

2 Community Based Studies

Section highlights

- An operational study on effect of zinc supplementation on reduction of diarrhoeal morbidity was started in rural community of West Bengal involving about 1900 children aged between 6-48 months. Zinc supplementation was given in double blind way.
- The study has been initiated to know the prevalence of acute lower respiratory tract infection and diarrhoea in rural children and to see the impact of exclusive breast feeding/weaning on these diseases.
- Rural community based study to know the magnitude of typhoid fever where 4.2% of the blood samples were positive for Salmonella typhi (very high percentage of isolation (14.5% was observed in one subcentre area. Isolation rate was 14.3% in the age group of 10 to <14 yrs) strains were resistant to chloramphenicol, ampicillin, trimethoprim, co-trimoxazole, furazolidone and amoxicillin
- A randomized community based intervention study conducted in an urban slum of Kolkata by periodic mass deworming with albendazole to children between 2-5 yrs of age, revealed that there was reduction in worm load as well as improvement in growth of the study children compared to the control group.

2. Community Based Studies

2.1 An operational study on Effect of zinc supplementation on reduction of diarrhoeal morbidity amongst rural children. (In collaboration with Health Department, Government of West Bengal.)

Investigator :

D.N. Gupta

Repeated attacks of diarrhoea are commonly associated with malnutrition. Almost all malnourished children suffer from both macronutrient and micronutrient deficiencies. Zinc, an important micronutrient, deficiency



leads to reduce immune function of the body resulted in increase morbidity from many of the infectious diseases including diarrhoea. Beneficial effect following zinc supplementation has been observed by different workers in their studies. Present study aims to determine the role of weekly zinc supplementation on reduction of diarrhoeal morbidity during supplementation and post-supplementation period amongst rural under-five children, as well as to find out any constraints (if any) of zinc supplementation at the community level. The study is being carried out in the rural field area in the district of South 24 Parganas, about 35 Km away from the Institute. The area consists of 11 villages having an approximate population of 29000. The objective of the study was explained to the Panchayet Pradhans and also to the panchayet members, community mothers through a series of group meeting. Voluntary Health Workers (VHW) detected diarrhoea cases through weekly surveillance activities and recorded information in a predesigned pretested proforma written in local language (Bengali). Preliminary information on baseline survey has been presented in Table 2.1.1.

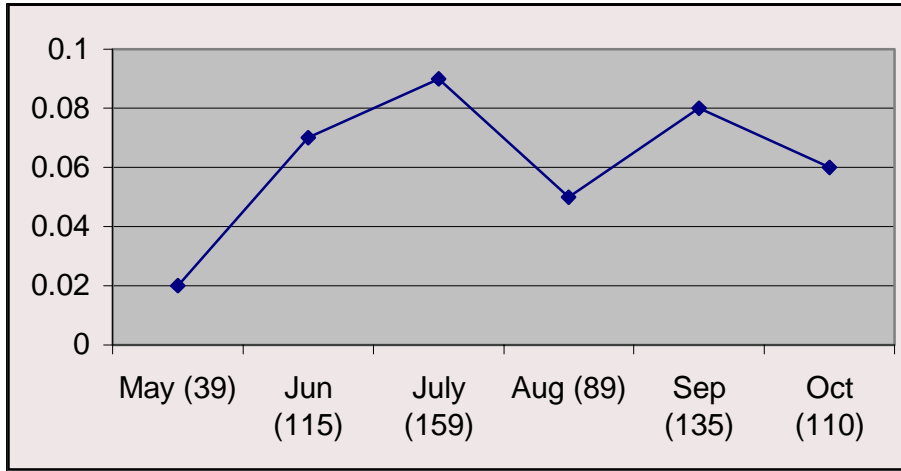
A total of 1878 children between 6-48 months were initially identified for supplementation of zinc or placebo. Supplementation was started from month of May 2003 and mothers were advised to continue syrup administra-

Table 2.1.1. Preliminary information of baseline survey

No. of families surveyed		5969
Identified families having study children		1652
No. of children (6-48 months) initially identified		1878
Total population in the study families		8735
Average population in the study families		5.3
Children excluded from the study		166
Religion:	Hindu	75.1
	Muslim	24.9
Housing condition	permanent	24.5
	Non-permanent	75.5
Latrine facility	Sanitary	67.6
	Non-sanitary	32.4
Drinking water	Tap	25.6
	Tube well	74.4
Per capita income (Rs.)	=500	82.6
	>500	17.4
Parents Education	Literate Father	75.3
	Illiterate Father	24.7
	Literate Mother	64.0
	Illiterate Mother	36.0

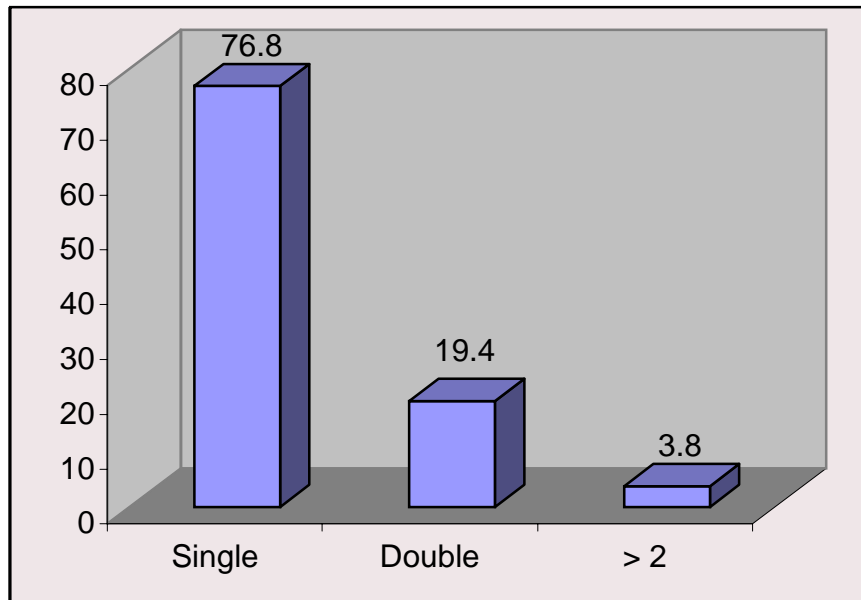


Fig. 2.1.1 Month wise incidence



tion up to October 2003. (Second bottle was supplied after three months). Zinc and placebo syrup were distributed in identical sealed cap container having identical colour and taste. Weekly Surveillance for detection of diarrhoea was started from month of May 2003. Evaluation was started from June 2003. Around 30% of the study families were evaluated every two months interval. . A total 166 children (8.8%) were excluded from the study for different reasons. Of the remaining 1712 children, a total of 505 children suffered from diarrhoea during May to October 2003 and 648 episodes were noted amongst them. The overall incidence (spell) of diarrhoea was 0.38 during six-month period. Multiple episodes were observed in 23.8% children.

Fig. 2.1.2 Child wise episode



Around 73% episodes had duration (=3days). In 35% episodes food was either given less or stopped. Breastfeeding was continued in 87% of the episodes in children aged =24 months.

Fig.2.1.3 Feeding pattern

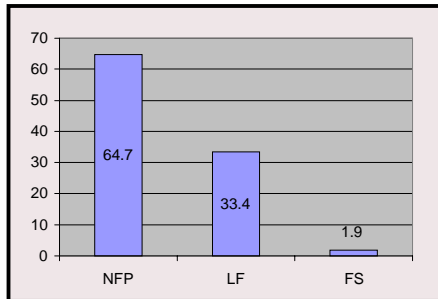
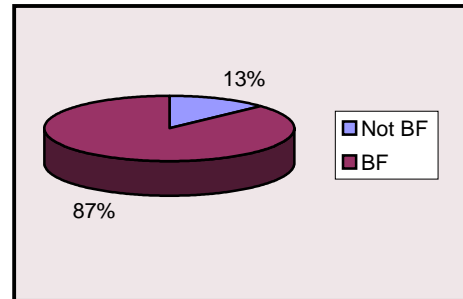


Fig.2.1.4 Breast feeding practice(=24 months)



2.2 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 of ALRI and pathogens responsible for this disease. Epidemiological information regarding their magnitude in the rural 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. With this view in mind the present community based study was undertaken with the objectives to know the prevalence of ALRI and diarrhoea in rural children and to see the impact of exclusive breast feeding / weaning in ALRI and diarrhoea.

The study has been initiated in 11 villages of Kalikapur Gram Panchayet 1 and 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 the data are being entered in computer. A module on ARI for health personnel was prepared in local language (Bengali). 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. So far 392 infants have been identified and enlisted. Anthropometric measurements of infants have been started at the subcentres. The study is in progress.



Blood drawn from patient of suspected typhoid fever

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

Investigator :

S. Ghosh

The study was undertaken to know the magnitude of problem of typhoid fever, at community level, as there was no reliable data on the incidence. The documentation of high incidence of typhoid fever in particular age group may help to determine the specific age group for initiation of typhoid fever vaccine and thus it may be introduced into National Immunizations Schedule. Drug resistance pattern of circulating strains of *Salmonella enteric serovar typhi* in the community may help the doctors for rational use of antibiotics for treatment of typhoid fever.

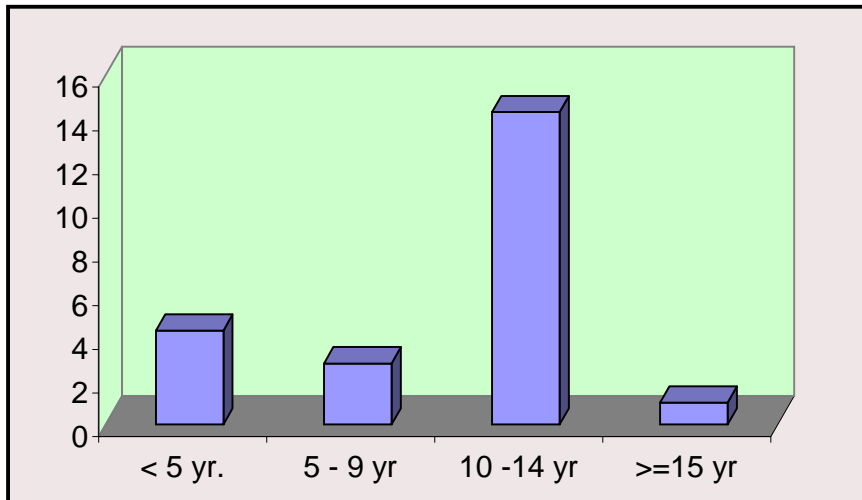
The study area is 35 Km away from our Institute. The area includes 4 sub-centers of Kalikapur PHC in Sonarpur Block of 24 Pargans (South) with the total population of about 29,000 living in 5967

families in 11 villages. The panchayate members have been explained the objectives of the study. Several mothers meeting were organized to generate community awareness to inform them about the importance of blood examination of fever cases. Mothers were also informed the availability of the blood culture facilities and treatment facilities at free of costs. Thirty female voluntary health workers (VHW) were selected through grampanchyates. These VHWs were trained to detect the fever cases of ≥ 3 days duration. They visited each family within her area once a week to detect fever cases and they refer these cases to PHC for treatment and blood examination especially for Malaria Parasite and culture for *Salmonella typhi*. Initial baseline demographic and epidemiological information of the study families were recorded in structured proforma and are being entered into the computer.

Since April, 2003 up to March, 2004, a total of 191 blood samples were collected from the fever cases coming from different Sub-centers of which eight samples (4.2%) were positive for *Salmonella typhi*. Number of samples collected were 37, 65, 55 and 34 from subcentres of Beniabou, Kalikapur, Raipur and Sahebpur respectively. All the 8 blood culture positive typhoid fever cases were from Raipur only with high percentage of isolation (14.5%). Agegroup distribution of 191 fever cases from whom blood samples were collected were 23, 35, 35 and 98 from < 5 yr, 5 to 9 yr, 10 to < 14 yr and ≥ 15 yr. respectively. Isolation in the same age groups were 1(4.3%), 1(2.8%), 5(14.3%) and 1(1.0%). Isolation rate for male and female cases were 4.7% and 3.6%.

Duration of fever at the time of collection of samples of 8 bacteriologically positive typhoid fever cases were of < 7 days in 4 cases, 7 to 14 days in 3 cases and > 14 days in 1 case only. Anorexia, headache and pain abdomen



Fig. 2.3.1 Blood culture + ve *S. Typhi* isolation rate in different age groups

were present in 4, 5 and 5 culture positive cases.

Salmonella typhi strains isolated from blood culture were uniformly resistant to Chloramphenicol, Ampicillin, Trimethoprim, Co-trimoxazole, Furazolidone and Amoxicillin. All the strains were sensitive to Tetracycline, Gentamycin, Nalidixic acid, Norfloxacin, Ciprofloxacin, Pefloxacin, Cefotaxime and Amikacin.

2.4 A study of the impact of albendazole on the nutritional status and diarrhoeal incidence among children between 2-5 years of age in an urban slum of Kolkata

Investigator :

D. Sur

Intestinal helminths are a worldwide problem especially among children of developing countries. It is estimated that more than 25% of the world population are infected. Helminthic infections are a very common childhood problem in India and West Bengal State is no exception. The main impact of worm infestation on health is malnutrition. Nutritional status of children may be adversely affected particularly if their food intake is marginal in quality and quantity. Further, malnutrition being an important predisposing factor for diarrhoeal disease, it may be presumed that the incidence of diarrhoeal disease will be reduced significantly if worm infection can be controlled. This project has thus been undertaken with the objectives to study the impact of periodic deworming on the nutritional status and diarrhoeal incidence among children 2-5 yrs of age and to assess feasibility of periodic anthelmintic administration by existing health workers.

It was a double blind randomised community based intervention study being carried out in the Tiljala slum area in the eastern part of Kolkata with a population of about 10,000. In the study area, 702 children between 24-60 months of age were identified and enrolled.

Four locally resident health volunteers (female) were trained to administer the anthelmintic/placebo, follow up for any adverse effects, attend to minor ailments like home management of diarrhoea with ORS and refer



problem cases to the attending physician of the institute or to nearby hospital. Baseline demography of the study families was obtained in pre-designed proforma. Nutritional assessment of the study children was done by anthropometric measurements in the form of weight for age, which was recorded once every 3 months. Measurement of weight was done once before albendazole/placebo administration, twice thereafter (at 3 monthly intervals) and the fourth, 3 months after the second dose of albendazole/placebo.

The children were allocated to receive either 400 mg albendazole in liquid form in Vitamin B Complex base or only

*Scientists and staff
on the way to
evaluate
performance of
health workers at
the rural field area
of NICED*



syrup of Vitamin B Complex as placebo from specific numbered bottle. Bottles of albendazole and vitamin B complex syrup were numbered according to a random number table in blinded design. Shape, size, colour of the bottles and the colour, taste of the syrups were similar. The children received the same dosage after 6 months. On completion of the trial, the placebo group was identified and a single dose of 400 mg albendazole in liquid form was administered.

Stool samples were collected from a subsample of the study children and examined for presence of ova before and every 3 months after deworming. The results of stool examination were maintained confidential by an independent person who was not involved in fieldwork, to avoid bias in implementation and analysis of the study. A local pharmaceutical company Messrs. Greenco Pvt. Ltd. supplied the preparation of the albendazole/placebo.

There was a significant increase of mean weight in the study group as compared to the control group (Fig. 2.4.1) at 3 months, 6 months and 9 months following albendazole administration ($p < 0.007, 0.010, 0.001$ respectively) The albendazole group of children also suffered from significantly less episodes of diarrhoea (Table 2.4.1) than their control counterparts (RR 1.3; 95% CI: 1.07, 1.53) with a percentage reduction of 28 per cent. Health workers could satisfactorily administer the correct dosage and there were no adverse effects.

