, the highest in the country.<sup>6</sup> The high rate of malnutrition among children in Bihar can be attributed to several factors, which may include low intake of nutritious food, non-availability of quality health services, absence of adequate community workers, and non-access to affordable medicines. Moreover, social practices such as early marriage and pregnancy and lack of adequate breastfeeding due to successive pregnancy also contribute to higher malnutrition rate in the State. These indicators are closely related to and dependent on literacy of women and their awareness levels, as mentioned in the first section (Table 1); female literacy is also the lowest in Bihar.

As per the National Family and Health Survey (NFHS) round three data (Table 3), current contraceptive use (by any modern method) in India was 48.5 per cent, while in Bihar it was as low as 28.9 per cent. An economically better performing state like Tamil Nadu recorded current contraceptive use as high as 60 per cent, considerably higher than the national average. Poor use of contraception is one of the primary reasons of frequent pregnancy among women whose literacy and awareness level is poor as they hardly have any informed choice of contraception. As in Bihar female literacy is the lowest in India the obvious effect is reflected in the current contraception use.

According to the District Level Household Survey (DLHS-3, Government of India 2008), some of the primary health indicators of Bihar are alarming when compared with the national average. Nearly 46 per cent girls were married in Bihar before they attain 18 years of age and nearly 65 per cent of the currently married women in the state were illiterate. As the female literacy rate of Bihar is already the lowest in

**Table 3.** Current Contraceptive Use: India and States (NFHS-3)

	Female Sterilisation	Any Modern Spacing Method	Total (any modern)
India	37.3%	10%	48.5%
Bihar	23.8%	4.2%	28.9%
Tamil Nadu	55%	4.6%	60%

**Source:** International Institute for Population Sciences (2007).

India, most of these under-18-years married girls are illiterate and unaware of health concerns and hence they are completely vulnerable to life-threatening health challenges. Only 32 per cent women in Bihar used any method of family planning and their unmet need was as high as 37 per cent. Only 4.6 per cent mothers in the state received a full antenatal check up (ANC), 26.4 per cent had three ANCs and 59.3 per cent had any ANC. The institutional delivery rate in Bihar was just 27.7 per cent and only 41 per cent children in the 12–23 month age had received full immunization. Only 39.8 per cent women knew about RTI/STI and the percentage of women who had heard about HIV/AIDS was just 29.5 per cent, therefore with the limited awareness level their health risks were highest. Considering the large-scale employment-oriented out-migration and return-migration in Bihar, which also contributes to the second largest internal migration after Uttar Pradesh (Government of India 2011, 2001), Bihar is among the highest HIV risk states due to the high rate of return migration rate (NACO 2011). In this situation having poor awareness among women about reproductive tract infection/sexually transmitted infection (RTI/STI) and HIV/AIDS coupled with poor literacy rates and education, migrant workers and their families in Bihar carry a manifold larger risk of sexually-transmitted life-threatening diseases including HIV/AIDS.

The Coverage Evaluation Survey (Government of India 2009a) conducted at the national level revisited some of the key indicators which were covered in the DLHS-2 and DLHS-3 surveys, and it found a marginal to considerable improvement in the maternal and child health indicators of Bihar (Table 4). Though there has been an improvement in the indicators in recent years, but still Bihar's performance lags considerably behind the national average. Though ANC services reached to more than 80 per cent of women in Bihar, most of them received only one ANC during their pregnancy period, and not the recommended three ANC, two tetanus (TT) injections and consumption of at least 100 iron folic acid (IFA) tablets. In Bihar barely 4.5 per cent pregnant women received full ANC services, while the national average is 26.5 per cent. Institutional delivery, which is primarily responsible for bringing down IMR and MMR, is another concern area where Bihar considerably lags behind the national average. Barely 50 per cent pregnant women deliver in health facilities in Bihar and the remaining, who are either not able to find health facilities or are not able to afford them, deliver their babies at home at the hands of either traditional birth attendants (TBA) or skilled birth attendants (SBA). In case of any emergency during the normal delivery process at home, it either results in the morbidity of the infant or the mother, or in some cases both. Similar is the progress with immunization of children in the 12–23-month ages, where only approximately 50 per cent of the children in the state get immunized for recommended preventive infectious diseases.

Another important indicator which plays a vital role in preventing or spreading many infectious diseases and, therefore, shapes the health status of a state is percentage of people having or availing toilet facilities to defecate. Defecation of human excreta in the open leads to serious health risks in the form of

**Table 4.** Comparison of a Few Maternal and Child Health Indicators of India and Bihar

Indicators	DLHS-2 (2004)		DLHS-3 (2008)		CES (2009)	
	India	Bihar	India	Bihar	India	Bihar
Mothers who received any (at least one) ANC (%)	73.6	31.4	75.2	59.3	89.6	84.3
Mothers who had 3 or more ANC (%)	50.4	16	49.8	26.4	68.7	33.8
Mothers who had full ANC (%)	16.5	4.3	18.8	4.6	26.5	4.5
Institutional delivery (%)	40.9	18.8	47.0	27.7	73%	48.3
Children 12–23 months fully immunized (%)	45.9	20.7	54.0	41.4	61.0	49

**Source:** DLHS (2&3) Factsheet for India & Bihar; Coverage Evaluation Survey-2009 factsheet for India & Bihar.

life-threatening bacterial infections, especially when defecated excreta comes in human contact in any form, through contamination of open water sources or contamination of the food cycle due to unhygienic practices. As per DLHS-3 data, in Bihar only 17 per cent of the population had toilet facilities, while the rest were defecating in open. As per the new census report (Government of India 2011) the percentage of people availing toilet facilities in the state has increased up to 24 per cent (Table 5) since 2007–08, but still three-fourth of the population defecates in open, while in case of the national average this is 50 per cent.<sup>7</sup> Defecation in the open is one of the biggest public health risks, especially in the case of densely populated hamlets in villages, slums located near railway lines in urban areas and also staying close to open water sources, industrial and urban clusters where a large number of migrant workers and their families live in makeshift houses, etc.

Because of the poorest availability of toilet facilities and the highest population density among any state (1102 per square km.) in Bihar, health risks related to the same are apparent from the large-scale cases of diarrhoea deaths among infants (0–5 years). At the national level infants (0–5 years) make 25 per cent of global diarrhoea deaths. Of the 610,000 infants below the age of five years who die because of severe gastroenteritis or diarrhoea, nearly 152,000 are Indians (IANS 2011). Bihar records one of the highest sickness and deaths among infants due to diarrhoea, as the Bihar Health Society

**Table 5.** Households not Having/Availing Latrine Facility (Excluding Institutional Households)

	Number of Households	% of Households
<b>Total households in India</b>	24,66,92,667	
defecating in open	12,29,57,510	50
defecating in open (Rural)	11,29,97,499	92
defecating in open (Urban)	99,60,011	8
<b>Total households in Bihar</b>	1,89,40,629	
defecating in open	1,43,58,546	76
defecating in open (Rural)	1,37,76,940	96
defecating in open (Urban)	5,81,606	4

**Source:** Self-calculated from HH-8 (Households by availability of Latrine facility) Census of India-2011. Government of India. Available at [http://www.censusindia.gov.in/2011census/hlo/HLO\\_Tablepage/HLO\\_table/00/HH2808-0000.pdf](http://www.censusindia.gov.in/2011census/hlo/HLO_Tablepage/HLO_table/00/HH2808-0000.pdf). Accessed on 15 March 2012).



(Government of Bihar 2012: 216) reports, after Acute Respiratory Infection (1.3 million patients) and fever of unknown origin (nearly one million patients), Acute Diarrhoeal Disease is the severest health risk for infants in Bihar which makes nearly half a million children ill.

By any index to measure socio-economic development, Bihar lags far behind the national average and remains well behind other states. Similar is the situation as far as the health status of the people in Bihar is concerned. The primary causes of poor health and health-related daily practices in Bihar are poverty and social deprivation, low literacy rate—especially female literacy, and structural inequalities in terms of class, caste and sex. It may take few decades before Bihar catches up with the rest of the country, when the high growth in GDP is maintained and translated into better health status of its population and human development. To achieve comparable human development in Bihar, the provision of better availability and accessibility of public health care facilities will need special attention.

## **Public Health Delivery and Bihar**

Health is a subject in the concurrent list of Indian constitution, which means that the union and the state governments both exercise their legislative, executive and financial authority over the health subjects. Committees of experts are appointed by the governments from time to time to render advice about different public health problems. The reports of these committees form an important basis of health planning in India. At the recommendation of the first such committee, that is, the Bhole Committee (1946), emphasis was laid on integration of curative and preventive medicine at all levels. It made comprehensive recommendations for remodelling of health services in India. At his recommendation, a three-tier delivery system of health services started as early as in 1952, which comprised of sub-centres (SCs), primary health centres (PHCs) and community health centres (CHCs). This system is still followed throughout India and it forms the backbone of the health infrastructure in India.

The Indian Public Health Standards (IPHS) is the nodal system followed by the Government of India and state governments to regulate and strengthen the public health delivery network in India. IPHS is a set of standards envisaged to improve the quality of health care delivery in the country under the National Rural Health Mission (NRHM) which started in 2005 for a period of seven years till 2012. The Ministry of Health and Family Welfare (MoHFW), Government of India recognized that the health care system in India had expanded considerably over the last decade. However, the quality of services was not uniform throughout the country, due to various reasons like non-availability of adequate infrastructure, human resources, problems of access, acceptability, lack of community involvement, etc. Hence, the MoHFW introduced the IPHS in order to improve the quality of public health levels, with the commencement of the NRHM when the state expenditure on health was to increase considerably at the recommendations of the National Health Policy (NHP) 2002.

The NRHM mission document committed to provide effective health care to the rural population throughout the country with special focus on 18 states, which have weak public health indicators and/or weak infrastructure. Bihar is one such state among 17 others mostly from northern, central, eastern and north-eastern states which were recognized by the Government of India for special attention in terms of increase of quality health infrastructure and human resources by providing additional budgetary support. The mission was launched with a commitment of the Government to raise national public spending on health from 0.9 per cent of GDP to 2–3 per cent of GDP.

The IPHS sets population norms for the each tier of health service delivery system, starting from sub-centre at the most peripheral village level to 500-bedded district hospitals (details in Table 6). In total, the IPHS sets standards for eight types of public health delivery systems. The following are the population norms and basic features for each tier of public health delivery system.

The sub-centre is the most peripheral health institution catering for the health care needs of the rural population. It is also the most peripheral contact point between the primary health care system and the community. It is manned by one male multipurpose worker (MPW/M) and one female multipurpose worker (MPW/F) or ANM. A PHC on the other hand is the first contact point between the village community and the medical officer. A PHC is expected to have a medical officer (MO) and 14 paramedical and other staff. It acts as a referral unit for five to six sub-centres. Activities of the PHC involve curative, preventive and promotive services. CHCs are basically referral centres for PHCs approximately in the ratio of 1:4. The staff strength of a CHC includes 4 medical specialists having a post-graduate (PG) degree, that is, a surgeon, a physician, a gynaecologist and a paediatrician, supported by 21 paramedical and other staff. A regular anaesthetist position at CHC has been proposed in the IPHS 2010 draft.

**Table 6:** Type of Health Facilities as per Population Norms of IPHS

Type of Health Facility	Population Norms	Basic Features
Sub Centre (SC)	Village Level: 5,000 population in plain areas and for every 3,000 population in hilly/tribal/desert areas.	Manned by one male multipurpose worker (MPW/M) and one female multipurpose worker (MPW/F) or ANM.
Primary Health Centre (PHC)	Block Level: 30,000 populations in plain areas and 20,000 in hilly, tribal, or difficult areas.	With 4-6 indoor/observation beds, it is manned by a MO and acts as a referral unit for 6 sub-centres and refers out cases to higher order public hospitals.
Community Health Centre (CHC)	Block Level: 4 PHCs are included under each CHC thus catering to a population of approximately 80,000 in tribal/hilly areas and a population of 120,000 in the plains.	30-bedded hospital providing specialist care in medicine, Obstetrics and Gynaecology, Surgery and Paediatrics with the help of regular appointed medical experts. It is the first referral unit for the PHCs falling under its area.
31–50 bedded Hospital & 51–100 bedded Hospital	Subdivision Hospital: It caters to about 5–6 lakh (0.5–0.6 million) people. Depending upon size of a sub-division, a sub-divisional hospital can be 31 to 50 or 51 to 100 bedded.	It has important role to play as First Referral Units for PHCs and CHCs in providing emergency obstetrics care and neonatal care. It fills the gap between the block level hospitals and the district hospitals.
101–200 bedded Hospital 201–300 bedded Hospital 301–500 bedded Hospital	District Hospital: Every district is expected to have a district hospital linked with the public hospitals/health centres down below the district such as Sub-district/Sub-divisional hospitals, CHCs, PHCs and SCs.	District hospitals is an essential component of the district health system and functions as a secondary level of health care which provides curative, preventive and promotive health care services to the people in the district.

Source: MoHFW, Government of India.

At Sub-Divisional Hospitals essential available services are: OPD, indoor and emergency services, with secondary level health care services related to General Medicine, General Surgery, Obstetrics and Gynaecology, Paediatrics, Anaesthesia, Orthopaedics, ENT, Radiology and Ultrasonology, Ophthalmology, Community Health, Dermatology and Venerology (Skin and VD) RTI/STI, Dental care and essential laboratory services. At District Hospitals essentially available services are: OPD, indoor, and emergency services along with secondary level health care services of General Medicine, General Surgery, Obstetrics and Gynaecology, Paediatrics including Neonatology, Emergency (accidents and other emergency), Critical care (ICU), Anaesthesia, Ophthalmology, ENT, Dermatology and Venerology including STI/RTI, Orthopaedics, Radiology, Dental care, and Public Health Management.

The above structure of the public health delivery system is a standard one throughout India, though its actual implementation has varied from state to state. For example, the IPHS has no guidelines about Additional PHCs (APHC), and in practice all APHCs should have all standards and facilities of a PHC. In practice two-thirds of the PHCs in Bihar are in fact APHCs, and they are no better than a sub-centre. APHCs are attached with the PHC of a particular block and subdivision and there is no separate appointment of doctors and paramedics for the APHCs. A part of the existing human resources at the PHC is deputed to provide a few hours of their service to the APHCs without having sufficient infrastructure in place.

Growth of public health infrastructure in Bihar has not been in congruence with the growth in population and demand for public health services especially in the last few decades. The infrastructural and human resource gap is huge, which is reflected in the periodical reports published by the Rural Health Statistics (RHS) Division of the MoHFW, Government of India. The latest available figures (Table 7) of 2008–09 show a huge gap of infrastructural and human resource shortage in Bihar. The required estimation of health infrastructure is based on the population estimates of the 2001 census, where the shortfall of sub-centres, PHCs and CHCs was 41 per cent, 34 per cent and 89 per cent respectively. The gap is substantial in sub-centres, PHCs, and very large in the case of CHCs along with a shortage of human resources, drugs and equipment for primary health care in the state. This gap will look even wider when compared against the new population data from Census 2011. The information in Table 7 gives a detailed picture of the requirement, availability and shortfall in health infrastructure and human resources (2008–09) employed for managing the health services as per IPHS norms. There is a shortfall of nearly a half to three-fourth of doctors, technicians and paramedical staff at the referral hospitals (CHCs) in the state. Having these positions inadequately filled, there is hardly and referral done from PHCs to CHCs and, therefore all the referral loads reach the district hospitals and medical college hospitals in the state.

These figures speak about the reality of the health infrastructure itself; the ground realities of the health facilities are even more alarming. On government records usually most of the mentioned services are shown available, but in reality adequate and timely availability and accessibility of these services for the ordinary population remains in question. In the mentioned total number of functioning PHCs, more than two-thirds are Additional PHCs (APHC), which are basically upgraded sub-centres (Government of Bihar 2012). A good number of sub-centres and APHCs run in far flung areas and from rented rooms without having any facilities for the accommodation of support staff. In such a situation these facilities only provide very limited services and are open only for limited hours. As per the 2011 census estimates of population needs of required public health infrastructure would be further higher as the need for basic health facilities will be estimated according to the present IPHS standards. Though the state government seems to be working hard in recent years to bridge the large infrastructure gap, so far it has not been possible for the state government to create a health infrastructure which is adequate to provide required

**Table 7.** Gap in Required and Existing Health Infrastructure and Human Resource as per IPHS Guidelines

Items	Required	In Position	Shortfall	Shortfall (%)
Sub-centre	14,959	8,858	6,101	41%
Primary Health Centre	2,489	1,641	848	34%
Community Health Centre (Referral hospital)	622	70	552	89%
Multipurpose worker (Female)/ANM	10,499	9,127	1,372	13%
Health Worker (Male) MPW(M) at Sub-centres	8,858	1,074	7,784	88%
Health Assistant (Female)/LHV at PHCs	1,641	479	1,162	71%
Health Assistant (Male) at PHCs	1,641	634	1,007	61%
Doctor at PHCs	1,641	1565	76	5%
Obstetricians & Gynaecologists at CHCs	70	21	49	70%
Physicians at CHCs	70	38	32	46%
Paediatricians at CHCs	70	17	53	76%
Radiographers	70	15	55	79%
Total specialists at CHCs	280	104	176	63%
Pharmacist	1,711	439	1,272	74%
Laboratory Technicians	1,711	135	1,576	92%
Nurse/Midwife	2,131	1,425	706	33%

**Source:** RHS Bulletin, March 2008-09, MoHFW, Gol.

health services to the population as per national norms (Government of Bihar 2012). Moreover, whatever the public health service delivery system is available in Bihar, it is grossly inadequate in terms of required infrastructure and manpower.

The Integrated Child Development Services (ICDS) Scheme, which is aimed at early childhood and motherhood development by improving nutrition and providing essential health related information and services, is in operation in Bihar since the 1970's. The ICDS is the most unique combination of programmes which includes providing pre-school education to 3–6 year-old children; and supplementary nutrition, immunization, health check-ups, referral services and nutrition and health education to children below 6 years and women in their reproductive age, especially pregnant and lactating mothers. Three of the six services, namely, immunization, health check-ups and referral services are delivered through the public health infrastructure of the respective states. The ICDS implementation data in Bihar (Table 8) speaks volumes about how another important opportunity of improving maternal and childcare indicators is being missed due to infrastructural constraints. When the health infrastructure of Bihar itself is inadequate and unable to meet the increasing demands of health services at its own designated facilities, in such a scenario the additional responsibilities for providing health services through ICSD is another grossly overlooked area. Moreover, the ICDS infrastructure and necessary human resource to run them smoothly is also inadequate. Major funding for running ICDS services comes from the central government and the ICDS facilities and services are executed and monitored by state governments; the inadequacy of the State in doing so takes a heavy toll of accessible service delivery, especially the health components of the scheme.

**Table 8.** Staffing Position in ICDS Scheme in Bihar (2010–11)

Post	CDPO	Female Supervisor	Anganwadi Worker	Anganwadi Helper
Sanctioned Strength	544	3,288	91,677	91,677
Actual Strength	508	254	80,211	80,211
Vacant positions	36	3,034	11,466	11,466
% of actual strength	93.38	7.73	87.49	87.49

**Source:** Bihar Economic Survey, 2010–11, p. 238.

School health services is one of the important institutional mechanisms for providing health services to school students from 6–14 years of age as suggested by the Central Health Education Bureau (CHEB) which works as an apex institution under the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India for health education and health promotion in the country. The aim of school health programme is to provide comprehensive health care to all school children in both urban and rural areas. It comprises of medical examinations, treatment, preventive medicine, follow-up action, sanitation, hygiene, a safe environment and other aspects of health management. There is a provision for health check-up twice in a year undertaken by government or private agencies under the supervision of a Medical Officer who is in charge of medical inspection. However, despite having such institutions and provisions in place, in practice much of the implementation and progress depends on how effective and efficient the state administration and elected local bodies are.

In the case of Bihar, due to inadequate availability of health infrastructure, lack of doctors and paramedics and lack of necessary monitoring and supervision from Health and Education department officials, school health services hardly works. In fact in schools teachers and students hardly know that there is such an institutional provision of having periodical school health check-ups for school students. Recently the state government has announced that health cards will be issued to all children up to 14 years of age studying in schools or otherwise (*Indian Express* 2011). Besides offering OPD facilities and free medicines, the health card, which will be valid for five years, will also facilitate specialized medical treatment in premier government hospitals. Though such announcements are being made, until the state has an adequate public health infrastructure, doctors, technicians and paramedics in place for providing health services, fulfilment of such announcements will remain elusive.

In recent years the state has launched a variety of programmes to reduce morbidity and mortality rates and these programmes are at various stages of implementation (GoI 2007). These programmes broadly cover the following: Janani Evam Bal Suraksha Yojana under the overall umbrella of the NRHM, Anaemia Control Programme, Blindness Control Programme, Vitamin A Supplementation Programme, Routine Immunization, Programme for Elimination of Iodine Deficiency Disorders, Revised National Tuberculosis Control Programme (RNTCP), National Leprosy Eradication Programme, Kala-azar Eradication Programme, etc. The NRHM has been an urgent need and most challenging task. However, this also provides an important opportunity to improve health outcomes through a variety of new approaches. Two of the key elements of NRHM, namely, the ASHA Programme and District Health Planning have been undertaken by the state in a rigorous manner (GoI 2007). District Health Plans, for the first time, have assumed a new centrality and urgency in the current context of the NRHM. This will also encourage decentralization and community participation, convergence and improved accountability of health systems at the grass-root levels. Specific activities have been undertaken to affect the basic

indicators of health. These include improvements in infrastructure and delivery system of health care, provision of manpower, equipments and drugs, improved inter-sectoral coordination, monitoring and evaluation, and other innovative approaches. These initiatives would have far reaching implications towards better health of common people across the State (GoI 2007).

## Conclusion

For the poor health status of Bihar, availability, accessibility and affordability of the public health service delivery system for common people holds prime importance. Second, the most important factors are lack of general education and awareness of health concerns in the community, especially among women who are the primary care givers in the family. The awareness level of men is also a concern, given the fact that they often control household finances and determine whether and which kind of health treatment is sought. The NFHS-3 revealed that in general, only a minority of fathers with a child less than three years of age were provided information related to maternal care. Only one-third were told about the importance of proper nutrition for the mother during pregnancy and one-fourth were told about the importance of delivering the baby in a health facility. Therefore, education is understood to be closely linked with a community's health concerns and awareness of preventable health challenges. Communities with poor education levels are likely to have lower awareness about public health challenges, which may result in a higher incidence of preventable diseases.

Bihar constitutes nearly 10 per cent of the national population and with higher population growth as compared with other states; this percentage would be going up in successive census. Hence, the case of Bihar is a very significant one as its poor performance on most of the socio-economic indicators would eventually keep on affecting the national developmental indicators. Though India is likely to be more numerous, better educated, healthier and more prosperous than at any time in history, a vibrant India with comparable regional development will be only possible when a poor performing state like Bihar gets its share of adequate opportunity, investment and innovation. When high population growth would not mean burden on resources, rather it will open up new vistas for trained human resources who will further contribute to the developmental process of the State and the nation. As Amartya Sen (1999) says that development in real sense should mean expansion of opportunity to every citizen in education, food security, health, sanitation, water and other services with equity and justice irrespective of gender, caste, religion or language.

To achieve the desired health status in Bihar, it is necessary that a multi-faceted approach of development is adopted. It includes developing physical infrastructure for providing health services as per rising population and growing demand for quality services. Physical infrastructure has two components, one is the opening up new health facilities and reviving and maintaining the dilapidated ones, another is providing adequate equipment, laboratory facilities and other support services especially at the first level of referral hospitals and 24x7 PHCs. Appointing adequate and quality human resources in the existing and new health infrastructure coming up, which is at present grossly mismatched and sanctioned positions are vacant from 50 per cent up to 80 per cent that includes doctors, technicians, paramedical staff and other support staff. The service approach should be brought into the health care delivery system and dependable services should be provided through static health facilities, mobile and outreach health facilities, and also through latest IT enabled services like telemedicine. The state should also play a key role

in bringing behavioural changes related to health through health educational programmes. It needs a right blend of a targeted approach through an information–education–communication (IEC) means, which should involve health specific curriculum at the level of schools, behavioural change communication strategy for social mobilization at various levels for better health outcomes involving Panchayati Raj Institutions (PRI), civil society, public health institutions and other stake holders. As we know public expenditure on health care in India is only 25 per cent of the total expenditure and in case of Bihar it is even lower. Hence, the private sector health care (organized and unorganized) has a larger share in the health infrastructure and reach. Therefore, the state should exercise its regulatory approach to ensure that patients get a fair treatment and service at the hands of private service providers. As a matter of fact, there are only a few states in India which have made statutory provisions under the Clinical Establishment Act for registration and regulation of private health care facilities, as suggested by the Government of India from time to time. Since such a legislation was not coming up in most of the states, the Government of India enacted the Clinical Establishments (Registration and Regulation) Act, 2010 and made it obligatory for the state governments to have similar legislation passed by their respective state legislatures. Unfortunately till date Bihar does not have such a statutory provision, while its neighbouring state, West Bengal, had such a provision as early as 1951 (West Bengal Clinical Establishment Rules 1951). In the absence of such a provision, private health care facilities run in Bihar the way it suits them economically without caring about ethical standards and any check from the state government. And therefore, one can hardly find more than a few hospitals and pathological laboratories in Bihar which are accredited by the National Accreditation Board for Hospitals and Healthcare Providers (NABH) and the National Accreditation Board for Testing and Calibration Laboratories (NABL) respectively.

Therefore, looking at the above needs and structural constraints in Bihar, it seems that it will take miles to go when one can see a nationally comparable development in the health indices and health status in Bihar. The recent growth and spurt in Bihar shows a ray of hope and a light at the end of the tunnel for achieving this phenomenal task of improving the health status in Bihar. All it needs is a coordinated and consistent effort at every level of governance, planning and execution of health targets with extensive community participation.

## Notes

1. Buddhism and Jainism in the sixth century BC, and the last Guru of the Sikhs in the seventeenth century grew in Bihar. The first republic in the world at Vaishali Mahajanpada as well as numerous statesmen and intellectuals like Ashoka, Chanakya, Chandragupta Maurya and Aryabhata are credited to Bihar. It gave the world the first seat of higher learning, a university at Nalanda, established during the fifth century.
2. Appleby Report (1953), Government of India.
3. Data on BPL population in Bihar varies from 43 per cent by the National Sample Survey Organization to 55 per cent by the Tendulkar Committee (2009), Government of India.
4. The Gross Enrolment Ratio (GER) is a statistical measure used in the education sector and by the United Nations in its Education Index to determine the number of students enrolled at several different grade levels and examine it to analyze the ratio of the number of students who live in that country to those who qualify for the particular grade level.
5. Human excreta defecated outside in the open.
6. HUNGaMA report (2011). A part was published in the Times News Network on 11 January 2012. Retrieved from [http://articles.timesofindia.indiatimes.com/2012-01-11/patna/30615605\\_1\\_malnutrition-pregnant-women-anaemia](http://articles.timesofindia.indiatimes.com/2012-01-11/patna/30615605_1_malnutrition-pregnant-women-anaemia)
7. Self-calculated from HH-8 (Households by availability of Latrine facility) from Census 2011.

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