• Training Programmes
• Completed Studies
• On-Going Studies
• Publications, Scientific Meeting/Conferences etc. attended
• Training attended by scientists, Statistical Consultancy & Visitors
• Staff List & List of SAC members
Annual Report - 2003-04
Training Programmes

- Hands on computer training in statistical packages during 21–25 July 2003. Sixteen researchers from Delhi based ICMR and other Institutes participated in the training programme.

- One week training course in ‘Research Methodology and Data Management’ for the benefit of Scientists in ICMR Institutes/Centers and Medical Colleges/Hospitals/ health research organizations. The course commenced on 1st Sep.2003. A four member team headed by Dr. Anil K. Mishra from Nepal Health Council also attended the training programme.

- WHO fellow U Tun Aung Hla from Myanmar attended training in Health Statistics at this Institute for one month in Sept., 2003. As part of this training he was given exposure to all fields of Health Research in the country. In this regard he was given the opportunity to visit different research Institute in Delhi as well.

- Training to the students of Centre for Bioinformatics from Ranchi from 16th Sept to 10th Oct 2003.

- A ten days training to M. Sc. (Final) Statistics students of Kurukshetra University was carried out during 22 December 2003 – 2 January 2004. 14 trainees attended the programme.

International Meetings/ Workshops/ Conferences

Prof. Arvind Pandey


Dr. D. Sahu attended the 2003 Annual Meeting of the Population Association of America at Holton Minneapolis and Towers. Minneapolis, Minnesota, 1-3 May 2003.

Dr. Atul Juneja attended the Second Annual Conference of the Frontiers in Cancer Prevention Research of American Association for Cancer Research held at Phoenix, Arizona

Awards & Honors

Dr. Abha Rani Aggarwal was awarded with the Prof. P.V. Sukhatme Award of the Indian Society for Medical Statistics in its XXI Annual Conference at Jodhpur, 28-30 November 2003 for her paper entitled “Nutritional Status and Diet Intake of Pre-School Children in Delhi”.

Dr. Tulsi Adhikari was awarded with the Prof. R.N. Shrivastava Award of ISMS in its XXI Annual Conference at Jodhpur, 28-30 November 2003 for her paper entitled “Identification of
COMPLETED STUDIES

1. Base Line Survey on Impact Assessment of ICDS Food Fortification in Uttar Pradesh

Background

Micronutrients are life-sustaining nutrients that are needed only in small quantities for effective functioning of brain, the immune system and energy metabolism. Micronutrient malnutrition makes a considerable negative impact on the health, learning abilities, and cognitive development and work capacity. Among women, it affects the pregnancy outcome. Deficiencies of micronutrients are closely linked with childhood illness and mortality, yet these deficiencies are largely preventable. Diet diversification, food fortification, supplementation and public health measures are the ways to control and prevent such deficiencies. The result is a devastating public health problem, affecting people throughout the socio-economic spectrum. For the nation, communities and individuals, micronutrient malnutrition takes a heavy toll in terms of lost productivity, vitality and initiative on all age groups but it is most devastating for pre school children and pregnant women.

Why to undertake the present research?

There is sufficient scientific evidence available from the western researches, which reassures that the consumption of most foods is self-limiting and no incidence of nutritional imbalance/adverse effects on consumption of micronutrient-fortified foods in any supplementary nutrition programme has ever been reported worldwide. However, the concept of food fortification is relatively uncommon in India. Hence, sometimes due to ignorance or due to paucity of research to assess the impact of fortifying supplementary food in large feeding programmes, there is an apprehension that fortification may either lead to imbalance of nutrients in
the body or may not really improve the nutritional status of people consuming marginal diets. This has lead to a prudent approach in taking bold decisions to fortify the ICDS supplementary food to reduce micronutrient malnutrition in different states. The current research has planned to test and provide empirical evidence on the impact of fortifying ICDS supplementary food through a well-conducted research landmark decision of WFP and IRMS, a premier research organization of the Indian Council of Medical Research, Government of India.

Objectives
- To determine the baseline prevalence of iron and Vitamin-A deficiencies among children 6-59 months in Kanpur Dehat district of Uttar Pradesh.
- To monitor the supplementation of fortified food and
- To undertake an end-line evaluation for evaluating the impact of supplementation.

Methodology
The district selected for the study is Kanpur Dehat where in two blocks were selected namely Maitha (where fortified food will be supplied) and Rajpur (where non fortified food will continue to be used). Thirty villages from each of the two blocks were selected by Probability Proportion to Size (PPS). From the each selected village, 25 children were selected for anthropometrics measurement, Dietary intake of 10 children for clinical examinations and 5 for the Biochemical examinations. A survey was conducted to assess the impact of fortified supplementary food under ICDS on the prevalence of micronutrient Deficiencies/malnutrition (Vitamin-A & Iron) among the ICDS beneficiaries in Kanpur Dehat district of Uttar Pradesh. The sample size covered works out as 750 children from Kanpur Dehat district. The sample was selected in the form of 30 clusters and 25 children per cluster. However, instead of 25 children per cluster, it was decided by TAC that about 50 children should be taken for clinical assessment for Bitots Spot and
Anemia while for sub clinical manifestation of nutritional deficiencies, the blood sample could be taken for much smaller group i.e., for 10 children. Thus, Sample size would be 1500 for clinical assessment and 300 for blood/ biochemical test for both the blocks.

Characteristics of Households
As discussed earlier, 30 clusters (villages) each from two blocks Maitha (intervention block) and Rajpur (control block) of Kanpur Dehat districts were considered for the study. Various characteristics of the sample households (religion, caste, type of house, land holding, use of fuel for cooking, availability of electricity, drinking water and toilet facility) in the above two blocks (intervention block and control block) are found to be comparable. The sample was selected in such a manner that the children and mothers are likely to be beneficiary of ICDS. Hence, majority of the sample households of both the blocks are either schedule castes or other backward class. In both the blocks very few (below 10 percent) households were found to have *pucca* houses; and almost all the households were using open field as a toilet facility and Firewood/cow-dung for cooking purpose; and more than three-fourth of households were having land less than 2 acres. Hand pumps were the most common facility available in the villages for drinking and cooking and they were mostly outside of the house. In Maitha less than one-tenth of households had electricity in Maitha while in Rajpur one-quarter of households had electricity.

As regards to exposure on health and Nutrition, about two-third of the households had no exposure on health and Nutrition in both intervention and control blocks. The results on breastfeeding practices show that over three-quarter children were put on breast within 24 hours. However, large majority of children were not exclusively breastfed as they were given complementary food within 3 months.
With regard to personal hygiene practices of mother and child, the practices seemed to be better in Rajpur block – 92 percent of children in Rajpur block had size of nails <1 mm, against 72 percent children in Maitha having nail size <1 mm. Similarly, higher percentage of children of Rajpur block had clean nails. The percentage of children as well as mothers washing hands was also higher in Rajpur.

Health Seeking
While management of cough and cold was similar both the blocks, the management of fever differed significantly -- nearly three-fourth of mothers went for home remedies for treating fever in Maitha, almost similar percentage of mothers opted for Vaid.

Food Frequency
The average consumption of fat, leafy vegetables and other major food items like milk, sugar & jaggery was almost of the same level in both the blocks. The consumption of pulses is however higher in Rajpur block than that in Maitha. The average consumption of green leafy vegetables at the district level and block level is same. The consumption of other major food items like milk, sugar & jaggery is lower at the district level as compared to the blocks selected for the study.

Level of Anemia/ Hb level among Children
According to WHO, the level of anemia has been defined as severe anemia if Hb level is less than 7, moderate if Hb level is between 7.0-9.9 and mild if Hb level is between 10.0-10.9. We define any type of anemia if Hb level belong to any of these three categories. Normal children are those whose HB level has been observed more than 11. In Maitha block, about 87 percent of children were found to be anemic having any type of anemia (5 percent severe anemia, 69 percent moderate and 13 percent mild level of anemia). More female children than male children were found to be severe anemic. The situation in Rajpur block was found to be grimmer where almost every child (99 percent) was found to be anemic with 7 percent severe, 83 percent moderate and about 9 percent...
were having mild anemia. In this block also female children were more severe anemic than male children.
**Vitamin-A deficiency**
As per the WHO definition, a child is classified as severe vitamin A deficient if he/she has serum retinol level less than 9.9 and mild vitamin A deficient if the serum retinol level is between 10.0-19.9. Thirty-seven percent children in Maitha block were vitamin A deficient while 57 percent were vitamin A deficient in Rajpur block.

**Worm load**
Presence of worm load through laboratory tests and prevalence of clinical signs in the study area showed that about 69 percent children in Maitha had such against only 20 percent Rajpur block. More male children than female had presence of
worm load particularly in Rajpur block.

Clinical Signs of Malnutrition
In both the blocks Kwashiorkor (hair sign) and Bitot-Spot (Conj. Xerosis) among children was quite high (One-fifth to one-sixth children in Rajpur and Maitha) reported to have such sign). Corneal Opacity and Corneal Xerosis among children was not found in either of the two blocks. Marasmus was also rare in these two blocks.

Nutritional Status (%)
Pre School Children (1-5 Years)
Gomez Classification (NCHS standard)

Maitha Block  Rajpur Block

<table>
<thead>
<tr>
<th>Gomez Classification</th>
<th>Maitha Block</th>
<th>Rajpur Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe &lt;60</td>
<td>18.5</td>
<td>28.7</td>
</tr>
<tr>
<td>Moderate 60-75</td>
<td>12.7</td>
<td>12.5</td>
</tr>
<tr>
<td>Mild 75-90</td>
<td>24.5</td>
<td>20.2</td>
</tr>
<tr>
<td>Normal &gt;90</td>
<td>44.3</td>
<td>38.6</td>
</tr>
</tbody>
</table>

Legend: Severe <60, Moderate 60-75, Mild 75-90, Normal >90
Nutritional Status of Pre-School Children
The severe and moderate grade of malnutrition (body weight less than 75 percent of standard) which constituted the high risk-group from health point of view was 51% in Rajpur block and 57% in Maitha block and was 48% at the district level (NIN/IASDS). The percentage of severely malnourished children is quite high at block level as compared to the district level. The percentage of children with moderate grade of malnutrition was nearly same at block and district levels.

2. DEVELOPMENT OF DEMOGRAPHIC DATABASE FOR MICRO LEVEL (DISTRICT) PLANNING IN INDIA: EXPLORATION OF ALTERNATIVE DATA SOURCES

Introduction

In view of decentralization of administrative authority and planning process, requirement of appropriate database at the micro-level makes it imperative to search for alternative data sources. The project compiled a list of indicators at district level from various sources, for the benefit of researchers, policy makers and planners. Relevant datasets at the district level and below are therefore essential for the smooth implementation of the development activities through the Panchayati Raj system in India. The report consists of a database on social and gender statistics at the district level based on latest information available at district level and compiled from 2001 Census of India, Rapid household survey (RHS/RCH), 1998-99 and published reports of CMIE, 2000. Based on ten indicators, a composite index referred as social health development index (SDHI) has been developed. Four of these indicators are from Census, 2001 while the rest are from RCH rapid household survey. In addition, infrastructure development index, computed by Central Monitoring Indian Economy (CMIE) has also been included in the report. The
Objectives

The objectives of the project were:

I. Compile the available database at district level from various sources conducted by different agencies.

II. Estimate different components of population growth, viz. population, fertility and mortality using indirect techniques and different database such as Census, National Sample Surveys and Rapid Household Surveys under Reproductive and Child Health Program.

Methodology

The indicators that are available at district level in Census, 2001 and RCH rapid household survey have been compiled for India, States and Union Territories. Some indicators have to be estimated indirectly, such as infant and child mortality rate and crude birth rate. For estimation of crude birth rate, reverse survival method would be used, while for estimating infant mortality rate, children ever born (CEB) and children surviving (CS) data from RCH- RHS to be used.

1. The crude birth rate for districts of India was estimated using the reverse survival method. The method is an indirect method of providing the estimates of birth rate.

The method is defined as

$BR_{1996-2001} = \frac{P_{0-6}}{SR_{0-6}} \times \frac{1000}{L_0 + \frac{1}{700000}}$

Where, $BR$ is the average birth rate in last six years.

$P_{0-6}$ is the proportion of population in age group 0-6

$SR_{0-6}$ is the survival ratio of 0-6

population = $L_0 + \frac{1}{700000}$
Where $L_0$ is the total person years lived at age 0, $L_{1-4}$ is at age 1 to 5 and $L_{5-9}$

Two-basic information is required for above exercise, first the population in a particular age group, say 0-6, which is available in census. These populations are survivals of births during last six years.

2. The second is the survival ratio to get the total number of births in last six years. The survival ratio will be derived indirectly using the data of Children ever born and the Children surviving during survey period to married women. The MORTPACK (A statistical and demographic package for providing the above estimates) will be used for above purpose.

The level of Life expectancy is used to arrive at $L_0$, $L_{1-4}$ and $L_{5-9}$ values using the South Asian Pattern of UN Model Life table. The survival ratio for age group 0-6 is multiplied with $P_{0-6}$ to get the birth rate in last six years. The average birth rate will be obtained by dividing the same with 6. The result of MORTPACK also provides the estimates of Infant Mortality Rate.

**Computation of SHDI**

The indexing of districts using a set of variables has multiple uses. It helps in assessing current level of development, monitor the trends and identify target areas and groups requiring special attention not only in the country but in each state as well. The composite index based on ten indicators was computed after standardizing the variables and by fixing the upper and lower limit. The detailed methodology for each variable is given below:
Accordingly three sets of indices have been developed
Index 1: Include all 10 variables (Social Health Development Index).
Index 2: Include only 4 variables of census (Social Development Index)
Index 3: Include only 6 variables of RCH (Reproductive and Child Health index)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Upper limit</th>
<th>Lower limit</th>
<th>Difference in upper and lower limit</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>Female literacy</td>
<td>96.06</td>
<td>18.49</td>
<td>77.57</td>
<td>100*(V-8.47)/77.57</td>
</tr>
<tr>
<td>V2</td>
<td>Gender disparity in literacy</td>
<td>109.94</td>
<td>39.49</td>
<td>70.45</td>
<td>100*(V-39.49)/70.45</td>
</tr>
<tr>
<td>V3</td>
<td>Sex ratio of 0-6</td>
<td>1036</td>
<td>754</td>
<td>282</td>
<td>100*(V-754)/282</td>
</tr>
<tr>
<td>V4</td>
<td>Proportion of 0-6 population</td>
<td>23.474</td>
<td>6.155</td>
<td>17.32</td>
<td>100*(23.47-V)/17.32</td>
</tr>
<tr>
<td>V5</td>
<td>Percentage married below 18 years</td>
<td>83.3</td>
<td>0</td>
<td>83.8</td>
<td>100*(83.8-V)/83.8</td>
</tr>
<tr>
<td>V6</td>
<td>Birth order 3 and above</td>
<td>73.3</td>
<td>1.9</td>
<td>71.8</td>
<td>100*(73.7-V)/71.8</td>
</tr>
<tr>
<td>V7</td>
<td>Current user of family Planning</td>
<td>83.7</td>
<td>1.7</td>
<td>82.0</td>
<td>100*(V-1.7)/82</td>
</tr>
<tr>
<td>V8</td>
<td>Safe Delivery</td>
<td>100</td>
<td>1.2</td>
<td>98.8</td>
<td>100*(V-1.2)/98.8</td>
</tr>
<tr>
<td>V9</td>
<td>Complete ANC</td>
<td>94.8</td>
<td>0</td>
<td>94.8</td>
<td>100*(V)/94.8</td>
</tr>
<tr>
<td>V10</td>
<td>Complete Immunization</td>
<td>99.5</td>
<td>1.6</td>
<td>97.9</td>
<td>100*(V-1.6)/97.9</td>
</tr>
</tbody>
</table>
Higher the value of composite indices better is the state’s status in terms of development. The indicators can also be grouped into positive and negative indicators. For example coverage of complete immunization is a positive indicator while proportion of births of order three and above is a negative indicator. In computing composite indices we have to make them uniform and therefore there is need of standardization of each indicator.

For positive indicators, index is usually computed as

$$100 \times \frac{(V_i - V_{\text{min}})}{(V_{\text{max}} - V_{\text{min}})}$$

In other words, index value is [Actual Value in the series – Minimum Value in the series] divided by [Maximum Value – Minimum Value]. This simply states that the district with a lowest value will get a score of 0 and district with a highest value will get a score of 100. In case variables affect negatively, index is computed as:

$$100 \times \frac{(V_{\text{max}} - V_i)}{(V_{\text{max}} - V_{\text{min}})}$$

The upper and lower limit is the highest and lowest value observed in the series.

**Mapping Exercise:**

The report has presented the SHDI values in context of space, i.e., districts. This would help the researchers, planners and policy makers to understand the disparity in social health development in India with help of GIS package. The higher and the lower values for the SHDI range from 90 and 17 respectively. For understanding the spatial pattern of development, the indices were divided into three categories < 30 low, 31-60 as moderate and 60 > as high.
Results

The result section consists of two parts. One is compilation and creation of social and gender database at district level. The other is developing composite SDHI and mapping of the districts based on the same. The table below gives the list of the 22 indicators for which data has been compiled at State and district level. Only 10 indicators from the following list were selected for computation of SDHI. There are a number of methodological issues and data quality related to computation of such indices. The idea of including 10 indicators is that these cover broad spectrum of development and for which data is available at the district level. Besides each indicator
has its own importance. Combining the indicators gives an approximation of the overall state of development.

List of Indicators

<table>
<thead>
<tr>
<th></th>
<th>Indicators</th>
<th>Source</th>
<th>Break down</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Literacy, 2001 (Percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Gender disparity in Literacy</td>
<td>Computed from census data State/ District</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Sex Ratio (Over all)</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sex Ratio (0-6)</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sex Ratio of 7+</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>% children aged 0-6</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Decd gwth (91-01)</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Avg annual exponential growth rate</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Density, 01</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Percentage urban</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Main Worker (percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Marginal Worker (percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Worker (Percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Cultivators (percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Agricultural labourers (Percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Household Industries (Percentage) Persons, Male, Female</td>
<td>Census of India State/ District</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>% girls Married below 18 years</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Birth Order 3 and above</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Percent current user</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Complete ANC</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Safe Delivery</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Complete Immunizations</td>
<td>RCH-RHS District</td>
<td></td>
</tr>
</tbody>
</table>

The variables selected for making
female literacy, Gender disparity in literacy, Sex ratio of children aged below 7 years, Proportion of population in the age group 0-6, Girls marrying below 18 years, Proportion of birth order of three and above, Percentage of currently married women using FP methods, Percentage of safe delivery, Percentage of women who had received complete antenatal care and percentage of children under age 3 who had received complete immunization. In the report mapping of SHDI was done for 14 major states. In this document, results of one state have been presented. Mapping of SHDI for the State of Bihar is presented below. Out of 36 districts of Bihar, 18 districts belong to low SHDI, 17 districts are moderate SDHI and only one district has high SDHI. Most of the low SHDI districts are located at the northern part of the State, bordering Nepal. Moderate districts are located in the south. As expected Patna district has the highest SDHI value. Comparing the SHDI with CMIE index shows that most of the districts with higher economic development does not really goes with social and health development. Thus, social and cultural status of the population determines overall health of the State.

Map of Bihar

Values displayed on map are CMIE values
3. Promoting family planning and Prevention and Control of RTI/STI & HIV/AIDS under the CHAYAN Project

Introduction

The study was baseline for the CHAYAN project, which was an intervention project, formulated to provide synergy to CARE India’s ongoing project on ‘Integrated Nutrition and Health program’ (INHP). The CHAYAN project aims to complement INHP and promote birth spacing in family planning programme, prevention and control of RTI/STI and HIV/AIDS. The project is to be implemented across 45 districts and 21 cities from five states of India, i.e., Chattisgarh, Jharkhand, Rajasthan, Uttar Pradesh and Delhi. The aim of this report is provide quantitative benchmark for the existing figures on the indicators defined for measuring the progress of the project.

Objectives

The specific objectives of the quantitative survey are - examine the birth preparedness and newborn care; examine knowledge, attitude and practices related to family planning among rural and urban couples; understand the level of awareness and knowledge about RTI/STI and HIV/AIDS among women and men in the reproductive age group in rural and urban areas. In addition, the study aims to understand behaviour and practices related to adolescent reproductive health, sexuality, RTI/STI and HIV/AIDS in age group 15-24 and examine the level of knowledge, attitude and skills of service providers.

Strategy used for Baseline:

Technical Advisory Group (TAG)
(Monitor overall quality of study - study design, tools, TOTs, & quality of report.)

Institute of Research in Medical Statistics (IRMS)
Monitor fieldwork, selected sampling units and technical support to field agencies
Field Agencies and Field coordinators selected

Methods
The study design was quasi-experimental without control. The operational area of INHP was the universe for the baseline study. Separate sample size was required for demonstration sites in rural areas, other Aganwadi centres in rural areas and AWCs in urban areas. The contraceptive prevalence rate (CPR) for modern spacing methods (condom, pills, IUCD and injectables) was taken for calculating the sample size of 700 index women from urban AWC, rural demonstration sites and design effect of 1.5 was applied for calculating the minimum sample size in rural non-demonstration areas. For birth preparedness and newborn index women with living child of up to 2 years of age were interviewed. All youths (15-24 years age) residing in all the households identified in the urban AWCs were interviewed. Aganwadi workers and Auxiliary Nurse-midwife were interviewed from selected AWCs. Multi-stage random sampling design was adopted for data collection. The tools were pre-tested in Delhi slums and finalised and translated into Hindi and local languages.

Results
A. Index women
The mean age at marriage was lowest in Rajasthan (14 years), while for UP it was 16 years and 17 years in Chhattisgarh. However, effective marriage referred as ‘gauna’ took place one year to two years after marriage. More than 50% of the women were illiterate and majority engaged in domestic work. The most viewed media was television in UP (40%), Chhattisgarh and Rajasthan (36%) followed by radio. The outreach health service was poor.

Contraception
Almost all index women were aware of modern family planning methods compared to traditional methods and this
was especially more for adolescent index women. Very few women knew fertile period correctly. Majority of women first used FP method after age 30 years and after the birth of 4 children. Majority of current users were sterilised. Oral pills and Condoms in urban areas of Rajasthan and Chhattisgarh were bought from chemist shop. While, Aganwadi workers/ANMs are major source of these contraceptives in rural areas.

Contraceptive counselling
More than two-fifth of current users in Rajasthan, one-third in Chhattisgarh and half in UP did not receive any counselling before accepting permanent or spacing methods. None of the users had any problems using Oral Pills, IUD or condom. Intension to use FP method in future was reported among very few non-users in UP and Rajasthan (22 % to 31 %). While, majority of non-users in Chhattisgarh (82 %) intend to use FP especially female sterilisation.

RH problems including IV/AIDS
A little less than half of the index women were unaware of RH problems. The rest were mainly aware of genital discharge (44 % in Rajasthan; 27 % in UP; 32% in Chhattisgarh), lower abdominal pain (20 % in Rajasthan; 16 % in UP; 24 % in Chhattisgarh) and burning/pain during urination (12-13 % in Rajasthan and UP; 20 % in Chhattisgarh). Television was main medium of their information on RH problems. Friends, personnel experience and relatives were other source of information. Very few index women suffered from RH problems during six months prior to survey and in majority of cases no treatment was sought.

HIV/AIDS Awareness
One-third of index women in Rajasthan and Chhattisgarh and little less than two-fifth in UP had heard about HIV/AIDS and the information was mainly gathered from television and individuals such as friends and relatives were other mediums. More than Seventy percent of the index women knew about different
mode of HIV/AIDS transmission, such as transfusion of infected blood, use of infected needles and having more than one sexual partner. However, fewer women were aware of HIV transmission through other modes such as heterosexual, homosexual or mother to child through breast-feeding. Among the four states, knowledge regarding modes of HIV transmission was much poorer in Chhattisgarh compared to UP and Rajasthan. Myths and misconception surrounding HIV transmission was low, through some had misconception of transmission through use of common toilets sharing meals, sharing clothes and kissing and hugging. More than three-fifth of women knew that condom use could prevent HIV/AIDS transmission. The other ways of prevention known to them was having only one sex partner.

Care of Recently delivered women

More than half RDW in UP and Rajasthan continued with their daily chores as before during the pregnancy. A little less than half in UP did not receive any family support in terms of household workload, while in Chhattisgarh, Jharkhand, and Rajasthan almost all received family support for reducing workload.

Birth preparedness and Utilisation of antenatal care

Utilization of antenatal care services was inadequate as two-fifth in UP and Rajasthan, and one-fourth in Chhattisgarh did not go for any antenatal check-ups. However, few RDW in (19 percent to 32 percent) received more than three ANC check-ups. As expected, majority of RDW had not taken iron and folic acid tablets that is necessary requirement for pregnant mothers who are largely malnourished. However, majority of women had received two doses of tetanus toxide (64 % to 73 percent).

Birth preparedness regarding disposable delivery kit (DDK) was low. Awareness regarding complication during pregnancy was unknown to more than two-fifth of women. Problems
related to delivery were unknown to large section of the women (40 percent to 60 percent). Most common practice followed during delivery was use of new blade to cut the umbilical cord and washing hand with soap. Very few women reported use of disposable delivery kit. Most of the deliveries (74 to 86 %) took place at home. Interestingly, majority of institutional deliveries in UP took place in private hospitals/clinics, while in Chhattisgarh and Rajasthan it was in government run health institutions.

Newborn care

As almost all deliveries took at home, babies were not weighted after delivery and this was especially more in rural areas than in urban areas. Giving bath to newborn babies was common feature in UP, Jharkhand and Chhattisgarh, while wrapping the baby with cloth was most common practice in Rajasthan. Feeding sugar water to their baby immediately after birth was common practice in UP, Rajasthan and Jharkhand. Applying mustard oil (37%) and ointment (15%) on umbilical cord after cutting was common practice in UP and Jharkhand, but not so in Chhattisgarh. As for Rajasthan pure ghee was most commonly applied (33 percent) to umbilical cord followed by powder/lotion/ointment (16 percent) and 22 percent did not apply anything.

Very few RDW (13 % in Chhattisgarh, 15 percent in UP and 18 percent in Rajasthan) reported post-natal care that includes visit by health personnel or change agents or mahila mandal members.

B. Youth

Majority of sample females (50-60 %) were below 17 years, while among sample males only 38 % to 46 % were below 17 years. About 40 % to 50% of adolescents were not attending school. Male youth (Around 40-46%) was working for remuneration, while about 8 to 14 percent of females were working. Nearly 75 percent of the both; males and females spend their leisure
time watching television. More males compared to females help in household activities.

Among female youth hygiene was mainly limited to personal grooming including regular bathing, use of soap, brushing teeth, and washing hands before a meal. Mention of habits reflecting a more evolved sense of hygiene such as washing hands after defecation and cleaning of private parts was limited to a small proportion in UP. Though this proportion was higher in Rajasthan.

The most commonly mentioned symptoms of growing up among girls was reported as increase in the size of breast and to some extent, hair in private parts and growth of height. Where as females understanding about the physical changes among males during growing up were mainly related to change in voice and hair in private parts and broadening of shoulders. While, male youth mentioned symptoms of growing up as hair in private parts, change in voice, broadening of shoulders and increase in height, increase in height, broadening of shoulders and increase in the size of the male organ.

Almost half (45-47 percent) of the female youth had started menstruating between 14 to 15 years of age, another 30 – 44 per cent between the ages of 12 to 13 years. Responses to the question on how they had reacted on menarche varied from confusion, dirty, embarrassed to fear. As overwhelming majority of the female youth (66 % to 80 per cent) were not aware of about menstruation before the onset of menarche explains reactions almost bordering bewilderment.

During menstruation restriction on religious activities and entry into kitchen and cooking were followed. Friends were major source of their information on menstruation. Problems during menstruation were experienced by 45 percent to 60 of female youth and as these problems were considered normal, majority did not to go for any treatment for these problems. Mother was usually consulted.
by female youth during their menstrual problem. A quarter of the youth chose not to discuss their problems with anyone.

Only a quarter of the youth were aware of reproductive tract infections (RTIs). Friends and relatives emerged as the main source of information for those who were aware of RTIs/STIs.

The youth were also asked about when a girl became physically mature to give birth. The majority of the responses (66.6 per cent) given were in the age group of 17 to 21 years. However, when asked about who is responsible if the couple could not have a male child, the majority (with more of the female youths) reported believing that God is responsible for the inability of a couple to give birth to a male child. Complications associated with early pregnancy revealed a fairly good knowledge among the youth. More than half of the youth were aware that pregnancy could be prevented if so desired. When asked about safe period, only about 8 per cent reported being aware.

Male youth were slightly more aware of HIV/AIDS compared to female youth, especially in Rajasthan. Television was cited as the main source of information followed by radio. The important modes of transmission were through sexual relations with an infected person, using infected needles, having multiple sexual partners, and infected blood transfusion. Despite high levels of awareness certain misconceptions about modes of transmission were also present among a considerable section of respondents, such as Mosquito bite, use of common toilet, and sharing meals with an infected person. Majority of youth affirmed that HIV/AIDS could be avoided mainly by use of condom followed by use of clean needles. Youth had positive attitude towards patients with HIV, especially females.
4. Estimates of Maternal Mortality Ratio in India and Its States - A Pilot Study

Background
Though India has made appreciable progress in improving its overall health status, the pace of decline in the maternal mortality ratio (MMR) has been quite slow. The health problems of mothers and newborns arise from the synergistic effects of malnutrition, poor, unhygienic living conditions, and infections and unregulated fertility. Bad communication of transport, illiteracy and ineffective public health services lead to inadequate obstetric care. The complications of pregnancies and the births have been the leading causes of deaths and disability in women of reproductive age. However, the levels and causes of maternal deaths vary across states. So, it is desirable to have the estimates of MMR with causes at state level for effective monitoring of the progress of Maternal and Child Care programmes. It is with this view, the Department of Family Welfare, Ministry of Health & Family Welfare, Govt. of India, commissioned a study on the subject at the Institute.

Objectives
The study aimed to develop an appropriate methodology to estimate maternal mortality ratio at the national and state level and also ascertain the medical and non-medical causes of maternal deaths in the population.

Methodology
The study proposed to evolve house-to-house survey vs. snowball sampling to collect information on live birth and maternal death. It also aimed to develop and validate the survey instruments and examine the feasibility of the proposed methodology.

Sample Size
Assuming MMR of 400 per hundred thousand live births, a
sample of 3.8 lakhs live births was calculated to provide an estimate of MMR at all India level with 95% confidence level and less than 5% margin of error. Assuming a birth rate of 28.5 per thousand population, this would amount to covering about 1.30 crore population.

**Survey Instruments**

Five types of survey instruments were developed and used to collect the information. They were PHC-Schedule, Sub-centre Schedule, House-to-House Survey Schedule, Snowballing and schedule for Verbal Autopsy. Having identified maternal deaths verbal autopsy was conducted to collect the detail information on maternal death.

**Coverage of Pilot Study**

For conducting the pilot study, 8 rural PHCs and 3 urban above mentioned five states were covered. The states were selected representing high MMR, Medium and Low MMR states one district from each of these states were covered and from the selected districts two PHCs from Rural area one UFS for Urban area were taken as presented in the following table.

**Findings of the Pilot Study**

- The estimates of MMR and

<table>
<thead>
<tr>
<th>State</th>
<th>District</th>
<th>PHCs (Rural)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttar Pradesh</td>
<td>Mathura Kanpur</td>
<td>Beri, Koshi Khurd Loharan, Bhatti, Raja Purva...</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>Dehradun</td>
<td>Raipur, Sahiya</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Nasik</td>
<td>Girnare, Warkheda</td>
</tr>
<tr>
<td>Karnataka</td>
<td>M andya</td>
<td>Kerakodu, Valagarahalli &amp; M andya town (urban)</td>
</tr>
<tr>
<td>Delhi (Slum)</td>
<td>Giri Nagar (Health Centre)</td>
<td>Nehru Place &amp; Okhla Ph-I</td>
</tr>
</tbody>
</table>
birth rate for the states covered in pilot survey, though based on small samples, provide estimates comparable with these from other sources.

- The snowballing technique captures maternal deaths, which were missed in house-to-house survey. Such omissions were over 10 percent.
- The majority of maternal deaths occurred to young women, very low (first or second birth) and high parity (births of order 4 and above) women. This has programmatic implications /lessons
  - More than three-fourth of the maternal death occurred to the mothers below the age 30 years.
  - More than 40% the deaths were at parity, one & two which may be due to early marriage age
  - The main cause of maternal death was PPH (17%) followed by post partum septicemia (13%) and anemia (12%).
  - About one-quarter of maternal deaths took place during antenatal period, 70 percent during post-natal period and 7 percent during delivery.
  - 45 percent of the maternal deaths were among those whose delivery was conducted by untrained dais.
  - More than 60 percent of the maternal deaths occurred SC, ST and OBC households.

![Birth Rate Graph](image)
**Annual Report  2003-2004**

**PLACE OF DELIVERY**  
(Fig. 6)

- **Home**: 47.3%
- **Institution**: 23.6%
- **Not Delivered**: 29.0%

**Maternal Deaths**  
Different Stage Of Pregnancy

- **Post Natal**: 68%
- **Ante Natal**: 24%
- **During Delivery**: 8%

**Delivery Conducted by**

- **ANM/ Doctors**: 41%
- **Trained Dai**: 8%
- **Untrained Dai**: 51%
ONGOING STUDIES

1. Community Based Study on Prevalence of Sexually Transmitted Disease in Urban and Rural Areas of India

National AIDS Control Organisation (NACO) carried out community level survey to estimate the STD prevalence in India in 2001. This was a national sample survey designed to provide estimate of STD prevalence among the male and female population in 28 States of India. The Institute for Research in Medical Statistics was involved in designing the study as well as analyzing the results. The survey was designed to interview adult males and females in the age group 15-49 years from systematically selected households of Primary Sampling Units (PSUs). A PSU was defined to be either a village, a group of contiguous small villages or a part of a large village in case of rural areas. A PSU in an urban area corresponds to a block of structures as defined by the Census and called Census Enumeration Block (CEB).

Survey Design and Sample Size

Assuming that the prevalence of Sexually Transmitted Infection in India to be 5 percent and allowing for 5% error and 10% relative precision, the sample size for a region was determined to be 3000. For the purpose of data collection the country was divided into five regions, South, West, Central, North and East. Allowing for some non-response and variability STI prevalence by age (a design effect of 2), the national sample size was determined to be 15000 adult persons. Assuming that the average number of adults per household to be 2.5, total number of households to be selected is 6000 from five regions. That is, 1200 households from each region, 240 from urban area and the rest 960 from rural areas.

In each region, two stage sampling procedure was carried out for rural areas, selection of PSU’s (the villages) with probability proportional to sample size (PPS) followed by
systematic random selection of households within the PSU. In urban areas a three stage sampling procedure was followed. The first stage was to select ward/towns with PPS sampling procedure. From each selected ward, one CEB/segment was selected randomly and then the required number of households from the CEB by systematic random sampling.

Data

Altogether 168 PSUs/clusters were selected from five regions, 34 each from North, East and South and 33 each from West and Central. Of these data have been received from 157 clusters (North – 29, West – 32, Central – 30, East – 33, South – 33). Total number of persons interviewed from all these clusters was 15382 (7314 males and 8068 females). Later the five zones originally formed were further clubbed to four geographic regions North, East, West and South consisting of 48, 38, 32 and 33 clusters respectively. Number of respondents from each zone was 4480 (2115 males, 2365 females) from North, 3784 (1736 males, 2048 females) from East, 3897 (1902 males, 1995 females) from West and 3221 (1561 males, 1660 females) from South.

Since the results from this study was the basis for validating assumptions for estimating HIV burden in the country, the analysis was carried out as per the epidemic stage classification for HIV. That is six States, Andhra Pradesh, Karnataka, Maharashtra, Manipur, Nagaland and Tamil Nadu forms the high epidemic zone. Three States, Goa, Gujarat and Pondicherry form the moderate epidemic zone and the rest of the States/UTs falls in the low epidemic zone. The sample size for high epidemic zone was 4955 cases from 47 clusters. The moderate zone had 896 cases from 8 clusters and the low epidemic zone had 9530 cases with 102 clusters.

Perceived prevalence of STD (History)

Four to seven percent of the males and 6 to 19 percent of females in three epidemic zones said they had suffered from Sexually Transmitted Infections (STI) in the past. In high epidemic
zone, 4.1% males and 5.7% females responded positively for past history of STI. 4.1% of the males and 18.6% of the females from moderate zone suffered from STI in the past. In low epidemic zone 7.2% of the males and 12.7% of females suffered from STI in the past. Urethral discharge in males (53-70%) and cervical discharge in females (78-95%) was the highest reported STD symptom. Itching and ulcer comes in the next order.
Current complaints and clinical findings
Comparison was made to study the correlation between the symptoms of STI as reported by the respondents and the actual findings by clinical examination. In case of genital ulcer only 61% of the cases reported was found clinically positive. 52% of urethral discharge and 79% of vaginal discharge reported was clinically agreed.

STD Prevalence by Diagnosis
STI prevalence diagnosed in low epidemic zone was 18%, in moderate zone 17% and 19% in high epidemic zone. The above prevalence included candidiasis and bacterial vaginosis. However, the experts suggested these cases may be removed from STI. Thus the prevalence came down to 13% in all the three zones when candidiasis was excluded. Actual prevalence when both candidiasis and bacterial vaginosis excluded came down to 7% in low, 9% in moderate 8% in high epidemic zones.
STI prevalence when analysed by place of residence we have 6.0% in urban and 7% in rural areas of high epidemic zone, and 6.0% in urban and 5% in rural areas of low-moderate epidemic zone.

2. Analytical Study of estimation of HIV burden in India using HIV Sentinel Surveillance Data

Introduction
The strong belief of Indian experts and officials that India will be spared from the HIV/AIDS pandemic because of the indigenous nature of its population was shattered when laboratory tests confirmed HIV positivity in 10 out of 102 CSW’s in Chennai in 1986. Shortly they started realizing the fact that the epidemic milieu necessary for heterosexual spread of HIV has existed in India for many years. Moreover, the conservative nature of Indians, that was not ready to accept public discussion of sexual behavior, where sex education remained taboo and illiteracy prevailed as high as 40% and even higher among women, made the
country endemic for silent spread of the disease rapidly. Unscreened blood transfusion and sharing of needles among drug users and in clinics/hospitals on those days had been other potential source of spreading the HIV infection in India.

Within a month of detecting HIV infection among CSW's more HIV infections were detected from different places in Chennai. Following this, Indian Council of Medical Research (ICMR) rapidly established a task force and 30 screening centers in 1986 (first HIV surveillance activity in India). HIV infection was soon detected among CSW's in Pune and Mumbai. By 1994 HIV/AIDS infection was reported in 30 out of 32 States/UT's in India and their routes of transmission was also known.

Until 1992, the surveillance was based on the data generated from 62 surveillance centres and 9 referral centres located in different parts of the country. Following the constitution of the National AIDS Control Organization (NACO) under the Ministry of Health & Family Welfare (MOHFW), the concept of Sentinel Surveillance was adopted in 1993-94 with the objective to monitor trends in specific high-risk groups (STD patients) and low risk groups (Ante Natal Clinic attendees) from designated sites. In 1998 the system was further strengthened and modified to cover nationwide annual sentinel surveillance for a period of 3 months every year. The Annual Sentinel Surveillance for HIV infection has been regularly held during the month of August – October every year. It began with 164 sentinel sites, which increased to 384 in 2002.

There were 3.97 million HIV infected persons in India based on the 2001 sentinel surveillance round and majority of them were from six high prevalent states namely, Andhra Pradesh, Karnataka, Maharashtra, Manipur, Nagaland and Tamil Nadu. However, this was said to be only a "tip of the iceberg" as the persons with HIV infection could be "apparently healthy" and could not be identified easily till they develop AIDS. Thus, surveillance programme is being
conducted to provide essential information on the dynamics of the HIV epidemic, monitor trends and foresee the type of inputs needed to strengthen the control activities in different geographical areas and population groups. In order to strengthen the epidemiological inference of the data collected from sentinel surveillance, the NACO invited the Indian Council of Medical Research (ICMR) to create accessible database, appraise the quality of data and examine the pattern of HIV positive in respect of various epidemiological variables. The Director General, ICMR has assigned the task to the Institute for Research in Medical Statistics (IRMS), one of the Institutes of ICMR catering the statistical needs of health research under the Council and the Ministry of Health and Family Welfare, Government of India. Prior to 2002, the National Institute of Health & Family Welfare (NIHFW) was the only organization that was involved in the analysis of sentinel surveillance data.

The specific objectives of the project was to
- Provide critical appraisal of data collected under the sentinel surveillance system in India
- Examine the methodology adopted for the estimation of HIV sero-positives and
- Provide epidemiological analysis of the pattern of sero prevalence in high and low risk groups in various epidemiological zones of the country.

Sentinel Surveillance data 2002 – an appraisal

The number of designated sentinel surveillance sites in 2002 was 384 that includes 166 STD, 200 ANC, 13 IVDU, 2 CSW, and 3 MSM spread over 28 States and 7 union territories (UTs) in India. The collection of data under the sentinel surveillance is from a broad cross-section of the population belonging to the high risk and the low risk groups by an anonymous unlinked sampling procedure during August-October every year. It is conducted based on the epidemiological principles
to provide quality data following a scientifically sound methodology in identified population groups and sites for eliciting trends and estimating the number and characteristics of the HIV positives for control and advocacy in the country. The period of activities is often extended until mid November in view of the establishment/addition of some new sites. Procedurally, the data is collected from these sites through a questionnaire and unanimous blood test report. The questionnaires are sent to the coordinating organization (NIHFW, New Delhi) for their entry and management and the data from tally sheets are used to prepare State-specific report and then sent out to NACO for use. For the 2002 round the responsibility of data entry and management from tally-sheets was accorded to IRMS.

**Appraisal on maintaining sentinel site list**

It may be mentioned that there are some additional sites in a few States for some specific purposes and thereby the total number of sentinel sites is more than 384. Although we received data from 390 sites, but only 367 (159 STD, 190 ANC, 2 CSW, 13 IVDU and 3 MSM) were from the designated sites to be identified for data analysis.

To get rid of such problem of identification of designated sites in future, it was suggested that permanent codes may be assigned for each designated sites and the details like name of the site and code should be written on each schedule as well as each record in the tally sheets.

*Maintaining Data Quality – an appraisal*

The data entry was undertaken using dBase programme and converted into excel for performing validation check. The range check run on age revealed that around 2% of the cases was recorded out of range values. Since the sentinel surveillance data is being collected for adult population (15-49 age group) with the aim of estimating HIV burden in the same group ages recorded beyond this range is considered out of range values.
While crosschecking linked variables like education, occupation and sex for these out of range cases several discrepancies have been observed. Some examples are:

- Age of persons with education level secondary or higher was recorded < 14.
- Occupation of persons who are below age 14 recorded as driver, housewife etc.
- Occupation of illiterate persons recorded as student
- Occupation of male participants recorded as housewife

Probably these could be data entry errors. Suggestions were provided to rectify such discrepancies at the time of data collection and transferring the data to schedule/tally sheets by cross checking these linked variables.

However, it has been reported that several cases in the age group below 14 and above 49 usually visit STD clinics. If so, there is a need to assess the size of such population attending STD clinics and the HIV prevalence among them. It was found that the HIV prevalence in this age group attending STD clinic is 4.3%, IVDU 4% and MSM 12.5%.

**An appraisal on Methodology**

**HIV Prevalence:** As the first step, we summarize the data in the form of number and percentage of HIV positives in each site with 90% confidence interval.

The 90% confidence interval for individual sites prevalence (percent tested positive) has been calculated as follows:

\[ p \pm 1.645 \sqrt{\frac{p(1-p)}{n}}, \]

Where \( n \) = Sample size (250 for STD sites and 400 for ANC sites)

State-wise prevalence for each risk-group has been estimated using mean and median of the proportion/percentage of sero-positives of such sites and compared. Notably the median is calculated only if the information is available for at least four sites. Though the targeted sample size for STD and ANC sites were set as 250 and 400 respectively, many sites could not enroll this many
cases. However, only those sites with sample size more than 200 in case of STD and more than 300 in case of ANC are considered for estimating prevalence to avoid fluctuation on account of small sample size. There are 41 STD and 13 ANC sites with insufficient sample size in 23 States and UTs.

Confidence Interval of State level Prevalence

Confidence interval for median prevalence of a state has been calculated as the confidence interval for the prevalence for the median site in previous years, which is not the correct procedure. IRMS has derived the correct formula for confidence interval for median following Kendall and Stuart (1977) as shown below.

The mean or median of \( k \) sites for a risk group in a State is taken as the HIV prevalence in the State. The 90% confidence interval of any estimate is given by:

\[
\text{Estimate} \pm Z_\alpha \times \text{SE (of the estimator)},
\]

Where, \( Z_\alpha \) is the Normal (Gaussian) ordinate at desired confidence level and equals 1.645 for 90% confidence level.

If the estimate is mean, it is derived as:

\[
\bar{p} = \frac{n_1p_1 + n_2p_2 + \cdots + n_kp_k}{n_1 + n_2 + \cdots + n_k}
\]

If \( n_1 = n_2 = \cdots = n_k = n \)

\[
\bar{p} = \frac{p_1 + p_2 + \cdots + p_k}{k}
\]

The corresponding expression for variance and thereby standard error is given by

\[
\text{Var}(\bar{p}) = \frac{\text{Var}(n_1p_1) + \text{Var}(n_2p_2) + \cdots + \text{Var}(n_kp_k)}{(n_1 + n_2 + \cdots + n_k)^2}
\]

\[
= \frac{n_1p_1q_1 + n_2p_2q_2 + \cdots + n_kp_kq_k}{(n_1 + n_2 + \cdots + n_k)^2}
\]
If the estimate is the median of \( k \) sample proportions, the standard error of median as given in Kendall and Stuart (1977) is:

\[
SE(\text{Median}) = 1.2533 \times \frac{\sigma}{\sqrt{n}}
\]

Where, \( \sigma / \sqrt{n} \) is the standard error of mean.

Hence

\[
SE(p_{\text{Med}}) = 1.2533 \times SE(\bar{p})
\]
\[
= 1.2533 \times (1) \text{ if } n's \text{ are not equal}
\]
\[
= 1.2533 \times (2) \text{ if } n's \text{ are equal}
\]

Here 1.2533 is the adjustment for large variation involved when median is considered as a central measure.

**Assumptions for Estimation of HIV Positives**

HIV sentinel surveillance data is collected mainly from two major populations, STD patients representing high-risk behaviour males and ANC mothers representing low risk behaviour females. Since sites/clinics selected are from urban area, the HIV prevalence observed is assumed to be for respective urban population. Therefore, certain conversion factors are to be applied to estimate the HIV burden in remaining sections of population like rural high-risk behavior males and females, urban high-risk behaviour females, rural low risk behaviour males and females and urban low risk behaviour males. Corresponding conversion factors are
ratio of HIV infections between urban/rural areas and male/female populations. Further, the total population in States has to be divided into subgroups of risk behaviour, i.e. high risk/low risk on the basis of STD prevalence. As there was no evidence-based information on these factors, certain consensual assumptions had been made in consultation with experts from the fields of epidemiology and biostatistics. While analyzing the HIV sentinel surveillance data for the year 2002, it was however observed these assumptions have been changed over the period. The observed assumptions on urban/rural and male/female ratios as against the existing ones are shown in Table 1 below. Therefore need for validating the assumptions was felt.

Table 1: Conversion factors for estimation of HIV Prevalence by Epidemic Level

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Assumptions</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>STD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F:M</td>
<td>1: 1.2</td>
<td>1: 2.0</td>
</tr>
<tr>
<td>R:U</td>
<td>1: 3.0</td>
<td>1: 3.0</td>
</tr>
<tr>
<td><strong>ANC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R:U</td>
<td>1: 8.0</td>
<td>1: 8.0</td>
</tr>
</tbody>
</table>

Temporal Variations in HIV Prevalence

As the trend analysis may not be very appropriate with limited number of data points over time, the significant increase/decrease in HIV prevalence has been examined on the basis of confidence intervals. Accordingly, if the confidence interval of mean prevalence for two consecutive years is overlapping, we consider it as no significant change in prevalence during the past two-year period. On the other hand, if the confidence interval of the mean HIV prevalence of the consistent sites of a State for a year is away from that of observed in the previous year and if it is towards the lower end, we consider that the HIV prevalence in the current
year has decreased significantly. Similarly, if the confidence interval of the mean prevalence of the consistent sites of a State for a particular year is away from that of the previous year and if it is towards the upper end the State is considered to have significant increase in HIV prevalence during the current year. In order to illustrate the above pattern, we consider the trend inference using confidence intervals of mean prevalence from 1998 to 2002 for the ANC sites in any of the States as presented in the chart 1 below, where the confidence intervals for each year is represented by line segments.

Chart 1 Sample Charts to interpret significant trends

| Confidence intervals of median prevalence 1998 – 2002 |
|-----------------|--------|--------|--------|--------|--------|
| CI   | 1998 | 1999 | 2000 | 2001 | 2002 |
| LL   | 2.2  | 2.0  | 1.9  | 1.5  | 1.8  |
| UL   | 2.5  | 2.3  | 2.1  | 1.7  | 2.0  |

We see that the line segments for first three-years are overlapping and hence the prevalence during these years is stable. Whereas, the line segment for 2001 is away from that of 2000 and it is towards the lower end. Thus, there is a significant decrease during 2000 – 2001. In 2002 it is outside the range for 2001 and is towards the higher end indicating significant increase during 2001 –2002.
Temporal variation in High Prevalence States: A State is said to be high prevalent if median HIV prevalence in ANC sites is greater than 1%. Six States, Andhra Pradesh, Karnataka, Maharashtra, Manipur, Nagaland and Tamil Nadu have been declared high prevalent in 1998. The temporal variation of HIV prevalence in these States for the STD sites during 1998 to 2002 is presented in chart 2 below.

A black line segment in the chart represents ‘no significant change’, a green line segment represents ‘significant decrease’ and a red line segment represents ‘significant increase’ during the corresponding time segment. In case two confidence intervals are coinciding at one of the edges, the line segment is represented in yellow colour. Though there is significant increase in HIV prevalence during initial years, we find that towards 2001 – 2002 the trend is decreasing in Nagaland and Karnataka, increasing in Andhra Pradesh, while it is stable in Maharashtra, Tamil Nadu and Manipur. Among the six states, HIV Prevalence in Andhra Pradesh is the highest and the trend is increasing, though it is statistically significant.
The temporal variation in ANC sites of six high level epidemic states is shown in Charts 3 (a) and 3 (b). Unlike the STD sites, the HIV prevalence in ANC sites for all the six high prevalent States shows increasing trend during 2001-2002. However, the trend is statistically significant only in two States Karnataka and Nagaland. One can, therefore, visualize the spread of the epidemic in the general population, particularly in these high prevalence States. One can also see that either stable or decreasing trend during the initial period took a reverse turn from the year 2000 reaching the same level or still higher level compared to 1998, the first year of Sentinel Surveillance. 

Another important observation from these charts is that the mean HIV prevalence of ANC sites in Tamil Nadu and Nagaland has never gone below the initial level during five years.

The epidemic level of a State is declared moderate if the HIV prevalence in ANC sites is below 1% and that in STD sites is above 5%. The three States falling in this category are Goa, Gujarat and Pondicherry. Charts 4 and 5 showing the temporal variations in high and low risk populations of moderate prevalence States can be interpreted in the same manner as explained above. Significantly decreasing trend is observed during the initial period (1998-99) in the high-risk groups of all three moderate prevalent States. In the second segment, the trend is increasing but statistically significant only in Gujarat and Goa. Thereafter no significant changes are seen in any of these three states.
Chart 3 Trends in High Prevalence States – ANC sites

Chart 4 Trends in Moderate Epidemic States – STD sites
Some Correlates of Sero-positives in STD and ANC Sites in High, Medium and Low epidemic zones

The sentinel surveillance also collects information on the age and socioeconomic characteristics of STD and ANC attendees, such as education, occupation, migration status and place of residence. Relative risk associated with these variables on HIV positivity has been studied using logistic regression analysis.

Place of Residence and Sex

The results of logistic regression analysis showed that place of residence has no impact on the HIV infection in high and low epidemic zone. In moderate zone it is 1:1.8 for STD and 1:0.5 for ANC. The odds ratio observed for moderate zone is statistically significant.

The sex differentials obtained in sero prevalence by epidemic level shows that in low and moderate epidemic zones, males are about three times more likely to be HIV positive than females among STD attendees. In high epidemic zone, males are 1.3 times more likely to be HIV positive than the female STD attendees. However, females from STD sites include cases with STD symptoms from OBG clinics.
Correlates of HIV Positives among STD Attendees

Variables that have an impact on sero-positivity among STD attendees of high epidemic zone are age, sex, education and occupation. The age group 20-44 is 3 times (p = 0) more likely to be sero-positive than any other age group. As education level increases, the likelihood of sero-positivity decreases. Among the five occupation groups, drivers/cleaners are at higher risk of HIV infection compared to other occupational groups (unskilled, Business/Industrial workers, service, Unemployed). As observed directly from data, males are 1.3 times more likely than females to be sero positive and it is statistically significant.

In moderate epidemic zone, there is no significant difference in sero prevalence by age. However, migrants are more likely to be sero positive than non-migrants. Males are about two times more likely than females to be sero-positive after controlling for the effect socio-demographic variable.

STD attendees in the age group 20-44 are twice more likely to be sero-positive than any other age group in low epidemic zone. There is an inverse relationship between education and likelihood of HIV infection. The pattern seems to be similar to that observed in high epidemic zone. Notably, there is no significant difference in likelihood of HIV infection by occupation or migration status. As expected, males are two times more likely to be sero-positive than females after controlling for socio-demographic variables.
Correlates of HIV Positives among ANC Attendees

Literacy is the only significantly contributing factor for low risk groups in high epidemic zone. An inverse relationship is observed between education and likelihood of sero prevalence. Occupation of husbands, specifically drivers/cleaners and business/industry workers, shows high risk in low epidemic states. However, the likelihood of HIV risk in moderate epidemic States was not statistically significant for any of the variables.
Comparison of STD Symptoms among STD Males, Women attending STD Clinics and Women Referred to STD Clinics from OBG OPD

During the initial period of sentinel surveillance it was found difficult to complete the required sample size (250) from many of the STD sites. In order to complete the sample size as well as to get equal representation for females, a few cases with STD symptoms from OBG clinics were referred to STD sites during the sentinel surveillance period. In such context it was apprehended that cases with vaginal discharge from OBG clinics also might have been referred to STD sites thereby defeating the surveillance purpose of STD sites data. Therefore a separate analysis has been carried out for STD symptoms in STD clinic attendees and cases referred from OBG clinics.

It is observed that while only 59% of those directly attending STD clinic have cervical discharge 69% of those referred from OBG clinic are with cervical discharge. Further, it is seen that urethral discharge in male STD patients is only 37% whereas cervical discharge in women attending STD clinics is 60%. Both these observed differences were found to be statistically significant. Indicating that vaginal discharge in females might have been recorded as cervical discharge

Chart 6: STD Symptoms in STD Females
(Charts 6 and 8)

Chart 7: STD Symptoms in OBG Cases

Chart 8: STD Symptoms in Males attending STD Clinic

Introduction

India’s National AIDS Control Organization (NACO) updates the estimate of HIV burden in the country every year based on the HIV prevalence derived from the Sentinel Surveillance data for the corresponding year. Until 2002 these estimates were derived using standard methodology by evolving certain assumptions on the basis of consultative discussions and recommendations of a group of experts including eminent epidemiologists and bio-statisticians in the country as well as the representatives from WHO, UNAIDS and UNICEF.

While analyzing the data for sentinel surveillance round 2002 certain changes in these assumptions were observed. The Institute for Research in Medical Statistics (IRMS) has validated these assumptions this year using information available from HIV Sentinel Surveillance (HSS) 2003 as well as Community based Survey to estimate STI prevalence in India. The methodology used for validation is detailed below.

Assumptions used

While estimating HIV burden in the country, following assumptions were evolved until 2002:

A1. The STD prevalence in India varies by place of residence. In the urban area it was assumed to be 10 percent in high epidemic zone, 7 percent in concentrated/moderate epidemic zone and 5 percent in low epidemic zone against 5 percent in the rural area of all epidemic zones.

A2. The male-female sex differentials in sero-prevalence among high-risk group were assumed to be 1.2 males per female in case of high epidemic, 2 males per female in case of concentrated/moderate epidemic and 3 males per female in case of low epidemic.
A3. The urban-rural ratio of sero-prevalence for STD population and general population were respectively assumed as 3 and 8.

A4. In case of zero prevalence for any of the risk group in a particular State we replace it by the average of the sero-prevalence for the same risk group in the low epidemic prevalence States.

Assumptions Related to STD Prevalence

NACO has recently conducted a community-based study to estimate the level of STD in urban and rural areas. The study was designed with the purpose to provide estimate of STD at the national level and the data was collected from the community by selecting certain number of primary sampling units (villages in case of rural area and census enumeration blocks of the selected ward in the urban area). As this was the first community based study at the national level, it was thought prudent to validate the above assumptions with the help of such data.

As the sample size for moderate zone was very small, the STD prevalence in low and moderate epidemic zones have been combined. Efforts have also been made to provide results that consider the appropriate design weight. The observed prevalence of STD in rural areas is found to be in concurrence with the assumption (5 percent). In case of urban area, the STD prevalence is found to be 6 percent in all the epidemic zones vis-à-vis the earlier assumption of 10 percent in high epidemic, 7 percent in concentrated epidemic and 5 percent in low epidemic zones.

Assumptions on male-female differential

Based on the HSS data for the years 2002 and 2003 the male-female ratios for sero-prevalence is found to be same as those assumed i.e., 1.2:1.0, 2.0:1.0 and 3.0:1.0 in high, moderate and low epidemic zones.

Assumptions on urban-rural differential
While estimating HIV burden in the country using HSS data, the urban-rural differential was assumed to be 3:1 (the sero prevalence is 3 times greater in urban area than that in rural area) for the high risk population (STD attendees) and 8:1 (the sero prevalence is 8 times greater in urban area than that in rural area) for low risk population (ANC attendees). In this context it may be mentioned that until 2002 round of HSS, all the sentinel sites (STD and ANC) were in the urban area and the characteristics of rural residents attending these clinics appeared to be similar as of the urban residents at least in respect of the risk of HIV infection. Hence, it was difficult to validate the urban-rural differential assumptions. However, in 2003 round of HSS, 210 rural ANC sites have been added with the purpose of validating these assumptions. As a result, the 2003 round of Sentinel Surveillance included 455 sentinel sites (STD, ANC, IVDU, MSM and CSW) and 210 rural ANC sites. On analysis it is however noted that almost one-third of the attendees of rural ANC sites in high epidemic zone reported to be resident of urban area. Similarly, two-fifth of attendees of urban ANC sites was from rural areas. Hence, neither urban ANC sites nor rural ANC sites could be strictly said as urban or rural sites. In such a scenario, to validate urban-rural differentials in sero-prevalence, it is desirable to adjust for compositional differences of population at risk that influence the prevalence. It is well known that the age distribution of the population is one such factor. Hence, the HIV prevalence has been adjusted for age using the age-distribution of the rural and urban population from the sample registration system (SRS). In order to confirm the assumption of urban-rural differentials following comparisons have been carried out.

1. Compare HIV prevalence at urban site as per the place of residence of attendees.
2. Compare HIV prevalence at rural site by place of residence of attendees.
3. Compare HIV prevalence according to Sentinel sites (urban sites and rural sites).
4. Compare HIV prevalence between urban attendees in urban sites and rural attendees in rural sites.

The urban-rural differential for HIV prevalence in urban sites is insignificant. On the other hand, HIV prevalence of urban attendees in rural sites from low epidemic zone is twice as high as that for rural attendees of the same sites when adjusted for age composition. The HIV prevalence seems to be greater among urban attendees than rural attendees when compared the HIV prevalence for urban attendees from urban sites vis-à-vis rural attendees from rural sites. Further, the above exercise on urban-rural differential in sero-prevalence clearly indicates that the HIV prevalence in urban area is higher than that in the rural area, more so in low-moderate epidemic zone but not to the magnitude of 8 (general population) and 3 (high risk population) as it was assumed earlier. In anticipation that there could be some differences due to some other compositional variable like utilization of ANC services in rural areas, the highest observed value of urban-rural differential amounting to 2.4 was taken as the consensus value.

We also examined the urban-rural ratio in sero-prevalence in STD sites for high and low-moderate zones and it was found to be 1:1. This is in concurrence with the results of Behavioral surveillance Study (BSS) where urban-rural ratio of the reported high-risk behaviour (reported to have multiple partners) was 1:1. Hence, we could consider replacing urban-rural ratio for sero-prevalence with 1:1 in place of 3:1 for the high-risk population in all the epidemic zones.

Replacement for zero prevalence

If the prevalence for the State emerged zero, it was replaced by the average of the prevalence in low epidemic States. The average prevalence of STD and ANC Sites in low prevalent States was 1.61 and 0.32 respectively and the same was taken to replace the zero values.

State Level Prevalence
As decided in the previous consultative meetings, the HIV prevalence in a State for high risk and general population was based on the median of the prevalence when the State consists more than three such sites. When the number of sites for a specific risk group in a State was less than four, then the mean prevalence of the sites has been considered as the State prevalence.

**Final Estimate**

The total estimated number of HIV infections in the country in age group of 15-49 years as on October, 2003 was 4.98 million HIV infections including high risk groups. Since there was not enough information on prevalence among CSWs and their size it was assumed 1.1% of the female population in India is CSW. Applying HIV prevalence for STD attendees to this population, it is estimated that the number HIV positives in CSWs is 71000. Thus total number of HIV infections among adult population is estimated to be 5.05 million.

These estimates are based on the prevalence rates in the age group 15-49 years as derived from annual round of HIV Sentinel Surveillance, 2003. Results of all 455 sentinel surveillance sites have been taken into consideration while making estimates. These figures have been derived after validation and modifications in assumptions used since 1998 as explained earlier.

Based on the census information of male-female distribution and tabulation of data of HIV estimates in 2003, there will be 17.8 lakhs women with HIV infections. Out of these, only 5696 pregnant women who are HIV positive have availed PPTCT services during the year 2003 in identified institutions. Considering the transmission rate of HIV infection from infected mothers to children as 30% in worst-case scenario, there will be 55,145 HIV infected children in the country.

Therefore total number of HIV infection in India including children is estimated to be 5.1 million.
4. Birth and Death Registration System in India: A Pilot Study

Background

Civil Registration System in India provides information on vital events like births and deaths by the geographic and/or administrative zones. The system is coordinated by the Office of the Registrar General, India, as the nodal agency for monitoring the registration work at national level. The information is quite useful for making future projections and planning various programmes for the people. The coverage in some of the states is however very low due to various reasons towards the functioning of the system. It is in this respect, the Institute for Research in Medical Statistics, Indian Council of Medical Research, New Delhi, undertook a study to review the existing systems of registration and suggest modifications for making registration system more effective.

Research design and methodology

The study was conducted in two states namely Uttar Pradesh and Punjab, the former having poor registration and the latter having a high registration as estimated by the office of the registrar general of India. Two districts from each state and ten villages from each district were selected. The study focused mainly on studying events -- births and deaths that occurred during the year 2002 in the selected villages.

Snowball sampling was used for identifying the events. Major variables for data collection included awareness of the system, attitude towards the system, reasons for non-registration, information on difficulties faced by the registration staff. Separate questionnaires were designed for each aspect.

Findings
Information was collected on 564 births and 136 deaths in Uttar Pradesh and 328 births and 139 deaths in Punjab. In Uttar Pradesh only 6 percent families reported to have knowledge about birth registration against 97 percent in Punjab. As a result, only one percent births were found to be registration in U.P. and it was over 90 percent in Punjab.

Towards the knowledge about the registration of deaths, about one-fifth of the families were aware about the registration of deaths against over 90 percent the families in Punjab reporting to be aware of the same. Registration of deaths was of the order of 14 percent in U.P. and 78 percent in Punjab.

It was observed that registration of births and deaths in Uttar Pradesh was not a usual practice but need based where the certificate was required. The registration of birth and death in Punjab was found to be a usual practice but the families received the certificates only when the same was needed.

The families had no knowledge of registration as well as they did not feel any necessity for the same in U.P. The Notifier system was not at all functional in U.P. whereas, the success of the system in Punjab was due to the Chowkidar working as notifier.

Possible reported reasons for poor registration in U.P. included the lack of fund at district level, non-availability of the required stationery, lack of coordination among different functionaries and almost no interest of the Gram Panchayat Vikas Adhikari in the registration work.

The functionaries at Registrar and Notifier level did not receive any formal training in birth and death registration.
5. **ISM&H Beneficiaries covered under CGHS and Selected Teaching Hospitals Attached to ISM&H Colleges**

**Objectives**

- To assess the reasons for acceptability / non-acceptability of ISM&H facilities under CGHS by the beneficiaries.
- To know the level of availability of facilities/medicines in ISM&H CGHS dispensaries.
- To assess the perception of CGHS beneficiaries towards ISM&H and their suggestions for improvements.
- To know the level of availability/facilities in teaching hospitals attached to the ISM&H Colleges & perception of indoor/outdoor patients of these hospitals towards ISM&H. Infrastructure facilities available in these selected colleges are also to be assessed.

**Methodology**

The study on assessing the impact of fortified supplementary food under ICDS on the prevalence of micronutrient deficiencies/malnutrition (Vitamin-A & Iron) among the ICDS beneficiaries in Uttar Pradesh was also extended in the state of Madhya Pradesh and Uttaranchal.

**Methodology**

The subjects for the study were selected from 30 clusters (villages). Fifty children were selected from each cluster for clinical assessment of Bitots Spot and Anemia while for sub clinical manifestation of nutritional deficiencies, the blood sample could be taken for much smaller group i.e., for 10 children. Thus, the total sample size per state was 1500 children for clinical assessment and 300 children for blood/ biochemical test.

The sample was restricted in two blocks, one experimental and the other control block. A sample of control with half sample size will be taken from the same district but from other blocks not covered under ICDS fortification. In case there are no such blocks then the control will be from comparable district in the adjoining state i.e, Rajasthan by ensuring that the control and study group broadly match with each other indicators like geographic and Demographic profile of the area, poverty, prevalence of malnutrition, literacy levels and other development parameters. So in the control area, the sample would be half in the form of 15 clusters.

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7. **Determination of Risk Factors Associated with Maternal Mortality in Municipal Corporation of Delhi: A Community Based Case Control Study**

In developing countries including India, pregnancy complications and childbirth related deaths are believed to be the major causes of death among women in their reproductive ages. Though the situation is changing with the advent of the safe methodology initiatives but the evidence of declining
maternal mortality at the time when India’s population is becoming increasingly masculine, seems odd and needs further investigation. In view of this, a case control study was submitted in MOHFW to determined the epidemiological risk factors associated with maternal deaths in urban slums of Delhi.

The objectives of the study are:

1. To identify maternal deaths and the risk factor associated with MMR in JJ colonies of Delhi.
2. To discover the socio-economic, cultural and behavioral factors behind such maternal deaths.
3. To estimate the relative risk of maternal deaths due the various risk factors identified.

Sample Size
Since the total population covered under JJ colonies in Delhi is around 12 lakhs, assuming birth rate to be 35 per 1000 population, there will be about 42000 births during a year. Further, assuming MMR to be 500 per 1,00,000 live birth it is expected to get approximately 150 maternal deaths during the past two years of the conduct of the survey. So it is proposed to cover 150 maternal deaths (cases) and 450 controls in the case-control design. Therefore a total of 600 women will be taken for the entire investigation.

Methodology
To meet the above objectives a retrospective case-control design has been taken in which a group of women who died due to pregnancy (maternal deaths) called cases and a group of women who survived after childbirth called controls are taken for the case-control study. The information on the maternal deaths which occurred during the last two years will be collected from the locality, mentioned above, from the registers maintained at health centers under IPP –VIII. Snowball sampling has also been conducted to identify the maternal deaths through the help of key informant as ANM and Basti Sevika from the IPP-VIII health centres. All the health centres covered under the IPP-VIII has been covered. In addition to these health centres list of maternal deaths from AIIMS,
Safdarjung hospital and NDMC office have also been collected.

**Current Status:**
Fieldwork is at the verge of completion. Interim analysis has been done and the findings were presented in last year SAC meeting. A total of 175 maternal deaths were identified but data has been collected for 131 maternal deaths due to non-availability or incomplete addresses of maternal deaths. Repeated visits have been made to locate the houses but of many of the maternal deaths were not located. 393 controls were also covered. Data cleaning and data entry has been completed for the collected data. Analysis of data is in progress and report writing is also in progress.

8. Examination of WHO guidelines for exclusive breastfeeding in relation to child survival. The study funded by the National Population Commission, Government of India.

**Background**
A number of research studies in India and abroad have established that there is a positive association between breastfeeding and infant survival. In this light the World Health Organization (WHO) has recommended a set of guidelines for infant feeding in developing countries (WHO 1991, Page 4). One of the research document based on analysis of the India’s National Family Health Survey, 1992–93 (NFHS–1) has assessed the factors that effects of exclusive and non-exclusive breastfeeding on infant mortality (Anandaiah and Choe, 2000). According to this analysis, both exclusive and non-exclusive breastfeeding lowers the mortality during early infancy but surprisingly it is found that the breastfeeding supplements is more beneficial than exclusive breastfeeding even for children at very young ages (below four months). The arguments given for such finding is that mothers who are poorly nourished and in poor
health themselves may not provide adequate breast milk for their growing infants. The results have therefore questioned the WHO recommendations that the children should be exclusively breastfed up to age 4–6 months for the developing country like India.

The main objective of the study is a through scrutiny of the reliability of infant death data and then an in-depth investigation to re-examine the effects of exclusive breastfeeding, non-exclusive breastfeeding, and not breastfeeding on mortality over different segments of post neonatal age. Further, it aimed to compare the findings with those of the subject report, National Family Health Survey (2000).

**Progress**
A set of explanatory variables (residence, mother’s education, mother’s occupation, standard of living index, Mother's age at child birth, Length of the preceding birth interval, Size of the child at birth, and Antenatal and natal care) along with duration of breastfeeding was selected to use in univariate and multivariate analysis. We have completed data analysis and report writing is in progress.

9. **Causes of Death by Verbal Autopsy in the states of Bihar and Rajasthan**
Objectives
Reliable data on causes of death is essential for a meaningful planning of health care and allocation of resources. In India, however, information on deaths in general and their causes in particular has been quite inadequate. The present study plan with specific objectives:

1. To assess probable causes of deaths in male and female population in Rajasthan and Bihar
2. To study the socio-economic profile of the households with deaths in the study population

Survey Design
For both the states, one district from each SRS (geo-physical sub-region in Bihar / region in Rajasthan) is selected. The 1991 Primary Census Abstract was used as sample frame. Thirty PSUs (villages in Rural and CEBs in town) were selected from each selected district using stratified PPS methodology. In this way six districts from each state were selected. Number of rural & urban PSU's was selected on the basic of population size.

Methodology
For both the states, one district from each SRS region in Bihar and Rajasthan is selected. The 1991 Primary Census Abstract was used as sample frame. 30 PSUs (primary sampling units -- villages in case of rural area and CEB in case of towns or wards in urban area) were selected from each selected district using stratified PPS methodology. In this way 180 PSUs from six districts in each state were selected. Rural & urban PSU’s were selected on the basic of population size.

Progress
A set of survey instruments (Still Birth, Neonatal, Child Mortality (29 days - 5 years), Adult mortality (≥5 years), Maternal
mortality) was developed and pre-tested by trained doctors as well as social scientists in both rural and urban areas. As recommended by the task force, data on causes of death is being collected in two phases, each having the six months reference period. The two rounds of the study enumerated same PSUs to get information on cause of death for the deaths occurred in one year time for the same population.

10. Risk factors associated with development of cervical cancer with reference to biosocial behavior - An exploratory study

As per the recommendations of the scientific advisory committee the Institute had undertaken the study on role of biosocial behavior in the process of cervical carcinogenesis. Cancer of the uterine cervix is one of the leading malignancies seen in Indian women. In view of this, the health care programs might have to be redefined. Most of the data are available from the developed countries are available from the developed countries and rely mainly on cytology screening programs on regular basis. In view of the paucity of resources the strategy of mass scale screening cannot hold for developing countries hence there is a need to also look at primary prevention approach by life style modification. Hence there is a need to look at the various risk factors relating to the disease. The review work dealt with the risk factors associated with the disease in Indian situation and other developing and developed countries. The factors responsible for cervical carcinogenesis are early sexual debut, multiple sexual partners, menstrual hygiene and unprotected sex. The tobacco habit has also been considered as an important candidate in causation of cervical neoplasms. These factors are amenable to modification hence could be incorporated in the cancer control program through intensive health education. This review related to the various risk factors related with cervical cancer and its relevance in developing countries including
methodological issues has been accepted for publication in *Indian journal of Cancer*.

The review of the work relating to cervical cytology screening strategies in developing countries is in progress.

11. **A study on job satisfaction among ICMR scientists**

The study has been taken up to assess the satisfaction level of ICMR scientist. This would involve the issues concerning the views of scientists on the following issues as recommended by the experts:

- Working environment including infrastructure
- Library and training facilities
- Coordination with the seniors and the juniors
- Identification of the scientist with the Institute
- Future Prospects
- Administrative system

- Family environment including stress

The Performa is in the process of development in consultation with the experts from Department of Psychology University of Delhi, Population Council and scientist from ICMR. Meetings have been arranged to discuss to finalize the study instrument and the operational modalities including the secrecy component. The issue of appointment of the SRF with relevant experience has been initiated. The details of the scientific staff have been received from most of the Institutes.
II. PUBLICATIONS


III Scientific Meetings/Invited Talks/Conferences/Seminars/Workshops attended

Prof. Arvind Pandey, Director

April 3-4, 03 Meeting on data management and analysis of HIV Sentinel Surveillance, Ministry of H&FW, NACO, New Delhi.

April 9 Meeting of the Executive Committee, Indian Association for the Study of Population, at International Institute for Population Sciences, Mumbai

April 22 Meeting of the Technical Advisory Group for Child Health Survey, Environmental Health Project (EHP), USAID, Vasant Vihar, New Delhi.

April 23-26 Training of Trainers Workshop for Baseline Survey of Chayan Project, CARE-India at India International Centre

April 29 Meeting of HIV/AID Prevention, Care & Support, Population Council, India Habitat Centre, New Delhi

May 1 Smt. Pushpa Sriramachari Oration by Prof. N.K. Ganguly, DG, ICMR at the Institute of Pathology, New Delhi

May 7 Meeting to discuss burden of disease programme of the Division of ECD & NCD at ICMR.

May 24 Meeting of the Selection Committee for a faculty position in the area of Biostatistics at the National Institute of Pharmaceutical Education and Research (NIPER), S.A.S. Nagar, Mohali

May 27-28 Workshop on competence building for writing up the proposals and seeking grants from national and international agencies at Srinagar (J&K).


June 26 Meeting of the Technical Advisory Group for Child Health Survey, Environmental Health Project (EHP), USAID, Vasant Vihar, New Delhi

June 27 Invited talk on “estimation of burden of disease due to Malaria” during XIX Annual Day Function of Desert Medicine Research Centre, Jodhpur
June 30  Meeting of the Selection Committee for the post of Demographer/Programmer at ICMR

July 9-11  Chaired the sessions in the Workshop on Data Analysis of the Study on Neonatal Health (joint study of John Hopkins School of Public Health and Chhatrapati Sahuji Maharaj Medical University, Lucknow), Lucknow

July 19  Meeting to finalize HIV estimates in India for the year 2002 under the Chairmanship of DG, ICMR at ICMR.


August 6-7  Meeting of the Task Force on Social and Behavioural Research, ICMR, New Delhi

August 7  Meeting of the Technical Steering Committee, NACO/Family Health International Collaborative Study on Differentials in the HIV Epidemic amongst IDUs in the North-East States at ICMR.

August 18  Meeting for the presentation of the findings of the Pre-test/Pilot study of MMR under the Chairmanship of Secretary (FW), Ministry of Health & Family Welfare, Nirman Bhavan

September 1  Meeting on formulating the protocol of the survey on drug regulatory system in the country including the problems of spurious drugs, in the office of Dr. R. A. Mashelkar, DG, CSIR (Anusandhan Bhavan, Rafi Marg, New Delhi)

September 3  Meeting of the Doctoral Committee for Ms. Shahina Begum, Department of Biostatistics, AIIMS

September 16  Meeting of the Technical Advisory Group, Family Health International(FHI), New Delhi.

Sept. 17-18  Workshop on “Emerging Demography & Health Scenario in India : Exploration from NFHS-2 ” at Centre For Economic and Social Studies (CESS), Hyderabad.

Sept. 22-23  Meeting of the Scientific Advisory Committee, National Institute for Research in Reproductive Health, Mumbai
Sept. 25.-27 Member of the Scientific Advisory Committee, Regional Medical Research Centre, Bhubaneshwar

Sep. 29 Meeting of the Core Group to discuss the study on tracking research flows for health research at Division of ECD, ICMR.


October 6-8 ICMR-WHO Workshop on “Burden of Non-Communicable disease” and an invited talk on “Data available from NFHS with reference to NCDs” at the Institute of Pathology, New Delhi.

October 17 Meeting of the Technical Advisory Group (SAG) to provide technical advice for the Baseline/End-line survey in C-5 and C-6 States of India, UNFPA, New Delhi

October 18 Meeting of the Scientific Advisory Committee, National Institute of Epidemiology, Chennai


Oct. 29-31 A National Workshop on Acquired Immuno Deficiency (AIDS) at Manipur University, Imphal

November 5 Invited talk on “Monitoring and Evaluation of RCH programme using Large Scale Sample Surveys” at the Training course for State Level Officials on Monitoring of RCH Programme, NIHFW , Munirka, New Delhi.

Nov.13-14 Regional Conference of the Indian Association for the Study of Population at University of Lucknow, Lucknow

Nov.20 Invited talk on the Estimation and Projection Model at the HIV/AIDS at a Workshop on Strategic Planning on HIV/AIDS, organized by UNDP at Rewari.

Nov. 23-25 Invited lecture on Multiple Classification Analysis in the International Biometric Society Conference at BHU, Varanasi
Nov. 27-30  XXI Annual Conference of ISMS at DMRC, Jodhpur, Lecture on Research Methodology in the pre-conference course at DMRC Jodhpur on the occasion of 21st Annual Conference of ISMS.

December 2  Doctoral Committee Meeting for Mr. Prem Chandra, Ph.D. Student, Department of Biostatistics, AIIMS, New Delhi

December 9  Meeting of Selection Committee for R.O. at Institute of Cytology & Preventive Oncology (ICPO), New Delhi

Dec. 11-13  National Workshop on AIDS in North-eastern Region at Manipur University, Imphal Manipur University

December 15  Post-Round Regional Meeting on HIV Sentinel Surveillance at Mumbai AIDS Control Society, Mumbai

December 17  Post Round Regional Meeting on HIV Sentinel Surveillance at Punjab University, Chandigarh

December 19  Annual General Meeting of ISPS at DMC Hall Osmania University, Hyderabad

December 23  Meeting of Investigational New Drug Trial Monitoring Committee at Dabur Research foundation, Sahibabad

December 24  Second Meeting of Taskforce on family welfare linked health insurance survey Nirman Bhavan, New Delhi.

December 29  Divisional Chiefs Meeting at ICMR.

December 30  Meeting of investigators on “Estimation of Spread of HIV/AIDS” at NIHFW, Munirka, New Delhi

Jan. 16, 04  Meeting at UNFPA regarding the progress made on initiation of the Endline/Baseline Survey.

Jan. 19  Invited talk on Integration of Statistical Findings and Presentation of Results in the Refresher Course on Project Formulation for Social Interventions : Application of Social Science Research Methods and Statistical Techniques for University Teachers at NIPCCD, New Delhi.

Feb. 6-7, 04  ICMR, Director’s Meeting at CJIL, Agra

Feb. 10  Task Force Meeting on Causes of Death by Verbal Autopsy Project at ICMR


Feb. 25  Technical Committee Meeting of MMR Pilot Study at Ministry of H & FW Nirman Bhavan, New Delhi.

Feb. 25-26  Meeting of the project “Innovative Study of AIDS Awareness among truckers in India” at IRMS.

February  Examiner of Viva-voce examination at Deptt. of P.S.M., Banaras Hindu University, Varanasi

March 11  Meeting of small working group of “Task Force group on Surveillance” at NIHFW, Munirka, New Delhi

March 12  Technical Advisory Group Meeting on the study “Impact assessment of fortification of ICDS supplementary food in the state supported projects of World Food Programme” at India Habitat Center, New Delhi

March 15  Presentation of the survey on “AYUSH Beneficiaries Covered under CGHS and selected teaching hospitals attached to AYUSH Colleges” at Red Cross Building, New Delhi

March 18  Invited a Lecture on Medical Statistics at MS University, Vadodara

March 22-23  Invited talk in the NFHS Workshop at IIPS, Mumbai

March 26  Doctoral Committee Meeting for Ms. Shahina Begum in the Deptt. of Biostatistics, AIIMS, New Delhi

Participation in International Meetings/Conferences/Workshops


External Examiner/Consultancy/Ph.D. Students:
1. Reviewed the Research project entitled “Developing a Database for Designing Prevention and Control of Human Leptospirosis in North Kerala’

Dr. R.J. Yadav

April 5, 2003

Attended the meetings to finalize the study Instruments of CARE project on May 10 & 19, 2003 at IRMS, New Delhi.

April 24, 03

Invited to attend Tenth meeting of the Management and System Division Council (MSDS) on at Bureau of Indian Standard, Manak Bhawan, New Delhi- 110002.

April 24, 03

Attended the Monitoring Committee of the IRMS renovation

May 10-19, 03

Committee for finalization the terms of references for renovation between UPRNN and IRMS

May 30, 03

Invited to attend Technical Advisory Group meeting at India Habitat World, New Delhi in which the presentation of the report of Uttar Pradesh was done.

April 30-May 26, 03

Attended the meetings to finalize the draft reports of Uttar-Pradesh of WFP project on at IRMS, New Delhi.

September 1, 03

Attended the meetings to finalize the draft Report of CARE project on at IRMS, New Delhi.

January 27-28, 04

Invited to attend National Dissemination Seminar on Reproductive & Child Health (Phase I, Round II) Results during at Delhi being organized by IIPS, Mumbai.

March 12, 04

Invited to attend Technical Advisory Group meeting at India Habitat, New Delhi in which the presentation of the report of Bench Mark assessment was done.

March 15, 2004

Attended the meetings to finalize the tabulation plan and Preliminary findings of CGHS- ISMH on at Department of AYUSH, MOHFW, New Delhi
Dr R. K. Gupta

Nov. 28-30, 03  XXI Conference of Indian Society for Medical Statistics held at DMRC, ICMR, Jodhpur

Feb. 4-6  Attended Three Days National Workshop on MIS under Health & Family Welfare Programmes at National Institute of Health & Family Welfare, New Delhi

February 9-11, 04  Annual Conference of IASP at Annamalai, Chennai

Mr. Anil Kumar

June 20-21, 2003  Attended the Data User Workshop pertaining to NFHS-2 data organized by IIPS at IRMS, Delhi


November 7, 2003  Attended SAC meeting in IRMS, Delhi.

Feb 10, 2004  Attended Task Force meeting of the study “Causes of Death by Verbal autopsy” in ICMR Headquarter, New Delhi

Dr. Abha Rani Agarwal

August 8, 2003  Attended a seminar on SPSS 11.5 organized by SPSS South Asia at Hotel La Meridien, Cannaught Place, New Delhi

August 18, 2003  Attended Core Group Meeting in MOHFW for the presentation of Maternal Mortality Ratios Study

Sept. 1-5, 2003  Attended as a Resource persons in training programme on Epidemiological Methods for the Scientist from Nepal

Sept 18-19, 2003  Invited as a Resource person to deliver lectures on “Statistica considerations in clinical trials” and “Compilation and analysis of Clinical trial data” in the Training Workshop on Research Methodology at Central Council for Research in Ayurveda and Siddha, Institutional Area, Janakpuri, New Delhi
October 11, 2003  Attended Ethical Committee Meeting at, Central Council for Research in Ayurveda and Siddha, Institutional Area, Janakpuri, New Delhi.

November 1, 2003  Attended Ethical Committee Meeting at IRMS, New Delhi.

November 29-1 Dec  Attended XXI Annual Conference of ISMS at Jodhpur and presented a paper on “Estimates of Maternal Mortality Ratios in India and its States - A Pilot Study”

Dec 8-10, 2003  Attended a Symposium on Extended Contraceptive Practice at IRR, Bombay.

January 15, 2004  Invited as a Resource person to deliver two lectures on Correlation and Regression (Test and Technique) and Regression with Dummy Variables in “Refresher’s Course on Project Formation for Social Interventions at National Institute of Public cooperation and Child Development, Siri Institutional Area Hauz khas, New Delhi

February 25, 2004  Attended Core Committee meeting in MOHFW for finalization of sample size and methodology for National level study on MMR

Dr. Tulsi Adhikari

June 20-21 2003  Attended workshop on NFHS data management at IRMS

August 8, 2003  Attended a seminar on SPSS 11.5 organized by SPSS South Asia at Hotel La Meridiem, Cannaught Place, New Delhi.

November 1, 2003  Attended Ethical Committee Meeting at IRMS, New Delhi.

November 7, 2003  Attended and presented the proposed Health Information System at IRMS in SAC at IRMS.

Nov. 28-30 2003  Attended 21st Annual Conference of Indian Society for Medical Statistics held at Desert Medicine research Centre Jodhpur, Presented paper entitled “Identification of Poor : Quality of Life
Approach” and was awarded with “Prof R.N. Shrivastava Award”.

December 4, 2003 Attended the Advisory Committee meeting on the modernization of the facilities and infrastructure of Council’s Libraries at ICMR.

Feb. 4-6, 2004 Attended Three Days National Workshop on MIS under Health & Family Welfare Programmes at National Institute of Health & Family Welfare

March 15, 2004 attended the meetings to finalize the tabulation plan and Preliminary findings of CGHS- ISMH on at Department of AYUSH, MOHFW, New Delhi. Secretary, AYUSH attended the meeting

Dr. Damodar Sahu

April 4, 2003 Meeting of project Development of Demographic Database for Micro (District) level planning in India: Exploration of Alternative Data Sources at IRMS (Asian Development Bank Funded project).

June 14-17, 2003 Field visit to Patna for monitoring fieldwork of the study Causes of Death by Verbal Autopsy

June 20-21, 2003 Attended data user workshop on NFHS-2 Data management organized by IIPS at IRMS

September 8-12, 2003 Invited to participate in the workshop on PROFILES organized by Linkages India (USAID) at the Essex Farm, New Delhi.

November 1, 2003 Attended Ethical Committee Meeting at IRMS, New Delhi.

November 7, 2003 Attended and presented the research studies on Development of Demographic Database for Micro (District) level planning in India: Exploration of Alternative Data Sources in SAC meeting at IRMS

January 2, 2004 Attended the meeting on the Job Satisfaction Level of ICMR Scientists
February 17, 2004  Invited to participate farewell party to Honor of Dr. Francois Farah, UNFPA Representative for his academic and financial support at India Internal Centre Annex, New Delhi.

May 1-3  Participated and presented a paper titled “Community Effects on Infant Mortality in Rural India: A Multilevel Approach to Prioritize the Program Inputs’ in the 2003 Annual Meeting of Population Association of America, at Hilton Minneapolis and Towers, Minneapolis, Minnesota.

December 3-5, 03  Attended the 2003 annual MALI (Medical Library Association of India) National Convention at Pune, organized by National Institute of Virology, Pune.

February 9 –11, 04  Participated and presented a paper titled “Does environment and social set-up affect maternal mortality in India? An exploratory study based on NFHS” at the XXVI Annual Conference of the IASP, held at Annamalai University Tamil Nadu.

Dr. Atul Juneja

May 12, 2003  Attended National technology day oration on Nutritional genomics: Chasing Dreams by Prof Ashish Dutta, Director National Centre for Plant genomic Research at ICMR Head Qrts.

June 20-21 2003  Attended workshop on NFHS data management at IRMS

July 26 2003  Attended Selection Committee meting as a member for the post of the SRF and computer Assistant for one of the Projects at IRMS

August 8 2003  Attended presentation of various SPSS modules at Hotel Le Meridian


Nov. 28-30 2003  Attended 21st Annual Conference of Indian Society for Medical Statistics held at Desert Medicine research Centre Jodhpur and presented a paper on Control of Cervical cancer by Life Style Modification
December 4, 2003  Attended the Advisory Committee meeting on the modernization of the facilities and infrastructure of Council’s Libraries at ICMR head Qrts.

Jan 2, 2004.  Attended the meeting on the Job Satisfaction Level of ICMR Scientists

January 21, 04  Coordinated the organization of Lecture by Dr. YK Choubey from Concordia university Montreal Canada on randomized Response trials.

January 29-31, 04  Attended 23rd Annual Conference of Indian Association For Cancer Research held at Advanced Centre for Treatment research and Education, Tata Memorial Centre Kharghar Navi Mumbai and presented a paper on Case Control Analysis of Various Modifiable Risk factors associated with cervical cancer
IV. TRAINING

Prof. Arvind Pandey

Faculty for the following training Programmes in Institute for Research in Medical Statistics

1. Training in SPSS and other statistical packages in July at IRMS.

2. Training Programme in Research Methodology (1-5 Sept., 2003 at IRMS)

3. Training in Health Statistics specifically for data management and analysis to the WHO Fellow (U. Tun Aung Hla) of Myanmar during 8-26 September, 2003.

4. Organized Secretarial Practice on the Job Training Programme for YWCA Student Ms. Maria George in January.

5. Organized training Programme for DPS, MPS/M. Phil students as IIPS, Mumbai at IRMS on February 21, 2004

6. Organized training programme at the level of LLDC/UDC/Assistant/PA./Stenographer of the ICMR Hqrs. Officer in Computer Application through NIC in March 8-12, 2004.

Dr. R.K. Gupta

23 Dec. 03-2 Jan. 04 Participated as a faculty in a training programme for the M.Sc. (Final) Statistics of Kurukshetra University

Mr. Anil Kumar

1. Delivered 20 lectures on “Electronic Data Processing” to Medical Record Officers trainee of Safdurjung hospital New Delhi

2. Delivered 20 lectures on “Electronic Data Processing” to Medical Record Technician’s trainee of Safdurjung hospital New Delhi.

Dr. M. Thomas

1. Hands on Computer Training in Data Analysis using SPSS for scientists from research organizations and Medical Colleges/hospitals in Delhi.
2. Training in Research Methodology for officials from Nepal Health Research Council.

3. Training for postgraduate students of Biotechnology from Centre for Biotechnology, Ranchi. Two students, Mr. Kamlesh Kumar and Ms Ra Pandey were trained in conducting research projects, data management and analysis in biomedical research.

4. Training for WHO Fellow Mr. U. Tun Aung Hla

5. Lectures on Biostatistics to Postgraduate students of St. Stephen’s Hospital. December

6. Participated in the ICMR Forum for Epidemiology at NIE, Chennai

7. Lecture on Role of Statistics in Medical Research to training programme in official statistics and related methodology at CSO for participants of regular curse in Statistics of the International Statistical Education Center (ISEC), Clcutta.

8. Attended the Post-round Regional meeting on HIV Sentinel Surveillance Round – 2003 for South and East regions as ICMR representative at Bangalore and Kolkatta.

9. Delivered lectures on basic Statistics to M.Sc students of Kurukshetra University

10. Attended the meeting at CBHI to discuss the study plan of Policy Reforms Option Database (PROD) – Health.

11. Attended the meeting to discuss the sites selection for the NACO/FHI Collaborative Research Project on Mobility, Migration and HIV/AIDS Risk in India.

12. Participated in the review meeting of the Community based Study on STI in Urban/Rural India organized by NACO with Regional coordinators

13. Participated in the meeting to validate the assumptions for HIV estimation using 2003 round sentinel surveillance data at NIHFW

**Dr. Abha Rani Agarwal**

1. Organized summer training Programme for Students of Post Graduate Diploma in Bioinformatics from Ranchi, Sept. 16-31st October.

3. Attended as a Resource person and deliver lecture on Odds Ratio & Case Study for the students of M.Sc( Statistics) from Kurushetra University, Dec23-1st Jan, 2003

Dr. Tulsi Adhikari

1. Training in SPSS and other statistical packages in July at IRMS
2. Training Programme in Research Methodology (1-5 Sept., 2003 at IRMS)
3. Training in Health Statistics specifically for data management and analysis to the WHO Fellow (U Tun Aung Hla) of Myanmar during 8-26 September, 2003
4. Training to the students of M.Sc. (Statistics), Kurukshetra University on Applied Statistics
5. Training to the students of Diploma in Bio-Informatics, Ranchi

Dr. Damodar Sahu

1. Hands on computer Training in data analysis using SPSS for scientists of Delhi based research Institutions and Medical college/Hospital during 21-25 July 2003
2. The training program on research methodology held for the group of scientists from Nepal Health Research Council during September 1-5, 2003
3. The training in Health Statistics specifically for data management and analysis to the WHO fellow (Mr. U Tun Aung Hla) of Myanmar during September 1-26, 2003
4. The training program for the final year M.Sc. student of Kurukshetra University held at the Institute from 23 December 2003 to 1 January 2004.
5. Organized training workshop for the field staff (the Medical doctors and Social Scientists) for second round fieldwork for the study Cause of Death by Verbal Autopsy at Patna February 21-24, 2004

Dr Atul Juneja

1. Acted as resource person for the workshop on SPSS held at IRMS from 21-25 July 2003
2. Acted as resource person for the training program held for the group of scientists from Nepal from 1-5 September 2003 and delivered lectures on Epidemiological methods

3. Delivered lectures during the training program for the final year M.Sc. students of Kurukshetra University held at the Institute from 23 Dec 2003 to 1 January 2004

V. STATISTICAL CONSULTANCY

Prof. Arvind Pandey

Provided consultancy to various users, researchers and scientists aiming to develop a health network and achieve the objectives set as mandate for the Institute

Dr. R. K. Gupta

Consultancy was provided to medical researchers in planning and analysis of their studies. Worked as a member of committees and did other work as and when assigned.

Dr Abha Rani Aggarwal

1. Provided statistical data analysis consultancy to Dr. Ajai Garg, Army Hospital for his thesis on A Study of clinical profile of chronic hepatitis B and C in patients co infected with human immuno deficiency virus.

2. Provided consultancy to Dr. Gaurav Kakkar, Consultant and Dr. Dwivedi, Manager for the designing of “a study on refractive Error Study in School going Children “

3. Provided statistical consultancy and data analysis to Dr. Shilpi Jindal, safdar Jung Hospital for her thesis on Management programme of Beningn ponoxyysmal positional vertigo.

4. Provided consultancy to Dr. Suman Nisha, a DNB student of Venu Eye Institute & Research Centre for her thesis on “Corneal Endothelial Evaluation.”

5. Provided consultancy and data analysis to Dr. C.P.Thakur, for his research paper on “A comparison of Sodium Antimony Gluconate and Amphotericin B Dehydroxychololate as first line drugs in the treatment of Kala-Azar.”
6. Provided comments on Programmes and policies to arouse awareness on essentials & interventions for safe motherhood and safe delivery.

7. Provided consultancy and data analysis to Dr. Irfan Robbani, Asstt. Prof., Sri Nagar for the research publication on “Clinico- Radiological evaluation of outcome in patients with spontaneous intracerebral hemorrhage.”

8. Provided comments on study of the epidemiology of Tuberculosis in India, using Molecular methods by Dr. (Mrs.) Urvashi B. Singh, AIIMS, New Delhi

9. Provided comments on the research project entitled “Analysis of Medical Data with selection bias and missing information” of an Ethiopian national.

10. Provided comments on research project entitled “Proposal for establishment of Hospital based National surveillance systems for rotavirus Disease and Strains in India” of Dr. M.K. Bhan, AIIMS”

Dr. Tulsi Adhikari

Providing statistical consultancy to the researchers (MD/PhD students & senior scientists) from Hospitals and Medical Colleges for the study design, data analysis and interpretation of their results

Dr. Damodar Sahu

Technical consultancies to research organization such as Environmental Health Project II - India to analyze NFHS-2 data by standard of living Index, PROFILE project of AED/LINKAGES India, and SDM project of CARE India.

Ms. Meherzad Taghizade, Master of Nursing Rajkumari Amrit kaur College of Nursing for the study on to assess the knowledge and attitude of adolescent girls regarding prevention of HIV/AIDS in selected colleges of University of Delhi.

Dr. Atul Juneja

1. Prof NN Mathur Prof of ENT Lady hardinge Medical College for the study on the comparison of two operative procedure.

2. Prof Sudhir Kapoor Prof at Dept. of Orthopedics at Maulana Azad Medical College consulted for Drug trial analysis.

3. Dr Geeta Vidyadharan DNB (Path) at IOP (ICMR) consulted for her thesis Antiapoptotic genes in Neoplastic and Preneoplastic Conditions of Prostate.
4. Dr. Rajinder from Dept of ENT Lady Hardinge Medical College for the evaluation of his thesis work.

5. Dr Ashima Anand of VB Patel Chest Institute consulted for her project.

6. Dr Narinder Pal Singla DNB tutor at Venu Eye Institute and Research Centre new Delhi consulted for his dissertation on Contrast Sensitivity in different morphological types of early cataract.

7. Dr. Mona Banibha from Department of ENT Lady Hardinge Medical College consulted for her thesis on “Comparison of Functional Endoscopic sinus surgery with and without partial Middle turbinate resection”

VI. VISITORS

June 23, 2002    Dr. R.C. Kalra, Director, CBHI, Ministry of Health & FW visited IRMS to develop partnership in the development and Production Software for Health Research.

June 24, 2002    Dr. Karuna Onta, resident Advisor, The Linkages India Proj visited this institute to develop partnership in the Development of Dissemination software for the promotion of breast feeding in Child Development.
VII. STAFF LIST

Director
Prof. Arvind Pandey, M.Sc., Ph.D., FSMS

Deputy Director
Dr. S.C. Mehta, M.Sc., Ph.D
Dr. R.J. Yadav, M.Sc., Ph.D.
Dr. S.K. Benara, M.D.
Dr. R.K. Gupta, M.Sc., Ph.D.

Assistant Directors
Mr. Anil Kumar, M.Sc.
Dr. (Ms.) M. Thomas, M.Sc., Ph.D.
Dr. (Ms.) Abha Rani Aggarwal, M.Sc., Ph.D.

Research Officers
Dr. Tulsi Adhikari, M.Sc. Ph.D.
Dr. Damodar Sahu, M.Sc., CPS, DCA, Ph.D.
Dr. Atul Juneja, M.Sc., Ph.D.

Data Processing Officer
Mr. Ashok Kumar, M.Sc.

Technical Officer
Mr. H.C. Joshi
Mr. S.K. Mathur
Mr. Tejpal Singh
Mr. K.L. Badolia

Senior Investigators
Mr. Vinay Kumar
Mr. Suman Kumar Bara
Ms. Usha Rani Gupta
Mr. Rajendra Singh Awana

Research Assistants
Mr. Bhagirath Lal
Ms. Sunita
Mr. Charan Singh

Field Investigators
Mr. Gurmeet Singh
Mr. Shiv Kumar
Mr. Parmatma Mahato

Data Processing Assistant
Mr. Ajay Kumar Sharma
Ms. Parminder Paul
Data Entry Operator
(Grade-D)  
Ms. Sita Sinha  
Ms. Sudarshan Khanna  
Ms. Kamal Anand  
Mr. Rajender Singh Sharma  
Ms. Kailash Bajaj

Library Asst & Information Officer  
Mr. Naresh Aggarwal

Data Entry Operator
(Grade-B)  
Mr. Prem Chand  
Ms. Indira Rani  
Ms. Geeta Sharma  
Ms. Promila Toppo  
Ms. Madhu Mehra  
Mr. Kapil Gautam

Field Assistant  
Mr. R.K. Yadav

ADMINISTRATIVE STAFF

Administrative Officer  
Mr. B.S. Sharma

Accounts Officer  
Mr. R.P. Sharma

Private Secretary  
Ms. Poonam

Personal Assistant  
Ms. Usha Gulati

Section Officer  
Mr. R.S. Chadha  
Mr. L.R. Chuttani

Assistant       
Mr. Bal Raj Sharma  
Mr. Raj Kala Ahlawat  
Ms. Shalini Sharma  
Ms. Amarjeet Kaur Bhasin  
Mr. Mukesh Kumar Kaushik

Upper Division Clerks  
Ms. Kusum Luthra  
Mr. B.M. Malhotra  
Mr. B.P. Singh

Jr. Stenographer  
Ms. Satvinder Kaur

Lower Division Clerk  
Mr. Ramesh Kumar Gupta  
Mr. Shankar Lal
SUPPORTING STAFF

Senior Driver
Mr. Shish Pal

Driver
Mr. Desh Bandhu
Mr. Des Raj (NNMB Project)

Daftary
Mr. D.D. Manjhi

Peon
Mr. Ram Pal
Mr. Dharmveer Singh
Mr. Gopi Chand
Mr. Gyan Chand
Mr. Ramesh Chand
Mr. Jagili Sabar

Farash
Mr. Ram Nath
Mr. Vijay Chand

Safai karamchari
Mr. Vimal Kumar
Mrs. Raj Mala