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Mortality and Morbidity Challenge in Health Sector of India

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ABSTRACT

Health as conceived by World Health Organization (WHO) is a "state of physical, mental and social well-being and not merely the absence of disease or infirmity". Hunger is synonymous with poverty and both are inseparably linked. Access to food and improved nutrition constitute an undeniable basic human right and one of the central goals of development process aiming reduction of poverty and inequality. Reducing malnutrition is thus central to the notion of reducing poverty itself. Health is an important factor in the formation of human resource development which plays a vital role in improving the qualities of human beings who are the active agents of economic development. Improving the qualities of human agents contributes to labor productivity, allocate and entrepreneurial ability. The relationship between health and poverty or health and development is complex, multi-faceted and multidirectional. Poverty in its various dimensions could be a manifestation, as well as a determinant of an individual's health. In its most basic form as a state of food deprivation and nutritional inadequacy poverty has a direct bearing on the morbidity and longevity of people.

Currently in India low IMR, MMR, low expectancy at birth, sex ratio is some of the biggest challenges for health sector development. Main diseases in India are Tuberculosis, Malaria, and HIV which are directly related to poverty.

Introduction

The infant and child mortality rates are taken as one of the most crucial indicators of health conditions and socio-economic development in any country. A child surviving the first five years of his life has been a global concern till now. It was estimated that approximately 10.5 million children under the age of 5 years died every year in the world till 2010. The sincere efforts were initiated since 1970, when child mortality was more than 17 million. However, these reductions did not take place uniformly across country and over the years. The success stories in developing countries demonstrated clearly that low mortality levels can also be achieved amid poverty and poor social and economic development. The effects of such achievements can never be underestimated, if the whole world was able to share the current child mortality experience of Iceland (the lowest in the world in 2002), over 10 million child deaths could be prevented each year. Today nearly all child deaths occur in developing countries, almost half of them in Africa. There is no doubt to the fact that across the world, children are at higher risk of dying if they are poor. The most impressive declines in child mortality have occurred in developed countries and in low-mortality developing countries where economic condition has improved. In contrast, the declines observed in countries with higher mortality have occurred at a slower rate, stagnated or even reversed. Owing to the overall gains in developing regions, the mortality gap between the developing and developed world has narrowed since 1970. However, because the better-off countries in developing regions are improving at a fast rate, and many of the poorer populations are losing ground, the disparity between the different developing regions is widening. Of the 20 countries in the world with the highest child mortality, 19 are in Africa, the exception being Afghanistan.

Mortality Challenges in India

Infant Mortality rate is a measure of human infant deaths in a community younger than one year of age. It is a crucial indicator to show the status of health of a society. High infant mortality rates are reflective of poor healthcare, sanitation, nutrition, and education. To compute a given year's infant mortality rate in a certain area or within a community, one would need to know how many babies were born alive in the in the area/community during the period and how many babies who were born alive died before their first birthday during that time. The number of infant deaths is then divided by the number of infant births, and the results are commonly multiplied by 1,000 and the rate reflects the number of infant deaths per 1,000 births in a standardized manner. The documentation of the demographic and geographical details of changes in cause-specific neo-natal (younger than 1 month) and 1-59-months mortality in India can guide further progress in reduction of child mortality. The Registrar General of India has implemented the Million Death Study (MDS) in 1·3 million homes in more than 7000 randomly selected areas of India. About 900 non-medical surveyors did structured verbal autopsies for deaths recorded in these homes. Each field report was assigned randomly to two of 404 trained physicians to classify the cause of death, with a standard process for resolution of disagreements. The child deaths were combined according to the MDS for 2001–13 with annual UN estimates of national births and deaths (partitioned across India's states and rural or urban areas) for 2000–15. It had calculated the annual

percentage change in sex-specific and cause-specific mortality between 2000 and 2015 for neo-natal and 1–59-months-old children. The MDS captured 52 252 deaths in neo-nates and 42 057 deaths at 1–59 months. Examining specific causes, the neo-natal mortality rate from infection fell by 66 per cent from 11·9 per 1000 live births in 2000 to 4·0 per 1000 live births in 2015 and the rate from birth asphyxia or trauma fell by 76 per cent from 9·0 per 1000 live births in 2000 to 2·2 per 1000 live births in 2015. At 1–59 months, the mortality rate from pneumonia fell by 63 per cent from 11·2 per 1000 live births in 2000 to 4·2 per 1000 live births in 2015 and the rate from diarrhoea fell by 66 per cent from 9·4 per 1000live births in 2000 to 3·2 per 1000live births in 2015 (with narrowing girl–boy gaps). The neo-natal tetanus mortality rate fell from 1·6 per 1000 live births in 2000 to less than 0·1 per 1000 live births in 2015 and the 1–59-month measles mortality rate fell from 3·3 per 1000 live births in 2000 to 0·3 per 1000 live births in 2015. By contrast, mortality rates for prematurity or low birth weight rose from 12·3 per 1000 live births in 2000 to 14·3 per 1000 live births in 2015, driven mostly by increases in term births with low birth weight in poorer states and rural areas. 29 million cumulative child deaths occurred from 2000 to 2015. The average annual decline in mortality rates from 2000 to 2015 was 3·3 per cent for neo-nates and 5·4 per cent for children aged 1–59 months. Annual declines from 2005 to 2015 (3·4 per cent decline for neo-natal mortality and 5·9 per cent decline in 1–59-months mortality) were faster than were annual declines from 2000 to 2005 (3·2 per cent decline for neo-natal mortality and 4·5 per cent decline in 1–59-months mortality). These faster declines indicated that India avoided about 1 million child deaths compared with continuation of the 2000–05 declines. To meet the 2030 Sustainable Development Goals for child mortality, India will need to maintain the current trajectory of 1–59-months mortality and accelerate declines in neo-natal mortality (to >5 per cent annually). Continued progress in reduction of child mortality due to pneumonia, diarrhoea, malaria, and measles at 1–59 months is feasible. Additional attention to low birth weight is required.

However, despite a good success in arresting child mortality in our country, there is utmost need to accelerate the efforts to bring it down to the prescribed standard. In this chapter, changes reported in different Health and Family welfare Surveys have been examined. These surveys relate to the year of 1992-93, 1998-99, 2005-06 and 2015-16, generally referred to NFHS, I, II, III and IV.

Infant Mortality Rates in Uttar Pradesh Compared with Major States

The infant mortality rates as reported by the National Family and Health Survey in 1992-93, 1998-99, 2005-06 and 2015-16 have been presented in table-1. The table showed that IMR was 78 at the all India level during 1992-93. In this year, state of Uttar Pradesh had highest level of IMR (100) after Orissa which was on the top (112) among all major states listed in table-1. The Kerala state had the IMR of 24 which was lowest among all the major states of the country. In 1998-99, situation in relation to IMR worsened in Uttar Pradesh as the state had highest level of IMR (87) while Kerala further improved its status. It not only improved its position with lowest IMR state in the country but IMR was reduced to 16 in 1998-99 from 1992-93.

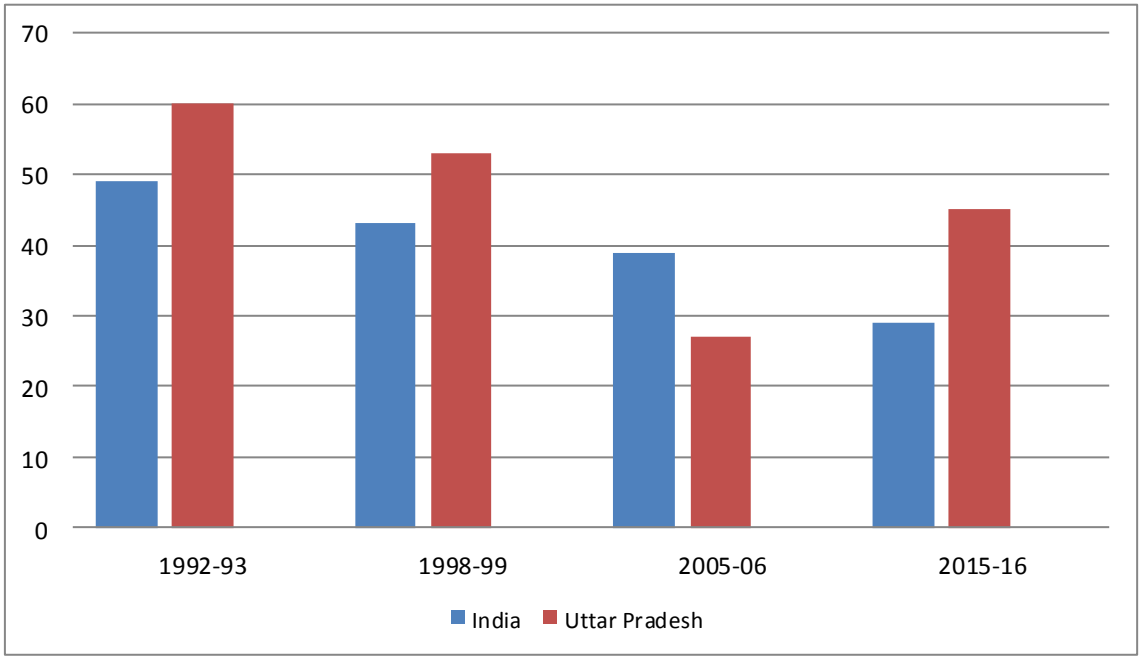
Table-1: Infant Mortality Rate in Uttar Pradesh and Major States: 1992- 2016

States	1992-93	1998-99	2005-6	2015-16	CAGR
Andhra Pradesh	70 (10)	66 (7)	53 (6)	35 (7)	-2.97
Assam	89 (3)	69 (6)	66 (2)	46 (4)	-2.83
Madhya Pradesh	85 (5)	86 (2)	69 (1)	51 (2)	-2.20
Bihar	89 (3)	73 (5)	62 (5)	48 (3)	-2.65
Gujarat	69 (10)	62 (8)	50 (7)	34 (8)	-3.03
Haryana	73 (7)	56 (10)	41 (11)	33 (9)	-3.39
Karnataka	65 (12)	51 (11)	43 (9)	27 (11)	-3.75
Kerala	24 (15)	16 (15)	15 (15)	5 (15)	-6.59
Maharashtra	50 (14)	43 (14)	37 (13)	23 (13)	-3.32
Orissa	112 (1)	81 (3)	65 (3)	39 (6)	-4.48
Punjab	54 (13)	57 (9)	41 (11)	29 (10)	-2.67
Rajasthan	72 (8)	80 (4)	65 (3)	40 (5)	-2.52
Tamil Nadu	68 (11)	48 (13)	30 (14)	20 (14)	-5.18
Uttar Pradesh	100 (2)	87 (1)	42 (10)	63 (1)	-1.99
West Bengal	75 (6)	49 (12)	48 (8)	27 (11)	-4.34
India	78	67	57	40	-2.86

Note: Figures in brackets are the ranks.

Source: National Family Health Survey-I, II, III & IV.

Figure-1: Infant Mortality Rate in Uttar Pradesh and India



Source: National Family Health Survey-I, II, III, IV

A sea change was witnessed in the reduction of IMR in different states of the country during 2005-06. At the all India level, IMR was reduced to 67 in 1998-99 from 78 in 1992-93. In Uttar Pradesh also, IMR was reduced to 42 in 2005-06 from 87 in 1992-93. The state reached to the rank of 10 in terms of having the lowest IMR in the major states. During this year, Madhya Pradesh and Assam emerged to be the states which had highest IMR (69 and 66 respectively) but the state of Kerala maintained its top rank with lowest IMR (15) in 2005-06.The above table showed that in the state of Uttar Pradesh, status of IMR worsened again during 2015-16, when IMR was found highest (63) among all major states listed in table-1 despite the fact that IMR at the all India level was reduced to 40 in 2015-16 from 57 in 2005-06. Most of the states among the major states did not report improvement in this regard. The Kerala state, like the past years, remained with lowest IMR state in the country but it also reported further reduction in its IMR in 2015-16 (5) from the year 2005-06 (15).

Infant Mortality Rates by Religion and Caste in India

The infant mortality rates by religion and caste have been shown in table-2. The table showed that among all major religions, IMR was found highest among Hindus in 1998-99, 2005-06 and 2015-15. It is also to be noted here that reduction in IMR in number terms was also highest among Hindus during all these years except in the year 2015-16 when Buddhists had highest decline in IMR compared with other religions. However, in case of Buddhists it does not matter much because their population is very small in India. In all these years, Muslims too had highest IMR after Hindus and the decline in their IMR was not much compared to Hindus. It is also evident that all the socially under privileged castes had higher IMR compared with upper castes. They too have shown considerable reduction in their IMR over the years.

Table-2: Infant Mortality Rates by Religion and Caste in India: 1992-93 to 2015-16

Religion/Caste	1998-99	2005-06	2015-16
Religion			
Hindu	77.1	58.5 (-18.6)	41.6 (-16.9)
Muslim	58.8	52.4 (-6.4)	40.0 (-12.4)
Christian	49.2	41.7 (-7.5)	25.0 (-16.7)
Sikh	53.3	45.6 (-7.7)	29.7 (-15.9)
Buddhist	53.6	52.8 (-0.8)	30.0 (-22.8)
Other	80.3	84.6 (4.3)	41.0 (43.6)
Caste			
Schedule caste	83.0	66.4 (-16.6)	45.2 (-21.2)
Schedule tribe	84.2	62.1 (-22.1)	44.4 (-17.7)
Other Backward Castes	76.0	56.6 (-19.4)	42.1 (-14.5)
Other	61.8	48.9 (-12.9)	32.1 (-16.8)
India	67.6	57 (-10.9)	40.7 (-16.3)

Note: Figure in brackets is the changes in numbers over previous year.

Source: National Family Health Survey- II, III, IV

Maternal Mortality Ratio

Many studies have used the maternal mortality ratio and the maternal mortality rate interchangeably to mean the number of maternal deaths per 100,000 live births. However, The World Health Organization (WHO) has made distinction between these two terms. The first is the Maternal Mortality Ratio which is the number of maternal deaths per 100,000 live births, a measure of the risk of death once a woman has become pregnant. For example, there is town which has 1,000 people. Eleven women in the town become pregnant. One baby miscarries. Ten women give birth to ten live babies. One of the women who gave birth dies due to complications in the pregnancy. The maternal mortality ratio is 1 out of 10. It is 10 per cent. It can be calculated as under:

$$\text{Maternal Mortality Ratio} = \frac{\text{Number of Maternal Deaths}}{\text{Number of Live Births}} \times 1000$$

Maternal Mortality Rates in major states

In the analysis attempted here, we have taken into account the Maternal Mortality Rate (MMR) in major states from 1997-98 to 2013 in table-3. The table showed that during the year 1997-98, Uttar Pradesh had highest MMR (606) among all major states and all India average (398). Assam, Bihar/Jharkhand, Rajasthan, Madhya Pradesh/Chhattisgarh also had higher MMR than the national average during this year. West Bengal, Rajasthan, Orissa, Karnataka were the other states where MMR was found to be quite higher. In the year 1999-2001, Uttar Pradesh had highest MMR (539) among the major states and all India average (327) as evident from the table. In this year, Rajasthan, Orissa, Madhya Pradesh/Chhattisgarh, Bihar/Jharkhand and Assam were the other states were MMR was above the national average. West Bengal, Karnataka, Gujarat and Andhra Pradesh were the states where MMRs were quite higher. During 2001-2003, Uttar Pradesh remained on the top among all the states having highest MMR (417) compared with national average (301). Rajasthan, Orissa, Madhya Pradesh/Chhattisgarh, Bihar/Jharkhand and Assam were the other states where MMR was found to be quite higher than the national average. During period 2004-2006, there was minor improvement in MMR of Uttar Pradesh because Assam became the highest MMR state and Uttar Pradesh was relegated to the position of next highest MMR states among all major states during this period. Rajasthan, Orissa, Madhya Pradesh/Chhattisgarh, Bihar/Jharkhand was the other states where MMR was much higher than the national average of 254.

Table-3: Maternal Mortality Rate in Uttar Pradesh and Major States 1997- 2013

State	Maternal Mortality Rate (1997-98)	Maternal Mortality Rate (1999-01)	Maternal Mortality Rate (2001-03)	Maternal Mortality Rate (2004-06)	Maternal Mortality Rate (2007-09)	Maternal Mortality Rate (2010-12)	Maternal Mortality Rate (2011-13)
Andhra Pradesh	197	220	195	154	134	110	92
Assam	568	398	490	480	390	328	300
Bihar/ Jharkhand	531	400	371	312	261	219	208
Gujarat	46	202	172	160	148	122	112
Haryana	136	176	162	186	153	146	127
Karnataka	245	266	228	213	178	144	133
Kerala	150	149	110	95	81	66	61
Madhya Pradesh/ Chhattisgarh	441	407	379	335	269	230	221
Maharashtra	166	169	149	130	104	87	68
Odisha	346	424	358	303	258	235	222
Punjab	280	177	178	192	172	155	141
Rajasthan	508	501	445	388	318	255	244
Tamil Nadu	131	167	134	111	97	90	79
Uttar Pradesh/ Uttarakhand	606	539	517	440	359	292	285
West Bengal	303	218	194	141	145	117	113
India	398	327	301	254	212	178	167

Source: Open Government Data (OGD) platform India & NITI Aayog

The above analysis has revealed to the fact that Uttar Pradesh was having highest MMR during period 1997-98 to 2001-03 in India. Thereafter, its first rank in terms of highest MMR was taken over by Assam but Uttar Pradesh was found to be

second highest MMR state among the major states of the country. Therefore, the state of Uttar Pradesh faces a formidable challenge of reducing its MMR at least to the national level in near future.

Morbidity Challenges in India

The losses of human life on account of pre mature deaths from fatal and non-fatal disease have been a matter of concern in India. Studies conducted on the subject have revealed that communicable and non-communicable diseases, malnutrition and pre-natal complications have been major reasons for sudden loss of human life. The other notable diseases which lead to loss of life are related to reproduction. Morbidity results from the diseases like malaria, tuberculosis, leprosy, AIDS, blindness, diarrhea etc. The normal life conditions are also threatened by diabetes, blood pressure and coronary diseases. On the whole, non-fatal diseases, communicable diseases, lifestyle diseases and pre-natal complications have put serious challenge to the healthy life and human development.

In view of morbidity challenges faced by the people in our state particular the poor people who are large in number provided logical base to study the status of different communicable and non-communicable diseases in human life in India. The present paper is an attempt in this direction.

Tuberculosis

The Number of persons affected by disease of tuberculosis per one lakh of persons in major states and at the aggregate level from 1991-92 to 2015-16 has been shown in table 4. The NFHS-1 had reported that 467 persons per one lakh of population were affected by tuberculosis during 1991-92. The number of such person increased to 544 in 1998-99. During 2005-06 number of tuberculosis affected persons declined to 445. The number of such person further declined to 316. In this way an increase in 16 percent in the cases of tuberculosis was found in 1998-99 over 1991-92, But it subsequently years as presented in table-4. There was decline of 18 percent and 29 percent in the tuberculosis affected person during 2005-06 and 2015-16 respectively over previous years. Thus, at all India level the declining trend in the number of persons affected by tuberculosis was evident as reported by the National Family and Health Surveys.

Table-4: Number of Person per 100,000 of Population with Tuberculosis in Major States and India: 1991-92 to 2015-16

States	NFHS-I (1991-92)	NFHS-II (1998-99)	NFHS-III (2005-06)	NFHS-IV (2015-16)	CAGR
Andhra Pradesh	407	592	449	320	-1
Assam	638	710	654	311	-2.95
Madhya Pradesh	435	602	353	224	-2.73
Bihar	595	989	797	661	0.44
Gujarat	308	438	538	181	-2.19
Haryana	327	538	340	234	-1.38
Karnataka	136	269	141	180	1.17
Kerala	586	526	275	374	-1.85
Maharashtra	293	282	321	245	-0.74
Orissa	555	833	418	338	-2.05
Punjab	238	207	201	156	-1.74
Rajasthan	724	397	371	222	-4.81
Tamil Nadu	703	479	508	360	-2.75
Uttar Pradesh	560	551	450	346	-1.99
West Bengal	357	492	605	356	-0.01
India	**467**	**544**	**445**	**316**	**-1.61**

Source: NFHS-I, II, III, IV

Malaria Cases in India

Malaria is a life-threatening mosquito-borne blood disease caused by a Plasmodium parasite. Malaria is a serious and sometimes fatal disease caused by a parasite that infects a type of mosquito which feeds on humans. Once an infected mosquito bites a human, the parasites multiply in the host's liver before infecting and destroying their red blood cells. People who get malaria are usually very sick with symptoms such as high fevers, shaking chills, and flu-like illness. Number of cases of Malaria in our country from 1990-91 to 2014-15 has been shown in table 5. The annual percentage change in the cases of malaria and over all compound annual growth rate (CAGR) during the period has also been calculated. The table showed an erratic pattern in the cases of malaria during the reference period. There were years when number of cases reported increased than the previous year. In the year of 2014 cases of Malaria increased by around 81 percent and than the previous year 2013. There were some years when noticeable decline in cases of Malaria was reported from the previous year. During the year 2011-12 at all India level reduction in

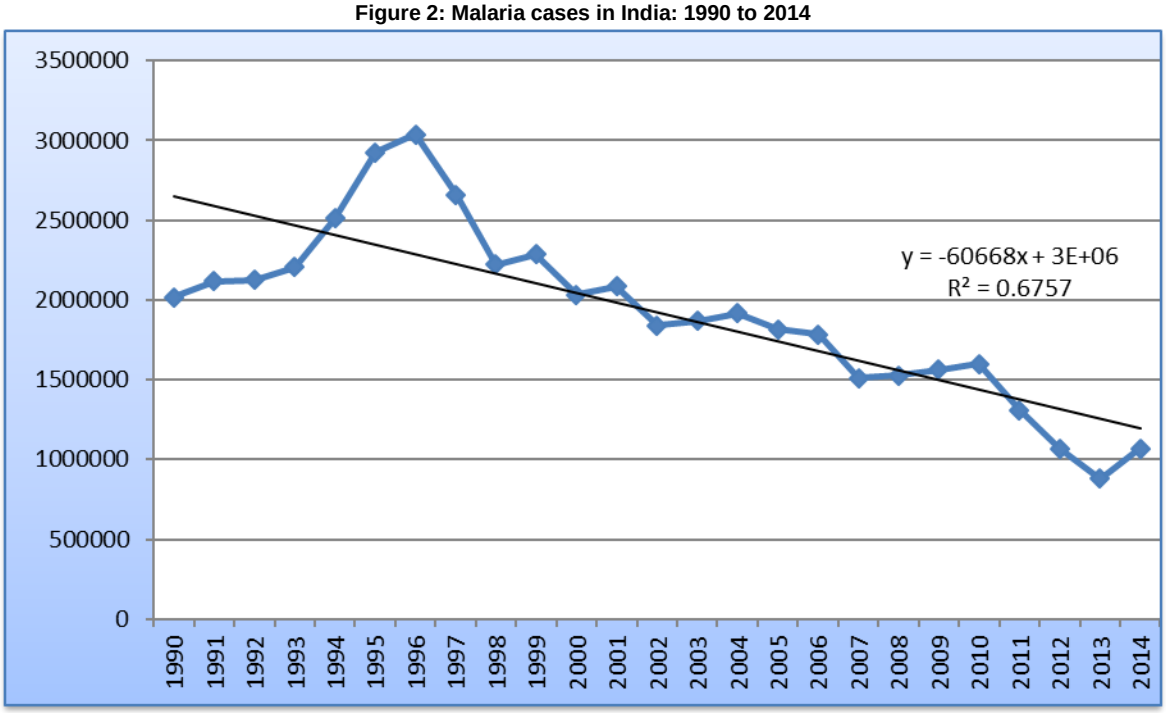
cases of Malaria was by around 21 percent. During the entire period, CAGR in the reduction of Malaria cases were only by around was 3 percent. In this way pattern indicated that decline in cases of Malaria at all India level over the years has been unsustainable.

Table 5: Number of Malaria Cases in India: 1990 to 2014

Year	Causes	Annual Growth Rate
1990	2018783	-
1991	2117460	4.6
1992	2125826	0.4
1993	2207431	3.7
1994	2511353	12.1
1995	2926197	14.1
1996	3035588	3.6
1997	2660057	-14.1
1998	2222748	-19.6
1999	2284713	2.7
2000	2031790	-12.4
2001	2085484	2.6
2002	1842019	-13.2
2003	1869403	1.4
2004	1915363	2.3
2005	1816569	-5.4
2006	1785129	-1.8
2007	1508927	-18.3
2008	1526210	1.2
2009	1563574	2.4
2010	1599986	2.3
2011	1310656	-22.0
2012	1067824	-22.8
2013	881730	-21.1
2014	1070513	17.6
	CAGR (-2.61)	

Source: Ministry of Health and Family Welfare, Govt. of India

Figure 2: Malaria cases in India: 1990 to 2014



Source: Ministry of Health and Family Welfare, Govt. of India

Cases of Cancer in India

Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and divide to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place. When cancer develops, however, this orderly process breaks down. As cells become more and more abnormal, old or damaged cells survive when they should die, and new cells form when they are not needed. These extra

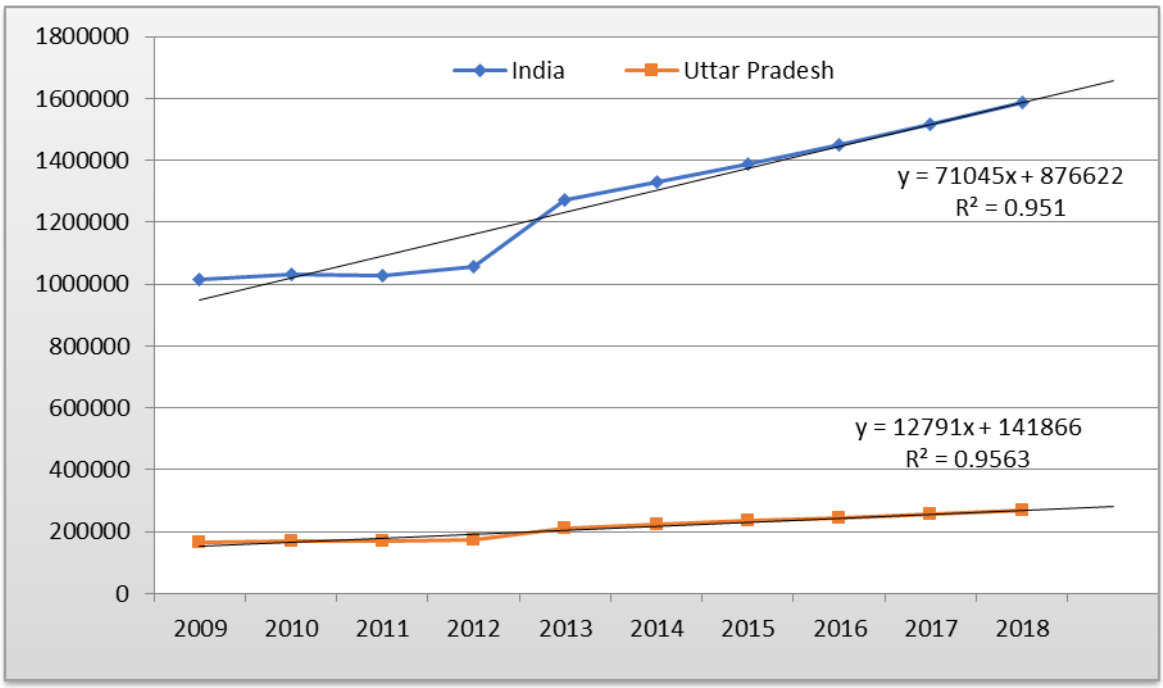
cells can divide without stopping and may form growths called tumors. Cancer cells are also often able to evade the immune system, a network of organs, tissues, and specialized cells that protects the body from infections and other conditions. Although the immune system normally removes damaged or abnormal cells from the body, some cancer cells are able to "hide" from the immune system. Cancer cases were found to be rising in India in as in the year 2009 more than 10 lakh cases of cancer were reported which increased to more than 17 lakh during the year 2016. During this period at all India level cancer cases had risen on year to year basis accept in 2011 when number of cancer cases declined very nominally by 0.2 per cent in 2013. Then there was increase in cancer cases as by this year cases of cancer grew by 17 per cent over the previous year at all India level. The annual compound growth rate in cancer cases at all India level during the period 2009 to 2018 was by 5.26 per cent.

Table 6: Number of Cancer cases in India and Uttar Pradesh: 2009 to 2018

Year	India	Annual Growth Rate	Uttar Pradesh	Annual Growth Rate
2009	1014010	-	166327	-
2010	1031166	1.6	169419	1.8
2011	1028506	-0.2	170013	0.3
2012	1057204	2.7	175404	3.0
2013	1270781	16.8	212075	17.3
2014	1328229	4.5	222615	4.7
2015	1388397	4.5	233659	4.7
2016	1451417	4.5	245231	4.7
2017	1517426	4.5	257353	4.9
2018	1586571	4.7	270053	4.9
	CAGR (5.26)		CAGR (5.70)	

Source: Ministry of Health and Family Welfare, Govt. of India

Figure-3: Number of Cancer cases in India and Uttar Pradesh: 2009 to 2016



Source: Ministry of Health and Family Welfare, Govt. of India

Cases of Kala Azar in India

A chronic and potentially fatal parasitic disease of the viscera (the internal organs, particularly the liver, spleen, bone marrow and lymph nodes) due to infection by the parasite called Leishmania donovani. Leishmania donovani, the agent of kala-azar, is transmitted by sandfly bites in parts of Asia (primarily India), Africa (primarily Sudan) and South America (primarily Brazil) where all together there are an estimated half million cases per year. There are also several hundred cases yearly in Europe (primarily in the Mediterranean region) and a few in North America. Kala-azar can cause no or few symptoms but typically it is associated with fever, loss of appetite (anorexia), fatigue, enlargement of the liver, spleen and nodes and suppression of the bone marrow. Kala-azar also increases the risk of other secondary infections. The first oral drug found to be effective for treating kala-azar is miltefosine. The term "kala-azar" comes from India where it is the Hindi for black fever. The disease is also known as Indian leishmaniasis, visceral leishmaniasis, leishmania infection, dumdum fever, black sickness, and black fever. Cancer is the name given to a collection of related diseases. In all types of cancer, some of the body's cells begin to divide without

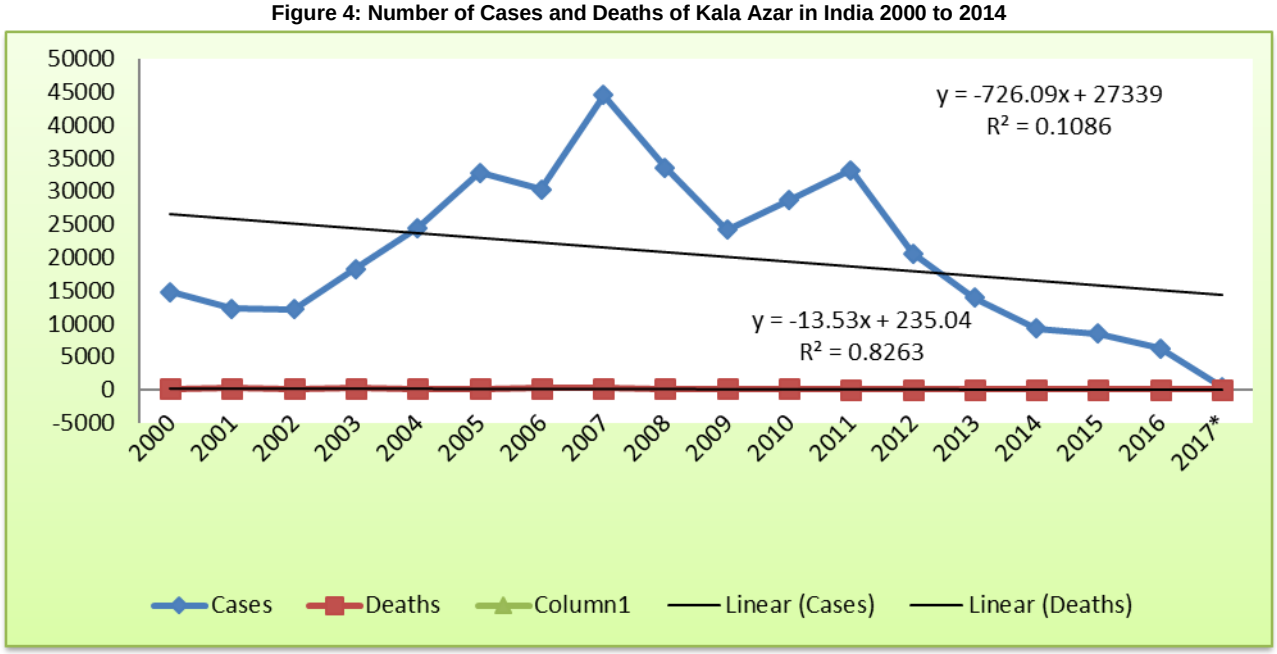
stopping and spread into surrounding tissues. In table-6.8, numbers of cases of Kala Azar at all India level from 2002 to 2017 has been presented. The table showed that from 2002 to 2013, large number of cases of Kala Azar was reported in country. The cases were 44000 and above in 2007 to 12000 and above during reference period. In subsequently year's number of cases of Kala Azar was reduced substantially. This pattern was reflected in the annual growth rate of Kala Azar cases from 2001 to 2017. The growth rate showed that in some year's number of cases were reduced considerably while in certain years cases of Kala Azar also increased noticeably. During the year 2017 number of cases of Kala Azar showed an increase of 1517 per cent over the previous year. The CAGR also showed a reduction of 20 percent in case of Kala Azar during 2000 to 2017.

Table 7: Number of Cases and Deaths of Kala Azar in India 2000 to 2014

Year	Cases	Annual Growth Rate	Deaths
2000	14753	-	150
2001	12239	-20.5	213
2002	12140	-0.8	168
2003	18214	33.3	210
2004	24479	25.5	155
2005	32803	25.3	157
2006	30285	-8.3	187
2007	44533	32	203
2008	33598	-32.5	151
2009	24212	-38.7	93
2010	28654	15.5	85
2011	33187	13.5	80
2012	20600	-61.1	29
2013	13869	-48.5	20
2014	9241	-50	11
2015	8500	-8.5	5
2016	6245	-36.1	0
2017*	387	-1516.6	0
	CAGR= -19.8		

Source: Ministry of Health and Family Welfare, Govt. of India

Figure 4: Number of Cases and Deaths of Kala Azar in India 2000 to 2014



Source: Ministry of Health and Family Welfare, Govt. of India

Cases of Diabetes

Diabetes is a disease that occurs when your blood glucose, also called blood sugar, is too high. Blood glucose is your main source of energy and comes from the food you eat. Insulin, a hormone made by the pancreas, helps glucose from food get into your cells to be used for energy. Sometimes your body doesn't make enough—or any—insulin or doesn't use insulin well. Glucose then stays in your blood and doesn't reach your cells. Over time, having too much glucose in your blood can cause health problems. Although diabetes has no cure, you can take steps to manage your diabetes and stay healthy. Sometimes people call diabetes "a touch of sugar" or "borderline diabetes." These terms suggest that someone doesn't really have diabetes or has a less serious case, but every case of diabetes is serious. Percentage of men and women in the age group of 15-49 suffering from diabetes in

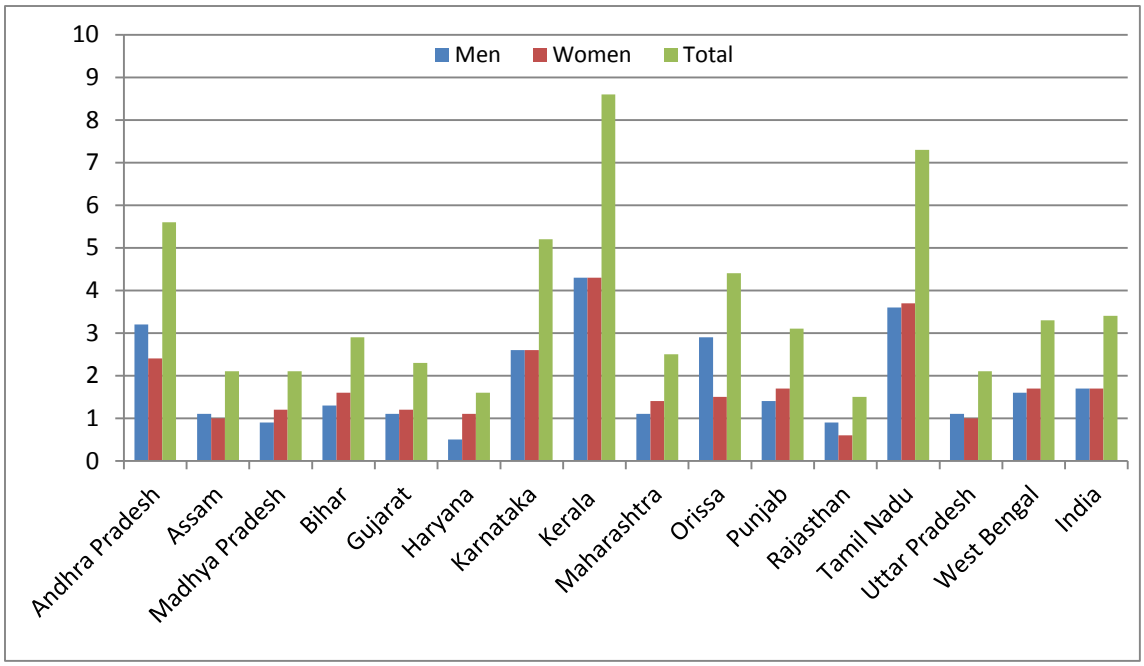
major states of India including Uttar Pradesh for the year 2015-16 has been showed in table-8. The table showed that in total population of country, 3.4 percent population was suffering from diabetes. There were states like Kerala, Karnataka, Orissa, Tamil Nadu, and Andhra Pradesh where percentage of population suffering from diabetes was above the national average. In the state of Uttar Pradesh 2.0 percent population was suffering from diabetes which was below the national average. At all India level percentage of men and women suffering from diabetes was 1.7 percent. In Andhra Pradesh, Karnataka, Kerala, Orissa and Tamil Nadu percentage of men suffering from diabetes was higher than national average while in Madhya Pradesh, Haryana and Rajasthan percentage of men suffering from diabetes was quite lower. In case of women Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, and West Bengal percentage of women suffering from diabetes was higher than the national average. In Assam, Rajasthan, and Uttar Pradesh percentage of such women was also lower than national average. In Uttar Pradesh percentage of men and women and total population of the state suffering from diabetes was found to be below the national average.

Table: 8 Percentage of Men and Women in the age of 15-49 suffering from Diabetes major State in India 2015-16

States	Men	Women	Total
Andhra Pradesh	3.2	2.4	5.6
Assam	1.1	1.0	2.1
Madhya Pradesh	0.9	1.2	2.1
Bihar	1.3	1.6	2.9
Gujarat	1.1	1.2	2.3
Haryana	0.5	1.1	1.6
Karnataka	2.6	2.6	5.2
Kerala	4.3	4.3	8.6
Maharashtra	1.1	1.4	2.5
Orissa	2.9	1.5	4.4
Punjab	1.4	1.7	3.1
Rajasthan	0.9	0.6	1.5
Tamil Nadu	3.6	3.7	7.3
Uttar Pradesh	1.1	1.0	2.1
West Bengal	1.6	1.7	3.3
India	1.7	1.7	3.4

Source: NFHS-IV

Figure 5: Percentage of Men and Women in the age of 15-49 suffering from Diabetes



Source: NFHS-IV

Cases of Asthma

Asthma attacks all age groups but often starts in childhood. It is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. In an individual, they may occur from hour to hour and day to day (WHO). This condition is due to inflammation of the air passages in the lungs and affects the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swell causing the airways to narrow and reducing the

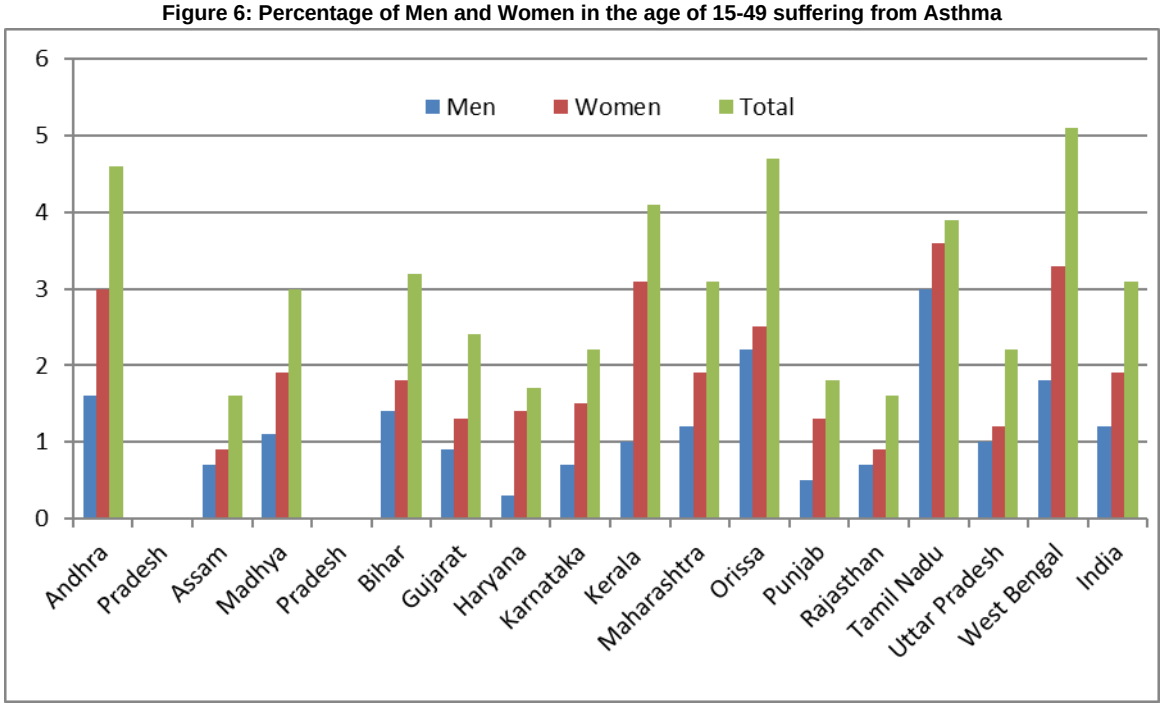
flow of air in and out of the lungs. Percentage of man and women in the age group of 15-49 suffering from Asthma in major states of India including Uttar Pradesh from the year 2015-16 has been showed in table-9. Percentage of men and women and total population suffering from Asthma was 1.2 per cent, 1.9 per cent, and 3.1 per cent respectively year 2015-16. In Andhra Pradesh, Bihar, Maharashtra, Orissa, Tamil Nadu and West Bengal percentage of men population suffering from Asthma in the year 2015-16 was above national average (1.2 per cent). There were states like Assam, Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Uttar Pradesh where percentage of men suffering from Asthma was below the national average. The percentage of women suffering from Asthma in the states of Andhra Pradesh, Maharashtra, Karnataka, Kerala, Orissa, Tamil Nadu and West Bengal was higher than national average but there were states like Assam, Bihar, Gujarat, Haryana, Karnataka, Punjab, Rajasthan and Uttar Pradesh where percentage of women suffering from Asthma was below national average.

Table: 9 Percentage of Men and Women in the age of 15-49 suffering from Asthma in Major State in India 2015-16

States	Men	Women	Total
Andhra Pradesh	1.6	3.0	4.6
Assam	0.7	0.9	1.6
Madhya Pradesh	1.1	1.9	3.0
Bihar	1.4	1.8	3.2
Gujarat	0.9	1.3	2.4
Haryana	0.3	1.4	1.7
Karnataka	0.7	1.5	2.2
Kerala	1.0	3.1	4.1
Maharashtra	1.2	1.9	3.1
Orissa	2.2	2.5	4.7
Punjab	0.5	1.3	1.8
Rajasthan	0.7	0.9	1.6
Tamil Nadu	3.0	3.6	3.9
Uttar Pradesh	1.0	1.2	2.2
West Bengal	1.8	3.3	5.1
India	1.2	1.9	3.1

Source: NFHS-IV

Figure 6: Percentage of Men and Women in the age of 15-49 suffering from Asthma



Source: NFHS-IV

Conclusion

The infant and child mortality rates are taken as one of the most crucial indicators of health conditions and socio-economic development in any country. A child surviving the first five years of his life has been a global concern till now. In India, average annual decline in mortality rates from 2000 to 2015 was 3·3 per cent for neo-nates and 5·4 per cent for children aged 1–59 months. Annual declines from 2005 to 2015 (3·4 per cent decline for neo-natal mortality and 5·9 per cent decline in 1–59-months mortality) were faster than were annual declines from 2000 to 2005 (3·2 per cent decline for neo-natal mortality and 4·5 per cent decline in 1–59-months mortality). These faster declines indicated that India avoided about 1

million child deaths compared with continuation of the 2000–05 declines. To meet the 2030 Sustainable Development Goals for child mortality, India will need to maintain the current trajectory of 1–59-months mortality and accelerate declines in neo-natal mortality (to >5 per cent annually) from 2015 onwards.

The communicable and non-communicable diseases, malnutrition, prenatal complications and diseases like Malaria, Tuberculosis, and Cancer etc have put serious challenges to the healthy life and human development. In the above analysis, incidence of various communicable and non-communicable diseases in the state of Uttar Pradesh was analyzed. The analysis in this chapter is based on the data published by National Family Health Surveys (NFHSs). Tuberculosis has posed a serious morbidity challenge in all major state of the country including Uttar Pradesh as National Family Health Survey (NFHS) data from 1991-92 to 2015-16 has shown. The NFHS-I had reported 467 cases of Tuberculosis per lakh of population in the year 1991-92 and such number of person increased to 544 in 1998-99. However number of tuberculosis affected persons was declined in subsequently years till 2015-16. Thus, at the national level declining trend in number of cases of Tuberculosis per lakh of population was evident.

The case of malaria has been rising sometimes and declining sometimes during the period 1990 to 2014. In the year 2014 malaria cases had increased by around 18 per cent than previous year of 2013. During the period of 2011-12, Malaria cases were reduced by around 20 per cent over 2010-11. The overall pattern of malaria cases indicated that decline in such case was unsustainable at all India level during 1990 to 2014.

The analysis showed that cancer cases were rising in India. In the year 2009, Ministry of Health and Family Welfare (MOHFW), Government of India (GOI) had reported that there were more than 10 lakh cases of Cancer in India which increased to around 15 lakh in the year 2016. In the year 2013, Cancer cases increased to around 17 percent over 2012 at all India level.

The data have revealed that there was large number of cases of Kala Azar reported in country during 2000 to 2017. In the year 2014 and 2015, number of cases of Kala Azar was drastically reduced. The annual growth in the case of Kala Azar from 2000 to 2017 showed that in few years cases were reduced considerably while in other years cases of Kala Azar increased noticeably. However, the numbers of cases were considerably reduced over years. For instance, at all India level cases of Kala Azar were declined by (-1516 per cent) in 2017 compared with previous year. The CAGR in the cases of Kala Azar was found to be quite lower (-19.8 per cent) during the period 2000 to 2017 at all India level. The number of deaths on account of Kala Azar was reported to be not much and there was consistent decline in the number of deaths from Kala Azar at all India level during the reference period. The deaths due to Kala Azar were totally eliminated during 2016-17 at all India level.

The data has indicated in total population of the country, 3.4 per cent suffered from Diabetes during 2015-16. The percentage of men and women who suffered from Diabetes was equal (1.7 percent). In the state of Uttar Pradesh, 2.1 per cent of total population suffered from Diabetes. In case of men percentage of population in the age of 15-49 which suffered from Diabetes was slightly higher compared with women.

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