

2. Community based studies:

2.1 Acute lower respiratory tract infection (ALRI) and diarrhoea in rural children below two years in relation to feeding practices with particular reference to breast feeding: A community based study.

Investigator: S.K. Mondal

Acute lower respiratory tract infection (ALRI) and Diarrhoea are two leading causes of mortality and morbidity in children below five years of age in the developing countries. There is a lack of community-based information on the disease burden caused by different pathogens responsible for causing ALRI, and the epidemiological information regarding their magnitude in the community is also scanty. Breast feeding, particularly exclusive breastfeeding in infants up to 6 months and complementary feeding along with proper weaning are known to protect infants from diarrhoea as well as ALRI. However there is very little information regarding extent of exclusive breast feeding in children <6months / complementary feeding as well as weaning feeds given to children. Therefore the study entitled 'Acute Lower Respiratory Tract Infection (ALRI) and Diarrhoea in rural children below two years in relation to feeding practices with particular reference to breast feeding: A community based study with the objective to know the prevalence of ARI and Diarrhoea in rural children, to see the impact of exclusive breast feeding / weaning in ALRI& Diarrhoea was undertaken.

The study has been initiated in 11 villages of Kalikapur Gram Panchayet 1 & 2 area of Sonarpur block of south 24 pargana District, in a population of 29000 approximate.

A baseline demography of the families have been done and are being entered in computer. A module on ARI for health personnel was prepared in local language. West Bengal Government health staffs and NICED field workers were given one day orientation training on ARI and Breastfeeding. In turn they trained Voluntary Health Workers under close supervision of investigators. Newborn infants are being enlisted for weekly follow up. Anthropometric measurements of infants are continuing at the subcentres. So far 1297 infants have been identified and enlisted for weekly follow up of which 448 have have been excluded for completion/leaving the area. Anthropometric measurements of infants have been conducted at the subcentres. Out of total 1297 children 867 were new born, of them 80.0 % were Hindu rest 20% were Muslims. 46.6% were delivered at Hospital, 8.4%at Nursing Home and rest 45.0% at home. Normal delivery were 87.0%, rest 13.0% were LUCS. Average birth weight for male was 2.72 kg, for female it was 2.61kg. Median time for initiation of breast milk was (Hindu-3hrs, Muslims-2hrs). 81.0% of mothers were literate.

Till Dec 05 a total of 1742 diarrhoea cases could be detected of which 0-5 months 173(9.93), 6-11months 716 (41.1) and 12-23 months 853 (48.9) where as out of 2237 ALRI cases 424(18.9) in 0-5 months, 899 (40.18) in 6-11 months and 914 (40.85) in 12-23 months children have been detected by the community Health Volunteers. In diarrhoea male children 54.36% ALRI 53.06% and in female 45.64% and 46.93% respectively

As a pilot basis 20 throat swab samples collected from acute cases of ALRI in STGG media at PHC OPD and processed at the NICED laboratory on the same day. However none of the samples yielded any positive result.

Data are entered in pc computer using excel/ access data base.

2.2 Epidemiology of typhoid fever in a rural and urban slum community of West Bengal

Investigator: S. Ghosh

The study was initiated to know the magnitude of problem due to Typhoid fever in rural community of West Bengal. Age specific incidence may indicate appropriate age for initiation of typhoid vaccine if it is included at National Immunization Schedule. Drug sensitivity pattern of circulating strains of *Salmonella enterica serovar typhi* in the community may help the doctors for rational use of antibiotic for treatment of typhoid fever. The study area and methodology were described in last year annual report.

The study area is 35 Km away from NICED and situated in Sonarpur block of South 24parganas There is a total population about 29,000 living in 5967 families in 11 villages under four sub-center of Kalikapur PHC. Majority (81%) of them are hindu, rest (19%) are muslim. Only 30.4% families live in Pucca houses. Drinking water source is mainly tube wells, where as 30% use tap water. About 50% of people use open field for defecation. Majority of the families fall within the income group of \leq Rs. 2000/-p.m. Over all literacy rate is 72.9%. 56.8% of male and 43.2% of female are literate.

Since April 2003 up to 2006, a total of 556 blood samples was collected of which 19 (3.4%) were positive for *Salmonella typhi*. Isolation rates are 4.6% in January to March, 4.5% in April to June, 2.5% in July to September and 2.7% in October to December. Sub-center wise isolation rate of *S.typhi* (7.80%) is significantly higher ($P < 0.05$) in Raipur as compared to that of Beniabou (0.94%), Kalikapur (2.27%) & Sahebpur (2.25%).

Age group wise distribution of 556 blood samples collected from fever cases 63, 101, 89 and 303 from age groups of < 5 , 5-9, 10-14 and ≥ 15 years with isolation rates of 3.17%, 1.98%, 8.99% and 2.31%. However incidence of typhoid fever per 1000 person year was found to be the highest in the age group of < 5 yrs (11.81) compared to that of 5-9 yr (2.03), 10-15 (4.06) & ≥ 15 yr (0.87).

Duration of fever at the time of collection of blood samples from 19 positive fever cases 15 were of ≤ 7 days duration, rest 4 were 8 to 15 days. Headache, pain abdomen, anorexia are main associated complain along with ≥ 3 days duration fever.

Salmonella typhi strains isolated were found to be resistant to Chloramphenicol, Trimethoprim, Co-trimoxazole, and Ampicillin but sensitive to Gentamycin, Nor-floxacin, Ciprofloxacin, Pefloxacin, Cefotaxime and Amikacin.

2.3 Identifying environmental risk factors for endemic diarrhoeal diseases in West Bengal, India : a remote sensing – geographic information system(GIS) approach

Investigators: A. Palit & A. Jeyaram*

Data of acute diarrhoeal disease incidences in Kolkata and its adjoining areas with special reference to cholera and shigellosis for at least one year (2002/2003) will be taken into account. Disease surveillance data (based on records of I.D. Hospital, Kolkata,

Institutional surveillance and D.H.S records) will be analysed. Particular foci of epidemic outbreaks as well as of endemic ones in and around Kolkata, India will be identified.

Baseline ecological data on temperature, humidity, surface water temperature of water bodies, land covers etc. will be collected. The type of human habitations in relation to water resources, water bodies, drinking water supply structures etc. will also be identified for macro-stratification of geo-environmental factors. Collection of above data are meaningful to ascribe the relation of disease transmission.

Retrospective satellite data (2002/2003) of IRS ID LISS III and LISS IV will be procured in the form of CCT (Computer compatible tapes) from NRSA, Hyderabad by RRSSC (ISRO), Kharagpur, W. Bengal for the study foci. The data will be analyzed at RRSSC, Kharagpur. False colour composite (FCC) images will be generated. Ground truth validation for the land use features of interest will be done. Classification of land use categories will be done and statistics will be generated. Analysis of satellite data will be carried out by digital image processing facilities available at Regional Remote Sensing Service Center (RRSSC), Kharagpur.

Ground truth of the study areas for analyzing the spatial variation in diarrhoeal disease dynamics will be carried out using IRS ID LISS III and LISS IV data. Mapping of temporal variation of environmental parameters for the purpose of correlating them with changing pattern of disease incidence with regard to selected foci will be done. The land cover details within the study region at sample locations will be collected simultaneously for use in classification and interpretation of satellite data. The information available in Survey of India (S.O.I.) topo maps on 1: 50,000 scale will be used for field traverses and base map preparation. Qualitative studies of water use and the organization of water supply will also be looked into to understand drinking water epidemiology.

Monitoring, identification and recording of disease incidence will be tallied in the same months of satellite pass. The correlation between disease incidence and land use features will be worked out to identify the most relevant land use features and environmental factors that may contribute to epidemic outbreak of cholera/ shigellosis etc. Based on this information, the disease distribution map of those selected foci will be prepared.

RS-GIS Steps involved:

- Interpretation of Satellite data for geo-environmental parameters and its conversion into vector layer•
- Interpolation of hydro-meteorological data & density of diarrheogenic pathogens into spatial layer
- Integration of Socio-economic and collateral data in GIS frame work
- Development of GIS model by giving weightage to each parameter for possible disease incidence
- Generation of diarrheogenic maps (levels)
- Overlaying of diarrheal disease incidence data on the above for possible correlation in relation to seasonal variation.

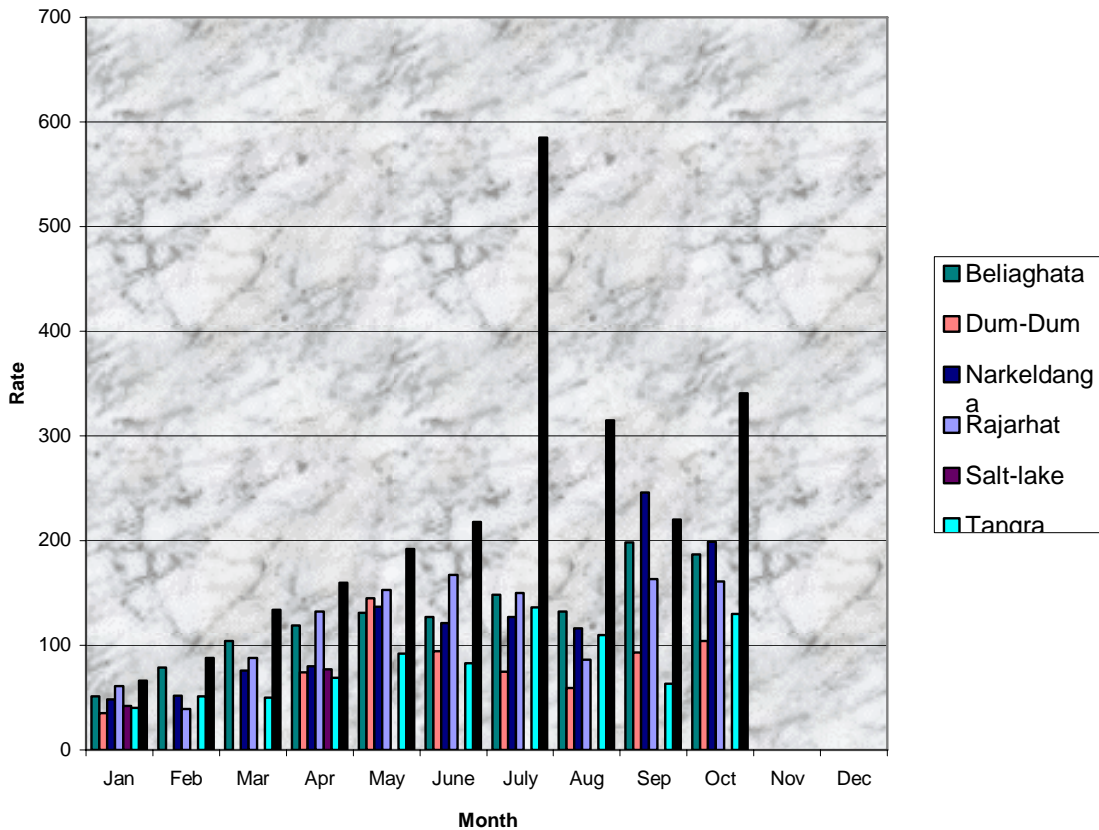
Data of acute diarrhoeal disease incidences in Kolkata and its adjoining areas with special reference to cholera and shigellosis for two years (2002 and 2003) has been taken into account as per objectives. Disease surveillance data has been analysed to identify particular foci of epidemic outbreaks as well as of endemic ones in and around Kolkata.

Baseline ecological data on temperature, humidity, surface water temperature of water bodies, land covers etc. are being collected from meteorological office, Kolkata. The type of human habitations in relation to water resources, water bodies, drinking water supply structures etc. are in the process of identification for ground truth evaluation.

Data have been recorded in designed formats for drinking water epidemiology along with its microbiological characteristics (water quality testing, monitoring etc.) at different sample locations in preselected foci in relation to environmental and land cover variables.

Retrospective satellite data of IRS ID LISS III and LISS IV are in the process of classification for mapping out the images of Kolkata as well as some of its worst diarrhea affected foci based on the disease surveillance data. The study is in progress.

Disease incidence data 2002



Disease incidence data 2003

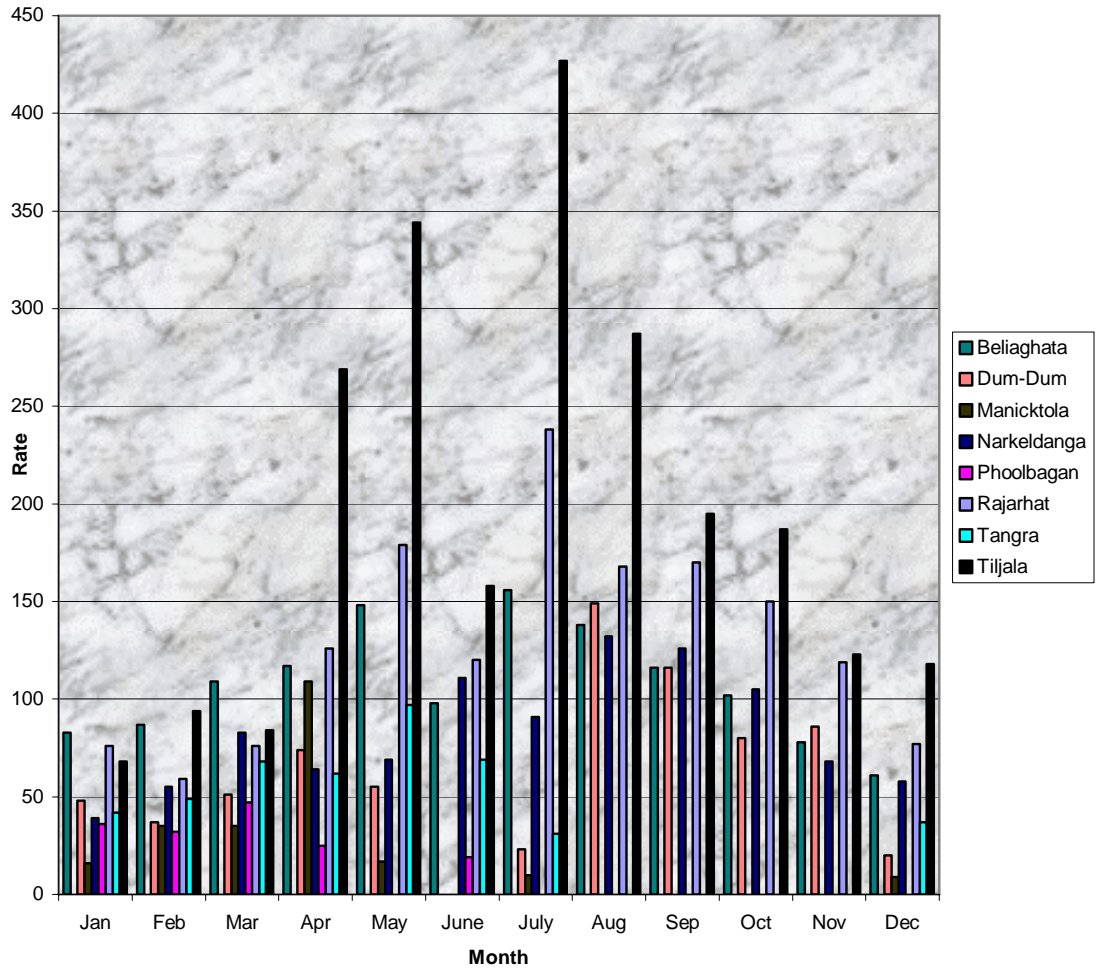


Table-1

AREA	PHC	Ward no.	Sources of water	No.of the samples tested	No.of positive cases For colliform bacteria	Organism Identified
Kolkata		Ward-29	1.Tap	1	0	Absent
			2.Tubewell	2	0	Absent
			3.Stored	2	0	Absent
Kolkata		Ward-30	1.Tap	1	0	Absent
			2.Tubewell	2	2	Present
			3.Stored	2	0	Absent

Table-2

AREA	PHC	Ward no.	Sources of water	No.of the samples tested	No.of positive cases For colliform bacteria	Organism Identified
24PGS (s)	Kalikapur	Kalikapur	1.Stored	15	3	Present
			2.Tap	12	0	Absent
			3.Tubewell	13	3	Present
			4.Pond	5	5	Present