HEALTH AND HEALTHCARE IN ASSAM

A Status Report

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In Collaboration with

Centre for Enquiry into Health and Allied Themes (CEHAT)
And
Omeo Kumar Das Institute of Social Change and Development

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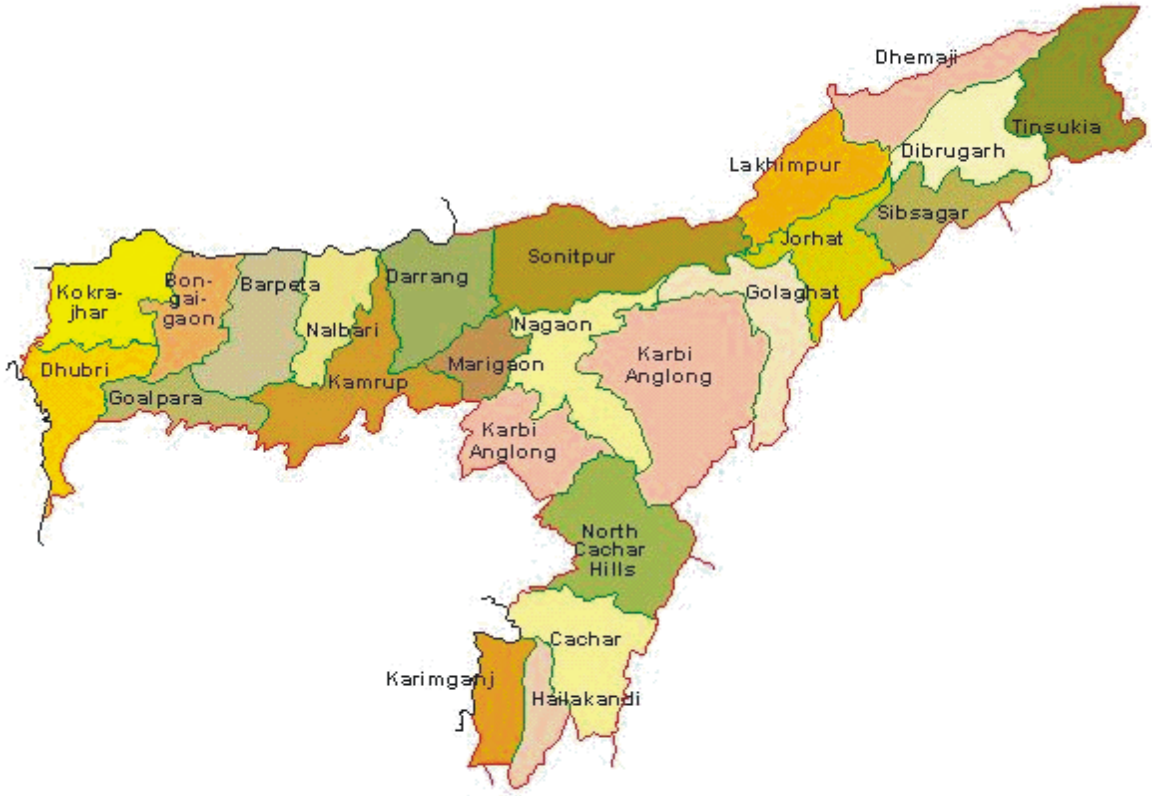
MAP OF ASSAM, 2001



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Preface

CEHAT has compiled a health database under four general heads -finance, human resources, basic health indicators, and infrastructure on over 500 variables relating to the Indian health sector compiled from numerous sources of health information that exists in India for over a period of 55 years. The database activity was mainly undertaken to facilitate easy access to health and health sector related information for research and advocacy.

The basic objective of preparing Status Reports of States has been to release the data from the database which CEHAT has collected over the years. The first initiative was taken by preparing the Health Status Report of Maharashtra by CEHAT. But the limitation of the database has been that it has only macro data that is collected through the various secondary sources. It does not have district-wise data. Hence CEHAT could not prepare such reports of other states independently. It was at that point CEHAT started collaborating with partner organizations of other states for preparing similar health status reports of the respective states. This Status Report of Assam has been prepared through partnership with the Omeo Kumar Das Institute, Guwahati.

Health and Healthcare in Assam; a Status Report is a comprehensive and analytical compilation of healthcare development of Assam bringing together all available information and data on health and healthcare.

Chandrima Chatterjee, Ph.D
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We have created the present volume of *Health Compendium of Assam* entirely out of published data from different sources. This is intended to be the baseline for understanding of the health situation in the state and also as a precursor for carrying out further studies. Encompassing the different aspects of the health care system, starting with infrastructural facilities, maternal and child health, prevalence of disease and epidemiological situation to that of health finance, a wide range of information is tried to be covered by this publication. Several people helped us in preparing this report to whom we owe our thankfulness.

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Omeo Kumar Das Institute of
Social Change and Development

Abbreviations And Acronyms

ABER	-	Annual Blood Examination Rate
ACDR	-	Annual Case Detection Rate
AIDS	-	Acquired Immune Deficiency Syndrome
ANC	-	Ante Natal Care
ANM	-	Auxiliary Nurse Midwife
API	-	Annual Parasitic Incidence
ARI	-	Acute Respiratory Infection
ASACS	-	Assam State AIDS Control Society
ASPCDR	-	Annual Smear Positive Case Detection Rate
AYUSH	-	Ayurveda, Yoga, Unani, Siddha and Homeopathy
BCG	-	Bacillus Calmette Guerin
BMI	-	Body Mass Index
BMSP	-	Basic Minimum Services Programme
BSE	-	Blood Slide Examination
CBR	-	Crude Birth Rate
CBHI	-	Central Bureau of Health Intelligence
CDR	-	Crude Death Rate
CHC	-	Community Health Centre
CMIE	-	Centre for Monitoring Indian Economy
CSS	-	Centrally Sponsored Scheme
CSSM	-	Child Survival and Safe Motherhood
DH	-	District Hospital
DHS	-	Directorate of Health Services
DHS (FW)	-	Directorate of Health Services (Family Welfare)
DLHS	-	District Level Household Survey
DME	-	Directorate of Medical Education
DOTS	-	Directly Observed Treatment, Shortcourse
DPMU	-	District Programme Management Unit
DPT	-	Diptheria-Pertusis-Tetanus
ECG	-	Electrocardiogram
Es OC	-	Essential Obstetric Care
Em OC	-	Emergency Obstetric Care
FRU	-	First stage Referral Unit
GOI	-	Government Of India
HDR	-	Human Development Report
HIV	-	Human Immunodeficiency Virus
ICMR	-	Indian Council of Medical Research
ICDS	-	Integrated Child Development Scheme
IDU	-	Intravenous Drug Users
IFA	-	Iron and Folic Acid Tablet
IIPS	-	International Institute for Population Sciences

IMR - Infant Mortality Rate
ISM - Indian System of Medicine
IUD - Intra Uterine Devices
LEB - Life Expectancy at Birth
LHV - Lady Health Visitor
MNP - Minimum Needs Programme
MoHFW - Ministry of Health and Family Welfare
MO - Medical Officer
MPO - Modified Plan of Action
MPW (F) - Multi Purpose Worker (Female)
MPW (M) - Multi Purpose Worker (Male)
MTP - Medical Termination of Pregnancy
NACP - National AIDS Control Programme
NBCE - New Born Care Equipment
NCDR - New Case Detection Rate
NHP - National Health Policy
NFHS - National Family Health Survey
NGO - Non Government Organisation
NMCP - National Malaria Control Programme
NMEP - National Malaria Eradication Programme
NRHM - National Rural Health Mission
NSSO - National Sample Survey Organisation
NSV - No Scalpel Vasectomy
OPD - Out Patient Department
OPV - Oral Poliovirus Vaccine
OT - Operation Theatre
ORS - Oral Rehydration Salt
ORT - Oral Rehydration Therapy
PF - Plasmodium Falciparum
PR - Prevalence Rate
PHC - Primary Health Centre
RCH - Reproductive and Child Health
RGI - Registrar General, India
RNTCP - Revised National Tuberculosis Control Programme
RTI - Reproductive Tract Infection
SFR - Slide Falciparum Rate
SPMU - State Programme Management Unit
SPR - Slide Positive Rate
SRS - Sample Registration System
STD - Sexually Transmitted Diseases
STI - Sexually Transmitted Infections
TB - Tuberculosis
TBA - Traditional Birth Attendant
TT - Tetanus Toxoid
UIP - Universal Immunisation Programme
WHO - World Health Organisation

Assam's Health and Health Care at a Glance

DEMOGRAPHIC PROFILE	
Number of Districts:	23+4(newly formed)
Population (2001 Census)	Total : 26655528 Urban : 3439240 (12.90) Rural : 23216288 (87.1) Male : 13777037 (51.69) Female : 12878491 (48.31)
Literacy Rate (2001 Census)	Person : 63.25% Male : 71.28% Female : 54.61% Urban : 85.35% Rural : 14.65%

HEALTH INDICATORS	
Sex Ratio (2001)	935 (Females per 1000 males)
Crude Birth Rate (2003)	26.3 (per 1000 population)
Crude Death Rate (2003)	9.1 (per 1000 population)
Infant Mortality Rate (2003)	67 (per 1000 live birth)
Neonatal Mortality Rate (1999)	53 (per 1000 live birth)
Post-Natal Mortality Rate (1999)	23 (per 1000 live birth)
Peri-Natal Mortality Rate (1999)	52 (per 1000 live birth)
Still Birth Rate (1999)	15 (per 1000 live birth)
Child Mortality Rate (1999)	24 (per 1000 live birth)

Life Expectancy at Birth (1998 – 2002)	Male – 57.7 Years Female-58.1 Years
Total Fertility Rate (2005-06), National Family Health Survey-III	2.4 (per women)

HEALTH INFRASTRUCTURE

Total number as on September 2005	
CHC's	100
PHC's	610
Sub-Centres	5109
Average rural population covered by – as on September 2005	
CHC	232163
PHC	38059
Sub-Centres	4544
Total number of –	
Allopathic Bed (2001-02)	- 12948
Population served per bed (2001-02)	- 12019
AYUSH doctor (2005) – 0.3 per 10000 population	
Doctor (2000)	- 2160
Population served per doctor (2000)	- 12128

MATERNAL AND REPRODUCTIVE HEALTH

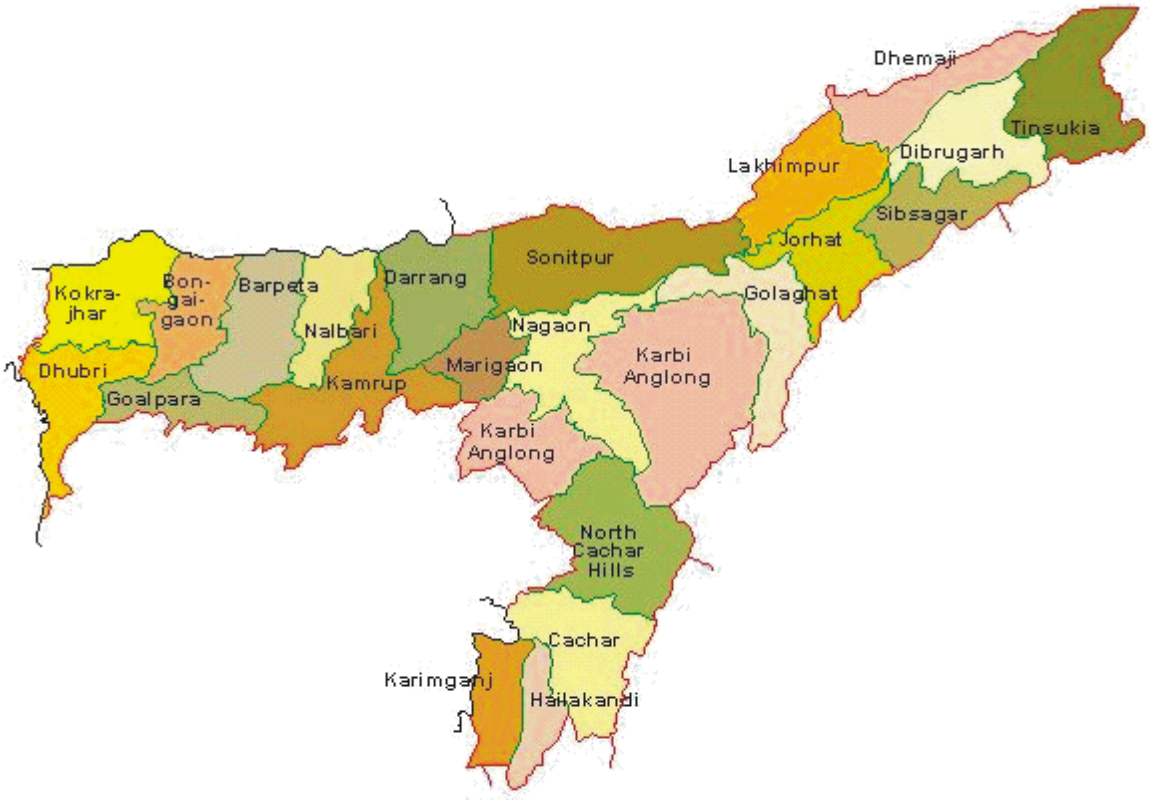
Girls Married Below 18 Years	(2002-2004), DLHS-RCH	23.8%
Median Age at Marriage	(2002-2004), DLHS-RCH	Boy – 27.2 Girl – 20.7
Birth Order 3+	(2002-2004), DLHS-RCH	40.6%
Full ANC	(2002-2004), DLHS-RCH	10.2%
Institutional Delivery	(2005-2006), NFHS-III	22.7%
Safe Delivery	(2005-2006), NFHS-III	31.2%

CHILD HEALTH AND NUTRITIONAL STATUS	
Children 12-23 months fully immunised (2005-06), NFHS-III	31.6%
Children breastfed within 1 hour of birth (2005-06), NFHS-III	50.6%
Children with diarrhoea in the last 2 weeks who received ORS (2005-06), NFHS-III	13.3%
Children with diarrhoea in the last 2 weeks taken to a health Facility (2005-06), NFHS-III	30.6%
Children with ARI in the last 2 weeks taken to a health facility (2005-06), NFHS-III	35.4%
Children age 12-35 months who received a Vitamin A dose in last 6 months (2005-06), NFHS-III	16.6%
Children under 3 years who are stunted (2005-06), NFHS-III	34.8%
Children under 3 years who are wasted (2005-06), NFHS-III	13.1%
Children under 3 years who are underweight (2005-06), NFHS-III	40.4%
Children age 6-35 months who are anaemic (2005-06), NFHS-III	76.7%
NUTRITIONAL STAUS OF EVER-MARRIED WOMEN (age 15-49)	
Women whose BMI is below normal (2005-2006), NFHS-III	36.5%
Ever-married women age 15-49 who are anaemic (2005-06), NFHS-III	69.0%
FAMILY PLANNING (currently married women, age 15-49 years)	
Currently using any method (2005-06), NFHS-III	56.5%
Currently using any modern method (2005-06), NFHS-III	27.0%
a) Female sterilisation	13.0%
b) Male sterilisation	0.2%
c) IUD	1.3%
d) Pill	10.3%
e) Condom	2.4%
Total unmet need for Family Planning	10.8%

DISEASES	
Malaria 2006(upto Nov), Jt. DHS(malaria)	API - 4.14
Tuberculosis 2005, DGHS, MoHFW	ACDR – 103 per lakh ASPCDR – 41 per lakh
Leprosy 2005 (March), Jt. DHS (Lerosy)	PR-0.41 per 10000 population NCDR–0.43 per 10000 population
AIDS 2006 (October), ASACS	Male – 355 Female – 101
Cancer 2005-06	Total cancer cases – 52.87%

HEALTH EXPENDITURE	
Total Health expenditure (Revenue + Capital), 2004-05	Rs. 422 crore
Total medical and public health expenditure, 2004-05	Rs. 33907.13 lakh
Expenditure on medical education, training and Research, 2004-05	Rs. 7530.14 lakh
Expenditure on public health, 2004-05	Rs. 4742.02 lakh
Total expenditure on Family welfare, 2004-05	Rs. 6680.41 lakh
Average out of pocket medical expenditure 2004-05	
Outpatient care - urban: rural	Rs. 351 : 226
Inpatient care - urban: rural	Rs. 10467: 4195

1. Assam at a Glance



Assam, the land of hills and valleys, of the mighty river Brahmaputra, of Mother Goddess Kamakhya, lies in the northeastern corner of India. The name "Assam" is derived from "Asom" which, in Sanskrit, means unequaled or unrivalled. The uneven topography of the land, full of hills, plains and rivers may, therefore, have also contributed to this name. The Mongolian Ahom dynasty that ruled Assam for more than six hundred years might be another source for the name. Except for a narrow corridor running through the foothills of the Himalayas that connects the state with West Bengal, Assam is almost entirely isolated from rest of the India. The state capital Guwahati, known in ancient times as Pragjyotishpura or the Eastern City of Light, was the capital of Kamrup which finds frequent mention in the great Hindu epic Mahabharata and other Sanskrit writings.

This state bordered Arunachal Pradesh in the east, West Bengal, Meghalaya, Bangladesh in the west, Arunachal Pradesh, Bhutan in the north and Nagaland, Manipur, Mizoram, Meghalaya, Tripura in the south. Its longitude lies at 88.25^0E to 96.0^0E and latitude at 24.5^0N to 28.0^0N and temperature varies from 6^0C TO 38^0C. The humidity that is brought into Assam by the southwest monsoons, which shower an average annual rainfall of 120 inches or more on the great Brahmaputra valley and the surrounding region, also create spectacular sunsets during most of the year. The monsoons are Assam's life blood; creating a bio-diversity that can compete with the equatorial rain-forests and painting the region with a thousand shades of green.

Cupped between two lush and verdant valleys i.e. the Brahmaputra valley and the Barak Valley, Assam is the second largest state amongst the eight sisters of the north-eastern region(NER). With a geographical area of 78,438 square km., Assam accounts for about 2.4 percent of the country's total geographical area. For administrative and revenue purposes, the state has been divided into 27 districts including the newly created Kamrup Urban district and 4 districts under the newly created Bodoland Territorial Council (BTC) areas i.e. Kokrajhar, Baska, Chirang and Udalguri.

According to the Census of India 2001, the population of Assam stands at 2,66,55,528 comprising 2.59 percent of the country's population. As against decadal growth rate of 21.34 percent at the national level, the population of the State has grown by 18.85 percent over the period 1991-2001. Assam has been witnessing an increasing trend of urbanisation but the degree of urbanisation has been very slow lagging as it does behind the all India figure of 27.78 percent(2001). The percentage of people residing in the urban areas have increased considerably from 11.10 in 1991 to 12.90 in 2001, indicating that even after six decades of independence, 87.10 percent of the state's population resides in the rural areas. Urbanisation trend at the district level also reveals wide inter-state difference in the degree of urbanisation ranging from 36.01 percent in the case of Kamrup to the lowest of 2.39 percent in the Nalbari.

The literacy rate of the total population for Assam has witnessed a significant improvement from 52.89 percent in 1991 to 63.25 percent in 2001, which is marginally less than the national average of 52.21 percent(1991) to 64.84 percent(2001). Assam ranks 24^{th} in literacy among the states of India and has higher literacy rates than the major states of Bihar, Rajasthan and U.P. The percentage of both male and female literacy has also shown a marked improvement since 1991, though the percentage of male literacy (71.28 percent) is much lower than the national male literacy (75.26 percent). The female literacy rate (43.03 percent) in Assam was substantially higher compared to the all India rate of 39.29percent, in 1991 though a stark difference existed between the males (61.87 percent) and females (43.03 percent). Census 2001, for Assam, shows an increase of around 11percent for female literacy but it did not increase proportionately with an all India figure, which witnessed an increase of approximately 13.38 percent, though Assam female literacy rate is still marginally higher than the all India rate

of 53.67percent. A wide sex difference with respect to literacy rate still exists in Assam, indicating the need for more education of girl children.

There are continuing and wide differences between districts with respect to female literacy. Intra state and district wise variation reveals a stark difference in the percentage of literacy with Jorhat having the highest literacy rates of 76.33 percent and Dhubri having the lowest with 48.21 percent, as per Census 2001, among the total population of Assam. Jorhat continues to occupy the highest position with respect to both male (83.62 percent) and female (68.49 percent) literacy rate, but Karimganj has the highest percentage of literates among the urban population with 90.37 percent.

According to the 2001 census, the sex ratio of Assam stood at 935 females per thousand males against the national ratio of 933. Assam has been able to improve its sex ratio since 1991 and has higher ratio than the all India average. Significantly, the improvement in Assam has occurred when the sex ratio for the country as a whole was declining. Within the state, Dhubri had the highest sex ratio of 950 in 1991, which decreased to 947 in 2001, while Goalpara took over the reins with the highest at 956 per 1000 males. North Cachar Hills continues to have the lowest at 884, though it has increased considerably with respect to 1991.

Lower literacy rate among the females has been one of the major causes of declining of the birth rate, death rate and infant mortality rate. Though crude birth rate, crude death rate and infant mortality rate has shown a secular declining trend since 1981 which is a positive development, it has been found to be higher for the state than that of the country as a whole. During the year 2003, the CBR, CDR and IMR were found to be 26.3, 9.1 and 67 as against 25.0, 8.1, and 63 per thousand respectively at all India level.

Being the gateway to India's Northeast, Assam also shares the region's development dynamics as peripheral and proximate to four East Asian countries, viz., Bangladesh, Myanmar, China and Bhutan. The changing demography due to influx from within and outside the country more particularly from erstwhile East Pakistan and now Bangladesh, decelerating trends in economic growth, high rate of unemployment, insurgency and ethnic conflict related to demand for autonomy and independence, lack of governance are some of the state's burning issues affecting overall development. The ethnic conflicts spreading over more than a decade in the state have made many people displaced robbing off their livelihood opportunities. Relief camps have become permanent homes of lakhs of people, making them all the more vulnerable to disease, malnutrition and other exploitations.

Besides, studies indicate that there is a rising trend in drug use among certain sections of youths in the state. Nagaland and Manipur forming a major drug route from the "Golden Triangle" formed by Myanmar, Laos and Thailand, with high prevalence of needle haring habit among the injecting drug users (IDUs), there looms a great danger. Rise in drug smuggling and trafficking has made the region, including Assam extremely critical for spread of HIV/ AIDS.

With 36.09 percent of population below the poverty line, which is next to Orissa, Bihar and Sikkim as per the Planning Commission data for 1999-2000, Assam's condition has been far below the national average of 26.10. However, the recent revelation of poverty estimates showing 20.46 percent people below poverty line against India's 28.27 percent is debatable in the context of methods of poverty estimation. The crisis of livelihood in the state is also revealed by the unemployment rate (rural: 3.6 percentand urban 8.2 percent) as compared to the country as a whole (rural: 2.5 percent and urban: 5.3 percent). About two third of the population in the state depend on agriculture for livelihood but this sector's contribution to the state GDP is only about one third of the total. On the other hand industrialization process in the state is rather poor contributing just seven percent to the state GDP. Poor and unremunerative nature of agriculture and stagnant industrialization process has led to petty tertiarization in the state. The above scenario has both direct and indirect effects upon health of the people.

Table 1.1 : Demography

Sl. No.	Name of District	Population Percentage of Urban Population)		Literacy Rate								Sex Ratio Female per (1000 male)	
				1991 (Among the total population)				2001 (Among the total population)					
		1991	2001	Person	Male	Female	Urban	Person	Male	Female	Urban	1991	2001
1	Dhubri	12.16	11.75	38.31	47.32	28.75	69.36	48.21	55..91	40.04	77.45	950	947
2	Kokrajhar	6.34	7.06	40.57	49.57	30.92	77.14	51.63	60.32	42.4	83.88	941	943
3	Bongaigaon	9.15	12.13	49.06	58.67	38.72	81.16	59.33	67.67	50.44	85.86	940	945
4	Goalpara	7.8	8.14	46.81	55.47	37.58	68.73	58.03	64.86	50.85	76.65	947	956
5	Barpeta	7.02	7.7	43.24	52.61	33.2	74.83	56.24	64.83	47.07	83.44	939	941
6	Nalbari	2.31	2.39	55.99	66.95	44.19	80.62	67.23	76.56	57.26	66.73	936	939
7	Kamrup	32.76	36.01	65.04	73.67	55.01	80.57	74.16	81.16	66.31	86.39	879	901
8	Darrang	4.93	4.97	42	50.8	32.53	76.02	55.44	63.91	46.4	85.02	938	944
9	Sonitpur	7.3	10.45	48.14	56.7	38.6	81.06	59	64.54	49.73	89.58	912	929
10	Lakhimpur	6.54	7.33	58.96	68.28	48.85	75.46	68.56	77.06	59.59	79.84	931	951
11	Dhemaji	1.86	6.79	53.84	65.43	41.12	80.44	64.48	74.41	53.51	81.52	927	941
12	Morigaon	5.16	4.89	47.99	56.17	39.19	76.54	58.53	65.15	51.51	84.21	941	946
13	Nagaon	10.87	12.02	54.74	62.49	46.3	80.68	61.73	68.27	54.74	84.62	929	944
14	Golaghat	5.9	8.57	58.54	66.5	49.75	85.14	69.38	77.14	60.99	87.45	920	930
15	Jorhat	15.27	17.15	65.51	73.29	56.88	79.95	76.33	83.62	68.49	86.92	913	933
16	Sibsagar	7.23	9.24	64.46	71.91	56.14	83.27	74.47	81.53	66.81	88.08	907	928
17	Dibrugarh	17.61	19.28	58.32	66.72	48.89	81.17	68.96	77.3	59.95	88.48	905	931
18	Tinsukia	16.49	19.47	50.28	59.27	39.99	78.95	60.95	70.15	50.78	83.63	891	913
19	K.Anglong	10.63	11.3	45.57	55.55	34.35	73.55	57.7	67.22	47.3	81.58	907	926
20	N.C. Hills	22.87	31.6	57.76	66.39	47.34	82.42	67.62	75.67	58.39	88.08	857	884
21	Karimganj	7.3	7.33	54.71	64.05	44.76	87.7	66.24	74.69	57.28	90.37	946	947
22	Hailakandi	7.6	8.12	53.07	64.08	41.04	85.3	59.64	68.24	50.46	86.5	929	935
23	Cachar	9.81	13.94	59.19	68.79	48.76	83.26	67.82	75.73	59.41	85.46	932	945
	Assam	**11.1**	**12.9**	**52.89**	**61.87**	**43.03**	**79.39**	**63.25**	**71.28**	**54.61**	**85.35**	**923**	**935**
	India	**25.75**	**27.78**	**52.21**	**64.13**	**39.29**	**-**	**64.84**	**75.36**	**53.67**	**-**	**927**	**933**

Source:- Census of India (1991, 2001); Directorate of economics and statistics (2003)

Table 1.2: Trend of Crude Birth Rate (CBR), Crude Death Rate (CDR) and Infant Mortality Rate (IMR) in Assam from 1981 to 2003

Year	CBR Per 1000 Population	CDR Per 1000 Population	IMR per 1000 Live Birth
1981	33	12.6	106
1982	34.2	12.4	102
1983	34.7	12.1	94
1984	35.3	13.2	99
1985	34.3	13.2	111
1986	34.7	12.6	109
1987	34.2	11.6	102
1988	32.9	11.8	99
1989	29.4	10.4	91
1990	29.7	10.5	76
1991	30.9	11.5	81
1992	30.8	10.4	76
1993	29.5	10.2	81
1994	30.8	9.2	78
1995	29.3	9.6	77
1996	27.6	9.6	74
1997	28.2	9.9	76
1998	27.9	10	76
1999	27	9.7	76
2000	26.9	9.6	75
2001	27	9.6	74
2002	26.6	9.2	70
2003	26.3	9.1	67

Source:- SRS, RGI,; Directorate of economics and Statistics, Assam

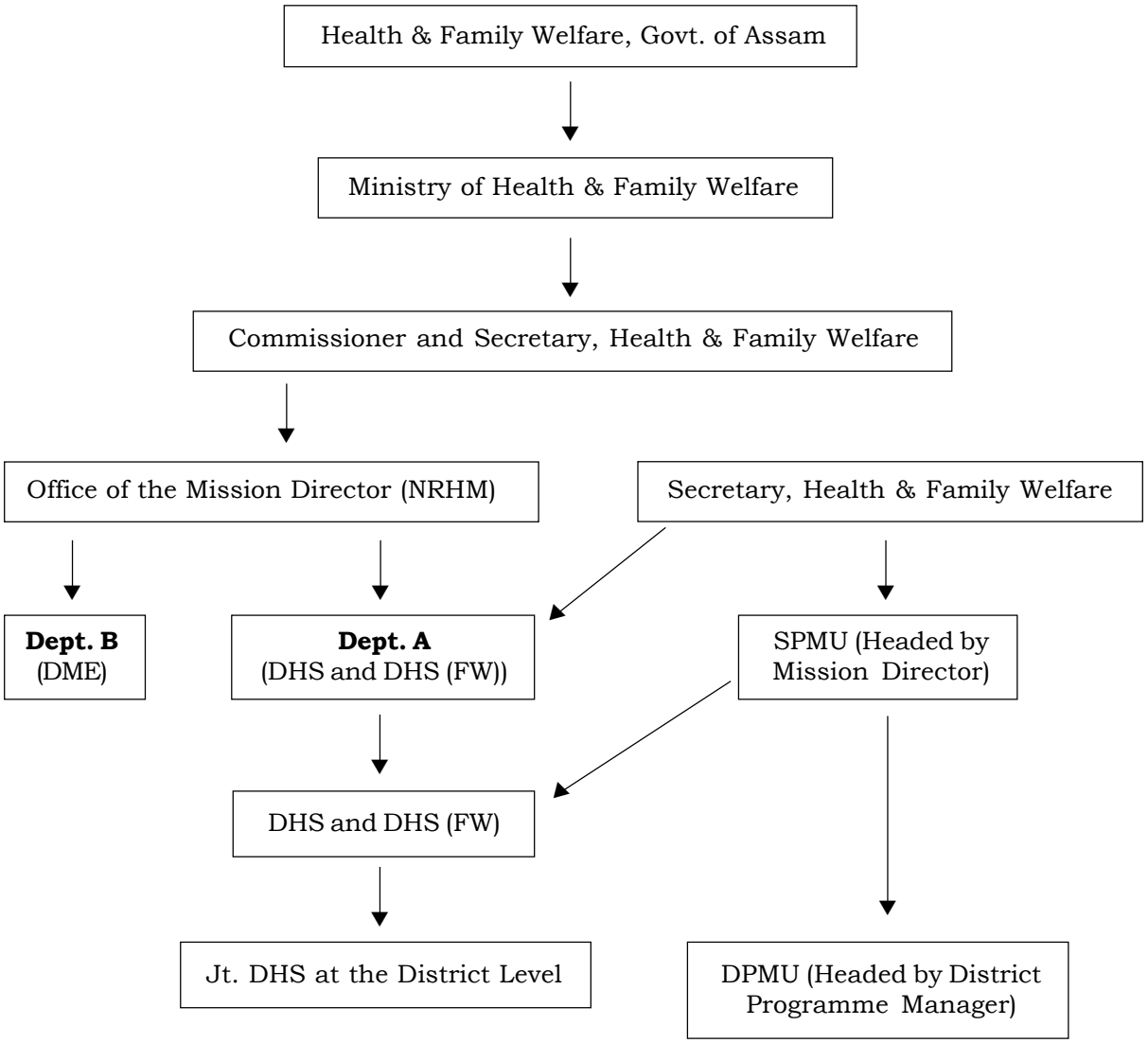
2. Organisation of Public Health & Family Welfare Services in Assam

The overall organisational and management structure in Assam is quite similar to the management structure followed across other states, despite health being a state subject. This is mainly because the financial allocation of the resources is determined by the central government and this is done through plan schemes or programmes that are usually uniform across states.

In Assam, the Health and Family Welfare department comes under the supervision of the Ministry of Health and Family Welfare. The Minister of Health and Family welfare has a Commissioner and a Secretary. An Additional Secretary, Joint Secretary, Officer on Special Duty (OSD), Senior Financial Accountant, Under Secretary and a Senior Research Officer assist the Secretary. There are two departments that come under the immediate purview of the Secretary. Department A includes the General Directorate of Health Services (DHS) and DHS of Family Welfare (FW). Directorate of Medical Education (DME) comes under Department B. Each of these departments has their own hierarchical structures from the state capital down to the district level.

Assam launched the National Rural Health Mission (NRHM) in April 2005, and actively trying to support the Directorate of Health and services, both General and Family Welfare by providing effective health care in all the areas of health, especially in the rural areas. The State Programme Management Unit (SPMU) is headed by the Mission Director who works at the same level as that of the Directorate of Health Services. At the district level, the District Programme Manager heads the District Programme Management Unit. Under NRHM, at the district level, there is a District Health Society headed by the Deputy Commissioner as Chairman and Joint Director of Health services as Member Secretary. The society is responsible for the overall management of the programme. The joint DHS is the officer responsible for the programme and is assisted by Additional Chief Medical and Health Officer (CM & HO). A team of members comprising of District Programme Manager, District Account Manager, Data Assistant and Media Expert assists the society. The NRHM aims to provide overarching umbrella to the existing programs of Health and Family Welfare.

Figure 1: Organisational Structure of Health and Family Welfare



The Directorate of Health Services has four different wings namely, Public Health Analyst, Additional DHS, Drug Controller and Joint DHS for each different units/ cell such as Nursing, Technical, Drug Analyst, Malaria, Public Health, Health Education Bureau, Leprosy, TB, AIDS etc. as shown in figure 2. The Deputy DHS of Pharmacology and Ayurveda also comes under the DHS. At the district level, the Chief Medical and Health Officer (CMHO) and Sub Divisional Medical and health Officer (SDM&HO) for various diseases and units are in charge of their own units and is headed by the Joint DHS of districts. (Fig 3) The Directorate of Medical Education looks after three medical colleges of Assam, Ayurvedic College, Nursing College, Homeopathic College, Pharmacy Institutes and Training Centre. Apart from this, the Assam Medical Council, a statutory body governs the medical profession through registration of allopathic doctors.

The Directorate of Health Services (Family Welfare) at the state level has joint DHS for various family welfare programmes such as Universal Immunisation Programme (UIP), Maternal and Child Health (MCH) along with other technical staff such as Demographer, Accounts Officer, Financial Account Officer, etc. The district Family Welfare (FW) bureau Comes directly under the State FW Bureau and is headed by the Additional Chief Medical and Health Officer (FW). Along with other technical staff, District FW bureau looks after the Rural Family Welfare Centre (RFWC) and the Post partum centre. The RFWC is, in turn responsible for the Sub centre, LHV and PHC. Figure 4, shows the organisational and administration structure of the DHS (FW).

Figure 2:- Organisational Structure of General DHS and Directorate of Medical Education (DME)

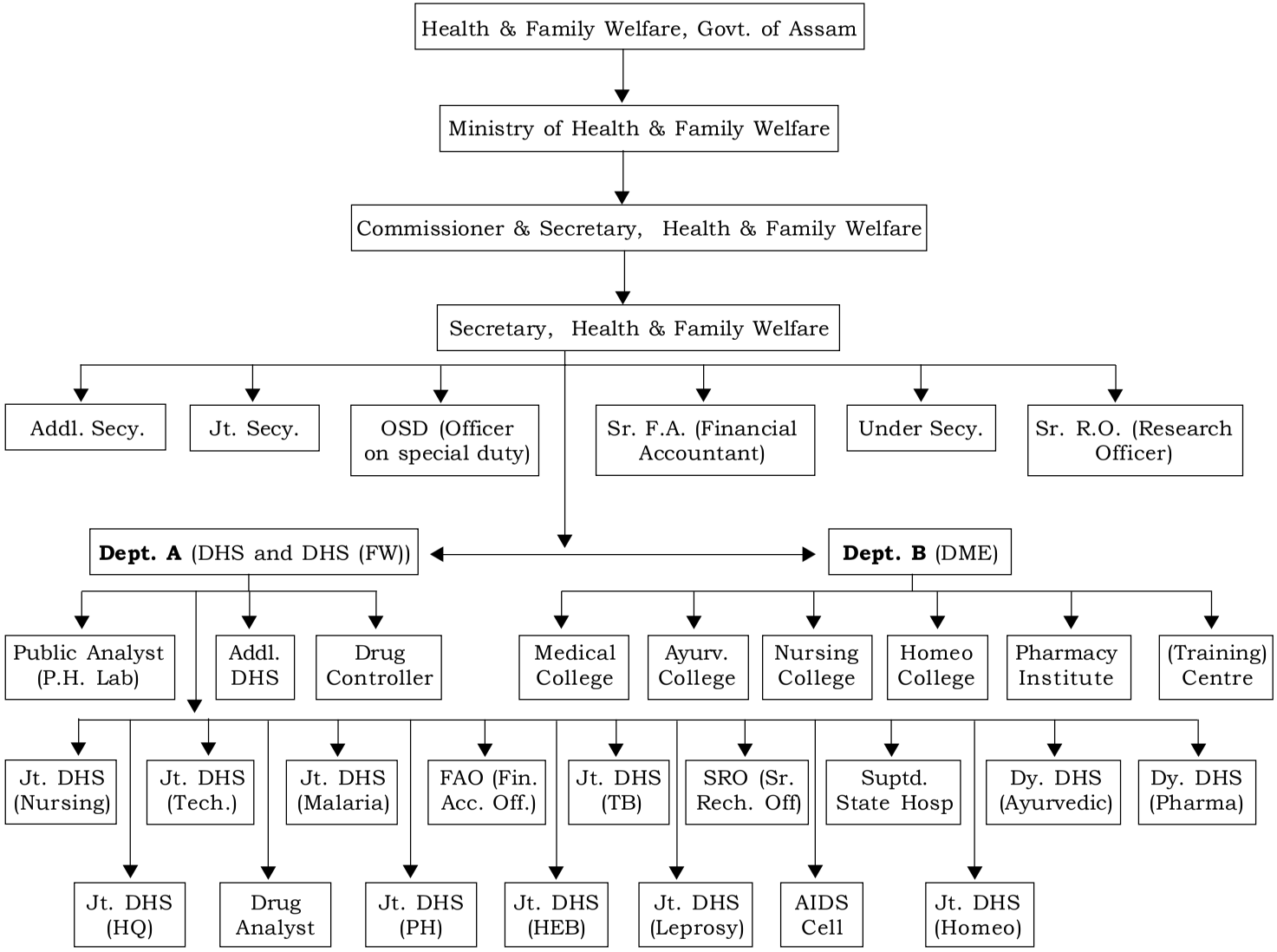


Figure 3: Organisational Structure of Health Services at District Level

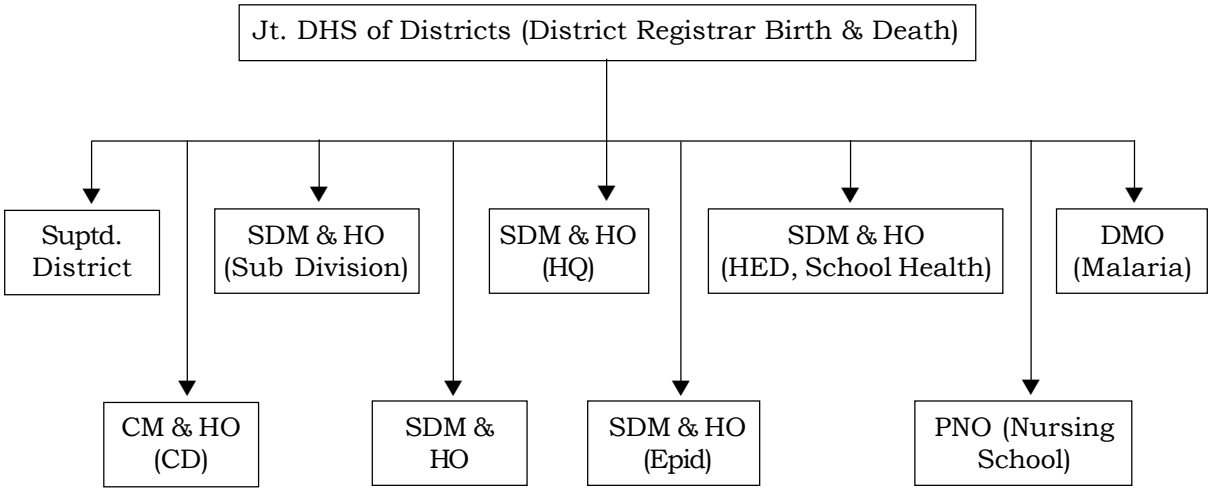
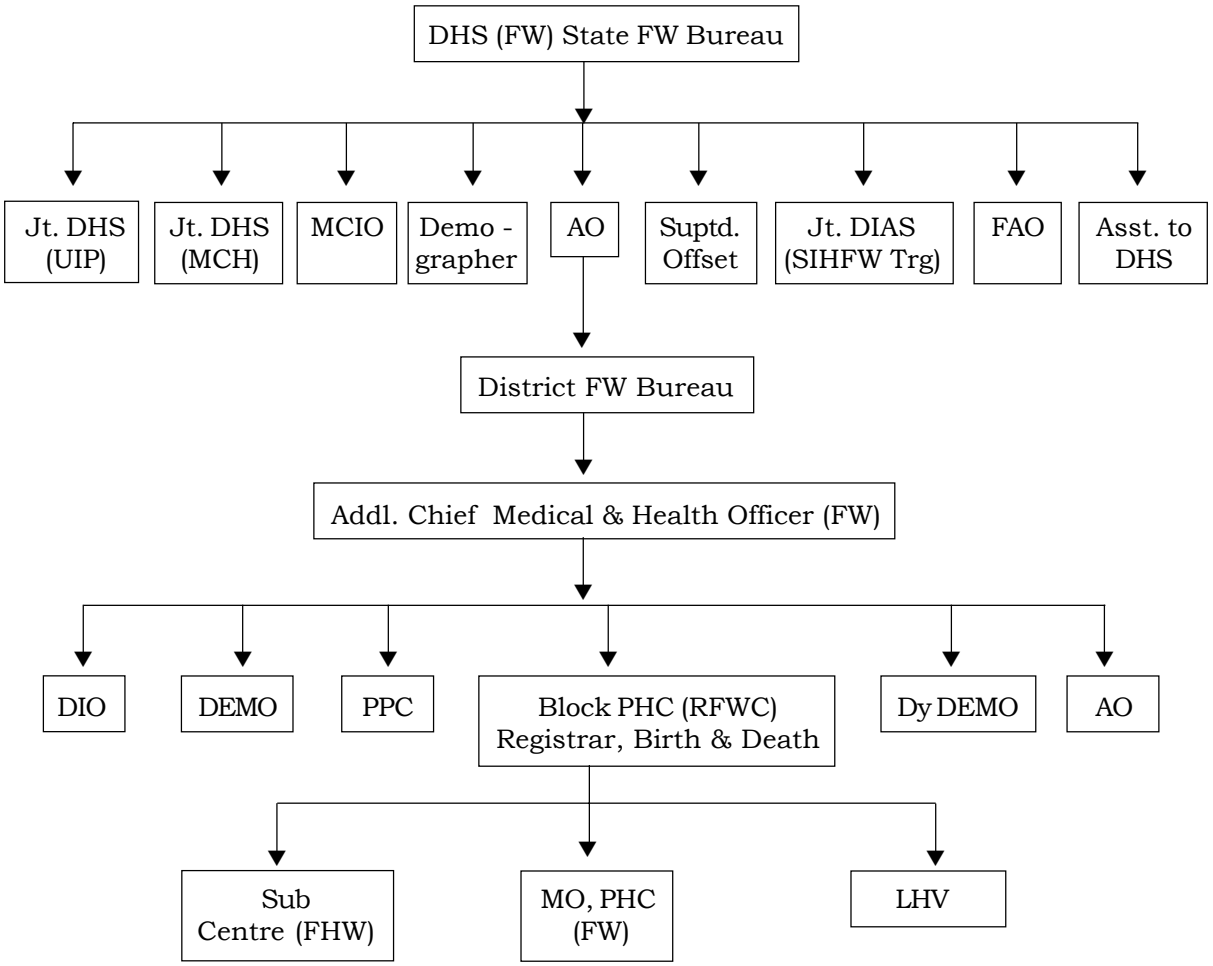


Figure 4: Organisational Structure of Directorate of Family Welfare at Both State and District Level



3. Health Care Delivery and Facilities

The Indian Constitution has made health care services largely a responsibility of the state governments and thus, it primarily becomes the responsibility of the state to provide health care to all the people in equal measure. Since health is influenced by a number of factors, such as adequate food, housing, basic sanitation, healthy lifestyles, protection against environmental hazards and communicable diseases, the term "health care" embraces a multitude of services provided to individuals or communities by agents of the health services or profession, for the purpose of promoting, maintaining, monitoring or restoring health.

The purpose of health care services is to improve the health status of the population and deliver the health care services. It operates in the context of the socio-economic and political framework of the country and involves management and organisational matters. The health care delivery system in India can be grouped into 5 types:

a) **Public Health Sector** which includes Primary Health care, Hospitals/Health Centres, Health Insurance Schemes and other agencies such as Defence Services and Railways.
b) **Private Sector**
c) **Indigenous Systems of Medicine** such as Ayurveda, Siddha, Unani, Tibbi, Homeopathy and unregistered practitioners.
d) **Voluntary Health Agencies**
e) **National Health Programmes**

Primary Health Care

The establishment of Primary Health Centres in India started as early as in 1952, and over the last five decades has undergone several changes to meet the increasing demand for health care services. In 1977, the Government of India launched a Rural Health Scheme, based on the principle of "placing people's health in people's hands". It is a three tier system of health care delivery in rural areas based on the recommendation of the Shrivastav Committee in 1975. In 1978, India became a signatory to the Alma- Ata Declaration and had committed to attaining "Health for all" by 2000 A.D. through the Primary Health care approach. Until the Eighth Five Year Plan, the emphasis was on the expansion of the health care establishment. However, during the Eighth and subsequent plans the emphasis was mainly on consolidation of existing health infrastructure rather than on expansion. "The thrust has been on qualitative improvement in the health services through strengthening of physical facilities like provision of essential equipment, supply of essential drugs and consumables, construction of building and staff quarters, filling up of vacant posts of medical and paramedical staff and in-service training of staff."

The National Health Policy stressed the provision of preventive, promotive and rehabilitative health services to the people thereby making a shift from medical care to health care. The delivery of Primary

Health Care is the foundation of rural health care system and is an integral part of the national health care system. In the rural areas, services are provided through a network of integrated health and family welfare system and health programmes have been restructured and reoriented from time to time to meet the objectives of the National Health Policy. These levels are:

1) **Village Level** In order to ensure that health care penetrates into the farthest reaches of rural areas and that it is accessible to everyone, different schemes have been implemented such as Village Health Guides Scheme, training of local 'Dais' and the ICDS Scheme. Under each of these schemes, one person from the village community is selected and trained. They serve as links between the community and the governmental infrastructure and provide the first contact between the individual and the health system.

2) **Sub-Centre Level** The Sub-Centre is the most peripheral outpost of the existing health delivery system in rural areas and first contact point between the Primary Health Care system and the community. They are being established on the basis of one sub-centre for every 5000 population in general and one for every 3000 population in hilly, tribal and backward areas. Sub-Centres are assigned tasks relating to interpersonal communication in order to bring about behavioural change and provide services in relation to maternal and child health, family welfare, nutrition, immunization, diarrhoea control and control of communicable diseases programmes. The Sub-Centres are provided with basic drugs for minor ailments needed for taking care of essential health needs of men, women and children. The Department of Family Welfare provides 100% Central assistance to all the Sub-Centres in the country in the form of salary of ANM's and LHVs, rent at the rate of Rupees 3000 per annum and contingency at the rate of Rupees 3200 per annum, in addition to drugs and equipment kits. The salary of the male worker is borne by the State Governments. Each sub-centre is manned by one male and one female multipurpose health worker. The work at sub-centres is supervised by male and female health assistant. One lady Health Worker (LHV) is entrusted with the task of supervision of six Sub-Centres.

3) **Primary Health Centre Level-** PHC is the first contact point between village community and the Medical Officer. The PHC's were envisaged to provide an integrated curative and preventive health care to the rural population with emphasis on preventive and promotive aspects of health care. The PHCs are established and maintained by the State Governments under the Minimum Needs Programme (MNP)/ Basic Minimum Services Programme (BMS). The National Health Plan (1983) proposes the establishment of Primary Health Centres on the basis of one PHC for every 30,000 rural population in the plains, and one PHC for every 20,000 population in hilly, tribal and backward areas. It acts as a referral unit for 5-6 sub-centres. The essential functions of the PHC are:

a) Medical care
b) MCH including family planning

c) Safe water supply and basic sanitation
d) Prevention and control of locally endemic diseases
e) Collection and reporting of vital statistics
f) Education about health
g) National Health Programmes as relevant
h) Referral Services
i) Training of Health guides, health workers, local dais and health assistants
j) Basic laboratory services

A PHC is expected to have a Medical Officer and 14 paramedical and other staff. It should have 4-6 beds for patients.

4) **Community Health Centres-** CHC's are being established and maintained by the State Government under MNP/BMS programme. Each community health centres cover a population of 80,000 to 1.20 lakh and are referral centres for PHC's approximately at the rate of 1:4. Its manpower strength includes four medical specialists (Surgeon, Physician, Gynaecologist and Paediatrician) supported by 21 paramedical and other staff. It should have 30 indoor beds with one OT, X-ray, Labour room and Laboratory facilities and also provides facilities for Obstetric care and specialist consultations.

Health Institutions

For 87 percent of the rural population in Assam, the Sub-Centres and the Primary Health care centres are the principal source of providing health care facilities and also of service to the needy and vulnerable groups. As seen from Table 3.1, there are 5109 Sub-Centres currently functioning, though the required number is 5063. Thus there is surplus number of sub-centres in the state which can also be explained from Table 3.3, which shows that the average rural population covered by a Sub-Centre is 4544 which is in accordance with the population norm of 5000 in rural areas. Table 3.2, shows that Nagaon, the second most populous district has the highest number of 464 sub-centres while North Cachar Hills has 73 Sub-Centres.

The number of Primary Health Centres in Assam has increased considerably from 237 since the period 1981-85 to 610 as functioning currently, but there is still a shortage of 216 PHCs in the state as per the 2001 census population. The average rural population covered by a PHC in Assam is 38059 which is much higher than the national norm of 30000 and covers 43 villages on an average, as seen from Table 3.1, The government has set the target of building additional 116 PHC's by the end of the Tenth plan. Dhemaji and Hailakandi districts have the lowest number of PHCs i.e. 9 and 8 respectively.

Table 3.1, also shows that the State does not have enough Community Health Centres to meet the demand of the rural population. Since the past decade 100 CHC's have been functioning as against the required 206 CHCs. One CHC in Assam covers about 2,32,163 of the rural population, as seen from Table 3.3, which is almost the double of the national norm of 1,20,000, indicating the inadequacy of the CHC to meet the demands of the rural population. It can also be seen that since the Eight Five Year Plan there has been no increase in the number of PHCs and CHCs in the state, indicating a lack of effort on

the part of the government to take initiative in the development of primary health institutions.

Table 3.4, shows that the total number of hospitals in the year 2002 were 268 with each hospital serving a population of 84183 and 12661 beds were available with each bed serving a population of 1782. As per the data available from the Directorate of Health Services, Assam, the average population served by each bed is 12019 in the year 2006.This indicates that there is a strong need for increasing the bed strength. According to the Economic Survey of Assam 2004-05, in the year 2001-2002, the total bed strength was 12948 and 49 beds were available per lakh population.

Table 3.1: Number of Sub-Centre, PHC and CHC's functioning in Assam

	(1981-1985)	(1985-1990)	(1992-1997)	(1997-2002)	Target (2002-2007)	Functioning as on September 2005	Required	Short-fall
CHC	12	60	100	100	81	100	206	106
PHC	237	449	610	610	116	610	826	216
Sub-Centres	1711	5109	5109	5109	0	5109	5063	0

Source: *Bulletin on Rural Health Statistics in India 2006* (accessed through Internet on 7-11-06)

Table 3.2: District-Wise Availability of Health Centres in Assam (as on September 2005)

District	Number of Sub-Centres	Number of Primary Health Centres	Number of Community Health Centres
Barpeta	351	41	6
Bongaigaon	95	23	4
Cachar	288	22	2
Darrang	322	35	7
Dhemaji	88	9	3
Dhubri	303	23	6
Dibrugarh	180	37	5
Goalpara	192	17	1
Golaghat	212	32	5
Hailakandi	103	8	1
Jorhat	149	24	4
Kamrup	338	51	9
Karbi Anglong	159	35	5
Karimganj	232	16	1
Kokrajhar	198	37	3
Lakhimpur	183	23	5
Marigaon	111	13	2
Nagaon	464	38	9
Nalbari	280	42	9
N.C.HILLS	73	12	2
Sibsagar	227	30	2
Sonitpur	325	28	5
Tinsukia	236	14	4
Assam	**5109**	**610**	**100**

Source: Ministry of Health and Family Welfare, Govt of India (accessed through indiastat.com on 11-10-06)

Table3.3: Average Rural Population and Average Number of Villages Covered by Sub-Centre, PHC's and CHC's in Assam as on September 2005.

	Average Rural Population Covered	Average Number of Villages Covered
Sub-Centres	4544	5
PHC	38059	43
CHC	232163	263

Source: *Bulletin on Rural Health Statistics in India 2006* (accessed through Internet on 7-11-06)

Table 3.4: Total Number of Allopathic Hospitals and Beds Available and their Ratio to the Population as on 01.01.2002

ITEMS	Total Number of	Population served per	Reference Period
Hospital *	268	84183	01.01.1991
Bed#	12661	1782	01.01.1991
Bed@	12948	12019	2001-2002

* Hospital figures prior to 1997 are generally inclusive of CHCs, from 1997 excluding CHCs
# Source: http://www.cbhidghs.nic.in/hii2003/8.3.htm (accessed on 14-11-06)
@ Source:- Directorate of Health services, Assam; Economic Survey 2000-2005, Assam

Medical Colleges, Hospitals and Training Centres

The state has three Medical colleges namely Guwahati Medical College in Guwahati, Assam Medical College in Dibrugarh and Silchar Medical College in Cachar district and one state hospital namely Mohendra Mohan Choudhury hospital in Guwahati.

It has three Tuberculosis Hospitals and three TB clinics with a total of 656 beds. There are 23 District TB centres and 15 TB wards are attached to general hospitals. Though there are no leprosy Hospitals the state has seven leprosy control units and 56 leprosy treatment centres with a total of 131 beds. It has one cancer hospital the Dr. B. Barooah Cancer Institute which is recognised by the Government of India as the Regional Institute for Cancer Treatment and Research. This institute largely caters to the need of the 8 northeastern states and has a total of 117 beds, as seen from Table 3.5.

Table 3.5: Status of Tuberculosis, Leprosy and Cancer Hospitals in Assam for the year 2004

	ITEMS	Number of Cases
Tuberculosis	Tuberculosis Hospital	3
	District TB Centres	23
	Wards attached to General Hospital	15
	TB clinics	3
	Beds	656
Leprosy	Leprosy Hospital	NIL
	Leprosy Control Units	7
	S.E.T. Centres	268
	Leprosy colonies	3
	Leprosy treatment centres	56
	Beds	131
Cancer	Cancer Hospital	1
	Wards attached to general Hospital	3
	No. of Radium Cobalt Units	2
	No. of dept. X-ray units	3
	Beds	117

Source: Directorate of Economics and Statistics (2005), Government of Assam

Besides, in the private sector there are several established hospitals and nursing homes in the state. Guwahati has a few super speciality hospitals as well as general hospitals and nursing homes in the private sector. These hospitals cater to a large number of people from all over the north east region as well as Bhutan.

Table 3.6: Number of Training Schools for Nurses and Health Workers in Assam and their Annual Admission Capacity

Training Centres	Total Number (as on September 2005)	Admission Capacity (as on 31.03.2001)
ANM/HW(F) Schools	22	1105
LHV/HA(F) Schools	1	40
Health and Family Welfare Training centres	1	-
MPW/(M)	0	-

Source: www.indiastat.com

For the training of Female Health Workers and Auxiliary Nurse Midwives (ANM's) the state has 22 ANM/HW(F) schools funded by the Government of India with a total annual admission capacity of 1105 students. There is one promotional school for Lady Health Visitors and Female Health Assistants established by the Government of India with an admission capacity for 40 students. There is one Health and Family Welfare Training centre in Guwahati but there are no training schools for Male Multi Purpose workers (MPW/M).

Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homeopathy (Ayush)

The department of AYUSH was established as Department of Indian System of Medicine and Homeopathy (ISM & H) in Ministry of Health and Family Welfare in March, 1995 and was renamed as Department of AYUSH in November 2003. A major strength of AYUSH is that it is accessible, acceptable and affordable. The National Health Policy (1983) visualised an important role for the ISM & H practitioners in the delivery of health services. During the Tenth Five Year Plan period the major thrust has been given to mainstreaming the ISM & H system and utilisation of the services of the ISM & H practitioners and improving access to health care and coverage under national programmes.

The state has one **Ayurvedic college** namely Ayurvedic College and Hospital in Guwahati offering both undergraduate as well as post-graduate course with an admission capacity of 50 and 12 respectively and bed strength of 100. There are 268 Ayurvedic dispensaries and 40 licensed pharmacies in Assam. There are three undergraduate **Homeopathy** colleges and hospitals located in different districts, Dr. J. K. Saikia Homeopathic Medical College in Jorhat, Swahid Jadav Nath Homeopathic Medical College & Hospital in Guwahati, and Assam Homeopathic Medical College & Hospital in Nagaon, with a total admission intake of 90 students and bed strength of 105. None of these colleges offer post graduate courses.

The state does not have any college that offers Unani, Siddha, Yoga and Naturopathy courses but it has one Yoga Hospital with 25 beds. However there are 25 Yoga, two Naturopathy 75 Homeopathy and one government approved Unani dispensaries in the State as seen from Table 3.7.

Till date, there are 250 Ayurvedic and 624 Homeopathic practitioners registered with the state government. Thus, a total of 874 doctors (both institutionally and non-institutionally qualified) are available to the people. Table 3.8 shows that only 0.3 AYUSH doctors are available per 10000 population in Assam against the all India ratio of 7.0 revealing the shortage of AYUSH doctors in the state.

Table 3.7: Status of Infrastructural Facilities under AYUSH in Assam as on 01-04-05

Facilities	Ayurveda	Unani	Homeopathy	Siddha	Yoga	Naturopathy	Total
Hospitals	1	-	3	-	1	-	5
Beds	100	-	105	-	25	-	230
Dispensaries	268	1	75	-	25	2	371
Regd. Practitioners	250	-	624	-	-	-	874
Colleges (U.G.)	1	-	3	-	-	-	4
Admission Capacity (U.G.)	50	-	90	-	-	-	140
Colleges (P.G.)	1	-	-	-	-	-	1
Admission Capacity (P.G.)	12	-	-	-	-	-	12

Source: www.cbhidghs.nic.in/hia2005/15.01.htm (accessed on 14-11-06)
http://mohfw.nic.in/Annual0506%5CCONTENTS.htm (accessed on 21.09.06)

Table 3.8: Number of AYUSH Doctor Available Per 10000 Population in Assam and India as on 01-01-2005

	AYUSH Doctor Per 10000 Population
ASSAM	0.3
INDIA	7

Source: http://mohfw.nic.in/Annual0506%5CCONTENTS.htm (accessed on 21.09.06)

Human Resources Position and Training Status

The Ministry of Health and Family Welfare (MoHFW), Government of India, has laid down the optimum number of human resources required in the rural health centres for their proper functioning as well as for maximum coverage of the population. The staffing position has been given in BOX 1.

Box 1.

STAFFING PATTERN

A. STAFF FOR SUB - CENTRE:	Number of Posts
1. Health Worker (Female)/ANM	1
2. Health Worker (Male)	1
3. Voluntary Worker (Paid @ Rs.100/- p.m. as honorarium)	1
Total:	3

B. STAFF FOR NEW PRIMARY HEALTH CENTRE	
1. Medical Officer	1
2. Pharmacist	1
3. Nurse Mid-wife (Staff Nurse)	1
4. Health Worker (Female)/ANM	1
5. Health Educator	1
6. Health Assistant (Male)	1
7. Health Assistant (Female)/LHV	1
8. Upper Division Clerk	1
9. Lower Division Clerk	1
10. Laboratory Technician	1
11. Driver (Subject to availability of Vehicle)	1
12. Class IV	4
Total:	15

C. STAFF FOR COMMUNITY HEALTH CENTRE:	
1. Medical Officer #	4
2. Nurse Mid– Wife (staff Nurse)	7
3. Dresser	1
4. Pharmacist/Compounder	1
5. Laboratory Technician	1
6. Radiographer	1
7. Ward Boys	2
8. Dhobi	1
9. Sweepers	3
10. Mali	1
11. Chowkidar	1
12. Aya	1
13. Peon	1
Total:	25

: Either qualified or specially trained to work as Surgeon, Obstetrician, Physician and Paediatrician. One of the existing Medical Officers similarly should be either qualified or specially trained in Public Health)

Source: http://mohfw.nic.in/dofw%20website/Bulletin%20on%20RHS%20-%2006%20-%20PDF%20Files/Genesis%20and%20Evolution%20of%20RHCS-Modified.htm (accessed on 23-11-06)

A glimpse into Table 3.9, shows the current position of human resources in the Sub-Centres, Primary Health Centres and Community Health Centres of Assam. As seen from BOX 1 each Sub-Centre should have one MPW (Female) or ANM and one MPW (M). However, Table 3.9, shows that though all the 5109 Sub-Centres have the required number of ANM's, there is an acute shortage of the MPW (Male) staff with only 320 in position against the required 5109. Absence of a MPW (M) training centre could be one of the potent reasons for the shortage of male human resources.

All the 610 Primary Health Centers in the state have the required number of Medical officer, ANMs and Pharmacists, but the post of Health Assistants, both Male and Female, Nurse Midwife, and laboratory technicians are grossly understaffed. Though the 100 Community Health Centers working in the state are overstaffed with physicians, they are in dire need of Surgeons and Paediatricians. There is also a shortage of Obstetricians & Gynaecologists, Nurse Midwife, Radiographer, and Laboratory technicians in the CHCs.

Table 3.9: Human Resources Position in Sub-Centre, PHCs and CHCs in Assam

Human Resources	Required	In Position	Shortfall
Multipurpose Worker (Female) / ANM	5719	5719	0
Multipurpose worker (Male) / Health Worker(Male)	5109	320	4789
Health Assistants (Female) / LHV	610	411	199
Health Assistants (Male)	610	175	435
Doctor At PHC's	610	610	0
Surgeons	100	0	100
Obstetricians and Gynaecologists	100	70	30
Physicians	100	130	0
Pediatricians	100	0	100
Total Specialist at CHC's	400	200	200
Radiographers	100	90	10
Pharmacist	710	710	0
Laboratory technicians	710	425	285
Nurse midwife	1310	424	886

Source: Ministry of Health and Family Welfare, GOI

Table 3.10, shows the trend for the number of registered medical and paramedical personnels in Assam since 2000 to 2004. The number of Allopathic Practitioners, Pharmacists, General Nurses, and Auxiliary Nurses all show a declining trend from 2000-2004. The number of registered Auxiliary Nurse or midwife has decreased almost by 50 percent since 2000 to 2004 and the number of Allopathic doctors has dropped 521 in 2000 to 399 in 2004. With the decreasing number of registered doctors in the state, the availability of per doctor to the population has increased. Table 3.11, shows that in the year 2002, with 2160 doctors working in the State, the ratio of availability of per doctor to the total population was 1:12128

which was very high compared to all India average indicating an acute shortage of doctors in the state. However, data from DHS, Assam shows that at present the population served by each doctor is 1195.

The nurse-patient ratio is meagre as there are only 1886 nurses working in the government hospitals in Assam. The Joint Director of Nursing does not keep record of the nurses in the private hospitals. Thus, Assam is in dire need of nurses, but due to inadequacy of funds no appointment has been made by the state to appoint nurses, as reported by the assistant Director of Nursing. Since 1997 to 2006, 8072 ANM's, 4867 GNM's and 319 B.Sc nursing students have been registered with the nursing council.

Table 3.10: Number of Medical and Paramedical Personnel Registered in Assam (2000-2004)

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Allopathic Practitioners	521	468	463	466	399
Pharmacists	351	325	733	250	271
General nurses, Midwives	803	NA	655	824	699
Auxiliary nurses, Midwives	1393	NA	1877	962	722

Source: Directorate of Economics and Statistics, Assam (for various Years)

Table 3.11: Total Number of Allopathic Doctors Available and its Ratio to the Population as on 01-01-2002

ITEMS	Total Number of	Population served per	Reference Period
Doctor*	2160	12128	01.01.2000
Doctor#	-	1195	2006

*Source: http://www.cbhidghs.nic.in/hia/7.09.htm (accessed on 14-11-06)

Source:- Directorate of Health Services, Assam, unpublished data from records.

The RCH- Facility survey of 2003 (Table 3.12) shows the in service training status of atleast one staff in the Sub-Centres, PHCs, CHCs, FRUs and DHCs of Assam. It can be seen that negligible proportion of staff in the Sub-Centres are trained in their area of specialisation with barely two percent of the staff having received training in IUD and RCH. Though the paramedical staff of the Primary Health centres are quite well trained, the training status of the Medical Officer is poor in areas of Sterilization, MTP and NSV. Similar is the case with the CHCs, FRUs and DHCs.

Table 3.12: Training Status of Medical Officers in DHCs / FRUs / CHCs / PHCs / Sub-Centres Of Assam, 2003

	Percent of DHC*	Percent of FRU*	Percent of CHC's*	Percent of PHC's		Percent of Sub-Centres Staff
				Medical Officer	Paramedical staff	
Sterilization	45.5	33.3	20.5	19.7	-	-
MTP	90.9	73.3	61.5	29	-	-
RTI/STI	72.7	63.3	46.2	-	-	-
RCH	63.6	53.3	59	53.1	89	2.1
New Born Care	81.8	66.7	64.1	-	-	-
NSV	-	-	-	11.7	-	-
IUD	-	-	-	-	75.5	1.9
CDD/ORT	-	-	-	-	84.8	5.9
UIP	-	-	-	-	82.1	5.7
CSSM	-	-	-	-	85.2	4.2
ARI	-	-	-	-	73.8	4.2

* Denotes percentage of atleast one Doctor/MO/ Paramedical staff received training during last 3 years preceding the survey.
Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Infrastructure and Facilities

Infrastructure

The status of essential infrastructural facilities available in the health centres is shown in Table 3.13, of the 522 Sub-Centres surveyed, barely three percent have tap water facility and only 31 percent of the Sub-Centres have electricity. The condition of the PHCs is none the better, with only 42 percent having atleast one bed. The CHCs, FRUs and the DHCs are still better equipped as compared to the PHC's and the Sub-Centres but they also lack a few basic facilities such as Laboratory, Labour Room, RTI/STI OPD facility and linkages with other district blood bank.

Table 3.13: Status of Infrastructure in DHC'S/FRU'S/CHC's/ PHC's/Sub-Centres of Assam (2003)

	Percent of DHC's	Percent of FRU's	Percent of CHC's	Percent of PHC's	Percent of Sub-Centres
Water Facility					
Tap	90.9	63.3	43.6	14.8	2.7
Others	0.01	36.7	56.4	-	97.3
Overhead Tank and pump	90.9	80	61.5	-	-
Electricity (all parts)	90	93.3	84.6	65.5	30.9
Generator Functional	77.8	64.7	29.4	-	-
Telephone	90.9	53.3	10.3	3.8	-
Vehicle Functional	81.1	40	41	13.8	-
Laboratory	45.5	30	35.9	29	-
Labour Room	54.5	56.7	51.3	56.2	-
OT for Gynaec Purpose	54.5	42.9	33.3	-	-
OT	100	93.3	71.1	-	-
Gynaec OPD Facility	81.8	40	30.8	-	-
RTI/STI OPD Facility	45.5	26.7	12.8	-	-
Linkage with District Blood Bank	54.5	30	10.3	-	-
PHC's with Atleast One Bed	-	-	-	41.7	-
Total Number of Units Surveyed	**11**	**30**	**39**	**290**	**522**

- Not Available

Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Equipments

Many of the DHCs, FRUs and the CHCs do not have even the basic equipments essential for hospitals. High pressure stabiliser, cardiac monitor, ventilator, fumigation, refrigerator etc. are some of the equipments which the health centres do not have.

Table 3.14: Availability of Selected Equipments in DHCs/FRUs/ CHCs of Assam (2003)

Equipments	Percent of DHC's	Percent of FRU's	Percent* of CHC's
Boyle's Apparatus	90.9	53.6	26.7
Oxygen Cylinder	72.7	46.4	16.7
Shadowless Lamp	81.8	46.4	16.7
High Pressure Sterilizer	18.2	14.3	6.7
Cardiac Monitor	27.3	14.3	6.7
Ventilator	27.3	25	23.3
OT Care/Fumigation	63.6	35.7	6.7
Hydraulic Table	81.8	64.3	33.3
X-Ray Machine	90.9	66.7	40
ECG Machine	71.4	71.4	0
ICE Line Freezer	70	72	78.1
Deep Freezer	63.6	56	62.5
Refrigerator	20.3	50	75
Total Number of Units Surveyed	**11**	**30**	**39**

Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Tubal Rings and Kits

Though the DHCs, FRUs and the CHCs keep receiving regular supply of Tubal rings, STD surgical kit, IUD kit and Kit I, there is shortage of few materials such as emergency Obstetric kit, RTI/STI kit, and new born child care kit which are not supplied regularly to these health centres. As these kits are essential for reproductive and child health care, proper action should be taken to ensure the smooth and continuous supply of these equipments.

Table 3.15: Supply Status of Tubal Rings and Kits in DHC's/FRU's/ CHC's/PHC's of Assam (2003)

Materials	Percent of DHC's	Percent of FRU's	Percent of CHC's	Percent of PHC's
Tubal Ring (Stock)	81.8	60	48.7	-
STD Surgical Kit	90.9	80	66.7	-
Em OC Drug Kit	36.4	36.7	20.5	-
RTI/STI Kit	27.3	30	12.8	-
IUD Kit	63.6	70	56.4	53.4
NBCE Kit	45.5	43.3	33.3	-
Kit I	72.7	80	64.1	60.3
Es OC Drug Kit	-	-	-	38.6
Mounted Lamp 200W	-	-	-	9
Total Number of Units Surveyed	**11**	**30**	**39**	**290**

- Not Available

Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Contraceptives and Vaccinations

The Sub-Centres and the Primary Health Centres have a fairly good stock of contraceptives and prophylactic drugs though the stock of vaccines is poor with PHCs and the CHCs having just about 50 percent of the vaccines stock. The DHCs and the FRUs do not have adequate stock of large IFA tablets, Vitamin A and ORS packets.

Table 3.16: Stock of Selected Items of Health Care in DHC's/FRU's/ CHC's/PHC's/Sub-Centres of Assam (2003)

	Items	Percent of DHC's	Percent of FRU's	Percent of CHC's	Percent of PHC's	Percent of Sub-Centres
Contraceptives	Nirod (Condom)	72.7	36.7	48.7	79	92.9
	Oral Pill	27.3	33.3	41	77.2	88.5
	IUD	72.7	56.7	69.2	59	84.7
Prophylactic Drugs	IFA (Large)	45.5	36.7	43.6	85	98.2
	IFA (Small)	-	-	-	86	-
	Vitamin A	54.5	53.3	59	71	92.9
	ORS Packet	45.5	46.7	59	81	95.4
Vaccines	BCG	72.7	63.3	53.8	49	-
	DPT	45.5	36.7	41	49	-
	OPV	54.5	53.3	33.3	52	-
	Measles	72.7	66.7	56.4	52	-
	DT	72.7	66.7	56.4	53.4	-
	TT	81.8	70	59	52	-
Total Number of Units Surveyed		**11**	**30**	**39**	**290**	**522**

- Not Available

Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Table 3.17: Availability of Atleast 60 percent of Critical Inputs in DHC's/FRU's/CHC's/PHC's/Sub-Centres of Assam (2003)

	PERCENTAGE HAVING ATLEAST 60 Percent ADEQUATELY EQUIPPED			
	DHC's	**FRU's**	**CHC's**	**PHC'S**
Infrastructure	81.8	60	38.5	21
Staff	81.8	40	12.8	35.2
Supply	45.5	40	17.9	50
Equipment	81.8	40	7.7	32.4
% Age Utilised as Referral	80	60	60	-
Total No. of units surveyed	**11**	**30**	**39**	**290**

- Not Available
Source: Facility survey-RCH (2003) Phase-II by MoHFW, GOI

Table 3.17, shows a summary picture of all the health centres having atleast 60 percent of the critical input of infrastructure, staff, supply and equipment. It can be seen that 80 percent of the District Health Centres have infrastructure, staff, equipment, and are utilised as referral but only 46 percent have regular supply of medicines, drugs and other essential equipments. Sixty percent of the First Referral Units have proper infrastructure and are utilised as referral by the lower health centres and only 40 percent of them have adequate staff, supply and equipment. However, the status of the Community Health Centres is abysmally poor. Though 60 percent of the CHCs are utilised as referral by the PHCs, 87 percent of the CHCs are not adequately staffed, 82 percent of them do not have supply of kits and drugs while only 8 percent of the CHCs have proper equipment. The condition of the PHCs is more or less the same.

A few newspaper articles can corroborate the existing real condition of the health centres in Assam. In an article published in Times of India, it was found that the government dispensary at Pandu in Jalukbari was "officially" being run by a four member staff since 2001 but a reality check later got to know that the quartet worked in other health centres because because the dispensary in Pandu did not exist at all. The dispensary at Bharalumukh and the health centre at Ulubari, Kharguli and the one at Kamakhya often wore a deserted look (Times of India, 31st March 2006). Another article in The Sentinel, it was seen that a majority of the CHC's, mini health centres, state dispensaries and sub centres in remote areas were running out of doctors and had no facilities. Most of the PHC's and Sub-Centres were lying abandoned. It said that the people of the remote areas of the district were suffering not only because of poor connectivity but also because they are deprived of even the basic treatment in the dispensaries, PHC's or sub-centres because of non-availability of doctors(The Sentinel, 17th April 2005).

Utilisation of Health Care Facilities

The impact of health on well-being depends not only on whether people are sick but also whether they obtain appropriate preventive

or curative care from the health care facilities available to them. Table 3.18, shows the percentage of people in Assam who use public and private health care facilities for different types of services. 78 percent of the rural population uses public health facilities as their main source of health care while only 22 percent of the rural masses utilise the private sector. However, 55 percent of the urban population use private sector while 43 percent use the public sector. Utilisation of both public and private health care is significantly low for delivery care as well as for the treatment of reproductive health problems as the DLHS-RCH 2002-04 data showed that still 72 percent of women get delivery done at home.

A staggering 82 percent of the population utilises public sector as a source for immunisation of children, while 64 percent of the total population uses private health care facilities for ORS packets. The public sector is the prime source for all modern contraceptive methods for both urban and rural population as well as for providing motivators for the use of modern contraceptives as well as for alternative methods of family planning. However the utilisation of services for methods of family planning is high for the urban population i.e. 51 percent as against the rural with only 21 percent.

Table 3.18: Percent Users of Public and Private Health Care Facilities in Assam (1999)

Type of Services	PUBLIC			PRIVATE		
	Urban	Rural	All	Urban	Rural	All
Source of Healthcare	43.4	78	74.7	54.9	21.7	24.9
Delivery Care (place of delivery)	34	10.3	11.7	25.9	4.7	5.9
Treatment of Reprodcutive						
Health Problems	15.6	12.2	12.4	24.7	14.9	15.5
Immunisation of Children	69.8	83.5	82.4	22.7	10.5	11.5
Source of ORS Packets	-	-	36.4	-	-	63.6
Source of All Modern Contraceptive Methods	46.8	65.5	63.7	47.7	30.6	32.2
Motivators of Current use of Modern Contraceptives	17.3	21.6	21.2	7.4	3.7	4.1
Motivators for Alternative Methods of Family Planning	50.7	21.1	23.4	*	*	-21.7

- Not available
* Percentage not shown; based on fewer than 25 unweighted cases
( ) based on 25-49 unweighted cases
Source: IIPS & ORC MACRO – ASSAM (2002)

Table 3.19: Share of Public Health Facilities in Hospitalised and Non-Hospitalised Treatment (Percentage of Episodes)

	Rural			Urban		
	1986-1987	1995-1996	2004	1986-1987	1995-1996	2004
Share of Public Sector in Non-Hospitalised Episodes Treated	40	29	27	26	22	24
Share of Public Sector in Hospitalised Episodes Treated	-	74	74	-	65	55
Share of Public Sector In-Patient Beds	84 as on 01.01.93					

Source:- NSSO 1998, NSSO 2006

Data from Table 3.18, demonstrates that the private sector does not account for 80 percent of the curative health services, let alone the health services in general. For preventive and promotive care, the public sector continues to be the main provider, particularly in the rural areas. Both rural and urban population prefers public sector for hospitalised cases whereas for OPD consultation private is more prevalent across both rural and urban.

Another way of looking at the utilisation of health care is the type of medical attention that is received by the people before death. As can be seen, only 10 percent of the population in Assam receives institutional attention as compared to 21 percent for all-India whereas 78 percent of the total population of Assam gets non-institutional attention which is quite high as compared to all-India i.e. 67 percent. twelve percent of the population do not take any medical attention before death.

Table 3.20: Percent Distrbution of Deaths by Type of Medical Attention Received Before Death by Residence (1999)

	Total		Rural		Urban	
	Assam	India	Assam	India	Assam	India
Institutional	9.7	20.7	8.6	17.2	26.2	35.8
Medical Attention other than Institution	78.2	67.3	78.6	69.1	73.3	59.7
No Medical Attention	12	12	12.8	13.7	0.6	4.4

Source: SRS, Statistical Report (1999)

Acute shortage of doctors, particularly specialists, accentuated by their general unwillingness to be located in the interior places, lack of fund for the maintenance of building/equipment and shortages of drugs and other material supplies are some of the leading causes for low utilisation of facilities. In fact, a recent nation-wide survey conducted in 2003, as quoted in World Development Report 2004, based on unannounced visit to the health care clinics showed that the absence rate for health care workers and doctors in public facilities was very high in India with 44.4 percent of the doctors and 39 percent of the health workers being absent. Amongst the selected 19 states of India, Assam had the highest rate of absence amongst the doctors (46 percent) and health workers (60 percent).

4. Reproductive and Child Health Care

Reproductive and Child Health approach has been defined as "people have the ability to reproduce and regulate their fertility, women are able to go through pregnancy and child birth safely, the outcome of pregnancies is successful in terms of maternal and infant survival and well being, and couples are able to have sexual relation free of fear of pregnancy and of contracting disease."(MoHFW,1997)

Promotion of maternal and child health has been one of the most important objectives of Family Welfare programmes in India. The Government of India took steps to strengthen maternal and child health services as early as the 1st and 2nd Five Year Plans (1951-56 and 1956-61). As part of the Minimum Needs Programme initiated during the 5th Five Year Plan (1974-79), maternal health, child health and nutrition services were integrated with family planning services.

The Reproductive and Child Health Programme, Phase I was launched in October 1997 incorporating a new approach to population and development issues. The programme integrated and strengthened the services/interventions under the Child Survival and Safe Motherhood (CSSM) Programme and Family Planning Services and added to the basket of services, new areas on Reproductive Tract/Sexually Transmitted infections (RTI/STI). Some of the new interventions that were added to this programme, in addition to the CSSM programme were essential obstetric care, 24-hour delivery services at PHCs/CHCs, emergency obstetric care, essential newborn care, Medical Termination of Pregnancy, prevention of reproductive tract infection (RTI) and sexually transmitted diseases (STD).

The introduction of this programme was a significant paradigm shift from a target oriented approach; to one which focussed more on responding to broader reproductive health needs identified by the local communities. However, it did not go without some limitations such as central focus, weak decentralised planning process, multiple funding organisation, improper monitoring system, limited role of the private sector etc which undermined its efficacy and led to less than expected results.

The second phase of the RCH programme, launched in 2005, has been introduced keeping in mind the weaknesses of the first phase. The primary focus is on reducing the regional imbalances in Reproductive and Child Health services. RCH will be integrated, focussed, participatory programme aiming to meet the unmet demands of the target population. The approach of the programme is phased, with immediate, medium term and long term objectives.

The Immediate Objectives of the RCH-II are to:

i) Improve routine immunisation coverage

ii) Reduce the unmet need for contraception
iii) Promote skilled care during childbirth with appropriate referral linkages for emergency obstetric care.
iv) Seek to provide integrated service delivery for basic reproductive and child health care with special focus on EAG (Empowered Action group) and North Eastern states.

Medium Term Objectives

i) Bring the total fertility rate to replacement level by 2010 through a coordinated implementation of intersectoral linkages.

Long Term Objectives

i) Achieve a stable population by 2045, at a level consistent with the requirement of sustainable economic growth, social development and environment protection.

This comprehensive Reproductive and Child Health programme, has been integrated with other programmes, revised over the years to address the need of the community and population as a whole. However, proper implementation of these programmes and benefits reaped by the target population would go a long way in determining its success.

Reproductive and Maternal Health

Reproductive and Maternal Health is one of the major components of the RCH programme. With respect to maternal and reproductive health (MoHFW; 1998b), the important elements of the programme include-

a) Early registration of pregnancies
b) Provision of ANC, including atleast three ANC visits, iron prophylaxis for pregnant and lactating women, two doses of TT vaccines, detection and treatment of anaemia in mothers, and management and referral of high risk pregnancies.
c) Encouragement of institutional deliveries or home deliveries assisted by trained health professionals.
d) Provision of postnatal care, including atleast three post natal visits.
e) Identification and management of reproductive tract and sexually transmitted infections.

The National Population Policy (2000) also reaffirms the commitment of the government to empowering women for improved health and nutrition and safe motherhood programme. Among the National Socio-Demographic goals, specified in the policy, to be achieved by the year 2010, there are several components that pertain to maternal health such as reducing maternal mortality ratio to below 100 per 100,000 live births, achieving 80 percent institutional deliveries and 100 percent deliveries by trained persons.

Antenatal Problems and Care

Antenatal care (ANC) refers to pregnancy related health care provided by a doctor or a health worker in a medical facility or at home. It is the care of the women during pregnancy so as to achieve at the end of the pregnancy a healthy mother and a healthy baby. This care usually begins soon

after conception and continues throughout pregnancy including services such as monitoring pregnancy for signs of complications; promoting, protecting and maintaining the health of the mother during pregnancy, detecting "high risk" cases and giving them special attention, delivery care and postnatal care. Thus, the primary focus of antenatal care interventions is on improving maternal health, this being both an end in itself and necessary for improving the health and survival of infants.

The NFHS I and II and the DLHS of 2002-04, conducted by the Ministry of Health and Family Welfare, Government of India are a major and reliable source of information on maternal and child health. As revealed by NFHS-II, majority of the women in Assam suffer from various health problems during pregnancy, the most common being excessive fatigue suffered by 46 percent of the women, which is more common amongst the rural women i.e 47 percent as compared to the urban women(33 percent). This is followed by swelling of the body (27 percent) and anaemia (21 percent).

A pregnant woman can have an antenatal check-up by visiting a doctor or another health professional, receiving a home visit from a health worker or both. In Assam, in the year 1998-99, about 59 percent of the women had received antenatal check-up outside home from doctors or other health professionals, which was almost equivalent to the national average of 60 percent and has shown a dramatic improvement since 1992-93 where less than 50 percent of the women would receive antenatal check-up outside home from a health professional. The percentage of women receiving antenatal check-up only at home from a health worker has decreased further from three percent in 1992-93 to one percent in 2002-04.

Again, though the percentage of women seeking no antenatal check-up has decreased from 52 percent in the year 1992-93 to 39 percent in 1998-99, it is still higher than the national average of 34 percent. However, as seen from Table 4.3, the DLHS study conducted in 2002-04 found that 38 percent of the women do not seek any antenatal check-up. It is still at the same position as it was in the year 1998-99 as per the NFHS data, though the national average has significantly dropped to 27 percent.

Wide inter state variation exists among women seeking no antenatal check-up ranging from eight percent in Dibrugarh to 71 percent in North Cachar hills. Over half of the female population of Barpeta, Dhemaji, and Nagaon districts does not go for any antenatal check-up. Background characteristics of the women such as education, age, religion, residence are found to influence the decision for women seeking or not seeking antenatal check-ups. Though there is no any perceptible difference in the percentage of women receiving antenatal check-up from doctor or receiving no ANC check-up between the age group of less than 20 to 34 years, between the age group of 35-49 the percentage of women receiving no antenatal check-up increases and receiving check-up from a doctor or a health professional decreases. The urban-rural disparity has a major significant impact with 86 percent of urban women seeking ANC check-up and only 10 percent not seeking any check-up.

However, the percentage of rural women is higher than the national average with 41 percent not receiving any ANC check-up. Table 4.3, also shows us that a positive relationship exists between women seeking/not seeking ANC check-up and mothers' level of education. Ninety percent of the women who had completed their high school and above had received an ANC check-up from a doctor in the year 1998-99, though it has decreased by eight percent since 1992-93, and about four percent did not receive any ANC check-up.

Religion is an important indicator for the state of Assam, due to mass migration of people form neighbouring Bangladesh. As seen from Table 4.3, religion does play an important role in women receiving antenatal care, as about 50 percent of the Muslim women in the year 1998-99 did not receive any antenatal check-up as against 32 percent of the Hindu women, while only 37 percent of the Muslim women received ANC check-up from a doctor as against 61 percent of the Hindu women.

The RCH programme has stressed the need for getting atleast three ANC check-up during the entire period of pregnancy and that the first check-up should be in the first trimester. In Assam, about 51 percent of the urban women go for more than four ANC check-up while only 16 percent of the rural women go for 3 ANC. The majority of the rural women (41 percent) do not go for any check-up. The median number of check-up that a rural women gets done is two. Amongst the women who get their ANC check-up done, only 29 percent of the rural women and 63 percent of the urban women get it done in the first trimester of the pregnancy.

Inter-state comparison for the year 1998-99 shows that, only 31 percent of the total women of Assam had received three or more ANC check-up and that in the first trimester, which is much below the national average of 44 and 33 percent respectively. Also, Assam stands at a much lower position, compared to the larger states of India, with only Bihar, M.P., Rajasthan and UP lagging behind Assam.

The DLHS-RCH study of 2002-04 has found that 43 percent of the women in Assam go for three + ANC visit, less than the national average of 50 percent. The poor performing districts are Dhubri, Barpeta, Goalpara, Karbi Anglong, Nagaon and North Cachar Hills, where lass than 30 percent of the women go for more than three ANC visits.

TT Vaccinations and IFA Tablets

Tetanus toxoid (TT) injections are given to pregnant women to immunise the mother and the child from the risk of sometimes getting infected by the use of unsterilised instruments or unhygienic environment during delivery. If a mother has not been immunised earlier, two doses of adsorbed TT should be given- the first dose at 16-20 weeks and the 2nd dose at 20-24 weeks of pregnancy, with a minimum interval of one month between the 2 doses. For a woman who has been immunised three years earlier, one booster dose is sufficient as it provides necessary cover for subsequent pregnancies, during the next five years.

The TT immunisation programme, a part of the Universal Immunisation Programme (UIP) of 1985-86, has been incorporated in the RCH programme. Thus, the RCH programme recommends two doses of TT vaccine to a pregnant woman with the 1st

dose at the Times of India 16 weeks and the 2nd at 20 weeks (CBHI, 1991).

Anaemia, a result of the adverse effects of iron deficiency, is one of the main causes of maternal deaths in developing countries (WHO, 1989, and Mathai, 1987). Iron deficiency may be due to inadequate diet or poor absorption of iron due to morbidity. While prevalence rates in developed countries for iron deficiency anaemia range from 10 to 20 percent (Scrimshaw, 1984), two-thirds of women in developing countries are estimated to be anaemic (WHO, 1989). In rural India, prevalence of anaemia among women of ages between 15 - 44 ranges in between 34 percent to 99 percent according to a study conducted in Hyderabad, Calcutta, and New Delhi (GOI, 1981).

The majority of women in India, suffer from iron and folic acid deficiency. The prevalence rates of anaemia are even higher among pregnant women. At the onset of pregnancy, about 20 percent of women are anaemic and it increases to over 60 percent by the last trimester. At the same time, up to 20 percent of pregnant women are deficient in folic acid too. It poses a major threat to the mother and to the infant because anaemia per se is associated with high incidence of premature births, postpartum haemorrhage, and low birth weight, lowered resistance to infection, impaired cognitive development and decreased work capacity.

To prevent the mother and the child from developing complications and impairment, the RCH programme provides and recommends the consumption of 100 IFA tablets during pregnancy. IFA tablet contains 60 mg of elemental iron and 0.5 mg of acid. While pregnant women are having three antenatal checkups, health workers distribute IFA tablets to all pregnant women (1 tablet a day for 100 days and to those clinical anaemia two tablets a day for 100 days). The paleness seen in the nails, tongue, inside of lower eyelids and complaints of weakness or dizziness are visible signs of anaemia. Anaemia can also be confirmed by checking haemoglobin level. Those found having below 11 gmspercent are considered clinical anaemic and are recommended to take two tablets daily for at least three months and continued till delivery (GOI, 1994). When the haemoglobin level is below seven gmpercent or less, the woman is considered to be suffering from severe anaemia.

Comparing both Table 4.2 and 4.3, it can be seen that though the percentage of women taking two or more TT injections has increased significantly form 35 percent in 1992-93 to 52 percent in 1998-99 it is still less than the national average of 67 percent and lags behind all the major states except U.P.. This indicates that half of the women are not immunised against TT during pregnancy and this is more prevalent in the rural areas whereas 88 percent of the urban women take two or more TT injections. With the increase in the level of education, the percentage of women receiving 2+ TT vaccines also increases. Forty-six percent of the Muslim women and 56 percent of the Hindu women take 2+ TT injections.

Table 4.4, shows the district-wise performance of the tetanus vaccinations given to pregnant women from 2001-05 of Assam. The percentage has increased significantly since 2001 to 2004-05 and

that there was dramatic increase from 55 percent in 2003-04 to 71 percent in 2004-05. During the year 2003-04, the government of Assam as part of its UIP had been able to achieve around 40-50percent of the target set and in the subsequent year 2004-05 it achieved almost 70-80 percent of its target in all the districts barring North Cachar Hills where only 36 percent was covered. However, it is interesting to note that in the year 2003-04, though the government was able to immunise 55 percent of the total pregnant women, its achievement for the Darrang district was five times the target set.

As per NFHS-II around 55 percent of the women in Assam were given IFA tablets/ syrup in 1998-99 whereas only 13.4 percent of the women had received 100+ or more IFA tablets in 2002-04, according to DLHG-RCH study. Although there exists a wide variation in the data, it is still a matter of concern as good majority of people do not even receive IFA tablets. The urban-rural discrepancy, level of mother's education and religion, all play a very important role in mothers receiving IFA tablets. However as explained earlier, inadequate health centres, shortage of supply of vaccines/tablets in Sub-Centres, PHCs and CHCs, lack of trained health workers to motivate and inform the rural women about its benefits are the other potent factors contributing to the availability of IFA tablets and vaccines to the rural women of Assam.

Full ANC comprises of 3+ ANC visits, 2+ TT injections and received 100+ IFA tablets as these are the minimum requirement for a pregnant. The percentage of women receiving full ANC is very low with only 16 percent while the national average is 20 percent. However the DLHS-RCH study of 2002-04 shows that 16 percent of women in India and only 10 percent in Assam get a full ANC check-up and that Sibsagar has the highest amongst all the districts with 24 percent. It suggests that the RCH programme of 1998-99 has not been able to achieve its objective to its full potential and the government must take adequate steps to ensure that the programme is carried out to its entirety.

Institutional Delivery and Safe Delivery

The place of delivery and the assistance received during delivery are important factors in ensuring safe childbirth. The need for effective intranatal care is therefore, indispensable as it helps to maintain hygienic environment and tackle complicated cases. One of the important objectives of the RCH programme is to encourage deliveries under proper hygienic condition under the supervision of trained health personnels.

In Assam, majority of deliveries i.e. 82 percent take place at home though it is more prevalent in the rural areas with 85 percent as contrasted to 40 percent in the urban areas. Ninety two percent of the illiterate women and 41 percent of the educated women go for home delivery. However, the percentage is enormously high compared to an all-India average where 65 percent of home deliveries take place. Religion also plays an important role as 93 percent of Muslim women and 75 percent of Hindu women have home deliveries (Graphs 1 and 2). Amongst the districts of Assam, Dhemaji, Dhubri, Goalpara, Karimganj, Marigaon, Nagaon, and N.C. Hills more than 80 percent have home delivery. It is interesting to note that, out of these districts, except Dhemaji and

N.C. Hills, all districts are Muslim dominated with more than 50 percent of Muslim population. (2001 census).Thus in Assam, according to NFHS-II, only 18 percent of institutional delivery- either public or private- takes place, lagging behind the all-India average of 34 percent and is at the lowest rung of the ladder amongst all the major states of India. Kerala is at the top with 93 percent of institutional delivery.

As majority of the deliveries are done at home, only 21 percent of the deliveries in Assam are assisted by a health professional, which is lowest among all the major states and much below the all India rate of 34 percent. Around 78 percent of the women get unskilled delivery done i.e. from a TBA or dais, who are not trained proficiently in the skills to manage normal deliveries or diagnose complications, posing a great threat to the mother and the child. Amongst the districts, Dibrugarh, Jorhat, Kamrup, Nalbari, Sibsagar, and Tinsukia are the only ones where more than 40 percent of the deliveries are safe deliveries. Education plays a very vital role as female literacy in all the above mentioned districts is more than 60 percent. Table 4.3, also shows that around 62 percent of the high school and above educated women would get their delivery done from a doctor while only eight percent of the illiterate women go to a doctor.

Assam is one of the 18 states of the country where the National Rural Health Mission (NRHM) was launched on April 12, 2005, to provide effective healthcare to rural population. With the objective of reduction of Infant and Maternal Mortality rates, the Mission intends to create a health care system which is holistic in nature including promotion of healthy lifestyle.

In order to promote safe delivery the Janani Suraksha Yojana (JSY), has been launched under the broad NRHM umbrella. This scheme replaces the National Maternity Benefit Scheme. While NMBS is linked to provision of better diet for pregnant women from BPL families, JSY integrates the cash assistance with antenatal care during the pregnancy period, institutional care during delivery and immediate post-partum period in a Health Centre by establishing a system of coordinated care by field level health worker. However, concerns about deprivation of women were expressed by different quarters in view of the inadequacy of existing health infrastructure and preference of women for delivery at home. As such parameters of the scheme were modified and the following scheme is in operative at present.

Table 4.1: Janani Suraksha Yojana

Category	Rural Area		Total	Urban Area		Total
	Mother's Package	ASHA's Package		Mother's Package	ASHA's Package	
Low Performance State	500+200	600	1300	500+100	200	800
High Performance State	500+200		700			

NB 1: Low performing States (10 states) High Performing States (Remaining states/UTs)

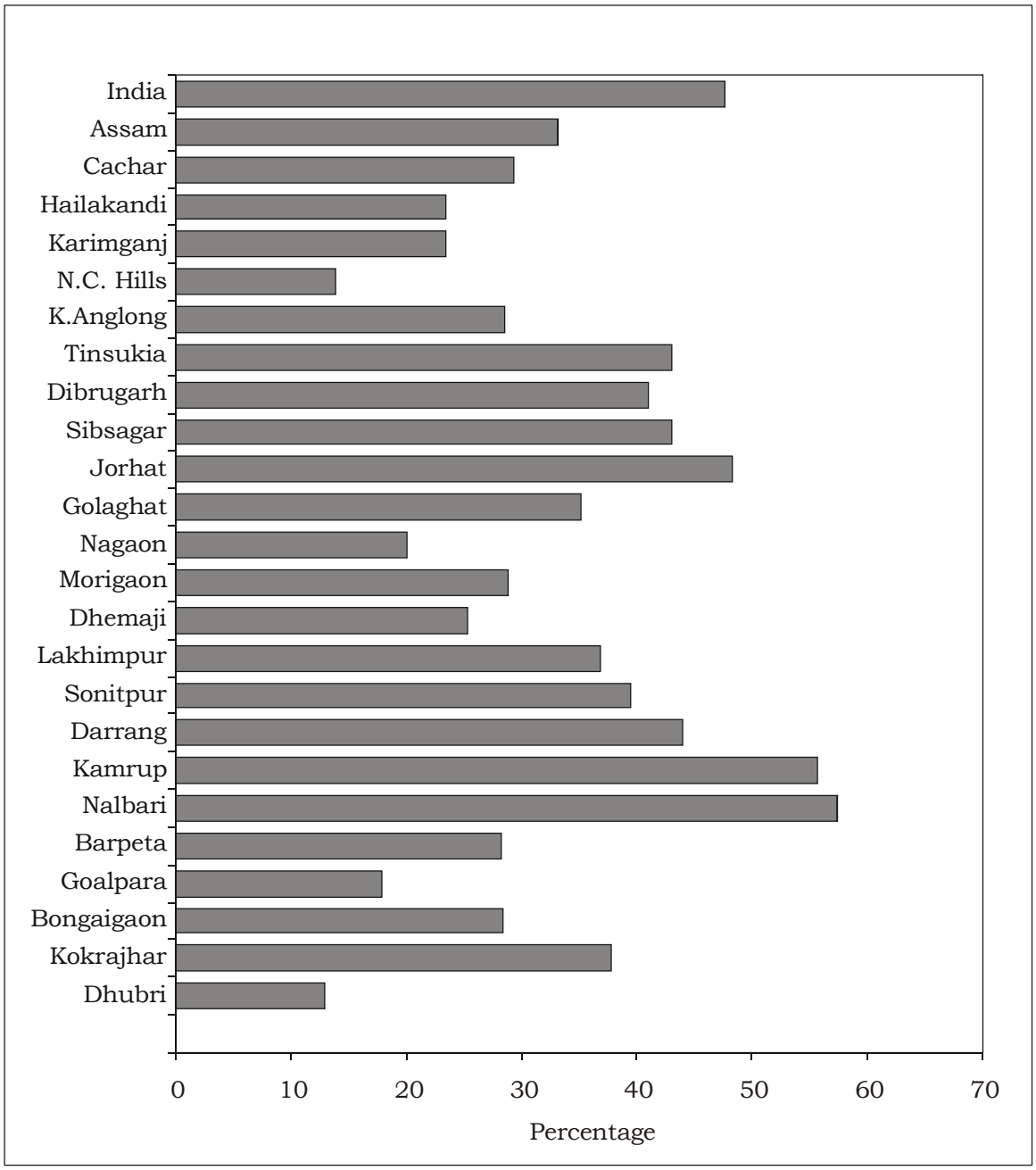
NB 2 : Cash benefit of Rs. 500/- per live births would be available to all pregnant women (BPL) on registration for ANC with the ASHA/ANM/PHC and the cash benefit is to be disbursed at the time of delivery, irrespective of the place of delivery.

NB 3 : Such eligible beneficiaries under the scheme who deliver in health institutions would get an additional cash benefit of Rs. 200 if they belong to rural areas of LPS and HPS and Rs. 100 if they belong to urban areas of ten low performing states (namely; Bihar Chattisgarh, Jharkhand, Orissa, U.P, Uttaranchal, Rajasthan, Madhya Pradesh, Assam & Jammu & Kashmir)

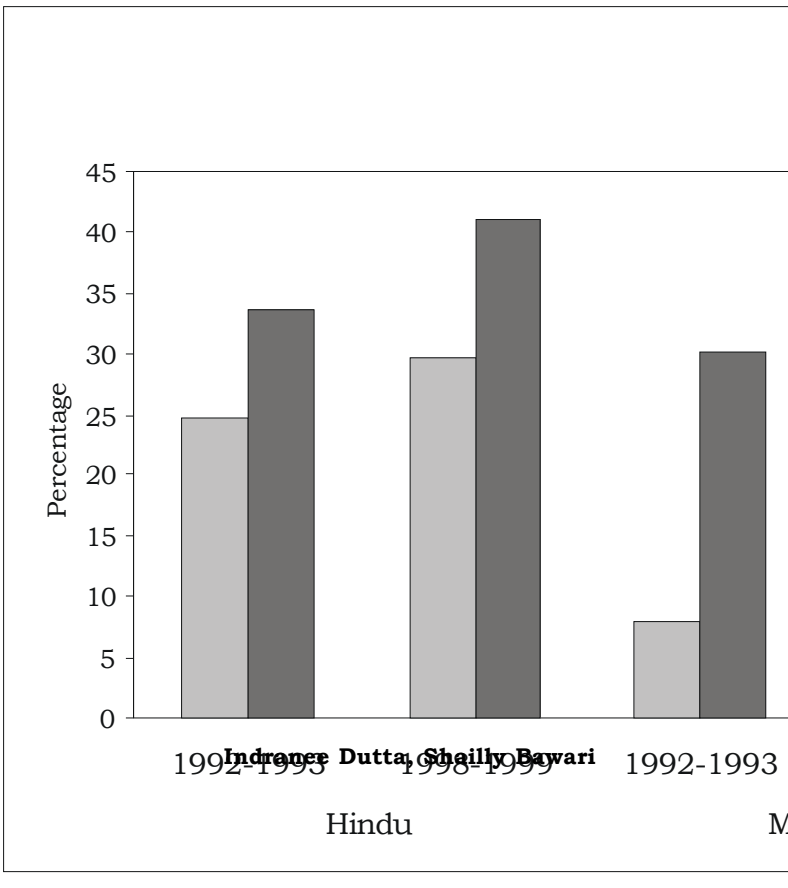
NB 4: The benefits would be extended to all women from BPL families of 10 LPS even after the third live birth if the mother, of her own accord chooses to undergo sterilization in the health facility where she delivered, immediately after the delivery.

This scheme is in operation in all the districts of Assam.

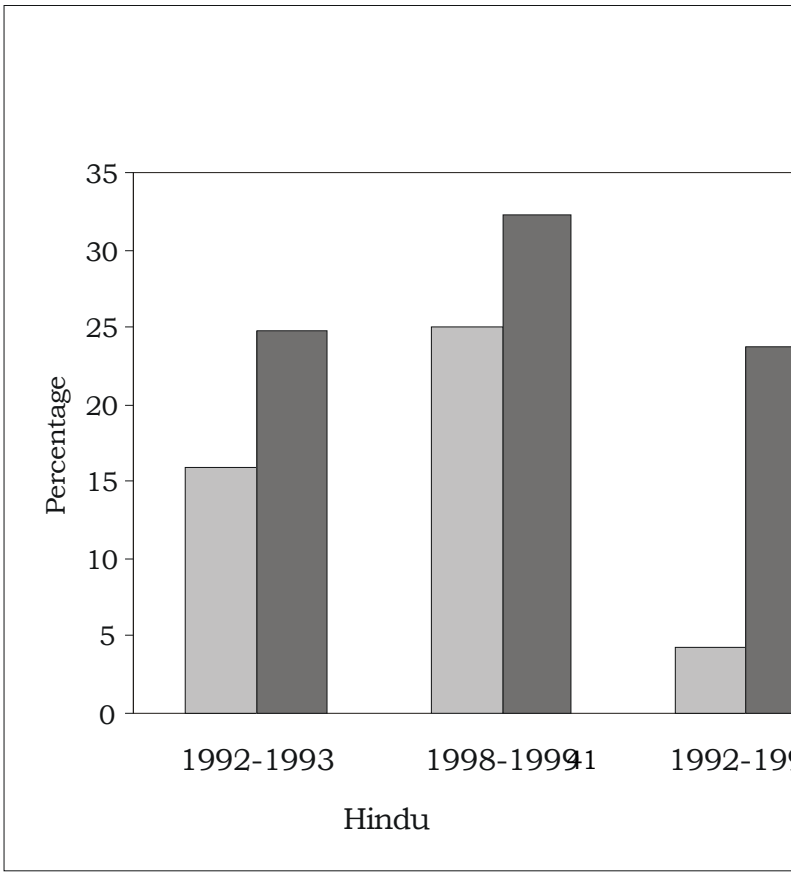
Graph 1: Districtwise Performance for Safe Delivery (DLHS:2002-04)



Graph 2: Safe Delivery



Graph 3: Institutional delive



Graph 4: Districtwise Performance for Ins
(DLHS:2002-04)

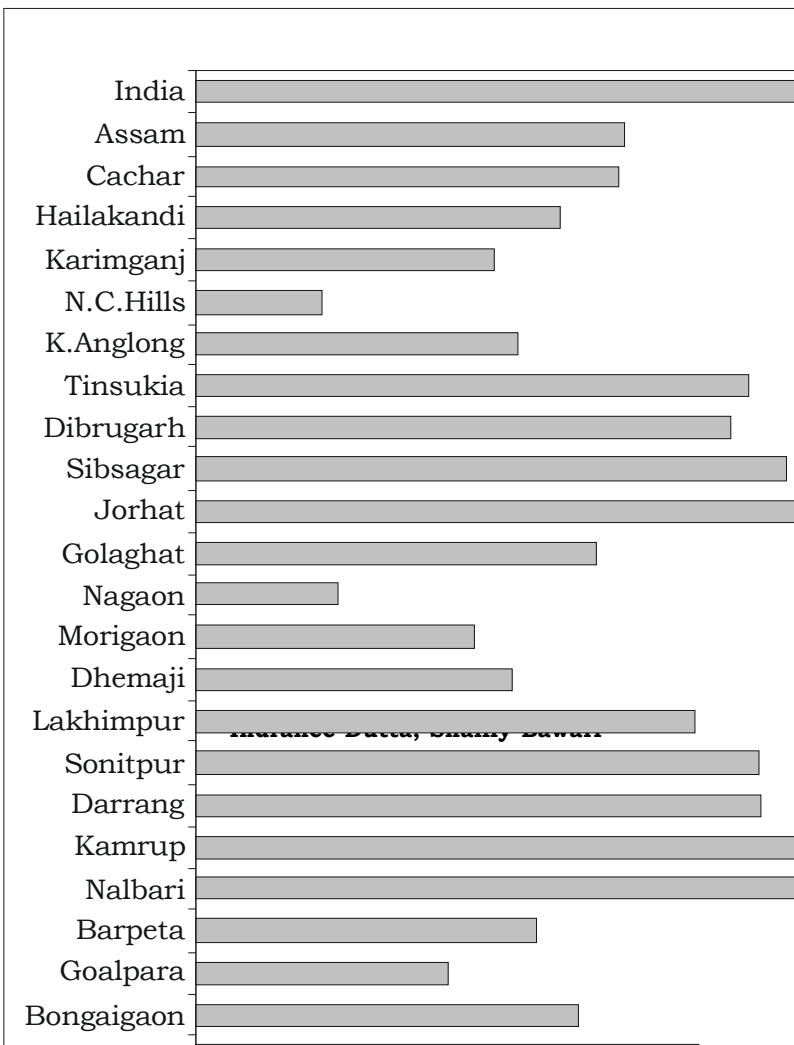


Table 4.2: Reproductive and Maternal Health (1992-1993)

Background characteristics			Antenatal Check up only at home from health worker	Antenatal Checkup outside home from			No Ant-enatal check up	2 or more TT Injections	Perce-ntage given if a Tablets & Syrup	Place of Delivery			Attendant assisting during delivery				
										Health facility/ institution							
				Doctor	Other health professional	TBA. Other[1]				Pu-blic	Pri-vate	Home	Doctor	ANM/ Nurs/ Mid-wife/ LHV	TBA	Rela-tive/ other	None
Mothers age at birth	< 20 yrs	Assam	1.8	33.1	9.8	0.3	54.9	32.1	35.1	7.9	2	90.1	11.1	6.5	20.5	60.4	1.6
		India	13.3	40.8	9.8	0.4	34.6	55.1	51.8	15.2	8.8	74.8	20.8	13.5	35.1	29.7	0.4
	20-34 yrs	Assam	2.7	36.7	11.4	0.4	48.7	36.7	41.5	8.3	3.8	87.3	11.8	7	21.2	58	2
		India	12.6	40.8	9.4	0.3	36	55.1	51.5	15	12	72.1	22.6	12.6	34.8	28.8	0.6
	35 + yrs	Assam	2.4	28.6	12.3	—	56.7	24.8	31.9	2.6	1.4	96	3.4	3.9	23.5	65.7	3.6
		India	13.1	22.5	5.9	0.3	57.2	30.3	30.3	7.2	5.3	86.1	10.3	8.8	41.3	37.6	1
Resi-dence	Urban	Assam	1.7	73.2	5.7	—	19.4	66.2	69.6	29.6	20.5	49.3	45	11.8	19.4	23.3	0.6
		India	3.9	69.6	7.2	0.4	17.8	74.4	68.7	30.2	27.4	41.5	47.6	17.7	22	12	0.4
	Rural	Assam	2.6	31.7	11.6	0.4	53.7	31.8	36.5	5.8	1.6	92.3	7.9	6.2	21.3	62.5	2.1
		India	15.4	31.1	10	0.3	42.4	47.7	45.1	10	6	82.9	13.9	11.1	39.1	34.6	0.6
Mother education	Illiterate	Assam	2.5	23.5	10.2	0.4	63.2	23.2	27.1	3.9	0.5	95.1	4	4.5	22.6	66.2	2.7
		India	15.5	25.3	9.2	0.3	48.8	40.3	38.3	8.6	3.2	87.2	9.9	10.1	41.8	36.8	0.7
	Literate, middle school complete	Assam	3.1	49.5	14.8	0.2	32.6	58.1	56.8	12.9	3.7	82.6	34.7	9.4	20	51.6	0.9
		India	9	61.9	11.1	0.3	16.9	78.1	17.6	25.4	17.6	55.9	34.4	19	27.2	18.8	0.4
	High school & above	Assam	0.3	98.1	1.6	—	—	88.5	91.2	26.9	32	40.7	56.4	19.2	10	14.5	—
		India	3.6	84.2	6.5	0.2	4.2	91.5	85.6	29.3	46	24.2	68.7	14.5	10.5	5.9	0.2
Religion	Hindu	Assam	2.6	44.5	11.5	0.4	41	41.7	47	11.1	4.8	83.6	16.2	8.6	24	49.2	2
		India	14	38.6	8.9	0.3	37.2	53	50.5	14.8	10	74.1	21	12.6	35.3	29.9	0.6
	Muslim	Assam	2.7	22	11.3	0.4	63.5	25.4	29.3	3.3	0.9	95.4	3.6	4.3	16.2	73.9	2
		India	8.6	41.6	8.5	0.4	40.3	51.8	44.3	11.9	11.8	75.6	19.6	10.6	37.4	31.5	0.6
	Christian	Assam	—	17.9	5.9	—	76.2	19.4	19.4	1.5	0.3	98.2	3.3	2.9	24.9	67.4	1.5
		India	6.5	61.4	7.3	0.2	23.9	65	65	22.3	26.2	50.9	41.7	14.3	18.7	24.3	0.8
Total		**Assam**	**2.5**	**35.3**	**11.1**	**0.4**	**50.7**	**34.9**	**39.4**	**7.9**	**3.2**	**88.5**	**11.1**	**6.7**	**21.3**	**59**	**2**
		India	**12.8**	**39.8**	**9.3**	**0.3**	**36.8**	**53.8**	**50.5**	**14.6**	**10.9**	**73.5**	**21.6**	**12.6**	**35.5**	**29.5**	**0.6**

Note: — Less than 0.5%
1. includes Hakim and "don't know"
2. Births in the period 1-47 months prior to the survey. Total includes 8 births to women belonging to other religions, which are not shown separately.
Source: NFHS-I

Table 4.3: Reproductive and Maternal Health 1998 – 1999

Background characteristics			Antenatal Checkup only at home from health worker	Antenatal Checkup outside home from			No Antenatal checkup	2 or more TT Injections	Percentage given if a Tablets & Syrup
				Doctor	Other health professional	TBA. Other[1]			
Mothers age at birth	< 20 yrs	Assam	0.4	54.7	6.6	0.4	36.9	54.6	54.2
		India	6.3	48.7	12.4	0.4	31.7	67.6	58.8
	20 – 34 yrs	Assam	1.9	51.4	7.2	0.2	38.3	52.4	56.1
		India	5.3	49.5	10.7	0.2	33.6	67.6	58.4
	35 + yrs	Assam	2.3	35.7	2.4	0	59.6	23.7	40.4
		India	5.7	32.1	6.1	0.1	54.9	47	36.6
Residence	Urban	Assam	0	86.2	2.2	0	9.5	87.7	84.9
		India	2	74.8	8.8	0.2	13.6	81.9	75.7
	Rural	Assam	1.6	49.4	7.1	0.2	40.7	49.5	53.1
		India	6.6	41.2	11.54	0.3	39.8	62.5	52.5
Mother education	Illiterate	Assam	1.7	36.8	8.2	0	52.2	35.5	40.5
		India	7.3	32.1	11.2	0.3	48.4	54.7	43.6
	Literate, middle school complete	Assam	1.17	63.61	6.1	0.2	28.17	66.2	67.38
		India	4.19	65.35	12.34	0.2	17.35	81.3	73.32
	High school & above	Assam	1.2	89.6	1.2	1.3	4.1	94.9	94.8
		India	1.2	85.4	7.2	0.1	5.8	91.2	86.5
Religion	Hindu	Assam	0.9	60.7	5.5	0.2	31.7	55.5	61
		India	6.2	47.2	11.2	0.2	34.5	66.5	57.5
	Muslim	Assam	2.3	37.4	9.1	0.3	49.9	45.7	46.5
		India	3.3	50.7	8.5	0.4	36.4	65.6	51.7
Total		**Assam**	**1.5**	**51.5**	**6.8**	**0.2**	**38.9**	**51.7**	**55**
		India	**5.6**	**48.6**	**10.9**	**0.2**	**34**	**66.8**	**57.6**

Cont. ... Table 4.3: Reproductive and Maternal Health 1998 – 1999

Background characteristics			Place of Delivery			Attendant assisting during delivery*				Post Partum checkup	Among those with post-partum checkup	
			Health facility/ institution		Home	Doctor	ANM/ Nurse/ Mid-wife/ LHV	TBA	Other	percentage within 2 months of Birth	percent-age seen within 2 days of birth	percent-age seen within 1 week of birth
			Public	Private								
Mothers age at birth	< 20 yrs	Assam	8.9	3	87.2	14.2	1.5	36.3	47.6	27.1	3.7	8
		India	16.7	14.4	67	28.2	12.6	34.7	23.4	18.1	14.7	30.3
	20 – 34 yrs	Assam	12.8	7.2	79.4	20.2	3.4	30.4	45.5	25.8	1.4	4.3
		India	16.4	17.8	64	31.5	11.3	34.6	21.7	16.4	13.7	30.6
	35 + yrs	Assam	8	0	92	15.3	0.7	32.5	51.6	13.9	*	*
		India	9.5	9.9	78.4	19.7	6.7	42.5	29.5	10.5	22.5	38.9
Residence	Urban	Assam	34	25.9	40.1	60	3.7	10.7	25.6	44.7	0	3.7
		India	29.1	34.5	33.9	55.8	17.2	18.8	7.6	19.6	14.3	32.3
	Rural	Assam	10.3	4.7	84.5	16	2.8	33.3	47.6	25	2.1	5.3
		India	12.5	11.6	74.3	23	9.8	39.6	26.6	16.1	14.2	30.5
Mother education	Illiterate	Assam	3.7	3.4	92.3	7.5	1.2	38	52.9	20.5	2	7.1
		India	10.2	6.8	81.5	15.6	9	44.7	29.6	13.6	14.5	31.9
	Literate, middle school complete	Assam	18.3	4.69	76.53	24.17	4.93	26.76	43.9	30.58	2	4
		India	25.04	21.2	51.74	41.4	15.97	25.91	15.95	23.77	14.7	29.6
	High school & above	Assam	31.3	26.6	40.9	62.3	3.7	17.1	15.8	55.4	*	*
		India	24.2	49.3	24.3	70.3	12.9	11.8	4.7	27.4	10	26.7
Religion	Hindu	Assam	15.7	9.4	74.5	26.4	3.4	28.5	41.2	32	2.3	6.4
		India	16.4	15.9	66	29.5	11.5	34.7	23.3	16.4	13.2	29.6
	Muslim	Assam	5.6	1.1	92.5	7.3	2.1	38	52.1	18.3	1.6	3.2
		India	14.1	16.5	67.5	29	9.6	40	20.5	15.7	20.4	36.3
Total		**Assam**	**11.7**	**5.9**	**81.9**	**18.5**	**2.8**	**31.9**	**46.3**	**25.5**	**2**	**5.2**
		India	**16.2**	**16.7**	**65.4**	**30.3**	**11.4**	**35**	**22.4**	**16.5**	**14.2**	**30.8**

*Based on fewer than 25 unweighted cases
Sources : NFHS – 2

Table 4.4: District Wise Reproductive and Maternal Health Status – DLHS – RHS 2002-2004

Sl. No.	Name of District	Antenatal checkup at home	Any MNC checkup	No Antenatal checkup	3+ANC visits	Atleast 1 TT Injection	Recd 100 or more IFA tablets/ Syrup	Full ANC*	Govt. Insti-tution	Private Insti-tution	Home delivery	Safe delivery	Post Delivery complication	
													Had post delivery compli-cation	Seeking treat-ment
1	Dhubri	2.6	37.8	61.5	23.6	48	6.4	4.9	9.4	1.2	89.1	13	33.6	45.3
2	Kokrajhar	2.7	61.6	38.4	36.4	54.7	9.9	8.8	24.8	6.5	67.9	37.8	34.5	48.1
3	Bongaigaon	1.4	55.7	44.3	38.5	62.9	8.9	6.8	15	9	76.1	28.3	29.4	36.8
4	Goalpara	0	60.9	39.1	28.7	65	13.5	7.8	10.9	4.8	82.8	17.9	13.4	66.3
5	Barpeta	0	44.4	55.6	24.2	58.5	14	7.8	12.9	8.3	78	28.2	24.8	49.8
6	Nalbari	1.1	78	22	53.3	77.1	23.6	18.9	31.9	20.4	47.2	57.3	27.4	73.6
7	Kamrup	0.5	80.7	19.3	61.9	85.3	21.9	18.4	15.5	29.2	55.3	55.6	38.8	59.7
8	Darrang	0	74.7	25.3	59.1	72.8	12.6	8.5	18.4	16.8	62.6	44	30.5	44.5
9	Sonitpur	0	77	23	54.3	77.9	17	15.2	19.1	16	60.4	39.5	16.5	56.2
10	Lakhimpur	0.4	49.8	46.4	45.7	55	18.4	12.7	18.2	13	68.8	36.8	61.1	35.6
11	Dhemaji	0	49.6	50.4	30.8	48.1	5	4.6	15.6	4.2	80.2	25.3	41.3	36.1
12	Morigaon	1	64.8	35.2	39.7	67.1	5.8	4.5	13.3	4.1	81.3	28.9	35.6	44.7
13	Nagaon	0.7	45.8	54.2	28.4	63	8.4	6.4	3.2	5.7	91.1	20	18.8	26.3
14	Golaghat	0.3	63.8	33.7	52.9	65.9	15.8	12.8	11	14	74.6	35.2	21	20.7
15	Jorhat	0.7	66.3	33.7	58.6	78.9	14.5	13.7	23.2	17.1	59.7	48.3	16	49.9
16	Sibsagar	0	64.7	33.8	53.1	67.3	27.9	23.8	13.2	23.7	61.8	43	43.6	50.7
17	Dibrugarh	0.3	92.4	7.6	68.1	87.1	17.7	14.1	21	12.3	55.2	41	20.5	39.5
18	Tinsukia	0	80.6	19.4	67.7	72.7	3.8	3.8	15.1	19.5	63.6	43	9.2	41.8
19	K.Anglong	0.3	57	43	26.5	55.7	8.7	5.1	16.4	3.8	79.6	28.5	27.1	40.3
20	N.C. Hills	0.2	29.4	70.6	17.1	32.2	10.3	7.3	7.2	0.7	91.8	13.9	27.7	6
21	Karimganj	2.8	58	42	40.3	63.6	7.6	4.2	13.3	5.4	81.1	23.4	51.5	21.9
22	Hailakandi	2	64	36	33.2	70.2	28.2	14.9	11.3	11.5	77.2	23.5	61.3	22.6
23	Cachar	0.6	62.6	37.4	36.1	61.1	6.9	5.7	16.3	10.1	73.6	29.3	47.1	19.9
	Assam	**0.9**	**61.5**	**38.2**	**42.6**	**65.9**	**13.4**	**10.2**	**13.9**	**12.9**	**71.9**	**33.2**	**31.7**	**42.1**
	India	**6.1**	**74.4**	**26.5**	**50.1**	**80.1**	**20.4**	**16.4**	**18.7**	**21.8**	**59**	**47.6**	**31.4**	**50.3**

*Full ANC (3+ ANC visits + atleast 1 TT Injection + Recd 100 or more IFA tablets/Syrup)
Source : DLHS-RCH, IIPS (2002-04).

Table 4.5: District Wise Performance Report of Tetanus Toxoid Vaccinations of Pregnant Women from 2001-2005, Assam (In Percentage)

Sl. No.	Name of District	2001-02	2002-03	2003-04	2004-05
1	Dhubri	61.25	65.72	65.71	85.47
2	Kokrajhar	49.2	59.7	59.38	68.22
3	Bongaigaon	38.53	48.8	49.93	64.47
4	Goalpara	52.75	65.44	70.7	82.72
5	Barpeta	51.79	57.33	59.96	69.6
6	Nalbari	31.77	41.78	48.82	72.9
7	Kamrup	53.24	41.74	63.32	66.48
8	Darrang	55.65	43.75	559.67	66.88
9	Sonitpur	42.84	46.74	42.62	75.84
10	Lakhimpur	96.79	49.7	48.74	93.84
11	Dhemaji	26.22	42.62	48.83	80.66
12	Morigaon	40.37	49.39	63.94	73.63
13	Nagaon	36.78	68.24	49.37	64.87
14	Golaghat	43.38	43.28	42.67	61.38
15	Jorhat	42.47	42.49	41.51	64.17
16	Sibsagar	18.36	30.79	37.19	55.27
17	Dibrugarh	80.36	57.86	49.42	71.75
18	Tinsukia	33.83	48.64	50.85	86.83
19	K.Anglong	36.28	41.46	38.81	56.94
20	N.C. Hills	34	26.56	22.06	36.38
21	Karimganj	37.08	61.56	42.28	63.72
22	Hailakandi	41.88	44.78	51.51	68.09
23	Cachar	36.53	49.63	55.19	82.9
	Total	**45.98**	**50.49**	**54.65**	**71.11**

Source : Jt. Director of Health Services (Universal Immunisation Programme), Assam

Table 4.6: Percentage of Ever Married Women (15-49 years), Having Symptoms of Reproductive Health Problems 1998-1999

			Vaginal discharge accompanied by						
			Any abnormal vaginal discharge	Itching or irritation	Bad odour	Severe lower abdominal pain	Fever	Other problem	Symptoms of a urinary tract infection
Residence	Urban	Assam	26.8	10.4	6.7	19.5	3.7	4.7	13.6
		India	27.8	15.9	8.7	16.5	6.3	8.6	15.4
	Rural	Assam	41.5	14.6	15	33.2	8.3	5.7	20.7
		India	30.4	17.5	12.3	19.3	8.7	7.8	18.4
Mother education	Illiterate	Assam	43.6	14.9	17.1	35.9	8.6	5.8	22.1
		India	31.3	18.2	13	20.3	9.7	8.5	19.3
	Literate, middle school complete	Assam	38	13.6	12.2	29.1	7.1	5.8	18.9
		India	29.9	16.9	10.1	18.2	7.1	8	16.7
	High school & above	Assam	30.2	13.8	6.5	21.3	5.3	4.3	13.4
		India	22.8	13.2	6.7	12.6	3.5	6.1	12.6
Religion	Hindu	Assam	39.2	15	14.8	22.9	6.7	4.9	17.6
		India	28.7	16.6	10.9	17.6	7.7	7.8	16.9
	Muslim	Assam	43.2	13.5	13.4	36.7	10.9	7.2	25.8
		India	37.2	20.6	14.3	25.4	11.8	10.3	23.2
Number of Children ever born	0	Assam	41.8	13.3	16.7	34.7	9.6	8.4	22.8
		India	29.4	16.5	11	19.6	7.8	7.2	18.7
	1	Assam	40.1	15.5	13.6	30.1	8.6	4.6	17.4
		India	26.2	14.6	9.6	15.7	6.1	6.2	14.9
	2 - 3	Assam	42.6	15.7	15.1	32.7	7.4	5.3	19.7
		India	29.7	16.6	10.7	18.5	7.5	8	16.8
	4 - 5	Assam	39.6	13.9	13.7	33.3	8.1	4.9	21.7
		India	31.8	18.6	12.8	20	9.8	9.1	19.1
	6 +	Assam	33.5	10	11.9	27.5	7	7	19.4
		India	30.5	19.5	12.9	18.9	9.6	8.9	19.7
Total		**Assam**	**40.3**	**14.3**	**14.3**	**32**	**7.9**	**5.7**	**20.1**
		India	**29.7**	**17.1**	**11.3**	**18.6**	**8.1**	**8**	**17.6**

Source : IIPS & ORC MACRO (2000)

Post Natal Care

The care of the mother and the newborn after delivery is known as postnatal care and is important for the mother to prevent complications that may develop after delivery and to provide care for the rapid restoration of the mother to optimum health. Postpartum check-up within two months after delivery is particularly important for births that take place in non-institutional settings. The RCH programme recommends three postpartum visits for the mother.

Table 4.3 shows that in the year 1999, out of the 82 percent of non-institutional deliveries, 26 percent of the births were followed by a postpartum check-up within two months of birth and that it is much higher than the national average of 17 percent. Interstate comparison by NFHS-II reveals that Assam is in a better position compared to other major states except a few like Andhra (45 percent), Karnataka (35 percent), Kerala (27 percent), Maharashtra (30 percent), Tamilnadu (53 percent) and West Bengal (32 percent). Among those with a post-partum check-up, only two percent of women come within two days and only five percent within one week on birth. Urban, Hindu, and educated women are more likely to visit than rural, Muslim, and uneducated.

The DLHS-RCH study of 2002-04, as shown in Table 4.4, indicates that 32 percent of the women in Assam had post delivery complications and that it ranged from 47 percent in the Cachar district to nine percent in Tinsukia.

Reproductive Health Problems

Absence of Reproductive health problems such as Reproductive Tract Infections (RTI's) is essential for the safety of the mother's health and also for both men and women for their ability to meet their reproductive goals. Postpartum check-up therefore, becomes crucial, as it helps in educating women about the importance of personal hygiene, family planning, and pregnancy spacing.

Table 4.6 shows that about 40 percent of ever married women within the age of 15-49 years in the year 1999 reported symptoms of abnormal vaginal discharge with severe abdominal pain being the major symptom (32 percent) followed by itching/irritation and bad odour (14 percent) and around 20 percent of them reported symptoms of a urinary tract infection, all being higher than the national average. Wide urban-rural gaps, mother's educational level and religion discrepancy exists. However, developing reproductive health problems is also related with the number of children born. It is seen that mothers with one child have a lower chance of developing any vaginal discharge or UTI and that it decreases with the mother having more than 4-5 children, while mothers with no children or 2-3 children reported maximum health problems.

Nutritional Status of Women

Body Mass Index (BMI)

Other indicators of women's health and nutritional status is the Body Mass Index and the level of iron in the body. BMI is defined as the weight in kilograms divided by the height in meters (kg/m^2). It is a simple index of weight for height and is commonly used to classify under-weight, over-weight, and obesity in adults. According to the WHO classification, people having BMI<18.5 are classified as

Table 4.7: Table Showing the Mean Height (cm) and BMI of Assam and India, 1998-1999

	Mean height (cm)	Mean Body MASS Index (BMI)
Assam	149.9	20.1
India	161.2	20.3

under-weight and that equal to or above 25 as over-weight.

In Assam, the mean height of women is 150 cm, which is one cm less than the national average of 151.2 cm. Women living in rural areas are more likely to be below 145 cm as are the illiterate and middle school women. Women between the age of 15-19 are more likely to be below 145 cm but it increases gradually as their age increases due to growth and then becomes static. This shows that the height of the person depends upon the place of living and education as rural and uneducated women may lack knowledge about the proper dietary plan and the essential nutrients required to maintain ones optimum health. Assam has about 17 percent of women below 145 cm as compared to all India average of 13.2 percent.

Table 4.8 shows that 27 percent of the women are under-weight in Assam against an all India average of 36 percent. Overall nutritional status of the women of Assam, in comparison to other states is better as Assam comes next to Delhi (12 percent), Punjab (17 percent), Kerala (19 percent) and Haryana (26 percent) which has BMI below 18.5 percent. The other states had more than 35 percent of women with BMI less than 18.5. The mean BMI in Assam is 20.1 kg/m^2.

The percentage of under-weight women within the age group of 15-24 was around 28 percent but increases to 31 percent between the age group of 25-29 and then decreases again to 24 percent in 30-34 years age group. Urban-rural, education and religion have some effect on the health and nutrition of women.

Anaemia

Seventy percent of the women in Assam are anaemic, with 40 percent of them having mild anaemia and 26 percent having moderate anaemia. This indicates the need for IFA tables in mothers as deficiency of iron can lead to a host of other problems during pregnancy.

Though there does not exist much urban-rural discrepancy, education does seem to play an important factor in determining the women's intake of iron rich food. Twenty eight percent of illiterate women suffer from moderate anaemia against 18 percent of the high school completed and above women, though there is not much difference in education between women suffering from mild anaemia. The height and BMI of the women also affect their anaemic level, as women having height less than 145 cm and BMI less than 18.5 kg /m^2 are more prone to anaemia.

The percentage of anaemic women in Assam is considerably higher (70 percent) than the all India average of 52 percent and is highest amongst all the major states indicating that women in Assam, across all age group are anaemic and require enough supplements or iron rich food and that their dietary pattern needs to be checked.

Table 4.8: Nutritional Status of and Iron-Deficiency Anaemia by Degree of Anaemia Among Ever Married Women, According to Selected Background Characteristics of Assam and India, 1998-1999

Background characteristics			Percentage below 145 cm (height)	Percentage with BMI below 18.5 kg/m²	Percentage of women with any anaemia	Percentage of women with		
						Mild anaemia	Moderate anaemia	Severe anaemia
Age	15 – 19	Assam	23.1	28.7	67.7	38.7	29	0
		India	14.7	38.8	56	36.2	17.9	1.9
	20 – 24	Assam	18.3	28.3	69.5	41.5	25.9	2.2
		India	13	41.8	53.8	34.8	17	2
	25 – 29	Assam	16.2	31.4	69.9	44	25.5	0.5
		India	12.4	39.1	51.4	34.8	14.7	1.9
	30 – 34	Assam	15.6	23.6	69.8	42.8	25.6	1.4
		India	12.3	35	50.5	34.8	13.7	1.9
	35 – 49	Assam	17	25.7	70.1	45.1	24.5	0.5
		India	13.7	31.1	50.5	35.1	13.6	1.9
Residence	Urban	Assam	11	18.8	67.2	49.2	17.1	0.8
		India	12	22.6	45.7	32	12.2	1.5
	Rural	Assam	17.9	27.9	69.9	42.6	26.4	0.9
		India	13.6	40.6	53.9	36.1	15.8	2
Education	Illiterate	Assam	19.1	31.6	72.1	43.1	28	1.1
		India	15.4	42.6	55.8	36.7	16.8	2.3
	Literate, middle school complete	Assam	15.5	22.2	68.4	43.8	24	0.8
		India	11.5	31.2	49.5	34.3	13.4	1.7
	High school & above	Assam	13.9	19.6	60.1	41.8	17.5	0.7
		India	7.7	17.8	40.3	29.7	9.7	0.9
Religion	Hindu	Assam	16.1	24.6	66.7	43.3	22.1	1.3
		India	13.5	36.9	52.4	35.5	15	2
	Muslim	Assam	20.3	32.2	75.1	42.8	32	0.3
		India	12.3	34.1	49.6	34.2	14.2	1.3
Total		**Assam**	**17.3**	**27.1**	**69.7**	**43.2**	**25.6**	**0.9**
		India	**13.2**	**35.8**	**51.8**	**35**	**14.8**	**1.9**

Source : IIPS & ORC Macro– India (2000)
IIPS & ORC Macro-Assam (2002)

Table 4.9: Percentage of Ever Married Women Classified as Having Anaemia by Degree of Anaemia According to Height & BMI 1998-1999

Background characteristic			Percentage of women with any Anaemia	Mild Anaemia	Moderate Anaemia	Severe Anaemia
Height	< 145cm	Assam	75.5	41.2	32.5	1.9
		India	56.2	36.5	17.2	2.5
	>=145 cm	Assam	68.5	43.6	24.2	0.7
		India	51.1	34.8	14.5	1.8
Body Mass Index	<18.5 kg/m²	Assam	72.3	42.1	28.2	2
		India	56.8	37	17.1	2.7
	>=18.5 kg/m²	Assam	68.9	43.4	25	0.5
		India	49.1	34	13.7	1.5

Source: IIPS & ORC Macro – Assam (2002)
IIPS & ORC Macro – India (2002)

Child Health Care

Child health care comes under the purview of the Reproductive and Child Health (RCH) Programme that incorporates the component of Child Survival and Safe Motherhood Programme. The Integrated Child Development Services Scheme of 1975 had the following interventions with respect to childcare:

a) Supplementary Nutrition
b) Immunisation
c) Health check-ups
d) Treatment of common diseases like diarrhoea, dysentery, respiratory infection, skin and eye diseases.
e) Deworming
f) Referral services
g) Nutrition and health education
h) Growth monitoring and promotion
i) Vitamin A and IFA supplementation
j) Pre-school non-formal education

Most of these services pertain to health and nutrition and the target population consists of children less than six years, adolescent girls of 11-15 years in select areas and women in the age group of 15-45 years.

Breast Feeding

Postnatal care offers an excellent opportunity to find out how the mother is getting along with her baby. For many children breast milk provides the main source of nourishment in the first year of life. A great asset in India is that an average mother, although poor in nutritional status, has a remarkable ability to breast feed her baby for prolonged periods, sometimes nearly extending to two years. Longitudinal and cross-sectional studies indicate that poor Indian women secrete as much as 400 to 600 ml of milk per day during the first year. No other food is required to be given until four to five months after birth. At this age of 4 to 5 months, breast milk should be supplemented by additional foods rich in protein and other nutrients, called supplementary food, which should be introduced very gradually in small amounts.

Breast-feeding should be initiated within an hour of birth instead of waiting several hours. The first milk, called "colostrum", is the most suitable food for the baby during

this early period because it contains a high concentration of protein and other nutrient the body needs; it is also rich in anti-infective factors, which protect the baby against respiratory infections and diarrhoeal diseases.

Table 4.10: Initiation of Breast Feeding

Residence		Percentage started Breast Feeding within 1 hour of birth		Percentage whose mother squeezed first Milk from Breast	
		*NFHS-I	#NFHS-II	NFHS-I	NFHS-II
Urban	Assam	13.7	44.2	-	71.5
	India	11.1	19.2	60	58.8
Rural	Assam	20.7	44.8	-	63.6
	India	9	14.8	64.4	64
Mother's Education					
Illiterate	Assam	22.1	47.8	-	62.2
	India	8.6	12.7	64.9	66.6
Literate, Middle School complete	Assam	17.3	41.8	-	65.7
	India	10.9	19.3	64.4	60.2
High School complete & above	Assam	12.2	37.8	-	69.3
	India	11.6	22.2	52.6	52.4
Religion					
Hindu	Assam	23.8	45.8	-	66.6
	India	9.6	15	63.5	62.5
Muslim	Assam	12.2	43.1	-	60.8
	India	7.4	17.4	61.4	64.4
Place of Delivery					
Public Health facility	Assam	13.4	29.2	-	58
	India	12.3	27.1	58.2	55.6
Private Health facility	Assam	7.2	41.8	-	69.7
	India	12	20.7	54.4	50.6
Own home/ Parents home	Assam	21.2	47.4	-	64.9
	India	8.5	11.9	65.7	68.2
Total	**Assam**	**20**	**44.7**	**70.3**	**64.1**
	India	**9.5**	**15.8**	**63.5[a]**	**62.8**

#Includes the 2 most recent births during the 3 years preceding the survey
*Percentage of last born children who stated breast feeding
[a] excludes Andhra Pradesh, M.P., H.P., Tamil Nadu & West Bengal
- Not available
Source:- NFHS-I (1992-93)
NFHS-II (1998-99)

Table 4.11: Breast Feeding Status by Child's Age (Months) for the Year 1998-1999

Age		Not breast feeding	Exclusively breast feeding	Breast feeding & Receiving		
				Plain water only	Supplements	Using a bottle with Nipple
< 4 months	Assam	1.0	42.5	22.2	34.4	11.0
	India	2.0	55.2	22.8	20.0	11.2
4-6 months	Assam	0.3	15.7	25.0	59.0	10.7
	India	2.2	27.3	27.6	42.8	17.0
7-9 months	Assam	1.3	8.7	12.7	77.2	14.9
	India	5.0	10.0	21.4	63.4	18.8

Source: NFHS-II

Table 4.10, shows the comparison between the year 1992-93 and 1998-99 for the percentage of mothers who started breast-feeding within 1 hour of birth and percentage of mothers who squeezed their first milk from their breast by different background categories.

As can be seen, the percentage of mothers breast-feeding within one hour of birth in Assam has increased substantially from 20 percent in 1992-93 to 45 percent in 1998-99. It is extremely high as compared to the national average and is also the highest amongst all the bigger states of India, indicating that the women in Assam are aware of the benefits of this. However, it is interesting to note that a high proportion of women in the rural areas and illiterate women breast-feed within one hour. During the year 1992-93, the urban rural gap was wide being 14 and 21 percent respectively, though in the year 1998-99 it became negligible. Mother's educational status has found a negative relationship with 38 percent of the educated women giving their first milk while 48 percent of the illiterate women breastfeeding within one hour of birth. The place of delivery and the religion also has a significant impact with mothers who have home delivery and Hindu women being more likely to start breast-feeding within one hour of birth.

Although the women in Assam initiate breast-feeding within one hour of birth, they are not aware of the benefits of the first milk as 64 percent of the women squeeze their first milk from breast as against 63 percent at all-India level. Contrary to the belief, urban and educated women are more likely to squeeze out than rural and illiterate women are.

The WHO recommends that the child should be exclusively breast-fed for six months and then it should be supplemented with other supplementary food, while the RCH programme by the Government of India, recommends exclusive breast-feeding for four months. In the year 1998-99 only 16 percent of the children were exclusively breast fed for four to six months as against the national average of 27 percent while 34 percent of the children who were less than four months were given supplementary food, as shown in Table 4.11.

Immunisation

The Universal Immunisation Programme (UIP) started in India in 1985 and immunisation of children is one of the two vital components. It seeks to immunise children in their first year of life against the six targeted diseases with three doses each of DPT, OPV, one dose of BCG and one dose of Measles vaccine. "Universal" immunisation implies the ideal that no child should be denied immunisation against Tuberculosis, Diphtheria, Whooping cough, tetanus, polio, and measles.

Table 4.12: Percentage of Children Age 12-35 Months Who Received Vaccination and No-Vaccination

	Full Vaccination		No Vaccination	
	Assam	India	Assam	India
NFHS-I (92-93)	19.4	35.4	43.6	30.0
NFHS-II (98-99)	17.0	42.0	33.2	14.4
DLHS-RHS (02-04)	19.3	47.6	23.6	19.8
NFHS-III (05-06)	31.6	-	-	-

Source:- IIPS- 92, IIPS & ORC Macro 2000, 2002, 2006; DLHS 02-04

Table 4.12, shows a trend of various national surveys of children between the age group of 12- 35 months who had received vaccination and no vaccination for Assam and India. Over the years, the percentage of children receiving immunisation for all the diseases i.e. full immunisation has been fluctuating from 19.4 in 1992-93 to 17.0 in 1998-99 and then shooting to 32 percent in 05-06.But still it is at a quite lower position as compared to the all India average. The DLHS-RHS survey on 11 districts out of 23 found that only 19 percent of the children are immunised while the all India average was 48 percent. Since full vaccination includes all the three of DPT and Polio and one dose of BCG and Measles each, Table 4.13, shows that the percentage of children getting immunised for the third dose decreases considerably as compared to the first dose. 57 and 62 percent of the children were given the first dose of DPT and Polio respectively while only 38 percent of the children received the 3rd dose for both DPT and Polio. A recent survey conducted by OKDISCD, sponsored by UNICEF (2006) on immunization status of children in Assam, found that the prime factors responsible for poor coverage of the immunization programme were unawareness of family members on the need for immunizations, wrong ideas and fear of side effects, and non availability of time to get their child immunized.

The percentage of children who do not receive any vaccination at all is still higher than the national average, though the national survey data shows a declining trend since the year 1992-93.

Table 4.14 and 4.15, also shows that education, urban–rural disparity, and religion also have a very significant role on children receiving immunisation.

Table 4.16 shows the performance of the government of Assam in providing full immunisation to the children. As seen

from the table, the percentage shows a declining trend from the year 1990-91 where 88 percent of the children were fully immunised and in the year 2004-05 it dropped down to 62 percent. However, there exists a wide discrepancy in the data of national surveys like NFHS and the DLHS-RHS and the state governments report as comparing table 4.14 and 4.13.

District wise available data indicates that the North Cachar Hills has the lowest percentage of achievement i.e. only 23 percent, for full immunisation whereas Lakhimpur has the highest of 80 percent in the year 2004-05.

Table 4.13: Fully Immunized Children in Assam Since 1990-2005.

Year	Infant target	Achievement	Percentage
1990-91	655991	574645	87.6
1995-96	688300	523457	76.1
2000-01	681878	442959	64.9
2004-05	681411	422139	61.95

Source: Directorate of Health Services, Assam.

Morbidity

Table 4.17, shows the percentage of children suffering from diseases such as Acute Respiratory Infection (ARI) or pneumonia, and Diarrhoea for various years and percentage of people seeking treatment for these diseases. The NFHS study indicates that in the year 1992-93, 11 percent of the children had pneumonia, while it increased to 18 percent in the year 98-99. However, the DLHS-RCH study in 2002-04 shows that it has decreased again to 11 percent and is lower than the national average of 16 percent. However, the percentage of people seeking treatment for ARI is still less than the all-India average of 74 percent. The data shows that religion, educational level of the mother and place of living does not have any major effect on the diseases.

The percentage of children suffering from fever has increased from 25 in the year 1992-93 to 28 percent in 1998-99 but has become almost equal to the national average in 1998-99 while it was higher in 1992-93.

Table 4.14: Child Health-Immunisation and Morbidity, 1992-1993

Residence		BCG	Polio	DPT			Polio			Measles	All*	None	Children suffering from		
			0	1	2	3	1	2	3				ARI	Fever	Diarrhoea
Urban	Assam	72.5	2.5	84.2	68.3	56.7	85.8	72.5	57.5	47.5	40	14.2	14.6	24.2	6.3
	India	77.6	7.8	80.4	75.2	68.8	80.8	76.8	70.2	57.5	50.7	16.4	5.1	18.7	8.8
Rural	Assam	45.8	1	50.3	39.6	28.5	51	39.9	30.2	23.6	17.4	46.5	10.9	24.6	6.3
	India	57.6	3.6	62.1	54.5	46.6	62.9	56.5	48.4	37.7	30.9	34	6.9	20.7	10.4
Mother's Education															
Illiterate	Assam	36.3	0.5	41.6	28.1	16.6	42.1	28.2	18.5	15.3	9.3	55.1	10.8	25	6.8
	India	50.8	2.9	55.4	47.5	39	56.4	49.5	41	30.8	24	40.1	6.5	19.9	10.3
Literate, Middle School complete	Assam	64	2.6	71.1	63.2	50.9	71.9	64	50.9	34.2	28.9	27.2	12	22.9	5
	India	79.4	6.5	83.4	77.2	70.7	83.4	78.9	71.8	57.7	51.1	14.2	7.1	22.4	10.2
High School complete & above	Assam	98	1	95.9	93.9	87.8	100	100	92.9	86.9	75.7	-	12.1	28.1	6.6
	India	92.8	10.4	94.2	90.5	86.3	91.9	91.9	87.7	76.7	70	4.2	4.6	17.4	8.3
Religion															
Hindu	Assam	61.2	2.1	66	55.8	45.4	56.4	56.4	46.8	34.8	30.2	30.3	10.1	22	4.4
	India	63.3	4.6	67.6	60.5	53.1	62.4	62.4	54.6	42.9	36	28.6	6.4	19.4	10.3
Muslim	Assam	34.2	-	39.1	26.1	13	27.2	27.2	15.4	16.5	6.8	58.5	14.4	29.3	8.8
	India	51.2	3.4	54.9	47	38.6	49.6	49.6	41.5	32.3	26.3	41.1	7.3	24	8.9
Total	**Assam**	**48.2**	**1.2**	**53.4**	**42.2**	**31**	**42.9**	**42.9**	**32.7**	**25.8**	**19.4**	**43.6**	**11.3**	**24.6**	**6.3**
	India	**62.2**	**4.6**	**66.3**	**59.2**	**51.7**	**61.2**	**61.2**	**53.4**	**42.2**	**35.4**	**30**	**6.5**	**20**	**10**

* All includes 3 doses of DPT and Polio and 1 dose of BCG and Measles each (Excluding Polio 0)
Source: NFHS-I

Table 4.15: Child Health-Immunisation and Morbidity, 1998-1999

Residence		BCG	Polio	DPT			Polio			Measles	All*	None	Children suffering from		
			0	1	2	3	1	2	3				ARI	Fever	Diarrhoea
Urban	Assam	83.2	3.7	85.6	76.7	67.2	87.9	82.1	68.6	56.7	50.1	10.4	10	23.7	4.1
	India	86.8	23.3	86.1	81.9	73.4	92.2	89.4	78.2	69.2	60.5	6.4	16.2	28.8	19.6
Rural	Assam	51.6	3.1	55.7	46.7	35.7	60.1	51.9	36	22.6	14.9	34.7	18.3	28.7	8.4
	India	67.1	10.1	67.1	60.1	49.8	81.1	75	58.3	45.3	36.6	16.7	20.3	29.7	19
Mother's Education															
Illiterate	Assam	42.9	2.8	46.2	37.2	26	50.4	41.4	26.5	14.1	9.9	43.3	16	26.5	8.7
	India	59.1	7.1	58.7	51	40.2	76.3	69.4	50.9	35.8	27.8	21.2	20.6	29.5	20.1
Literate, Middle School complete	Assam	61.3	3.2	67.7	58.1	46	71.8	64.5	44.4	33.1	19.4	24.2	21	30.8	7.3
	India	85.4	17.9	85.5	79.9	70.4	91.6	87.6	75.1	65.2	55.8	6.8	19.8	18.4	19.4
High School complete & above	Assam	8.5	4.7	90	81.2	74.9	93.5	88.8	83.4	56.8	51.3	6.5	15.6	29.4	8.5
	India	95.2	27.9	95.6	92.7	86	97.4	95.5	87.1	82.8	72.7	1.4	13.8	27.2	15
Religion															
Hindu	Assam	61.2	3.8	64.9	56.7	45.5	66.4	58.5	43.7	30.1	21	29.2	18.6	27.6	8.7
	India	72.5	13.1	72.1	65.6	55.7	84.7	79.3	63.5	51.5	42.4	13.3	19.1	28.3	19
Muslim	Assam	45.1	2.5	49.6	39.1	28.5	57.1	48.2	31.6	17.7	12.3	36.9	17.3	30.6	7.7
	India	62.3	9.9	63.2	56	45.7	76.3	70	54	40.4	32.7	21	20.8	34.5	20.7
Total	**Assam**	**53.5**	**3.1**	**57.4**	**48.5**	**37.5**	**61.8**	**53.6**	**37.9**	**24.6**	**17**	**33.2**	**17.8**	**28.4**	**8.2**
	India	**71.6**	**13.1**	**71.4**	**65**	**55.1**	**83.6**	**78.2**	**62.8**	**50.7**	**42**	**14.4**	**19.3**	**29.5**	**19.2**

* All includes 3 doses of DPT and Polio and 1 dose of BCG and Measles each (Excluding Polio 0)

Source: NFHS – II

Table 4.16: District-Wise Performance of Universal Immunisation Programme (UIP) from April 2004 – March 2005.

Sl. No.	Name of District	Target (Infants)	BCG	Percent	DPT-3	Percent	OPV-3	Percent	Measles	Percent	Fully Immunised	Percent
1	Dhubri	39276	35332	89.96	29481	75.06	30814	78.46	26881	68.44	23054	58.7
2	Kokrajhar	22648	15321	67.65	17964	79.32	18289	80.75	16390	72.37	11288	49.84
3	Bongaigaon	23850	16033	67.22	16984	71.21	16984	71.21	16190	67.88	14814	62.11
4	Goalpara	20363	18366	90.19	17358	85.24	17358	85.24	16750	82.26	13601	66.79
5	Barpeta	41549	35707	85.94	29090	70.01	29157	70.17	27756	66.8	24467	58.89
6	Nalbari	30294	21422	70.71	22197	73.27	22645	74.75	20478	67.6	13884	45.83
7	Kamrup	58736	54383	92.59	50745	86.4	51944	88.44	47728	81.26	42837	72.93
8	Darrang	40031	30220	75.49	31782	79.39	32091	80.17	28883	72.15	30396	75.93
9	Sonitpur	41955	39705	94.64	36132	86.12	36111	86.07	33834	80.64	27191	64.81
10	Lakhimpur	23490	21663	92.22	20375	86.74	20293	86.39	18675	79.5	18675	79.5
11	Dhemaji	13728	12443	90.64	11434	83.29	11434	83.29	10554	76.88	10554	76.88
12	Morigaon	22047	18118	82.18	16221	73.57	16176	73.37	15585	70.69	11686	53
13	Nagaon	56133	40713	72.53	42701	76.07	42651	75.98	38856	69.22	31264	55.7
14	Golaghat	24139	18351	76.02	17147	71.03	17087	70.79	14951	61.94	13409	55.55
15	Jorhat	29188	20903	71.62	22330	76.5	21830	74.79	21013	71.99	18752	64.25
16	Sibsagar	26832	20484	76.34	19965	74.41	20001	74.54	18230	68.05	14767	55.04
17	Dibrugarh	33131	26331	79.48	27272	82.32	27055	81.66	26505	80	22184	66.96
18	Tinsukia	29621	27518	92.9	24704	83.4	24580	82.98	23487	79.29	21427	72.34
19	K.Anglong	19811	14380	72.59	13210	66.68	13182	66.54	11195	56.51	6922	34.94
20	N.C. Hills	4664	2761	59.2	2374	50.9	2374	50.9	1843	39.52	1072	22.98
21	Karimganj	26095	17767	68.09	17898	68.59	18064	69.22	16905	64.78	15171	58.14
22	Hailakandi	16059	14890	92.72	9660	60.15	11350	70.68	9804	61.05	7351	45.77
23	Cachar	37771	44113	116.79	32452	85.92	32414	85.82	32159	83.14	27373	72.47
	Total	**681411**	**566924**	**83.2**	**529476**	**77.7**	**533884**	**78.35**	**494682**	**72.6**	**422139**	**61.95**

Source: Joint Director of Health Services (UIP), Assam

The percentage of Diarrhoea among children had increased to eight percent in 1998-1999 from six percent in 1992-1993 but again decreased to four percent in 2002-2004. However, this percentage is quite lower than the national average of 16 percent in 2002-2004. Assam has the lowest percentage of children suffering from Diarrhoea amongst all the major states of India with eight percent while Delhi has the highest percentage of 30. The proportion of people seeking treatment for it only 68 percent, while on the average 73 percent of the people in India seek treatment for it. Moreover, the percentage of mother having knowledge of the Oral Rehydration Salt given to children during Diarrhoea is comparatively less than the national average though they give ORS to their children.

Table 4.17: Comparison of NFHS-I, NFHS-II and DLHS-RCH Data for Pneumonia and Diarrhoea

	NFHS – I 1992-1993		NFHS – II 1998-1999		DLHS – RHS 2002 – 2004	
	Assam	**India**	**Assam**	**India**	**Assam**	**India**
ARI/Pneumonia	11.3	6.5	17.8	19.3	11.4	16.2
Seeking Treatment for ARI	40.7	66.3	41.7	64	61.8	73.7
Diarrhoea	6.3	10	8.2	19.2	4.2	13.2
Seeking Treatment for Diarrhoea	35.8	61.2	48.2	63.4	67.6	73
No Treatment for Diarrhoea	25.8	19.3	38.8	27.4	-	-
Knowledge of ORS	53.2	42.7	42.9	62.4	16.6	27.6
Given ORS Packets	21.6	17.5	37.1	26.8	45.1	29.7

*NFHS & RHS – Diseases suffering in past 2 weeks from the day of survey
- Not available

Data shows that educational background, religion and urban – rural discrepancy do not have much effect on the disease. It indicates that the absence of basic public facilities such as safe drinking water, proper sanitation and hygienic conditions are responsible for the prevalence of such diseases.

Child Nutrition and Health

The nutritional status is a major determinant of the health and well-being of children. Presence of optimum nutrients viz. proteins, vitamins and minerals is essential for the growth, development and maintenance of the body as it enables a child to grow well and enjoy good health. The three indices of nutritional status are weight-for-age, height-for-age, and weight-for-height.

The weight-for-age is a composite measure that takes into account both chronic and acute under-nutrition. Children who are more than 2 S.D. (Standard Deviation) below the reference median on their index are considered to be *under-weight*. The height-for-age measures linear growth retardation and children who have low height for age are called *stunted*. It reflects past or chronic malnutrition. The weight-for-height examines body mass in relation

to body length. Children having low weight for height are considered to be *wasted*, too thin, or suffering from acute malnutrition.

Table 4.18, shows that though the percentage of underweight children for weight-for-age nutritional index has decreased significantly with 50 percent in 1992-93 to 36 percent in 1998-99 and is lower than the national average of 47 percent in 1998-99, there is still a considerable proportion of underweight children in Assam. 13 percent of the children in Assam are grossly underweight i.e. they lie below -3 S.D. Percentage of underweight rural children is more with 37 percent in contrast with the urban children with 27 percent. Children with literate and educated mothers are less likely to be underweight as compared to illiterate mothers. Percentage of Muslim children is strikingly high with 22 percent of severely underweight and 49 percent of underweight children. Percentage of underweight children is higher with mother's height less than 145 cm.

Table 4.18: Child Nutrition and Health

Background and Demographic Characteristics			Weight for Age				Height for Age			
			1992-1993		1998-1999		1992-1993		1998-1999	
			Percent below –3SD	Percent below - 2SD	Percent below –3SD	Percent below - 2SD	Percent below –3SD	Percent below - 2SD	Percent below –3SD	Percent below - 2SD
Residence	Urban	Assam	10.2	37.3	6.5	27.3	16.2	39.6	20.2	37.1
		India	14.8	45.2	11.6	38.4	22	44.8	15.4	35.6
	Rural	Assam	19.6	51.8	13.7	36.6	27.3	53.5	34.5	50.9
		India	22.4	55.9	19.9	49.6	30.9	54.1	25.4	48.5
Mothers education	Illiterate	Assam	23.2	55.4	16.4	41.7	31.5	57.8	38.3	56
		India	24.7	59.2	24.1	55	34.5	58.5	30.2	54.4
	Literate, middle school complete	Assam	12.4	46.1	9.1	28.3	19.2	45.7	27.8	44.3
		India	15.4	48.3	12.3	41.9	21.2	44.2	16.6	38.4
	High school & above	Assam	5.1	22.2	8.9	29.3	9.2	28.9	27.4	34.5
		India	7.8	30.3	5.8	26.6	12.2	30	8.2	25.4
Religion	Hindu	Assam	16.2	45.1	7.1	27.2	21.7	47.7	26.2	45
		India	21	53.7	18.4	47.7	29.2	52.5	23.3	46
	Muslim	Assam	23.8	59.6	21.7	49	33.9	61.3	42.5	56.4
		India	21.2	55.4	18.6	48.3	31.4	54.5	24.8	47.1
Mothers Height	<145 cm	Assam	-	-	18.5	38.6	-	-	40.5	54.3
		India	-	-	28.3	59.8	-	-	36.8	60.7
	>=145 cm	Assam	-	-	12.2	35.5	-	-	32.3	49.3
		India	-	-	16.5	45.1	-	-	21.1	43.3
Age of the Child	< 6 months	Assam	0.4	9.9	2.1	18.3	5.8	18.6	10.7	25.1
		India	2.8	15.6	2	11.9	5.7	15.7	4.2	15.4
	6-11 months	Assam	9	35.6	11.9	30.7	17.1	38.7	22.7	35.8
		India	14.1	43.3	11.8	37.5	14.3	34.3	11.3	30.9
	12-23 months	Assam	22.2	61.9	18	47.2	28.9	58.9	44.7	63.3
		India	26.3	63.4	23.1	58.5	30.7	56.6	29.8	57.5
	24-35 months	Assam	25.7	61.5	14.9	36.4	29.1	62.4	39.1	56.1
		India	25.9	62.2	24.1	58.4	34.6	60.2	32	56.5
Total		**Assam**	**18.7**	**50.4**	**13.3**	**36**	**26.3**	**52.2**	**33.7**	**50.2**
		India	**20.6**	**53.4**	**18**	**47**	**28.9**	**52**	**23**	**45.5**

Cont. ... Table 4.18: Child Nutrition and Health

Background and Demographic Characteristics			Weight for Height				percentage of children with			percentage of childrenwho received (1998-99)
			1992-1993		1998-1999		1992-1993			
			Percent below –3SD	Percent below - 2SD	Percent below –3SD	Percent below - 2SD	Mild ANAEMIA	Moderate ANAEMIA	Any ANAEMIA	Atleast 1 dose of Vitamin A supplement
Residence	Urban	Assam	1	5.6	1.6	10.4	22.9	29.3	52.3	27.4
		India	2.9	15.8	2.2	13.1	23.7	42	70.8	38.7
	Rural	Assam	1.8	11.4	3.4	13.4	31.4	32.3	63.8	14.6
		India	3.2	18	3	16.2	22.7	47.1	75.3	27
Mothers education	Illiterate	Assam	1.4	12.2	3.4	15	32.7	35.9	68.7	9.2
		India	3.4	18.8	3.4	17.1	21.7	50	48.2	80.4
	Literate, middle school complete	Assam	2.1	8.2	3.5	10.4	28.4	28.9	57.3	19.8
		India	2.9	16.2	2.2	14.6	24.7	43.5	72.9	40
	High school & above	Assam	3.4	10.5	2.4	12.3	30.1	22.3	52.5	34.6
		India	2.3	12.3	1.6	11	24	35.1	61.9	7
Religion	Hindu	Assam	1.6	10.8	1.9	9.6	30.5	27.6	58	19.7
		India	3.3	17.7	2.9	16	22.4	46.7	74.6	29.7
	Muslim	Assam	2.2	10.3	5.5	18.7	32.6	37	69.6	9.6
		India	3	17.2	2.5	14.1	26	43	74.2	24.1
Mothers Height	<145 cm	Assam	-	-	5.2	18.5	-	-	-	-
		India	-	-	2.9	17.1	-	-	-	-
	>=145 cm	Assam	-	-	2.9	12.2	-	-	-	-
		India	-	-	2.8	15.2	-	-	-	-
Age of the Child	< 6 months	Assam	—	2.3	2.4	14.1	-	-	-	-
		India	2	9.5	1.9	9.3	-	-	-	-
	6-11 months	Assam	1.3	3.4	5.3	14.6	35.4	34.1	69.6	-
		India	2.9	15.7	2.8	13.2	27	41.5	71.7	-
	12-23 months	Assam	3	18.4	4.7	14.4	29.2	29.9	59.1	15
		India	5.6	28	4.1	21.9	22	49.4	77.7	28.4
	24-35 months	Assam	1.9	11.3	1.5	11.2	30.7	33.6	64.2	15.8
		India	2.5	16.6	1.9	13.2	21.9	44.5	72	31
Total		**Assam**	**1.7**	**10.8**	**3.3**	**13.3**	**31**	**32.2**	**63.2**	**15.4**
		India	**3.2**	**17.5**	**2.8**	**15.5**	**22.9**	**45.9**	**74.3**	**29.7**

Source:- NFHS-1 ansd NFHS-II

- Not available

— Less than 0.5%

The table 4.18, also shows that though the percentage of underweight children has decreased in the year 1998-99 since 1992-93 for children of more than 6 months, it has increased for children less than 6 months of age.

In Assam, 34 percent of the children are grossly stunted lying below-3 S.D. as against the national average of 23 percent and has shown a steep increase from 26 percent in the year 1992-93. Moreover, children within the age group of 12-23 months are the worst sufferers as they comprise 63 percent. This indicates the prevalence of chronic under-nutrition resulting from the failure to receive adequate nutrition over a long period of time or suffering from chronic diarrhoea. Rural-urban division, mother's education, mother's height, and religion, all have a significant effect on child's nutrition.

Again, the percentage of wasted children has increased in Assam from 11 percent to 13 percent while it has decreased on an all-India level from 18 to 16 percent. Children born in rural areas, with illiterate mothers and Muslim children are highly wasted.

Anaemia

One of the objectives outlined in the Tenth Plan is to reduce the prevalence of anaemia by 25 percent and moderate and severe anaemia by 50 percent in children. Table 4.19 shows the status of anaemic children in Assam. Around 63 percent of children are anaemic with 31 percent having mild anaemia while 32 percent having moderate anaemia. While the percentage of children with moderate anaemia is less than the national average of 46 percent, it is higher for mild anaemia with 23 percent at the all India level. There is a wide rural–urban discrepancy with 64 percent of rural children having any anaemia while 52 percent of urban children. Mother's education also has a strong effect as 69 percent of anaemic children have illiterate mother as against 53 percent with high school and above educated mothers. Seventy percent of children within the age group of 6-11 months are anaemic. This indicates that children within six months of age do not receive adequate nutrition, are not exclusively breast-fed for six months and are not provided with supplementary food thereafter.

Table 4.19: Percentage of Children with Anaemia by Mother's Anaemic Status (1998-1999)

Mothers Anaemia Status		Any Anaemia	Mild Anaemia	Moderate Anaemia
Not Anaemic	Assam	44.6	27.0	17.6
	India	67.8	23.2	40.7
Mildly Anaemic	Assam	64.1	30.8	33.2
	India	76.8	23.4	48.4
Moderately Anaemic	Assam	84.7	36.6	48.2
	India	85.6	21.6	55.5

Table 4.19, shows a relationship between mother's anaemic status and child having anaemia. Fourty-five percent of children suffer from anaemia even if their mother is not anaemic. However, the percentage increases if the mother is mildly or moderately anaemic. This shows the importance of mother's health for the well being of the child and the prevalence of malnutrition amongst the children.

Vitamin A Supplements

Vitamin A deficiency is a major health problem in India. In Assam, only 15 percent of the children received atleast one dose of Vitamin A supplement in 1998-1999, as against 30 percent at the all-India level. Urban children as well as whose mothers are educated receive more Vitamin supplements as compared to rural and illiterate children.

However, the just released figures (NFHS-III) for Vitamin A Supplements shows only a slight increase of 1.1 percent coverage (16.5%) for the state of Assam, while there is decrease of 10.3 percent for urban and 1.7 percent for the rural children. In 2005-2006, only 12.9 percent of rural children and 17.1 percent of urban children of age 12-35 years have received Vitamin A dosage. The decrease in the use of Vitamin A supplements could be due to the anxiety and concern among the health care providers as well as among mothers due to the incident that took place on 11th November 2001, where more than 15 children had died during the Vitamin A distribution campaign mode in Assam. According to the Assam state government, 700 children of 3.2 million who were given the vitamin A dose, became ill. Whether all these cases were a direct consequence of high dose Vitamin A administration, is still not sure (Indian Pediatrics, 2002). Thus, after this incident may be the government has also not taken much initiative on their part to promote the Vitamin A supplement.

5. Family Planning

An expert committee (1971) of the WHO defined family planning as "a way of thinking and living that is adopted voluntarily, upon the basis of knowledge, attitudes and responsible decisions by individuals and couples, in order to promote the health and welfare of the family group and thus contribute effectively to the social development of the country". Family planning helps individuals or couples to avoid unwanted births, to determine the number of children in the family, to regulate the intervals between pregnancies and to control the time at which births occur in relation to the ages of the parent.

The 'National Population Policy' of 2000 reaffirms the commitment of the government towards target free approach in administering family planning services. In Assam, the prevalence of knowledge about family planning is quite low as compared to other states. With around 24 percent of girls getting married below the legal age of 18 years and 41 percent of them having more than three children, Assam calls for an urgent need of educating the population about family planning. Table 5.3 shows the district wise break up, where Barpeta, Morigaon and Goalpara have high percentage of girls being married below 18 years. High concentration of Muslim population and lower literacy level are the main reason for it. Religion plays a important role in the use of contraceptives as seen from Table 5.5, where around 33 percent of Hindu women used any modern method while barely 15 percent of Muslim women used the same, in the year 1998-99.

NFHS-II survey carried out in Assam in 1999, found that 98 percent of the total female population, had knowledge about any method of contraceptives. Among the modern method, knowledge about female sterilisation was more prevalent (96.3%) followed by about the pill (87.3) and then male sterilisation (85%). Knowledge about the modern methods of contraceptives was the same across the urban-rural areas, with knowledge about IUD and condom being more prevalent in urban than in rural areas. Traditional methods such as withdrawal and safe period are less known in rural areas compared to the urban areas. The DLHS (2002-04) survey also found that 95 percent of women in Assam have knowledge about any modern method while only 24 percent of them knowing about all the methods.

Analysing by the background characteristics, both modern and traditional methods are more used in urban areas than in the rural areas, though the urban areas have shown a decline by three percent in the use of modern methods in 1998-99 since the year 1992-93. Low level of literacy rate among the women of Assam i.e. fifty-five percent has a major influence on the use of contraceptives. As seen from table 5.5, 61 percent of illiterate women did not use any method. Religion has also been found to have a considerable impact on the use of contraceptives with 94 percent of women having no children not using any method. As the number of children increases, use of contraceptive methods increases.

Table 5.1: Percentage of Currently Married Women Having Knowledge of Any Contraceptive Methods by Specific Method & Residence, Assam (1999)

Method	Urban	Rural	Total
Any method	99.99	98.3	98.4
Any modern method	99.99	98.2	98.3
Pill	96.2	86.5	87.3
IUD	86.6	68.8	70.3
Condom	89.0	69.5	71.2
Female Sterilization	99.4	96.0	96.3
Male Sterilization	94.6	84.1	85.0
Any traditional method	84.0	64.1	65.8
Rhythm/Safe period	78.3	60.0	61.5
Withdrawal	66.2	48.8	50.3

Source: IIPS & ORC MACRO – Assam (2002)

Despite having knowledge about the contraceptive methods available, about 57 percent of the women in the year 1998-99 did not use any method. The main reason cited by them was fertility reasons (60%) followed by wanting more children (44%) and method-related reasons (22%). As per NFHS data use of modern methods is more prevalent than the traditional methods while the DLHS data shows that both are equally used. Among the modern methods, female sterilisation and pills are most commonly used.

Table 5.2 : Current Use of Family Planning Methods for Various Years

(Percentage)

Methods	1990 – 1993*		1998 – 1999 **		2002 – 2004 ***	
	Assam	India	Assam	India	Assam	India
Any method	42.8	40.6	43.3	48.2	57.5	53.0
Any modern method	19.8	36.3	26.6	42.8	28.7	45.7
Pill	2.8	1.2	6.3	2.1	12.2	3.5
IUD	0.9	1.9	1.9	1.6	1.2	1.9
Condom	1.7	2.4	1.8	3.1	2.3	4.8
Female Sterilization	12.1	27.3	15.7	34.2	12.8	34.3
Male Sterilization	2.3	3.4	1.0	1.9	0.1	0.9
Any traditional method	22.9	4.3	15.8	5.0	28.7	7.3
Rhythm/Safe period	15.7	2.6	11.1	3.0	-	-
Withdrawal	6.3	1.4	4.7	2.0	-	-
Not using any method	57.2	59.4	56.7	51.8	-	-

* NFHS – I (Assam) and (India)
** NFHS – II (Assam) and (India)
*** DLHS-RCH

Table 5.3: District Wise Data on Mean Marriageable Age, Birth Order, Knowledge of Family Planning, Current Use of Contraceptives and Unmet Need of Assam (2002-2004)

District	Girls married below 18 years	Mean age at Marriage		Birth order 3+	Knowledge of		Current use of Contraception						Unmet Need	
		Boy	Girl		Any modern method	All modern method	Any method	Any modern method	Female Steril-ization	IUD	Pills	Condom	Lim-iting	Spa-cing
Barpeta (2)	41.2	27.8	19.2	41.6	93.1	28.6	59.3	29.4	8.2	0.8	18.7	1.7	10.2	10.2
Bongaigaon (1)	22.0	26.9	20.9	44.1	94.8	24.6	44.3	24.7	6.4	1.6	14.5	2.2	25.4	12.8
Cachar (2)	2.7	27.5	23.3	46.5	78.0	17.0	32.0	14.8	7.7	0.3	4.6	2.0	31.6	9.7
Darrang (1)	21.4	27.9	21.6	33.9	99.0	36.0	68.8	38.9	17.6	1.3	18.3	1.4	7.1	5.5
Dhemaji (2)	21.7	24.5	20.1	41.7	95.2	14.7	54.7	21.2	9.9	1.8	8.2	1.3	15.9	8.3
Dhubri(1)	33.8	25.6	19.1	50.9	96.3	15.7	45.7	19.6	5.1	0.6	11.8	2.1	16.3	13.5
Dibrugarh(2)	22.0	25.8	22.1	30.8	99.4	11.4	64.6	36.1	27.3	0.3	6.7	1.8	9.2	6.7
Goalpara(2)	35.3	26.0	19.5	37.9	96.6	24.7	59.1	27.4	5.6	2.0	17.2	2.5	8.6	7.5
Golaghat (1)	15.6	27.4	21.5	34.8	99.1	25.5	42.6	16.5	4.9	2.4	7.5	1.5	29.7	11.0
Hailakandi (2)	17.8	30.6	22.6	44.7	98.1	14.6	81.8	14.7	3.2	0.3	8.0	3.3	1.5	5.3
Jorhat (1)	9.0	28.7	21.7	30.0	97.7	19.6	58.0	15.6	6.5	0.2	7.5	1.3	18.6	7.7
Kamrup (1)	12.1	28.4	21.5	35.3	99.5	36.2	67.1	44.0	23.6	1.8	14.0	4.6	9.3	4.9
K. Anglong (2)	20.7	24.9	20.4	52.1	92.9	6.6	50.2	28.0	5.5	2.8	18.7	1.0	18.2	8.4
Karimganj (1)	23.8	30.7	20.9	56.1	95.0	47.6	70.2	15.9	5.9	0.7	5.7	3.1	7.3	2.1
Kokrajhar (2)	26.7	26.2	19.6	38.8	81.5	7.4	35.4	18.1	3.4	2.2	11.5	1.0	28.5	12.1
Lakhimpur (1)	11.4	27.7	22.4	32.6	95.3	17.4	58.1	40.5	12.0	3.4	17.5	6.9	13.8	9.1
Marigaon (2)	47.0	25.9	18.9	43.0	89.9	18.8	48.6	21.9	4.6	1.3	12.8	2.5	19.3	9.8
Nagaon (1)	26.2	26.9	20.4	41.7	99.6	24.3	62.9	23.4	10.8	0.4	11.5	0.7	13.7	4.8
Nalbari (2)	27.6	28.0	20.3	34.3	98.6	26.0	68.6	41.2	13.2	1.1	23.2	3.0	8.1	7.1
N.C. Hills (1)	17.8	26.3	20.0	50.0	46.8	17.0	12.2	12.1	8.4	1.5	2.1	0.1	28.5	21.3
Sibsagar (1)	12.4	27.0	22.3	34.0	98.6	28.5	60.2	25.1	12.8	1.2	8.7	2.5	13.6	7.2
Sonitpur(2)	25.9	27.8	21.1	34.1	98.4	28.1	61.0	33.0	16.3	1.4	13.4	1.7	7.1	8.3
Tinsukia(1)	16.2	27.5	21.9	29.6	99.9	34.6	60.5	36.8	22.0	1.9	11.4	0.8	18.0	7.3
Assam	**23.8**	**27.2**	**20.7**	**40.6**	**95.4**	**24.2**	**57.5**	**28.7**	**12.8**	**1.2**	**12.2**	**2.3**	**14.3**	**8.2**

1: Household Survey Phase – I, 2002-2003
2: Household Survey Phase – II, 2004
Source: DLHS – RCH (2002-04)
www.rchindia.org/keyindia.htm

Table 5.4: Percentage Distribution of Currently Married Women by Contraceptive Method Currently Used, According to Selected Background Characteristics (1992-1993)

Background characteristics			Any method	Any modern method	Pill	IUD	Condom	Female steril-isation	Male steril isation	Any tradi-tional method	Rhythm/ Safe period	Withd-rawal	Not use any method
Residence	Urban	Assam	62.3	33.6	3.9	1.6	5.5	21.4	1.3	28.7	17.2	11.0	37.7
		India	51.0	45.3	1.9	3.9	5.8	30.4	3.2	5.8	3.5	2.1	49.0
	Rural	Assam	40.1	18.0	2.7	0.8	1.2	10.8	2.5	22.1	15.5	5.7	59.9
		India	36.9	33.1	0.9	1.2	1.2	26.3	3.5	3.8	2.3	1.2	63.1
Education	Illiterate	Assam	32.1	14.7	1.4	0.4	0.4	9.7	2.8	17.4	13.1	3.1	67.9
		India	33.9	31.5	0.6	0.6	0.8	25.7	3.7	2.4	1.6	0.6	66.1
	Literate, middle school complete	Assam	55.3	26.6	4.5	1.4	2.3	16.3	1.9	28.8	18.8	9.6	44.7
		India	50.5	44.1	1.9	2.5	2.7	33.7	3.4	6.74	3.7	2.5	49.5
	High school & above	Assam	69.3	29.7	5.8	2.5	9.7	11.5	0.2	39.7	22.1	17.4	30.7
		India	54.7	45.0	2.8	7.3	10.7	22.0	2.1	9.7	5.9	3.4	45.3
Religion	Hindu	Assam	48.3	23.9	3.1	1.0	1.8	15.2	2.8	24.4	16.0	7.6	51.7
		India	41.6	37.7	1.0	1.7	2.2	29.0	3.7	3.9	2.4	1.3	58.4
	Muslim	Assam	32.3	4.5	2.5	0.6	1.8	5.3	1.3	20.8	15.7	3.7	67.7
		India	27.7	22.0	1.9	1.7	2.4	14.4	1.6	5.7	3.7	1.6	72.3
No. of living children	No children	Assam	18.0	4.2	0.6	—	0.9	0.6	2.1	13.8	9.8	4.1	82
		India	4.2	2.1	0.3	0.1	1.1	0.3	0.4	2.1	1.2	0.8	95.8
	1 Child	Assam	28.4	6.3	1.8	0.6	2	0.5	1.5	22.1	15	7	71.6
		India	19.3	12.8	1.6	3.2	3.6	3.1	1.2	6.5	3.8	2.5	80.7
	2 Child	Assam	46.4	19.9	5	1.1	4.2	6.8	2.8	26.5	18	8.1	53.6
		India	46.1	40.2	1.7	3.6	4.2	27.1	3.6	5.9	3.7	2	53.9
	3 Child	Assam	51.4	27.4	2.3	1.2	2.3	18.3	3.3	24	15.7	7.2	48.6
		India	58.9	55.4	1.1	1.5	2.1	45.3	5.3	3.5	2.2	1.1	41.1
	4+ Child	Assam	49.6	25.9	3.1	1.1	0.5	19.2	2.1	23.7	16.5	5.4	50.4
		India	52.4	49	1	1	1.3	40.9	4.6	3.4	2.1	0.9	47.6

Table 5.5: Percentage Distribution of Currently Married Women by Contraceptive Method Currently Used, According to Selected Background Characteristics (1992-1993)

Background characteristics			Any method	Any modern method	Pill	IUD	Condom	Female steril-isation	Male steril isation	Any tradi-tional method	Rhythm/ Safe period	Withd-rawal	Not use any method
Residence	Urban	Assam	53.4	30.6	6	1.9	4.5	17.9	0.3	22.2	13	9.3	46.6
		India	58.2	51.2	2.7	3.5	7.2	36	1.8	6.7	3.9	2.8	41.8
	Rural	Assam	42.3	26.3	6.3	1.9	1.5	15.5	1.1	15.2	10.9	4.3	57.7
		India	44.7	39.9	1.9	1	1.6	33.5	1.9	4.4	2.7	1.7	55.3
Education	Illiterate	Assam	39.5	25.9	5.1	1.6	0.7	17.5	1	12.5	8.3	4.2	60.5
		India	42.9	39.2	1.2	0.5	0.9	34.4	2.2	3.3	2.1	1.2	57.1
	Literate, middle school complete	Assam	45.2	27.2	8.3	1.8	1.8	14.5	0.9	17.4	12.7	4.8	54.8
		India	54.5	48.2	3.4	1.9	3.1	38.2	1.5	6	3.4	2.7	45.5
	High school & above	Assam	55.6	28.5	5.3	3.9	7.2	11.3	0.8	26.6	19.4	7.2	44.4
		India	57	47.1	3	5.7	11.2	25.8	1.4	9.6	5.9	3.7	43
Religion	Hindu	Assam	48.6	33	6	2.4	1.8	21.4	1.4	14.8	10	4.8	51.4
		India	49.2	44.3	1.8	1.5	2.7	36.2	2.1	4.7	2.9	1.8	50.8
	Muslim	Assam	33.5	14.9	6.8	0.9	1.9	5.1	0.2	17.5	13.3	4.2	66.5
		India	37	30.2	4.1	1.5	4.2	19.6	0.8	6.4	3.6	2.8	63
No. of living children	No children	Assam	6.4	1.9	0.6	0	1	0	0.3	4.5	3.1	1.4	93.6
		India	4.6	2.1	0.4	0	1	0.4	0.3	2.5	1.3	1.2	95.4
	1 Child	Assam	29.2	12.3	5.8	1	3	2	0.5	16.7	10.3	6.5	70.8
		India	23.7	15.8	3.1	2.9	4.9	4.2	0.7	7.7	4.5	3.2	76.3
	2 Child	Assam	50.9	29.5	9.6	3	2.6	13.5	0.8	21	14.5	6.5	49.1
		India	58.1	51.9	2.7	3	4.7	39.4	2.1	5.9	3.4	2.5	41.9
	3 Child	Assam	58.5	39.8	7.6	3.2	1.2	26	1.8	17.8	13.6	4.2	41.5
		India	67.5	63.1	1.7	1.2	2.5	54.8	2.8	4.1	2.5	1.6	32.5
	4+ Child	Assam	51	34.4	5.8	1.6	1.1	24.7	1.2	14.9	10.8	4.1	49
		India	57.4	52.2	1.9	0.7	1.8	45.3	2.4	4.5	3	1.5	42.6

Source : IIPS & ORC Macro – India (2000)
IIPS & ORC Macro – Assam (2002)

Unmet Need For Family Planning

The concept of unmet need for family planning was first explored in 1960s, when data from surveys of contraceptive knowledge attitude and practices (KAP) showed a gap between some women's reproductive intention and their contraceptive behaviour. Many married women who are sexually active prefer to avoid becoming pregnant but nevertheless do not use any method of contraception. These women are considered to have an "unmet need" for family planning.

Table 5.6 shows the percentage of currently married women with unmet need for family planning in Assam for both the years 1992-93 and 1998-99. According to NFHS-II, about 17 percent of women in Assam have an unmet need for family planning as compared to 16 percent in India and that it has declined since 1992-93. The unmet need for limiting the birth is more than the unmet need for spacing the birth.

Unmet need for family planning is higher in rural areas than in urban areas. It also varies by women's education with higher amongst the illiterate women (18%) as compared to the High school and above educated (11%). Hindu women have lower unmet need as compared to Muslim women. The most common reason prevalent for unmet need are inconvenient or unsatisfactory services, lack of information, fears about contraceptive side effects and opposition from husband or relatives. The latest **NFHS-III (2005-06**) result show that although current use of contraception has increased to 57 percent and that the extent of unmet need has declined to 11 percent, there is still a need for considerable improvement in the coverage and quality of family planning services.

The problem of family planning is essentially a problem of attitude change. People are generally in favour of family planning but in spite of this, the rate of contraceptive use by couples is low. What is more important is to stimulate social changes affecting fertility such as raising the age of marriage, increasing the status of women, education and employment opportunities, old age security, compulsory education for children etc. The solution to the problem is one of mass education and communication so that people may understand the benefits of a small family.

Table 5.6: Percent of Currently Married Women with Unmet Need & Met Need for Family Planning Services by Selected Background Characteristics

Background Characteristics			Unmet Need for family planning						Met Need for family planning					
			1992 - 93			1998 - 99			1992 -93			1998 - 99		
			For spacing	For limiting	Total	For spacing	For limiting	Total	For spacing	For limiting	Total	For spacing	For limiting	Total
Residence	Urban	Assam	9	5.8	14.9	4.4	9.7	14.2	12.8	49.6	62.3	8.6	44.7	53.4
		India	8.6	8.4	17.1	6.7	6.7	13.4	5.2	45.8	51	5.2	53	58.2
	Rural	Assam	11.3	11.4	22.6	7.2	10	17.2	8	32.1	40.1	7.9	34.5	42.3
		India	11.9	8.5	20.3	8.9	7.8	16.7	2.7	34.2	36.9	2.9	41.8	44.7
Education	Illiterate	Assam	11.7	13.4	25.2	6.7	11.5	18.1	5.9	26.2	32.1	6.2	33.3	39.5
		India	11	9.3	20.3	7.8	8.5	16.2	1.5	32.4	33.9	1.6	41.3	42.9
	Literate, middle school complete	Assam	10.4	9.2	19.6	7.8	9.7	17.6	7.3	44.5	51.7	6.6	35.4	42
		India	10.8	7.2	18.1	8.4	6.1	14.4	4	46.4	50.4	3.5	52	55.5
	Middle school complete	Assam	8.6	3.9	12.5	8	8.1	16.1	14.7	49	63.7	10.1	40	50.2
		India	12.7	6.5	19.3	11.1	6.1	17.1	6.8	44	50.8	6.8	45.4	52.2
	High school & above	Assam	10	3.4	13.4	5.3	5.5	10.8	25	44.4	69.3	16.9	38.7	55.6
		India	10.5	7.3	17.8	8.8	6.3	15.1	10.2	44.5	54.7	9.1	47.9	57
Religion	Hindu	Assam	9.9	9.3	19.2	6.1	9.2	15.2	8.6	39.7	48.3	6.7	41.9	48.6
		India	10.9	8	18.9	8	7.1	15.1	3.1	38.6	41.6	3.1	46.1	49.2
	Muslim	Assam	13.5	13.3	26.7	8.6	11.5	20.1	8.7	23.6	32.3	10.6	22.9	33.5
		India	12.9	12.9	25.8	11	11	22	4.6	23.2	27.8	5.2	31.8	37
Total		**Assam**	**11**	**10.7**	**21.7**	**7**	**10**	**17**	**8.6**	**34.2**	**42.8**	**7.9**	**35.3**	**43.3**
		India	**11**	**8.5**	**19.5**	**8.3**	**7.5**	**15.8**	**3.4**	**37.2**	**40.6**	**3.5**	**44.7**	**48.2**

Source : NFHS – 1 (Assam – India)
NFHS – 2 (Assam – India)

6. Diseases

The prevalence of infectious and communicable diseases is one of the major leading causes for increased rate of morbidity and mortality. Though the human body has an inbuilt immunity system to combat many diseases and infections, yet the modern style of living has taken a toll on human health. With increasing pollution, improper sewage and sanitation system, and lack of proper drinking water facilities in both urban and rural areas, it augments the spread of diseases amongst the population.

Keeping in view the prevalence and increasing incidences of the diseases, the Government of India had launched various National Health Programmes for the control/eradication of communicable diseases. Assam has been following all the National Programmes for various diseases such as Malaria, Tuberculosis, AIDS, Leprosy, Cancer etc. Some of these are totally centrally sponsored while some are on cost sharing basis between the centre and the state. Some of the major diseases prevalent in Assam are discussed below.

Malaria

After independence, National Malaria Control Programme (NMCP) was launched in India in April 1953. It was based on indoor residual spraying with DDT twice a year in endemic areas. After the success of this programme, National Malaria Eradication Programme (NMEP) was launched in 1958. In this programme, the country witnessed a shift in the success of control of malaria. However, in 1970 there was a resurgence of malaria again and considering this, a Modified Plan of Operation (MPO) was evolved by the central government in 1977 to reduce malaria morbidity. In 1999, the programme was renamed National Anti-Malaria Programme with special focus given to community development. However, since 2004 this programme has been renamed National Vector Borne Disease Control Programme (NVBCP) which looks after Malaria, Filaria, Japanese Encephalitis, Dengue, and Kala-azar.

Malaria is a protozoal disease caused by the bite of an infected female anopheles mosquito. Out of the four types of parasites, the predominant causal organisms in India are *Plasmodium vivax* followed by *Plasmodium Falciparum* which is considered to be the deadliest amongst all. In Assam, *P. Falciparum* causes almost all the deaths due to malaria.

Malaria has been a serious problem in Assam, mainly due to topography such as hilly terrains and vast forest areas and climatic conditions being congenial for perennial malaria transmission, prevalence of malaria vectors, and predominance of P. Falciparum as well as prevalence of drug resistant P. Falciparum in some areas. The NFHS data shows that the three month prevalence of malaria in Assam had increased from 2710 in the year 1992-93 to 2974 in 1998-99 per 100000 population. The prevalence of malaria is seen more in the rural areas as compared to the urban areas.

Table 6.1: Malaria (3 month prevalence) Per 100000 Population

	NFHS-1 (92-93)		NFHS-2 (98-99)	
	Assam	**India**	**Assam**	**India**
Rural	2900	3896	3066	4254
Urban	1230	1729	1910	2156
Total	**2710**	**3324**	**2974**	**3697**

Source:- IIPS 1995, IIPS 2000, IIPS and ORC Macro 2002

During the Tenth Five Year Plan (2002-2007), the goals set for malaria control in the country was to bring the Annual Parasitic Incidence (API) to 1.3 or less, Annual Blood Examination Rate (ABER) to over 10 percent and to reduce the morbidity and mortality rate by 25 percent by 2007 and 50 percent by 2010 (NHP 2002).

Table 6.2, shows the epidemiological situation of malaria in Assam since the year 2000. The malaria department conducts an independent annual census survey to determine the target population in each district. ABER is the percentage of population who get their blood slide examination done out of the total population. In Assam, the ABER has been had been around 7-8 percent. The Annual Parasitic Incidence (API) gives the measure of malaria incidence per 1000 population in a community. It determines the number of confirmed positive cases during a year out of the population under surveillance. In Assam, the API had been fluctuating with as high as 4.14 in the year 2006 to as low as 2.01 in 2004. Assam has a long way to go to reach the target set in the Tenth Plan of reducing the API to 1.3 or less. The percentage of *P.Falciparum* out of the total positives (PF%) had been consistently increasing since 2000. In the year 2004, 71 percent of the total cases were P.Falciparum, indicating the status of Assam as a high endemic state. In the year 2006 about 304 cases of death have been reported.

Table 6.3, shows the district wise epidemiological situation of Assam with their API and P.Falciparum percentage since the year 1995. in the year 1995 around 11 districts of Assam out of 23, had an API of more than 10 with North Cachar Hills, Kokrajhar, Karbi Anglong, Kamrup and Darrang having more than 20. However, over the years though it has decreased, a few districts namely, Goalpara, Hailakandi, Karbi Anglong, Kokrajhar and N.C. Hills still remains a highly endemic district. As these districts are mainly forest covered areas, due to indiscriminate exploitation, forests are now more accessible and the movement of population with low immunity into such areas have resulted in malaria epidemics. The better performing districts have been Dhubri, Dibrugarh, Golaghat, Jorhat, Karimganj, Morigaon, Sibsagar and Tinsukia where the API has been less than 1. The prevalence of P. Falciparum is very high in most of the districts as seen from the table indicating the prevalence of deadly malaria in Assam.

The government of Assam has to strategise its plan of action to combat and control the

disease as it is a major source of concern of peoples health. To control the vector in the state, the government has been trying to carry out various activities such as spraying of DDT, making people aware of personal protection such as use of mosquito nets, community participation by NGO's, civil bodies etc., training and manpower development, social mobilisation and call for public and private partnership.

Table 6.2: Epidemiological Situtation of Malaria of Assam from 2000 to 2006

Year	Population	BSE Number	Positive Number	PF Number	ABER* Rate	SPR* Rate	SFR* Rate	PF Per-cent*	API*	Malaria Death
2000	26909570	2215375	84915	52116	8.23	3.83	2.35	61.47	3.15	43
2001	27321133	2431620	95142	58961	8.9	3.91	2.42	61.97	3.48	122
2002	27734709	2325105	89601	55825	8.38	3.85	2.4	62.3	3.21	72
2003	27853436	2133820	76570	48647	7.66	3.58	2.27	63.53	2.74	53
2004	28730761	1853560	58134	41409	6.45	3.13	2.23	71.23	2.01	52
2005	29000656	2050261	67885	45453	7.06	3.31	2.21	66.95	2.34	113
2006 (upto Nov)	29327104	2645867	121429	79131	9.02	4.58	2.99	65.16	4.14	304

Source:- Jt. Director of Health services (Malaria), Assam
Note - BSE- Blood Slide Examination, PF- Plasmodium Falciparum. *ABER- Annual Blood Examination Rate, SPR- Slide Positive Rate, SFR- Slide Falciparum Rate, API- Annual Parasitic Incidence

Table 6.3: District-Wise Epidemiological Situation of Malaria in Assam Showing the Annual Parasitic Incidence (API) Per 1000 Population and Plasmodium Falciparum (PF) Percentage Since 1995 to 2005

DISTRICTS	1995		1997		1999		2001		2003		2005	
	API	PF Percent	API	PF Percent	API	PF Percent	API	PF Percent	API	PF Percent	API	PF Percent
Barpeta	4.23	64.6	1.04	76.94	1.34	82.36	1.15	69.12	1.01	39.58	1.28	58.18
Bongaigaon	11.35	95.61	8.16	96.2	5.43	94.35	4.43	96.64	2.16	88.81	3	91.84
Cachar	3.89	98.89	3.8	99.32	5.39	98.73	2.48	99.82	2.42	99.62	1.68	99.82
Darrang	20.91	12.61	14.21	8.09	11.75	8.36	11.19	12.49	7.49	10.63	6.22	21.08
Dhemaji	16.7	26.54	2.84	21.58	3.05	10.18	1.34	1.87	1.56	10.17	1.56	14.53
Dhubri	8.91	87.81	3.92	88.77	2.22	89.96	1.37	89.51	0.95	9304	0.64	93.53
Dibrugarh	0.08	64.15	0.05	68	0.05	72.06	0.06	73.81	0.02	77.78	0.02	76.32
Goalpara	10.07	86.01	5.26	83.66	7.44	86.66	6.7	81.39	4.27	79.99	3.31	84.54
Golaghat	2.66	29.26	1.15	42.81	1.17	64.65	0.16	53.66	0.45	37.37	0.27	32.03
Hailakandi	10.48	97.94	8.61	98.68	10.97	98.47	6.42	98.57	10.98	99.52	6.78	99.69
Jorhat	1.67	93.19	0.56	79.02	0.89	79.03	0.38	38.19	0.11	64.71	0.08	54.17
Kamrup	21.77	81.07	9.71	88.85	5.45	72.8	2.76	79.14	1.65	87.68	1.46	78.87
Karbi Anglong	23.78	68.17	21.77	67.06	29.18	83.83	22.21	87.91	16.7	83.22	16.14	84.81
Karimganj	1.62	81.27	0.67	78.06	0.79	92.33	0.72	93.51	0.68	90.66	0.24	91.06
Kokrajhar	21.73	86.62	11.92	84.19	9.76	75.49	6.05	83.09	6.08	78.56	7.18	82.08
Lakhimpur	8.31	33.58	4.86	8.83	8.23	6.14	2.71	5.2	3.17	1.33	2.33	11.08
Morigaon	3.49	33.63	1.36	16.36	1.19	46.89	0.75	55.73	0.5	64.2	0.71	61.81
Nagaon	5.51	60.6	2.59	56.12	3.42	62.16	1.82	33.08	2.38	70.79	2.04	62.11
Nalbari	10	87.27	1.07	85.44	2.19	91.92	1.44	81.13	1.19	76.74	1.8	80.78
N.C.Hills	26.12	66.2	24.86	53.94	20.19	58.42	17	72.89	12.68	82.28	12.64	75.84
Sibsagar	0.07	50.67	0.01	70	0.08	77.38	0.11	68.5	0.02	82.61	0.02	85.19
Sonitpur	13.75	37.42	4.33	35.52	3.96	72.41	5.12	34.08	2.55	32.65	1.7	36.9
Tinsukia	4.13	44.45	1.34	26.73	2.51	36.79	2.58	48.26	1.21	27.22	0.58	21.83

Source:- Jt. Director of Health Services (Malaria), Assam

Tuberculosis

National Tuberculosis Control Programme (NTCP) started in 1962 all over India as a centrally sponsored scheme. However, in 1993, the Government of India adopted a Revised National Tuberculosis Control Programme (RNTCP) with Directly Observed Treatment, Shortcourse (DOTS) as the recommended strategy for TB control. The RNTCP aims to detect at least 70 percent of new smear positive TB cases and cure atleast 85 percent of them.

In Assam, RNTCP was first started in Dibrugarh district in 1998. Till today all the 23 districts of Assam are covered under RNTCP. There are 65 Tuberculosis Unit (TU) and 332 Designated Microscopy Centre (DMC) to control tuberculosis. There are 4100 DOT centres running in the state for providing DOTS to the TB patients in the state.

The point prevalence of TB per Lakh population in Assam was 638 in the year 1992-1993 but increased to 710 in 1998-1999, as seen from Table 6.4., In the year 1998-1999 out of the total TB cases only 50 percent of them were medically treated in Assam while 79 percent of the population was treated in India. The prevalence of TB is more pronounced in rural areas as compared to the urban areas.

Table 6.4: TB Point Prevalence Per 100000 Population for Assam and India

	NFHS-I (1992-1993)		NFHS-II (1998-1999)			
			Assam		India	
	Assam	India	TB*	Medically treated TB	TB*	Medically treated TB
Rural	660	512	721	358	600	476
Urban	440	344	583	345	390	307
Total	**638**	**467**	**710**	**357**	**544**	**432**

Source:- IIPS 1995; IIPS 2000; IIPS 2002
* includes medically treated TB

Table 6.5, shows the district wise annual performance of the RNTCP for the year 2004-05. The Annual smear positive case detection rate (ASPCDR) has been quite low in most of the districts except Dibrugarh, Tinsukia, Sonitpur and Kokrajhar where it has been more than 70 percent which is in accordance with the aim of RNTCP. Districts like Barpeta, Karimganj and Cachar has the ASPCDR as low as 37-39 percent. The cure rate of new smear positive patients, in most of the districts has not reached the target of 85 percent. However there are a few districts that have atleast 80 percent of cure rate. Success rate is low in Karimganj and Sibsagar with 69 percent. Thus, the government should focus more on these districts and try to bring down the prevalence rate.

Table 6.5: District Wise Annual Performance of RNTCP Case Detection (2005), Smear Conversion (4th quarter, 2004 and 1st to 3rd quarter, 2005) and Treatment Outcomes (2004)

Districts	ACDR * (per lakh)	ASPCDR* (per lakh)	ASPCDR* (per-cent)	Percent new sputum positive out of total new pulmonary cases	3 month conversion rate of new smear positive patients (percent)	Cure rate of new smear positive patients (percent)	Success rate of new smear positive patients (percent)
Barpeta	73	28	37	52	86	80	87
Bongaigaon	97	37	49	53	84	62	71
Cachar	79	30	39	49	84	73	80
Darrang	96	38	51	51	88	73	74
Dhemaji	86	47	62	65	78	78	76
Dhubri	123	46	61	46	77	72	82
Dibrugarh	166	65	87	64	89	84	86
Goalpara	92	41	54	61	87	69	73
Golaghat	92	35	47	51	80	67	72
Hailakandi	88	38	51	54	80	69	71
Jorhat	93	37	50	58	85	73	80
Kamrup	109	41	55	58	84	80	80
Karbi Anglong	165	51	68	43	72	64	76
Karimganj	82	29	38	48	84	63	69
Kokrajhar	131	53	70	44	90	65	72
Lakhimpur	109	44	59	52	86	80	82
Morigaon	108	39	53	50	90	84	85
Nagaon	74	34	45	55	91	86	86
Nalbari	94	45	61	62	88	75	82
N.C. Hills	98	31	41	46	89	82	88
Sibsagar	75	33	44	73	84	60	69
Sonitpur	143	57	76	51	85	82	85
Tinsukia	113	54	72	72	85	70	77
ASSAM	**103**	**41**	**55**	**54**	**85**	**76**	**80**
INDIA	**128**	**50**	**66**	**56**	**89**	**84**	**86**

Source:- TB India 2006- RNTCP Status Report, Central TB Division, DGHS, MoHFW
*- ACDR- Annual Case Detection Rate, ASPCDR- Annual Smear Positive Case Detection Rate

Leprosy

Amongst all the diseases prevalent in Assam, leprosy eradication claims to be the most successful in the achievement of its goal. The WHO's resolution of eliminating leprosy as a public health problem i.e. attaining the prevalence of below 1 case per 10000 population, by the year 2000, had been achieved by Assam in the targeted year itself (Graph 5).

Assam witnessed a drastic reduction of the prevalence rate per 10000 population between 1995 and 2001 where it dramatically fell off from 6.8 to 0.83 within a span of just 5 years, whereas it had decreased by only 0.9 between the years 1981-95.With the assistance of World Bank in the first project (1993-2001) the government had made a tremendous effort towards the control of leprosy in the state. Though the new case detection rate had increased between the year 1995-2001 for both Assam and India, it had again decreased by March 2005.

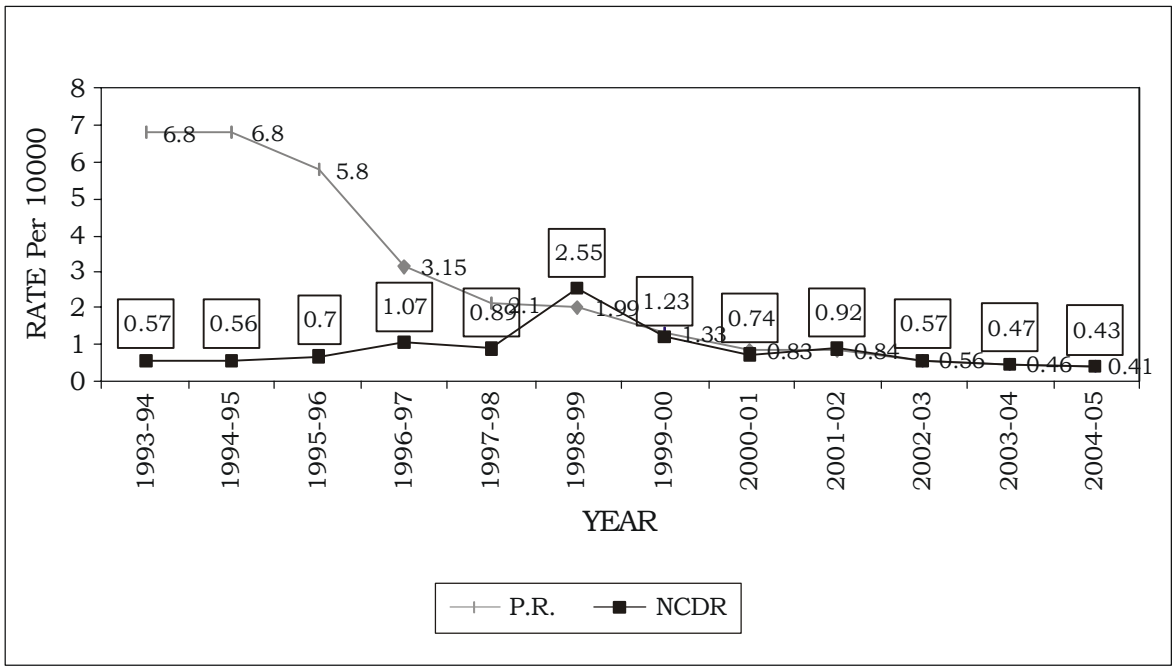
Table 6.6: Leprosy Situation in Assam and India Showing the Prevalence Rate and New Case Detection Rate per 10,000 Population, for Various Years.

Year	Prevalence Rate		No. of Endemic		NCDR*	
	Assam	India	Assam (Districts)	India (States)	Assam	India
1981	7.5	57	23	35	-	-
1995	6.8	8.4	23	35	0.56	4.9
2001(March)	0.83	3.7	5	23	0.74	5.5
2005(March)	0.41	1.34	0	11	0.43	2.34

Source:- Jt. Director of Health Services (Leprosy), Assam
* NCDR- New Case Detection Rate

As seen from the figure, the prevalence rate of leprosy per 10000 population had been constantly declining since 1993. Till the year 1999-2000, the prevalence rate was more than 1, however, after that it started declining gradually until it reached 0.41 in 2005. The New case detection rate (NCDR) also shows a similar trend.

Graph 5: Trend of Leprosy-P.R. & NCDR Per 10,000 Population in Assam



Source: - Jt. Director of Health Services (Leprosy), Assam

Table 6.7, shows the district wise endemicity of leprosy with the number of PHC's having prevalence rate per 10000 population. Out of total 153 Block PHC's in Assam, 5 percent of the PHCs had a prevalence rate between 1-1.9 which included two PHCs each from Dibrugarh, Karbi Anglong and North Cachar Hills district. 78 percent of the PHCs had a prevalence rate below 1 while 18 percent of them had a prevalence rate of 0. Bongaigaon, Kamrup, and Karimganj districts are better performers as compared to other districts as more than 50 percent of the PHC's have a prevalence rate of zero.

The present challenge for the government of Assam is to maintain the status of low endemic state that it has gained so far as there is a tendency for the disease to disappear naturally when the source of infection is reduced to a very low level. It has been actively involving itself in numerous activities such as removal of social stigma, community based rehabilitation, community awareness through Interpersonal communication, and structural integration.

Table 6.7: District-Wise Prevalence Rate of Leprosy as on March, 2005

Districts	Total Number of Block PHC	Number of PHC having Prevalence Rate				
		0	<1	1-1.9	2-4.9	5-9.9
Kokrajhar	4	Nil	4	Nil	Nil	Nil
Dhubri	7	1	6	Nil	Nil	Nil
Goalpara	5	2	3	Nil	Nil	Nil
Bongaigaon	6	4	2	Nil	Nil	Nil
Barpeta	9	3	6	Nil	Nil	Nil
Kamrup	14	8	6	Nil	Nil	Nil
Nalbari	7	1	6	Nil	Nil	Nil
Darrang	7	1	6	Nil	Nil	Nil
Morigaon	3	Nil	3	Nil	Nil	Nil
Nagaon	11	Nil	11	Nil	Nil	Nil
Sonitpur	8	Nil	8	Nil	Nil	Nil
Lakhimpur	6	Nil	6	Nil	Nil	Nil
Dhemaji	5	Nil	5	Nil	Nil	Nil
Tinsukia	4	Nil	4	Nil	Nil	Nil
Dibrugarh	6	Nil	4	2	Nil	Nil
Sivsagar	8	Nil	8	Nil	Nil	Nil
Jorhat	7	Nil	6	1	Nil	Nil
Golaghat	5	Nil	5	Nil	Nil	Nil
Karbi Anglong	9	1	6	2	Nil	Nil
N.C. Hills	5	2	1	2	Nil	Nil
Cachar	8	Nil	8	Nil	Nil	Nil
Karimganj	5	3	2	Nil	Nil	Nil
Hailakandi	4	1	3	Nil	Nil	Nil
TOTAL	**153**	**27**	**119**	**7**	**Nil**	**Nil**

Source:- Joint Director of Health services (Leprosy), Assam

AIDS

Assam follows the National AIDS Control Programme which is totally a centrally sponsored Programme. The first phase of National AIDS Control Programme came to an end in the year 1997 and was extended up to 1998. The NACP Phase-II was started in the state after the establishment of the Assam State AIDS control society in the month of October 1998.

The first AIDS case in Assam was reported in September, 1990. Till October, 2006, altogether 1576 HIV positive cases, 456 AIDS cases (355 male, 101 female) including 41 deaths have been reported. People in the age group of 20-39 are at a major risk with more females in the age group of 20-29 and males in the age group of 30-39. The state is still a low prevalence state. But it is considered a highly

vulnerable state due to the existence of certain vulnerable factors as cited by the State AIDS control society.

Assam being the gateway to all other states of north eastern India, acts as a major transit point for such people who are mobile and form the floating population. The movement is predominantly by men and there is evidence to believe that during such travel some men engage in high sexual activity. Moreover, a large number of female immigrants/ migrants from Nepal, West Bengal and other states in the North-East who do not have employment opportunities in the state have been pursuing sex work. The above reasons very well explain why a whopping 84 percent of AIDS spreads through sexual contact in Assam and affects mainly the young people in sexually active age group.

Another major factor that makes Assam vulnerable to AIDS is the fact that it shares the territorial border with two highly-prevalent states, Manipur and Nagaland. Moreover, Assam is also one of the major transit route of drugs to the national and international market because the north-eastern states of India are proximate to the "Golden Triangle" bordering Laos, Myanmar and Thailand where opium is extensively cultivated and heroin is produced and exported to the international market. In Assam about eight percent AIDS is transmitted through intravenous drugs user.

Table 6.8: AIDS Cases in Assam as on October 2006

Age in Years	Male	Female	Total
00-05	8	3	11
06-14	5	2	7
15-19	1	3	4
20-29	91	50	141
30-39	174	37	211
40-49	59	6	65
50+	16	0	16
Not specified	1	0	1
TOTAL	**355**	**101**	**456**

Source:- Assam State AIDS Control Society

Table 6.9: Major Transmission Categories with Their Percentage

Risk / Transmission Categories	No. of cases	Percentage
Sexual	383	83.99
Homosexual	10	2.19
IDU (intravenous drug users)	31	6.8
Perinatal	17	3.73
Blood & Blood product	7	1.54
Others (Not specified)	8	1.75
TOTAL	**456**	**100**

Source:- Assam State AIDS Control Society

Though the prevalence of AIDS is not very high in Assam, it is considered a highly vulnerable state considering the prevalence of above factors responsible for AIDS epidemic. The National AIDS Prevention and Control Policy was adopted in the year 2002. The Assam Health Establishment Act, 1993 and Rules, 1995 has made mandatory reporting of HIV/AIDS cases from the private health establishments to the health authority. The State AIDS Control Society along with the Government of Assam has taken a strong political and administrative commitment and is determined to prevent the AIDS epidemic form further spread and to reduce the impact of the epidemic at all levels of general population.

Table 6.10: Year Wise Details Report of AIDS Cases in Assam

YEAR	AIDS Cases		TOTAL
	Male	Female	
1990	1		1
1991-93	Nil	Nil	Nil
1994	2	Nil	2
1995	7	Nil	7
1996	1	Nil	1
1997	11	1	12
1998	10	4	14
1999	18	3	21
2000	35	6	41
2001	38	9	47
2002	15	1	16
2003	41	9	50
2004	39	12	51
2005	87	36	123
2006 (Oct.)	50	20	70
TOTAL	**355**	**101**	**456**

Source:- Assam State AIDS Control Society

Cancer

Though Assam can boast about its success in controlling spread of AIDS and leprosy it must be admitted that Assam accounts for the highest number of cancer patients in the entire north-east India. In the year 1996-97, out of the total cancer patients registered with the B.Borooah Cancer Institute, 60 percent were from Assam. Over then, though it had decreased to 43 percent by 2003-04, it again increased to 53 percent in 2005-06. Out of the total patients registered, 61 percent were males while 39 percent were females in 2005-06.

Table 6.11: Total Number of Male and Female Cancer Patients of Assam Out of Total Number of Patients Registered Since 1996-2006

Year	Total no of new cases registered	Total cancer cases		Male cancer patients		Female cancer patients	
		Number	Percent	Number	Percent	Number	Percent
1996-97	5509	3311	60.1	2249	67.93	1062	32.07
1997-98	5353	3197	59.72	2141	66.97	1056	33.03
1998-99	5475	3255	59.45	2170	66.67	1085	33.33
1999-00	5657	3337	58.99	2167	64.94	1170	35.06
2002-03	5714	2879	45.13	1862	64.68	1017	35.32
2003-04	6071	2597	42.78	1674	64.46	923	35.54
2004-05	6246	3502	56.07	2235	63.82	1267	36.18
2005-06	6596	3487	52.87	2131	61.11	1356	38.89

Source:- Annual report for various years, Dr. B. Borooah Cancer Institute,Guwahati

According to the annual report of BBCI (2005-06), the most frequent cancer in male is pharynx and larynx, oesophagus, mouth and lung. Since chewing of tobacco is widely prevalent in Assam, it acts as the major cause of cancer of the upper digestive and respiratory tract. Among the female population, cancer of the cervix, breast and oesophagus accounts for nearly 50 percent of all cancer. Several studies reveal a close association of cervical cancer with poor genital hygiene, early consummation of marriage, multiple pregnancies and contact with multiple sexual partners. Prevalence of breast cancer appears to be related to late marriage, birth of the first child at a later age, fewer children, and shorter periods of breast-feeding.

The district wise prevalence of cancer cases in Assam is shown in the table 6.12. Kamrup is the worst hit district, which alone accounts for 28 percent of the total patients in Assam, followed by Nagaon, Darrang, Barpeta, Nalbari and Sonitpur. A study done by ICMR has also shown the common types of cancer prevalent in each of these worst hit districts (BOX 2).

Table 6.12: District Wise Break-up of Cancer Cases in Assam for the Year April 2005-March 2006

Districts	Male	Female	Total	Percent
Kokrajhar	26	23	49	1.4
Dhubri	78	29	107	3.1
Goalpara	74	36	110	3.2
Bongaigaon	84	39	123	3.5
Barpeta	203	93	296	8.4
Kamrup	569	400	969	27.8
Nalbari	164	105	269	7.7
Darrang	179	123	302	8.7
Morigaon	92	51	143	4.1
Nagaon	185	153	338	9.7
Sonitpur	125	102	227	6.5
Lakhimpur	60	25	85	2.4
Dhemaji	6	5	11	0.3
Tinsukia	23	15	38	1.1
Dibrugarh	21	19	40	1.1
Sibsagar	39	28	67	1.9
Jorhat	65	34	99	2.8
Golaghat	44	31	75	2.2
Karbi Anglong	28	20	48	1.4
N.C. Hills	9	3	12	0.3
Cachar	22	10	32	1.0
Karimganj	14	8	22	0.6
Hailakandi	21	4	25	0.7
TOTAL	**2131**	**1356**	**3487**	**100**

Source:- Annual report for various years, Dr. B. Borooah Cancer Institute, Ghty

BOX 2

Cancer Cases High in Six Districts of Assam

According to data gathered under a World Health Organisation (WHO) - sponsored Indian Council of Medical research (ICMR) project called "Atlas of Cancer in India," Kamrup, Nagaon, Darrang, Barpeta, Nalbari and Sonitpur were among the districts of Assam, which had high incidence of cancer. Kamrup district headed the list with 591 cases, which was 20.5 percent of the total cancer cases documented in the Dr. B Borooah Cancer Institute (BBCI) in the year 2002.

The findings of the project revealed that of the state's 23 districts (in 1992), four districts- Kamrup, Darrang, Jorhat, and Dibrugarh- had MAAR (Minimum or Microscopic Age Adjusted Rate) above 36.2/100,000. In all these districts, leading sites in males were those associated with tobacco use, while among females, the leading site was cancer of the cervix uteri.In Kamrup district, common cancers were cancer of the Oesophagus, Hypopharynx, mouth, lung, tongue, oropharynx, larynx and tonsil. Among females, breast cancer was the most frequent, followed by cervix, oesophagus, mouth and ovary.Significantly, in Darrang district, cancer of oesophagus was the leading site among the females, a trend not seen anywhere else in India. In Dibrugarh district, the picture was different with cancer of the cervix being the leading site in females.

Based on the total number of cancer patients who reported to the BBCI, quite a few districts have high incidence of cancer of the hypopharynx. Some of those, with MAAR are Dibrugarh (12.3), Kamrup (9.3), Darrang (7.6), Jorhat (7.4), Nalbari (7.1) and Golaghat (6.7).

Cancer of the Oesophagus has also been high in many of the districts. Kamrup (12.2), Dibrugarh (9.2), Darrang (7.6), Golaghat (6.1), Barpeta (6.0) are the districts with the highest incidences. Regarding cancer of the mouth, Kamrup (7.8) topped the list, followed by Goalpara (7.6), Darrang (6.8), Nalbari (5.8), Morigaon (5.6) and Jorhat (5.4).

The situation could actually be more serious because apart from the cancer reported to the BCCI, which forms the basis of the study, there are a number of cases, which have been diagnosed or treated through other organisations both in and outside Assam.

Source:- The Assam Tribune, 02-08-2005

Though it is necessary to control and prevent the incidences of communicable and non-communicable diseases from rising, only focussing on the needs of individual patients is not the solution to combat the disease. What is required of the government as well as the community is total holistic approach which looks into other public amenities such as water, sanitation, hygiene, waste disposal and vaccinations simultaneously while dealing with the disease. Providing proper public health services is the key goal in reducing population exposure to disease. These services are of high priority for assuring good health for the population as a whole because when the Public Health System falters, people have to pay a high price in terms of illness, debility and death.

Since Assam follows all national programmes that are centrally sponsored, it should chalk out a strategy to implement these programmes in a proper and effective way. It should specially focus on Malaria and other vector borne diseases, and TB for which it is highly susceptible.

7. Health Expenditure

The share of health expenditure in Assam has been declining continuously over the year since 1997-98 as shown in the Table 7.1. Out of the total revenue expenditure of the state, 6.3 percent was the revenue expenditure on medical and public health and family welfare in 1997-98, but since then it has been decreasing constantly. In the year 2003-04 and 2004-05, medical and public health and family welfare had received only 4 percent of the share out of the total government's revenue expenditure.

Table 7.1: Medical and Public Health and Family Welfare Expenditure on Healthcare in Assam (Rs. in crores)

	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006 (RE)	2006-2007 (BE)
Medical and Public Health (Rs. in Crores)										
Revenue expenditure	220	191	256	276	281	266	288	343	603	762
Capital Expenditure	3	3	3	9	15	6	20	12	3	9
Family Welfare										
Revenue expenditure	33	40	51	70	64	58	62	67	171	205
Percent of Revenue Health expenditure to total revenue expenditure	6.26	5.23	5.25	5.39	5.04	4.56	4.14	4.01	5.29	6

Source:- CMIE (2004 and 2006),
Note : RE-Revised Estimate, BE-Budget Estimate

In India, the Medical and Public Health and the Family Welfare Programme are both under the central Health Ministry of Health and Family welfare but under two separate administrative units- the Department of Family Welfare and the Department of Health. The ministry is responsible for the overall budget. Medical and public health is primarily a state responsibility including the provision of much of its funding. Table 7.2, shows the total proposed budget for public health and the actual amount spent by the government along with the percentage of expenditure of various services out of the total public health expenditure. Comparing the expenditure of the state government on medical and public health with a gap of five years, it can be seen that, in the year 2000-01, around 37 percent of the total public health expenditure was spent on Rural Health Services, the highest amongst all

other expenditures. Within it 21 percent had been spent on PHC while nothing was spent on the Sub-Centre. It was followed by the Urban Health Services with 23 percent. However in the year 2004-05 the expenditure on Urban Health Services was increased to 28 percent while Rural Health Services had declined to 32 percent. Medical education, training and research received only 18 percent of the total share in 2000-01 but were increased to 22.2 percent by 2004-05. Expenditure on Public health, which includes prevention and control of diseases and public health education, has not witnessed any major increase in government expenditure.

Table 7.2: Assam Governments Expenditure on Medical and Public Health (Rs. in Lakhs)

	2000-2001			2004-2005		
Expenditure Head	**Proposed**	**Actual**	**Percent**	**Proposed**	**Actual**	**Percent**
Total medical and public health expenditure	30911.69	27241.03		45989.24	33907.13	
Expenditure on Urban Health Services (allopathy+ISMH)	6722.84	6263.26	23	9578.91	9565.11	28.2
Expenditure on rural health services (allopathy+ISMH)	10692.55	10137.88	37.2	14489.99	10985.22	32.4
Expenditure on PHC	5609.08	5799.89	21.3	8163.07	5729.08	16.9
Expenditure on CHC	721.39	767.6	2.8	1997.98	1321.93	3.9
Expenditure on Medical education, training and research	6060.48	4889.82	18	9738.19	7530.14	22.2
Expenditure on public health	3980.5	3635.22	13.3	6907.84	4742.02	14
Expenditure on prevention and control of diseases	3022.93	2850.76	10.5	5990.05	3538.69	10.4
Expenditure on Public health education	160.12	149.95	0.6	193.35	207.13	0.6
Expenditure on centrally sponsored schemes	1839.92	1837.24	6.7	1962.9	195.27	0.6

Source:- State budget report for various years.
Figure in brackets denotes the percent of expenditure out of total medical and public health expenditure.

Expenditure On Urban and Health Services

We tried to analyse the available data by segregating the total medical expenditure under different categories to understand as to where and how much money is spent by the state government. Table 7.3, clearly shows gross under utilisation of funds allocated for urban hospitals and dispensaries (allopathy). Out of Rs. 507.93 lacs allocated under plan expenditure in 2004-05 only Rs 82.64 lakhs was spent on hospitals while Rs.7048.92 lakhs allocated under non plan expenditure, Rs.5575.94 lakhs was spent.

Table 7.4, shows the line items or the components where the amount has actually been spent. The table clearly reveals increasing proportion of health expenditure on salaries and no spending on non-salary components such as machinery and equipment, maintenance, materials and supplies etc. the same trend can be seen even in the year 2000-01. In the year 2004-05, Rs 265.27 lakhs was allocated for salary under the plan expenditure whereas Rs.357.42 lakhs was spent, clearly showing the nature of over-spending. Similar was the case with the non-plan expenditure. Since plan expenditure includes transfers from the central government to the state government in form of grants, they are pooled along with other state resources and then the size of the state plan is derived. As a result, a significant amount of funding that is earmarked for plan purposes is utilised for Non-Plan activities.

Similar inference can be drawn from Table 7.5, which shows how the state government has been spending the allocated funds under both Plan and Non-Plan expenditure, only on salary and ignoring other areas. No expenditure on maintenance, and materials and supplies has been incurred since 2000, though sufficient amount of money has been allocated to it.

Table 7.3: Expenditure on Urban Hospitals and Dispensaries-Allopathy (Rs. in Lakhs)

ITEMS	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
General Hospital	811.44	2817.73	797.52	2734.33	212.03	5602.30	180.35	1748.00
Grants-in-aid (CSS)	45.00	-	'45.00	-	155	-	0	-
Mental Hospital (Tezpur)	-	185.00	-	185.00	-	185.00	-	0
Other Hospitals	-	146.83	-	121.61	-	171.75	-	3196.65
3 Chest Hospitals at Ghty, Rangiya, & C.L.M. Chest hospital	-	233.88	-	180.5	-	222.81	-	162.60
Leper Hospital	-	111.43	-	61.41	-	155.25	-	30.82
Medical Unit, Janta Bhavan	-	0.75	-	0.75	-	1.05	-	0.79
MMC Hospital, Guwahati	169.10	32.32	163.85	27.11	-	285.08	-	222.44
MMC Hospital Waste Management - CSS	-	-	-	-	20.00	-	0	-
Other T.B. Hospital / Ward/Clinic	86.15	269.73	87.25	212.97	15.90	425.68	2.29	214.64
Aid materials and Equipment - CSS	154.79	-	76.24	-	105.00	-	0	-
Satindra Mohan Deb Hospital, Silchar	7.11	-	3	-	-	-	-	-
TOTAL	**1273.59**	**3797.67**	**1172.86**	**3523.68**	**507.93**	**7048.92**	**182.64**	**5575.94**

Source:- Budget Report, Government of Assam

Table 7.4: Expenditure on Urban Hospitals and Dispensaries for Different Items (Rs. in Lakhs)

ITEMS	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Salaries	1008.41	1684.14	1051.62	3523.68	160.55	4454.69	182.64	5575.15
Machinery & Equipments	2.10	10.07	0	0	50.5	9.84	0	0
Maintenance	-	2.89	0	0	3	13.79	0	0
Materials & Supply	38.26	1187.60	0	0	6.5	1608.23	0	0
Grants-in Aid	7.11	187.81	0	0	0.05	185.75	0	0
TOTAL	**1073.80**	**3797.67**	**1051.62**	**3523.68**	**227.93**	**7048.92**	**182.64**	**5575.94**

Source:- Budget Report, Government of Assam

Table 7.5: Expenditure on Rural Health Services (Allopathy) (Rs. in Lakhs)

ITEMS		2000-2001				2004-2005			
		Proposed		Actual		Proposed		Actual	
		Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Salaries	Health Sub Centres	-	-	-	-	-	-	-	-
	PHU's	1282.55	2399.15	1972.43	3783.54	1438.8	3628.15	1581.24	4084.2
	PHC under GMC	-	57.69	-	43.92	-	33.81	-	39.2
	CHC	710.89	1202.22	767.6	0	242	850.37	409.77	912.16
	Hospt & Dispns.	14.51	-	24.11	2409.23	14.5	1512.95	62.62	1600.79
Machinery & Equip-ment	Health Sub Centres	-	-	-	-	-	-	-	-
	PHU's	3	0.1	0	0	0.55	0.15	0	0
	PHC under GMC	-	-	-	-	-	-	-	-
	CHC	-	-	-	-	-	-	-	-
	Hospt & Dispns.	-	6.98	-	0	-	8	-	0
Maintenance	Health Sub Centres	-	-	-	-	-	-	-	-
	PHU's	-	4.22	-	-	-	3.62	-	0
	PHC under GMC	-	-	-	-	-	-	-	-
	CHC	-	-	-	-	-	-	-	-
	Hospt & Dispns.	-	0.06	-	0	-	0.08	-	0
Materials & Supplies	Health Sub Centres	-	-	-	-	90	-	0	-
	PHU's	26.6	725.1	0	0	24	1031.25	0	0
	PHC under GMC	-	10	-	0	-	10.5	-	0
	CHC	9.6	-	0	-	21	-	0	-
	Hospt & Dispns.	-	523.25	-	0	-	730.61	-	0
TOTAL	Health Sub Centres	-	-	-	-	90	-	-	-
	PHU's	1332.03	4183.19	1972.43	3783.54	2722.45	5384.15	1581.24	4084.2
	PHC under GMC	-	93.86	-	43.92	-	56.47	-	39.2
	CHC	721.39	-	767.6	-	1086.5	911.48	409.77	912.16
	Hospt & Dispns.	25.66	2287.07	24.11	2409.23	16	2770.56	62.62	1600.79

Source:- Budget Report, Government of Assam

Medical Education, Training and Research

The Medical education, Training and research department has been under-utilising the funds allocated to it. With three medical college hospitals and one state hospital in Assam, the state government should have ideally spent more on the infrastructural development and improving the existing conditions of the hospital. But the break-up of the line items form Table 7.6, indicates that the government has been spending only on the salary, whereas virtually there has been total nil spending on publications, scholarships, machinery and equipments, materials and supplies since 2000. In the year 2004-05, out of total expenditure on medical education, 78 percent of the fund was spent on Salary component alone. This is something, which clearly needs a serious consideration.

Table 7.6: Expenditure on Medical Education, Training and Research

ITEMS	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Salaries	912	3386.52	984.46	3905.36	265.27	5838.02	357.42	6953.24
Publication	-	5.78	-	0	-	16.31	-	0
Scholarships	262.35	5.18	0	0	1.2	661.72	0	0
Machinery & Equipments	7.09	41.37	0	0	1	201.96	0	0
Materials & Supply	0.3	992.9	0	0	-	1239.6	-	0
Grants-in Aid to B. Borooah Cancer Institute	-	-	-	-	-	219.48	-	219.48
TOTAL	**1212**	**4806.48**	**984.46**	**3905.36**	**347**	**9373.19**	**357.42**	**7172.72**

Source: - Budget Report, Government of Assam

Since the major spending of the state government has been only on salary, it becomes imperative for us to understand how much of the funds is actually spend on the salary component. Extracting all the salary expenditure under medical and public health budget, Table 7.8, has been prepared to show the total amount proposed by the state for salary and the actual amount spent. In the year 2000-01, both under plan and non-plan schemes, the government had grossly overspent on salary, while in the year 2004-05, the Plan expenditure was again spent more than allocated. However, out of the Non-Plan allocation for salary, 89 percent was utilised for it. If we see the Table it shows that, funds allocated under Non-Plan expenditure is under utilised, while the amount allocated under Plan is over utilised. One implication of this is that the salary and other establishment expenditures that get transferred to the non-plan head in other schemes continue to be financed out of the Plan funds. This has over the various Plan periods, resulted in much of the Plan funds being increasingly absorbed by salaries and other establishment expenditures, leaving very little for expenditures on other essential recurring inputs.

Table 7.7: Expenditure on Medical Education, Training and Research (Rs. in Lakhs)

MEDICAL EDUCATION, TRAINING AND RESERCH	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Direction and Administration	38.74	200	0	0	62.9	324.94	14.41	48.84
Ayurveda								
Ayurvedic college & Hospital , Guwahati	19.18	154.33	22.18	153.63	6.54	261.55	108.9	294.03
Improvement of Govt Ayurvedic College (CSS)	20	-	0	-	140	-	0	
TOTAL	**39.18**	**154.33**	**22.18**	**153.63**	**146.54**	**261.55**	**108.9**	**294.03**
Homeopathy								
Dr. J.K. Saikia Homeopathic Medical College, Jorhat	20.98	-	2.17	-	15.13	64.15	9	34.94
Swahid J.N. Homeopathic Medical College, Ghty	34.45	-	0	-	7.98	81.97	10.85	27.45
Assam Homeopathic Medical College, Nagaon	18.05	-	0	-	9.85	60.97	11.22	17.18
Improvement of 3 Homeopathic Medical College (CSS)	60	-	0	-	30	-	0	-
TOTAL	**133.48**	**-**	**2.17**	**-**	**62.96**	**207.09**	**31.07**	**79.57**
Allopathy								
Assam Medical College, Dibrugarh	191.32	552.74	157.82	510.1	50.77	1089.34	56.49	1101.45
Support to AMC (CSS)	10	-	0	-	100.77	-	0	-
Silchar Medical College, Silchar	93.57	266.68	133.01	250.29	25.03	588.23	27.95	1133.29
Support to SMC (CSS)	10	-	0	-	27.76	-	0	-
Guwahati Medical College, Guwahati	355.62	605.48	298.79	644.74	33.96	1280.22	22.34	1410.97
Upgradation of GMC (CSS)	1000	-	0	-	1000	-	0	-
Establishment of Drug De-addiction centre in 3 medical colleges (CSS)	6	-	0	-	6	-	0	-
Medical school, Dibrugarh	-	37.83	-	55.72	-	64.87	-	11.45
Regional Dental College, Guwahati	20.5	117.23	19.73	107.1	1.25	241.15	0.95	173.99
Regional College of Nursing, Guwahati	18.46	62.36	14.76	76.1	4.76	102.95	3.92	94.96
Pharmacy Institute, GMC	15.94	-	0	-	6.35	20.72	1.75	5.21
Pharmacy Institute, SMC	15.94	-	0	-	8.94	23.76	0	0
Development of pharmacy institutes attached to AMC, GMC, SMC & GAC	30	-	0	-	0	-	0	-
Reorientation of Medical Education	-	11.69	-	6.79	-	79.21	-	52.61
Dr. B. Borooah Cancer Institute	-	-	-	-	-	219.48	-	219.48
Tumor Hospital at AMC, Dibrugarh	3.42	-	0	6.86	13.54	-	0	0
TOTAL	**1770.77**	**1654.01**	**624.11**	**1657.7**	**1279.13**	**3709.93**	**113.4**	**4202.81**
Hospitals and Dispensaries								
Assam Medical College Hospital, Dibrugarh	70.32	928.73	44.68	500.47	25.73	1471.12	41.98	668.96
Guwahati Medical College Hosp., Guwahati	229.53	1210.78	228.44	1293.78	60.79	2173.68	47.66	1776.48
Silchar Medical College Hospital, Silchar	65.98	658.63	62.88	299.78	13.48	1224.88	0	102.03
TOTAL	**365.83**	**2798.14**	**336**	**2094.03**	**100**	**4869.68**	**89.64**	**2547.47**

Table 7.8: Expenditure on Saleries in Medical and Public Health (Rs. in Lakhs)

	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Urban Health Services- Allopathy								
HQ Establishment	20	102.46	20	520.7	-	790	7.09	158.3
District Establishment	156.6	180.96	160.05	217.82	11.6	471.32	13.06	595.5
Urban Health Services- ISM	-	7.23	-	8.25	-	11.44	-	69.8
Rural Health Services-Allopathy								
Primary Health Units	1282.55	2399.15	1972.43	3783.54	1438.8	3628.15	1581.24	4084.2
PHC's under GMC	-	57.69	-	43.92	-	33.81	-	39.2
Community Health Centres	710.89	-	767.6	-	242	850.37	409.77	912.16
Hospitals and Dispensaries	14.51	1202.22	24.11	2409.23	14.5	1512.95	62.62	1600.79
Tribal Areas Sub-plan	-	-	-	-	180	89.46	330.74	93.83
Other Expenditure	-	-	-	-	250	108.63	99.19	77.19
Rural Health Services-ISM								
Ayurvedic Dispensaries	-	60.88	-	112.52	-	379.79	-	257.79
Est. of Ayurvedic Dispensaries	132.7	-	128.57	-	13	-	14.74	-
Est. of Homeopathic Dispensaries	50.62	-	48.82	-	64.3	69.83	96.01	26.78
Medical Education Training & Research								
HQ Establishment	36.44	-	0	-	13.9	296.52	14.41	48.84
Public Health								
District Establishment	-	1108.51	-	125.21	9.1	128.53	-	319.79
HQ Establishment	-	67.54	-	106.41	-	80.24	-	85.51
Prevention & control of diseases								
a) Malaria Eradication	1240	135.42	1197.11	176.68	90.21	3527.1	478.16	1653.17
b) General Epidemic	-	609.28	0.02	984.714	-	715.7	-	829.26
c) Leprosy	-	343.59	-	394.06	-	795.38	-	484.8
d) Filaria Eradication	-	32.26	-	43.09	-	42.29	-	39.03
e) Control of TB	-	47.88	-	55.06	-	69.3	-	54.27
Prevention of Food Adulteration	49.5	171.31	43.42	193.94	53	197.92	46.78	126.71
Drugs Control	31.5	40.93	29.23	45.51	34.3	56.62	49.13	292.35
Public Health Laboratories	-	30.6	-	0	-	34.32	-	75.93
Public Health Education	51.6	81.16	52.04	97.91	64.61	107.98	75.8	131.33
GENERAL								
Health Statistics and Evaluation	15.16	44.13	19.02	58.97	18.06	62.13	12.49	41.14
Other Expenditure								
a) Prevention of blindness	148	-	158.72	-	-	320.52	2.56	255.18
b) Control of Communicable diseases	148	-	153.2	-	-	-	-	-
TOTAL	**4088.07**	**6723.2**	**4774.34**	**9377.56**	**2497.38**	**14380.3**	**3293.79**	**12352.85**

Table 7.9: Expenditure on Prevention & Control of Diseases and Public Health (Rs. in Lakhs)

YEAR	Expenditure on Prevention & Control of Diseases (Actual)	Expenditure on Public Health (Actual)	Percent of Prevention & Control of Diseases to Public Health
1999-2000	2534.51	3387.86	74.81
2000-2001	2850.76	3635.22	78.42
2001-2002	2456.53	3163.68	77.65
2002-2003	2925.34	3857.33	75.84
2003-2004	3557.85	5167.3	68.85
2004-2005	3538.69	4742.02	74.62

Source: - Budget Report, Government of Assam

To understand how the disease control programme funds are utilised by the state government it becomes necessary to see how much money is spent on prevention of diseases. Table 7.9 shows the percentage of expenditure on prevention and control of diseases out of total public health expenditure. The expenditure on prevention of diseases has been fluctuating over the years with 78 percent in 2000-01 to 69 percent in 2003-04. Though the government has been spending on diseases, the major expenses are incurred on the salary component itself, thus leaving very little for use of other activities, as seen from the salary table. This table also shows that, having spent about 75-80 percent on prevention of diseases, very little is spent on health education, public health, laboratories, food adulteration and drugs control.

Table 7.10: Total Expenditure on Family Welfare (Rs. in Lakhs)

TYPE OF EXPENDITURE	2000-2001				2004-2005			
	Proposed		Actual		Proposed		Actual	
	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan	Plan	Non Plan
Maternal & Child Health (Immunisation)	-	328.31	-	297.91	-	458	-	399.06
Centrally Sponsored Schemes (CSS)								
Direction & Administration	801.76	-	625.94	-	819.59	-	664.71	-
Training	949.3	-	328.18	-	1050.84	-	248.17	-
Rural Family Welfare Services	6519.62	-	5225.42	-	14342.17	-	4738.82	-
Urban family Welfare Services	147.37	-	114.27	-	153.74	-	119.86	-
Transport	124.46	-	78.81	-	137.07	-	91.03	-
Compensation	261.9	-	0.23	-	358.35	-	96.76	-
Mass Education	77.97	-	0.70	-	13.50	-	1.61	-
Other Services and Supplies	436.59	-	301.29	-	434.59	-	297.45	-
Total of CSS	**9336.27**	**-**	**6674.84**	**-**	**18455.10**	**-**	**6281.35**	**-**
Total on Family Welfare	**9336.27**	**328.31**	**6674.84**	**297.91**	**18455.10**	**458.00**	**6281.35**	**399.06**

Source:- Budget Report, Government of Assam

Family Welfare

The family welfare programme has been a 100 percent centrally sponsored program, except for the immunisation programme for maternal and child health. The entire expenditure incurred by the state on maintenance of infrastructure, manpower, consumables and costs for provision of family welfare services under the programme is met from central Plan funds and is wholly reimbursable by the central government in strict conformity with approved patterns of the schemes.

Table 7.10, shows the type of expenditure covered under family welfare and the utilisation of funds under this department. The maternal and child health immunisation comes under the Non-Plan expenditure. The table shows that about 87 percent of the funds were spent on the programme in the year 2004-05. All other aspects of family welfare come under the central sponsored schemes. In the year 2004-05, the Assam government has spent only 34 percent of the total funds allocated on family welfare under the plan expenditure as compared to the year 2000-01 where around 71 percent was spent. This could be due to various reasons such as the fund being diverted for other health or Non-Health related activities considered more important by the state at that point of time etc. Though the government spends on rural and urban family welfare services, other areas such as training, transport, compensation and mass education are largely ignored. This explains why the rural health services and delivery system in Assam is so weak and ha s not witnessed many major changes since the last five years.

To solve the problem of under-utilisation of funds in the family welfare sector, the central budget should be used for financing only the Plan part. The recurrent expenditure required for maintaining the already present infrastructure should be financed out of the state's budget. Increased allocations may be made in the state budget to finance these components. The family welfare program though a centrally sponsored programme cannot be seen independent of the overall health programme and especially independent of the allocation of resources for primary care activities.

Table 7.11: Average Out of Pocket Medical Expenditure on Treatment of an Ailment in Outpatient and Inpatient Care Units, Assam

Source of Treatment	INPATIENT				OUTPATIENT			
	1995-1996		2004-2005		1995-1996		2004-2005	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Public	2201	2092	2696	3157	171	145	43	14
Private	7102	2003	20048	8179	152	98	308	212
All	3790	1946	10467	4195	163	115	351	226

Source: NSSO:- 1998; 2006

The Assam budget report only show how much the government spends on the public health sector, But is universal known that in India large proposational health sector spending is done by the private health sector. This can be understood throught average out-of-pocket expenditure that is incurred by the rural and urban population on public, private and other health institutions. Table 7.11 shows that poorer or rural households rely more on the public sector for hospitalised treatment than the urban areas. This probably reflects the lack of inpatient service provided by the private sector in rural areas, which is logical, and unlikely to change substantially until income amongst these groups rise. The NSS report also reveals that many illness episodes are not treated at all, principally due to the cost of accessing services.

As per NSSO report of 2004-05, the out of pocket expenditure for the urban areas for hospitalised treatment in the private sector, in Assam, has increased sharply. This could be due to the growth in the number of private facilities, or a response to the stagnating quality in the public sector. However, for out patient (OPD) consultation, the private sector continues to be the preferred choice amongst both the rural and urban areas. Thus, people are willing to spend more on the private sector for OPD and trivial health issues; while the public sector plays an important role in providing care for emergencies and chronic illness for the poor.

8. Other Health Indicators

Mortality rates are often refered indicators to assess the level of health and health care in any state. Infant mortality rates (IMR) is universally regarded not only as a most important indicator of the health status of a community but also of the level of living of people in general. Table 8.1 shows the IMR rate of Assam by sex and residence for various years. The IMR of Assam has decreased from 102 per 1000 live birth in 1982 to 76 in 1999. However, the female IMR has not been constantly declining but rather going through a series of crests and troughs. However, the Rural IMR is more than the Urban IMR, though not much male-female difference exists.

Table 8.1: Infant Mortality Rate by Sex and Residence for Assam (per 1000 live births)

Year	Total			Rural			Urban		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1982	102	106	96	103	108	98	72	69	75
1986	109	110	107	111	113	108	69	54	85
1990	76	78	73	78	80	74	39	38	40
1994	78	84	71	78	85	70	76	69	84
1997	76	74	78	79	78	81	37	37	38

Source: SRS, RGI (1999)

Table 8.2 shows that though the Infant mortality rate, Neonatal Mortality Rate and Postnatal Mortality Rate has decreased from 1981 to 1999, Perinatal mortality rate and still birth rate has increased in the year 1999 as compared to 1991.

Table 8.2: Trend of Mortality Rate by Place of Residence of Assam (per 1000 live births)

Year	1981			1991			1999		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Infant mortality rate	107	76	106	83	42	81	79	36	76
Neonatal mortality rate	67.8	49.4	66.9	54.8	26.8	53.4	55	26	53
Postnatal mortality rate	39.5	26.8	38.8	28.2	15.7	27.6	24	10	23
Perinatal mortality rate	58.3	44.9	57.6	49.8	27.8	48.7	54	23	52
Still birth rate	17.4	6.1	16.8	14.1	7.4	13.8	16	5	15
Child mortality	-	-	-	-	-	-	25	12	24

Source: SRS, RGI (1999) & (2002)

Table 8.3 shows the life expectancy at birth by sex and residence of Assam for various years. The life expectancy at birth has continued to increase over the years. For 1970-75, the combined life expectancy at birth for both sexes was 45.5 years. Two decades later by 1996 it was 56.2 years- an increase of 11 years. The life expectancy at birth for the female is slightly higher than for the male.

Table 8.3: Life Expectancy at Birth by Sex and Residence of Assam

Year	Total			Rural			Urban		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1970-75	45.5	46.2	44.8	44.9	45.5	44.4	55.7	56.3	56.2
1976-80	51.1	51.6	50.4	50.4	51.1	49.5	60.8	59.3	64.2
1981-85	51.9	52	51.9	51.2	51.5	51	60.2	59.4	61.2
1986-90	53.6	53.6	54.2	53	52.9	53.6	60.9	60.6	61.3
1991-95	55.7	55.7	56.1	55.1	55.1	55.3	64.1	64.1	65
1992-96	56.2	56.1	56.6	55.6	55.6	55.9	64.6	64.4	65.5

Source: SRS, RGI (1999)

The NFHS-II study in the year 1998-99 shows the infant and child mortality by background and demographic characteristics, as seen from Table 8.4. The Neonatal mortality in Assam is at 52 per 1000 live birth, higher than the national average of 37per thousand live births. It is also higher among the children whose mothers are high school and above educated at 46 and among male children at 42 per thousand live births. Mothers whose age at the time of the birth was less than 20 or between 30-39 years also had a higher proportion on Neonatal mortality. Similarly, the percentage of post neonatal mortality, Infant mortality is also higher in Assam at 23 against 17 per 1000 live birth at all India level.

The child mortality rate is lower at 20 than the national average of 24 per thousand live births. The higher proportion of mortality rate is among the rural, illiterate and male children.

Table 8.4: Infant and Child Mortality by Background & Demographic Characteristics, 1998-99

Background and Demographic Characteristics			Neo-natal Mortality	Post natal Mortality	Infant Mortality	Child Mortality	Under-five Mortality
Residence	Urban	Assam	32.5	11.4	43.9	11.4	54.8
		India	33.5	15.8	49.2	17	65.4
	Rural	Assam	37.3	25.3	62.6	19.7	81.1
		India	51.7	28	79.7	347.6	111.5
Mothers education	Illiterate	Assam	37.1	29.2	66.3	25.2	89.8
		India	55.3	31.2	86.5	39.7	122.8
	Literate, middle school complete	Assam	37	18	55	10.3	64.6
		India	37.1	16.2	53.3	14.5	67
	High school & above	Assam	45.7	7.8	53.5	0	53.5
		India	24.3	8.6	32.8	4.4	37.1
Religion	Hindu	Assam	35.2	21.8	57.1	19.7	75.6
		India	50.4	26.7	77.1	32.4	107
	Muslim	Assam	39.1	29.3	68.4	20.2	87.2
		India	38	20.8	58.8	25.4	82.7
Sex of child	Male	Assam	42.1	24.8	66.9	21.4	86.8
		India	37.8	16	53.8	14.6	67.6
	Female	Assam	31.5	24.2	55.6	16.9	71.5
		India	28.8	15.5	44.3	19.7	63.1
Mothers age at birth	< 20 yrs	Assam	40.8	30.7	71.5	21.4	91.4
		India	48.4	19.3	67.7	21.3	87.5
	20-29 yrs	Assam	31.4	22.4	53.8	18.3	71.1
		India	28.1	14.4	42.4	14.2	56
	30-39 yrs	Assam	51.6	23.3	74.9	19.5	93
		India	36.6	17.1	53.7	23.5	75.9

Source: NFHS-II (1998-99)

Morbidity

The morbidity profile is an important indicator of assessing the health status of a particular population. The reported ailments is a subjective phenomenon and is influenced not only by the actual burden of the diseases but also by knowledge of the disease, education, and even by the recall period used in the survey. Table 8.5 shows a morbidity rate for a two-week recall period for acute, chronic and any ailment as well the annual hospitalisation rate for both rural and urban areas. Wide gender differentials can be seen across both rural and urban areas for any ailment with 95 and 104 per

1000 females for rural and urban respectively. Urban females report more of ailments than rural females.

Across the Month Per Capita Consumtion Expenditure (MPCE) fractile group, in rural areas acute ailment is reported more amongst the people with lowest monthly per capita expenditure and is highest amongst the people with highest MPCE in the urban areas. However, for chronic ailment and hospitalisation rate, rich people in urban areas report more of ailments as compared to rural areas because of greater accessibility of health care services and high purchasing power.

Prevalence of any ailment was found to be substantially higher in the Scheduled Tribe category specifically in the urban areas as compared to other social groups. Not much of difference exist between Scheduled Caste (SC) and Others groups and there is no difference across rural and urban areas. This shows that the vulnerable sections i.e. ST and SC have poor health status as compared to the privileged ones.

Table 8.5: Number of Persons Reporting Ailments During a Period of 15 Days per 1000 Persons and Number of Persons Hospitalised Per 1000 Population by Sex, Fractile-group of MPCE and Social Group in Assam, 1995-96

	Acute Ailment		Chronic Ailment		Any Ailment		Annual Hospitalisation Rate	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
SEX								
Male	61	63	7	8	68	71	9	15
Female	85	86	10	20	95	104	8	19
MPCE class								
0-10	90	46	8	9	97	48	13	7
20-Oct	78	99	2	20	79	115	5	10
20-40	68	72	6	16	73	87	5	14
40-60	68	66	8	6	75	72	8	19
60-80	73	63	9	14	82	77	8	13
80-90	67	88	14	20	81	108	10	26
90-100	77	108	22	15	99	122	29	33
All	72	74	9	13	80	86	9	16
Social Group								
ST	62	110	2	17	64	126	8	16
SC	76	83	9	6	85	85	8	24
Others	73	69	10	14	83	83	9	15

Source:- NSSO 1998

Water Supply

Access to safe drinking water and proper sanitation facility are one of the major determinants of health status. Table 8.6 shows the percentage of households having drinking water and sanitation facilities in Assam during the year 1992-93 and 1998-99 in a study conducted by NFHS. It shows that only 60 percent of the people in Assam had access to pump/pipe drinking water while the all India average was 78 percent. Out of this, pipe water is available in the urban area while pump water is a major source in the rural areas. However, still 42 percent of the rural people had access to other sources of water such as well water or surface water.

As diarrhoea mainly spreads through contaminated water, the major reason for its prevalence is that 62 percent of people in rural Assam do not purify their water whereas only 55 percent in Urban Assam uses water filter.

Table 8.6: Percentage of Households Having Drinking Water and Sanitation Facilities in Assam

Type of Facility	1992-93		1998-99	
	Assam	India	Assam	India
Drinking Water from Pump/Pipe	43.2	68.2	60.1	77.9
Any Toilet/Latrine facility	49.6	30.3	63	35.9

Source : IIPS (1992-93) & IIPS & ORC MACRO (1998-99)

Table 8.7: Percentage of Households by Source of Drinking Water, Assam

Sources	1992 – 93			1998 - 99		
	Urban	Rural	Total	Urban	Rural	Total
Piped	29.2	8.3	11	47.8	7.1	11
Hand Pump	35.1	31.8	32.2	34.8	50.6	49.1
Well water	26.7	36.5	35.3	16.9	30.4	29.1
Surface water	2.4	13.8	12.4	0.2	11.8	10.7
Other	6.5	9.6	9.2	0.3	0.1	0.1
Total	**99.9**	**100**	**100.1**	**100**	**100**	**100**

Source : IIPS (1992-93) & IIPS & ORC MACRO (1998-99)

Table 8.8: Percentage of Households by Method of Purifying Drinking Water, Assam

Method	1998 - 99		
	Urban	Rural	Total
Strains water by cloth	0.7	1.2	1.1
Uses alum	1.7	3.3	3.1
Uses water filter	54.5	13.3	17.3
Boils water	22.8	24.2	24
Uses electronic purifier	2.3	0.7	0.9
Uses other method	0.1	0.8	0.7
Does not purify water	31.7	61.9	59

Source: IIPS & ORC MACRO (1998-99)

Sanitation

Table 8.9: Percentage of Households by Type of Sanitation Facility, Assam

Sanitation facility	1992 – 93			1998 - 99		
	Urban	Rural	Total	Urban	Rural	Total
Flush toilet	66	7.8	15.1	57.8	10	14.6
Pit toilet/latrine	26.2	35.6	34.4	37.1	49.6	48.4
Other	0.2	-	-	0	0.2	0.2
No facility	7.6	56.6	50.4	5.1	40.2	36.8
Total per cent	**100**	**100**	**99.9**	**100**	**100**	**100**

- Less than 0.05 per cent

Source: IIPS (1992-93) & IIPS & ORC MACRO (1998-99)

In the year 1998-99, around 48 percent of the total household in Assam used pit toilet/latrine while only 15 percent of the total household had access to the flush toilet facility. Still 37 percent of the households had no access to any facility. In rural areas, 50 percent of the household uses pit toilet/latrine and 40 percent of them do not have any facility. In Urban areas, 58 percent of the households have Flush toilet facility and 37 percent of them use pit toilet/ latrine as shown in Table 8.9. Thus, households in Assam lack sanitation facilities and the situation demands that minimum public health facilities should be atleast adequately provided.

Conclusion

Despite its rich natural resources and high concentration of business and economic activities among the Northeastern states, Assam has not been able to achieve the desired health outcomes. Poor literacy rate, low per capita income which is mainly due to the high density of population, wide urban-rural disparity, improper water and sanitation facilities etc., all have contributed to some extent in some form to the under developed health sector. Though the state has been quite successful in preventing and controlling leprosy and AIDS, it still has a long way to go in controlling epidemics of malaria, TB and life threatening cancer. The health infrastructure, delivery system, manpower, resources, all has to be strengthened enough so that it can be utilised by the people in a proper way. With a weak preventive, promotive and curative system, it has failed to provide proper service to its citizens. The national programmes that are followed for maternal and reproductive health, child health, family planning, should be sincerely carried out. The health department should carry out sound research to collect data and ascertain the existing conditions and facilities. Thus there is a clear need for more resources and investment in public health to attain better health objectives.

Glossary

Annual Blood Examination Rate (ABER) = Blood Slide Examination X 100
Population

Annual Parasitic Incidence (API) = Total no. of positive cases detected X 1000
tral Population

Crude Birth Rate (CBR) = No. of live births in a year x 1000
Mid-Year Population

Crude Death Rate (CDR) = No. of deaths in a year X 1000
Mid year Population

Infant Mortality Rate (IMR) = No. of infant deaths during a year X 1000
No. of live births during the year

Life Expectancy at Birth (LEB) = It is the average number of years expected to be lived at the time of birth if current mortality trends were to continue.

Neonatal Mortality Rate (NMR) = No. of infant deaths during the year X 1000
No. of live births during the year

Post Neonatal Mortality Rate (PNMR) =
No. of deaths of 29 days to < than one year during the year X 1000
No. of live births during the year

Plasmodium Falciparum (PF) = Total no. of Plasmodium Falciparum X 100
Total no. of positives

Sex Ratio is the number of females per 1000 males.

Slide Positive Rate (SPR) = Total no. of positive cases detected X 100
Blood Slide Examination

Slide Falciparum Rate (SFR) = Total no. of Plasmodium Falciparum X 100
Blood Slide Examination

Total Fertility Rate (TFR)=
TFR per women in a given year is average number of children born to a women during the reproductive span (age 15-49 years) provided she experience the current age-specific fertility rate.

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The Institute is the only of its kind in the entire North East that consists of eight relatively small and less developed states of India. The Institute undertakes research on various subjects related to the life and processes of social transformation and development of Assam and other States of North-East India It also provide academic and professional guidance to agencies, institutions and scholars engaged in social changes and development. The Institute offers advisory and consultancy services to the central and state government and Academic institution.

Previous Publications

		Year of Publication
1	Review of Health Care in India: Country Health report	2005
2	Health and Health Care in Maharashtra: Health Status Report of Maharashtra (in English and Hindi)	2005
3	Health Facilities in Jalna: A Study of Distribution, Capacities and Services Offered in a District in Maharashtra	2004
4	Health and Health Care Situation in Jalna, Yawatmal and Nandurbar	2004
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