

Completed Studies

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1. Lymphatic filariasis in young children: an immunological prospective.
2. Study on nutritional status of Dongria Kondh primitive tribe and Domb scheduled caste populations of Orissa
3. Study of health consequences of domestic violence with special reference to reproductive health
4. Identification of serum immunosuppressive factors in human filariasis





Completed Studies

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Co-Investigators:
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Funding:
Intramural
Starting date: August 2001
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1. Lymphatic filariasis in young children: an immunological prospective.

Objectives:

1. To detect pre-patent infection through IgG4 and circulatory filarial antigen assay.
2. Prevalence of anti-filarial antibodies in different age classes in children.

Background:

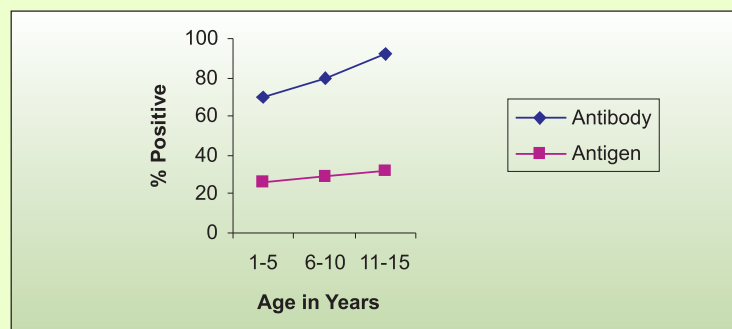
Children are most susceptible to acquire infection because of lack of immunity and high exposure to infective larvae in an endemic region. These infections, established in childhood, may act as the reservoir for the future disease later in life. As clinical manifestations in filariasis appear most frequently in early adulthood or later, most of the studies have been focused in adult population and the importance of filarial infection and disease in children has been markedly neglected.

Results:

The infection and disease status among children below 15 years of age was determined in villages of Khurda district, Orissa. Prevalence of microfilaria, acute disease and hydrocele cases was observed to be 10%, 14.9% and 2.2% respectively. Presence of circulating filarial antigen (CFA) was determined using Og4C3 test kit. About 32% of the children were found CFA positive. Prevalence of filarial antigenemia of 28%, 32% and 34.5% was observed in 1-5 yr, 6-10 yr and 11-15 yr age groups respectively. The level of antigenemia although increased marginally with age in pediatric age groups but significant difference was not observed among the groups. Similarly, no difference in antigen prevalence and intensity (antigen unit) among asymptomatic amicrofilaraemic children indicating adult worm burdens were similar. Infection free children (antigen negative) were checked whether these subjects were exposed to the infection or not. About 95% IgG positivity to filarial antigens was observed indicating that these children were well exposed to filarial infection.

In order to check the transplacental transfer of filarial antigen and antibody, cord blood along with the maternal blood samples were collected (Khurda district hospital).

FIG: Prevalence of antigenaemia and anti-filarial antibodies in different age class of endemic children.



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IgG and IgM antibodies to *Setaria digitata* antigens were determined in both maternal and cord blood samples (n=154). IgG positivity of 85% and 43% were observed in maternal and cord blood samples respectively. IgM positivity rate of 55% was noticed in maternal blood samples. It is of interest to note that only one cord blood sample was found positive for the IgM antibody. Presence of circulating filarial antigen (CFA) was also determined in both maternal and corresponding cord blood. About 56% of mothers were found to be CFA positive where as 18% cord blood samples were found positive for filarial antigen.

Conclusion:

The results indicate the severity of filarial infection in young children in the endemic regions of Orissa. Adult worm burden were similar among the pediatric age groups and most of the infections are acquired early in life below 5 years of age, which in later life lead to overt clinical symptoms of Filaria Disease.

2. Study on nutritional status of Dongria Kondh primitive tribe and Domb scheduled caste populations of Orissa

Objectives:

1. To study the demography, socioeconomy and morbidity status;
2. To assess the nutritional status of all age groups;
3. To study the household food and nutrient consumption pattern and seasonal variation;
4. To evaluate the availability and utilization of health care and nutritional programmes;

Background

The present study was carried among the Dongria Kondhs primitive tribal group (PTG) and Domb scheduled caste populations in Rayagada district of Orissa. Dongria Kondhs confined to inhabit their traditional dwelling places in remote contagious hilltops of Niyamgiri hills in Eastern Ghats covering under Kalyansighpur, Bissamcuttack and Muniguda blocks. Their economy is solely based on shifting cultivation and collection of minor forest produce. Considering their backward characteristics of pre-agriculture level of technology, stagnant or declining population, extremely low literacy rate and subsistence level of economy, two Micro-projects namely Dongria Kondh Development Agency are functioning for their overall socioeconomic development. Dombs are only the neighbourhood landless population, who live separately in the Dongria villages, acting as mediators with mainlanders and involve in business activities. The Dongria population is limited to about 7500 and Dombs account for 2500 spread over 112 villages devoid of communication facilities.

Methodology

Half of the total villages were selected for study adopting PPS sampling. Sample size was estimated for each nutritional indicator separately using the formula assumed the

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Closing date: 30.09.2005



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population size, expected prevalence of nutritional deficiency considering relative precision of the estimate at 95% confidence interval and design effect. The sample size for estimating micronutrient deficiencies calculated assuming prevalence of anaemia and goiter in target groups. Household data collected using a pre-tested questionnaire for socio-economic and demographic status, knowledge-attitude practices, awareness and utilization of healthcare services and nutritional programs. Diet survey was conducted on 10% sub sample of households covered for nutrition assessment by 24-hour recall method. Clinical examination was done for nutritional deficiency signs and related systemic disorders. The anthropometrical measurements were taken using standard equipment and procedure and nutritional status assessed using standard indices. Finger-prick blood samples were collected and haemoglobin levels measured by cyanmethaemoglobin method. A sub-sample of blood used for serum ferritin levels using ELISA. Venous blood samples collected from 50 adult subjects analysed for serum iron and total iron binding capacity using kits. Children were examined for presence of signs of goiter, urinary iodine excretion levels estimated by wet-digestion and salt iodine analyzed by titration methods.

Results

A total of 708 households were covered for the study that included 82% Dongria Kondh and 18% Domb communities. The sex ratio was 1273 and 1072 females per thousand males respectively for Dongria Kondh and Domb. Both the communities were Hindu by religion. The average family size 4.8 and majority of these households were nuclear families. Only 2.8% of Dongria and 16.7% Domb household heads were literate. The total literacy level found to be very low at 6.5% and 23.9% respectively for Dongria and Domb. Female literacy continued to be much lower than males in Dongria (male 11.7%; female 2.6%) and Dombs (male 28.2%; female 20%). None of the Dongria households had electrification and sanitary facility, while quite a few Domb households had electrification in Kurli village. Cultivation was the major occupation of Dongria besides collection of minor forest produce and business was the occupation of Domb. All Dongria households had agriculture lands and practicing shifting cultivation, while Dombs involved in different business activities.

Food and Nutrient intake

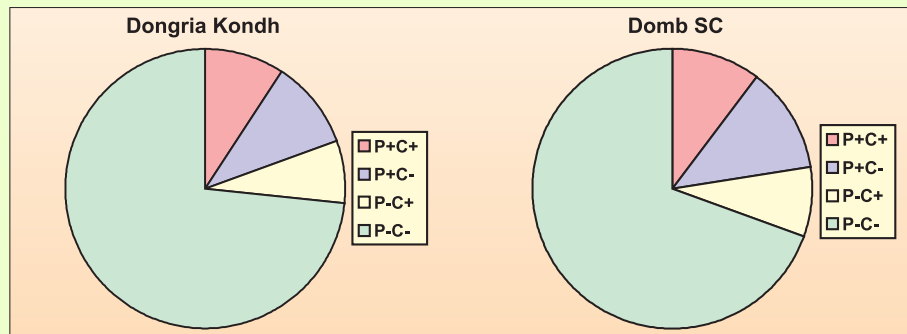
Data on food and nutrients intake was collected from 164 households. In general, rice and millets formed the bulk of dietaries and comparable to the suggested levels of 460g. The mean intake of pulses was much less than suggested 40g in both the communities (14.7g and 18.5g). The average consumption of green leafy vegetables was marginally lower 24g and 26g in Dongria and Domb than the suggested level of 40g. The consumption of vegetables and roots-tubers was less than 50% of the RDI. Consumption of milk and milk products, fats/oils, sugar and jaggery were grossly inadequate in both communities.

The proportion of Dongria and Domb households consuming adequate amounts of both protein and calorie (P+ C+) accounted for only 9% and 10% respectively, while

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Figure 1. Distribution of households by protein and energy adequacy status



about 63% and 61% were consuming inadequate amounts of both protein and calorie (P- C-). The proportion of households consuming adequate amounts of protein but inadequate amounts of calorie ranged from 11% in Dongria to 14% in Domb. The percent of households with inadequacy of protein but adequate amounts of calorie ranged between 17% among Dongria and 14% among Domb (Fig 1).

Seasonal variation in food intake

There was a wide seasonal variation observed in food consumption pattern of Dongria Kondh in terms of quality and quantity. Rainy season was observed to be the food scarcity season, during which they were in practice of taking alternative foods to meet the food insecurity. Dongria people preferred consume mango kernels, tamarind seeds and pith of sago palm used in powder form as alternative ingredients of rice in mandia jawa as staple consumed through out the day. The coping methods of food scarcity continued up to August every year.

Morbidity history and clinical examination of children:

History of acute illness within two weeks prior to clinical examination was recorded among children aged up to 10 years. About 50% and 40% of children of 0-5 yrs and 6-10 yrs age respectively had some illness. Common cold, respiratory tract infection, febrile illnesses and diarrhoeal disorders were the common illness observed in order of frequency. Difference in frequency of illness observed to be minimal in Domb caste and Dongria tribe children.

Information on recurrent attacks of RTI, fever and diarrhoeal disorder for at least two episodes in last 3 months was collected. Recurrent respiratory tract infection was found to be the most common illness, where recurrent attacks of RTI/fever/ diarrhoeal diseases were found to be reduced as the age advanced (i.e. in 6-10 yrs. age group). History of exanthematous illness in terms of fever and/or rash was seen in quite a few children (about 5%). Clinical pallor was observed in two third of the children examined and prevalence rate was 10% higher in the 6-10 yrs children when compared to younger (0-5 yrs) children. Signs of protein energy malnutrition in forms of edema and changes in skin or hair were evident in about 8% of children of both the groups. Splenomegally



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was observed in identical proportions (15%) in both the age groups from either groups and it was associated with hepatomegally in more than half of these cases. Auscultatory signs of lower respiratory tract infection or wheezy bronchitis syndrome detected in about 7% of Dongria children, where it was observed to be higher (17%) in Domb children.

Nutritional status

The nutritional status of preschool children assessed according to weight-for-age (underweight), height-for-age (stunting) and weight-for-height (wasting) by SD classification (Table 1). The proportion of Dongria children with underweight (<median-2SD) was 66.7%, of which 38.1% were severely underweight (<median-3SD). While 52.7% of Domb children were underweight and 20.2% of them were severely underweight. Nearly 63% and 52% of Dongria and Domb children respectively were stunted (<median-2SD), an index of linear growth retardation reflected chronic nutritional deficits. The prevalence of severe stunting (<median-3SD) was 21% in both the communities. The percentage of children with wasting was relatively higher among Dongria Kondh (34%) than Domb (27%). About 8% and 5% of children had severe grades of wasting.

Table 1. Distribution of 0-5 years children according to SD (z-score) classification

Nutritional index	Sex	N	<Median -3SD	-3SD to -2SD	-2SD to -1SD	≥-1SD
Weight-for-age						
Dongria	Boys	229	36.4	29.1	19.1	15.4
Kondh	Girls	259	39.7	28.1	25.6	6.6
PTG	Pooled	488	38.1	28.6	22.5	10.8
Domb SC	Boys	80	12.4	39.1	21.9	26.6
	Girls	95	27.7	26.1	20.0	26.2
	Pooled	175	20.1	32.6	20.9	26.4
Height-for-age						
Dongria	Boys	229	26.4	41.8	10.0	21.8
Kondh	Girls	259	18.2	40.5	18.2	23.1
PTG	Pooled	488	22.1	41.1	14.3	22.5
Domb SC	Boys	80	23.4	23.4	23.4	29.8
	Girls	95	16.9	27.7	24.6	30.8
	Pooled	175	20.2	25.6	23.2	31.0
Weight-for-Height						
Dongria	Boys	229	7.4	22.8	40.0	29.8
Kondh	Girls	259	8.9	28.9	38.0	24.2
PTG	Pooled	488	8.1	26.0	39.0	26.9
Domb SC	Boys	80	1.6	29.6	34.4	34.4
	Girls	95	9.2	13.8	35.5	41.5
	Pooled	175	4.6	22.6	35.0	37.8

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The body weight of children and adolescents were expressed as percentage of NCHS standards (Table 2). About 63% and 79% of Dongria and Domb school age children (6-10 years) respectively were underweight. The prevalence of moderate and severe undernutrition was 36% in Dongria and 49% in Domb children. The prevalence of undernourished adolescents was about 85% in both the study groups, while moderate and severe grades of undernutrition accounted for 57%. The proportion of 'at risk' children (grades II + III) tended to increased from 36% in children 6-10 years to 56% in 11-19 years children of Dongria Kondh, and it was 49% in 6-9 years to 58% in 11-19 years children of Domb.

The distribution of adults according to body-mass index (BMI) grades is shown in Table 3. The overall prevalence of chronic energy deficiency (CED: BMI<18.5 kg/m²) accounted 57.5% for Dongria Kondhs and 62% for Dombs. The prevalence of CED

Table 2. Nutritional status of children and adolescents

Nutrition grade (%NCHS)	Dongria Kondh PTG			Domb SC		
	Boys	Girls	Total	Boys	Girls	Total
School-age children (6-10 y)						
N	214	191	431	62	48	110
Normal (≥90.0%)	38.8	20.9	33.4	19.4	22.9	20.9
Mild (75.0-90.0%)	30.8	29.7	30.5	29.0	31.3	30.0
Moderate (60-75%)	23.4	26.4	24.3	46.8	31.3	40.0
Severe (>60.0%)	7.1	23.1	11.8	4.8	14.6	9.1
Adolescents (11-19 y)						
N	127	54	181	35	48	83
Normal (≥90.0%)	18.1	5.6	14.4	25.7	4.2	16.9
Mild (75.0-90.0%)	31.5	22.2	28.7	31.4	16.7	25.4
Moderate (60-75%)	31.5	48.1	36.5	22.9	50.0	33.9
Severe (>60.0%)	18.9	24.1	20.4	20.0	29.1	23.7

Table 3. Distribution of adults (≥20 years) according to body mass index

Body mass index (kg/m ²)	Nutrition grade N	Dongria Kondhs PTG			Dombs SC		
		Male	Female	Total	Male	Female	Total
< 16.0	Grade III	9.6	14.4	11.9	4.0	21.4	13.3
16.0 – 17.0	Grade II	14.4	11.6	13.0	12.2	25.0	19.0
17.0 – 18.5	Grade I	36.7	28.3	32.6	40.5	20.2	29.7
18.5 – 20.0	Low normal	28.2	30.5	29.3	32.4	25.0	28.5
20.0 – 25.0	Normal	10.8	13.0	12.0	9.4	7.2	8.2
≥25.0	Over weight	0.3	2.2	1.2	1.5	1.2	1.3



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particularly grade II and III was more among females than among their male counterparts of Dongria Kondh (male 24% vs female 26%) and Domb (male 14.2% vs female 46%). The proportion of over-weight (BMI > 25.0 kg/m²) was negligible in both the communities.

Iron deficiency anemia

The haemoglobin levels were estimated from 719 subjects (571 Dongria Kondh and 148 Domb). Only 12.8% of Dongria and 17.9% of Domb had normal levels of haemoglobin (Table 4). Overall, 87% of Dongria and 81% of the Domb population had some level of anaemia. The proportion of individuals having mild, moderate and severe anaemia were 39%, 31% and 17% respectively for Dongria Kondh, while it was 29%, 35% and 18% for Domb. The prevalence of anaemia among preschool children (<11 g/dl) was 74.2% with 3.2% having severe anaemia in Dongrias, while severe grade was 12.5% among Dombs. The prevalence of anaemia was reported to be more in adolescents, adult males and females as compared to children.

The mean ferritin concentrations were 34 ng/ml in males 33.9 ug/ml in females. The proportion of individuals (>10 years) with inadequate iron stores (< 15 ng/ml) was 56.4%, of which 59% and 41% were males and females respectively. The variation in mean concentrations of haemoglobin between normal and hypoferritinemia was significant. Iron deficiency is a reduction in serum iron (SI) levels, an elevation in total iron binding capacity (TIBC) levels, and hence a net reduction in iron saturation (SI/TIBC). The mean SI concentrations were 149.9 ug/dl and 118.6g/dl for males and females

Table 4. Prevalence (%) of anaemia by haemoglobin levels (g/dl)

Age, sex, physiologic Groups*	N	Normal	Anaemia		
			Mild	Moderate	Severe
Dongria Kondh PTG					
Children 1-5 yrs	31	25.8	41.9	29.1	3.2
Children 6-11 yrs	171	22.8	47.4	22.8	7.0
Children 12-14 yrs	25	4.0	56.0	24.0	16.0
Women above 15 yrs	186	9.1	31.2	35.5	24.2
Men above 15 yrs	158	5.0	36.1	36.1	22.8
Pooled	571	12.8	39.1	31.0	17.1
Domb SC					
Children 1-5 yrs	16	25.0	37.5	25.0	12.5
Children 6-11 yrs	17	35.3	11.8	41.1	11.8
Children 12-14 yrs	11	18.2	36.4	36.4	9.0
Women above 15 yrs	60	21.7	30.0	31.7	16.6
Men above 15 yrs	44	4.5	31.8	38.7	25.0
Pooled	148	17.9	29.2	35.0	17.9

*Anaemia grading done by Hb below 11g/dl for preschoolers and pregnant women, 11.5g/dl for 5-11 years children, ≤12g/dl for adolescents and adult females, and ≤13% for adult males

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respectively. The mean TIBC was 376.5 ug/dl that included 409.4 ug/dl and 284.6ug/dl for males and females respectively. Using the cut off value below 50% of iron saturation, 84% of subjects were found iron deficient.

Iodine deficiency disorders

It was observed that the proportion of households consuming salt having adequate iodine (>15 ppm) was 6.0% among Dongria and 18% among Dombs. The percent of household salt with levels of iodine above 30 ppm were lower for Dongria (0.3%) than Dombs (6.2%). Of the total school age children, prevalence of total goiter rate (TGR) was 14.6% and 15.9% for Dongra and Domb respectively, while visible goitre was 4.9% and 2.4% (Table 5). The prevalence was more among female children as compared to male peers (13.2%). Sex differentials were found significant in the prevalence of TGR Dongria children ($\chi_{(1)}=4.25$, $p<0.05$).

Table 5. Prevalence of goiter among 6-12 year children

Community and sex	N	Goitre (%)			TGR
		Grade 0	Grade I	Grade II	
Dongria PTG					
Total	391	85.4	9.7	4.9	14.6
Boys	240	88.3	8.8	2.9	11.7
Girls	151	80.7	11.3	8.0	19.3*
Domb SC					
Total	220	84.1	13.5	2.4	15.9
Boys	108	83.9	15.2	0.9	16.1
Girls	112	85.6	10.1	5.3	15.4

! Total goiter rate is combination of goiter grades I and II
*Significantly different from boys ($\chi^2_{(1)}$) at $p<0.05$.

Table 6. Urinary iodine excretion levels ($\mu\text{g/l}$) among 6-12 year children

Community and sex	N	Urinary iodine ($\mu\text{g/L}$)			
		Normal (≥ 100)	Mild (50-99.9)	Moderate (20-49.9)	Severe (<20.0)
Dongria PTG					
Total	364	45.9	9.3	25.3	19.5
Boys	198	40.4	10.1	29.3	20.2
Girls	166	52.4	8.4	20.5	18.7
Domb SC					
Total	166	53.6	10.8	21.7	13.9*
Boys	83	54.2	10.8	25.3	9.7
Girls	83	53.0	10.8	18.1	18.1

*Significantly different from boys at ($\chi^2_{(3)}$) $p<0.05$



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The median urinary iodine excretion levels were 36.0 mg and 40.5 mg respectively for children of Dongria Kondh and Domb communities indicating the problem of IDD as mild endemicity. The proportion of the children with UIEL below 50ug/dl was 51.7%, the same was 54.1% and 46.4% for Dongria and Dombs (Table 6). The proportion of children had normal ranges ($>100 \mu\text{g/l}$) were 45.9% and 53.6% respectively. Children with UIE levels $<50.0 \mu\text{g/L}$ was 41.9%, while it was 44.8% and 35.6% respectively in ST and SC groups indicating the assumable endemicity of iodine deficiency. The variation in percent of UIEL grades between communities was insignificant.

Availability and utilization of healthcare services

There are three PHC situated at Kalyansighpur, Muniguda and Bissamcuttack block levels situated at distant of 8 to 20 km. Only about 10% of respondents reported that they were availing public healthcare services during illness. The reasons attributed for not availing the services were inaccessibility and lack of transportation. Majority obtained from traditional healers like Disari/Jani, followed by local multipurpose health workers or Anganwadi Workers. About 50% of women reported that they were aware of ORS and using it for their children. Equal proportions of women knew the signs and symptoms of malaria. Mosquito was stated to be the common causative factor, while others attributed to it water, air/ghost etc. Nearly one-fourth of women reported that Anganwadi Worker visited their house during the past few months and they were utilizing the Anganwadi services.

In general, awareness about anaemia was poor. About 7% of women reported 'tiresomeness' was the manifestation of anaemia, followed by paleness. Around 7% of women stated that dietary inadequacy was the cause of anaemia, while a few women attributed it to iron deficiency. A negligible proportion of mothers from Dongria (5%) reported that they had seen IFA tablets, whereas it was 17% from Domb. Out of 100 lactating mothers interviewed, 16% of Dongria and 33% of Domb reported that they had received IFA tablets during pregnancy and consumed all tablets. These tablets were received from Anganwadi Centre or ANM/MPHW. About 5-14% of total women were stated that IFA tablets meant for good health, and none of them attributed it for anaemia control. The proportion of respondents aware of goiter ranged from 7.4% in Dongria to 33.3% in Dombs. The causative factors of goiter was in the order of food, water and others like air, ghost etc. The proportion of respondents who were aware of iodized salt ranged between 24.3% in Dongria and 60.7% in Domb communities.

Conclusion:

The results indicated that the study populations were socially isolated and economically backward with a wide seasonal variation in food intake. Malnutrition was widely prevalent in all age groups with poor knowledge on healthcare, education and nutritional programs. There is an urgent need to strengthen the IEC activities on health and nutrition education and utilization of public healthcare and nutrition programs among the social isolate populations.

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3. Study of health consequences of domestic violence with special reference to reproductive health

Objectives

1. To understand the people's perception of domestic violence.
2. To know the prevalence of domestic violence.
3. To find out the factors associated with domestic violence.
4. To identify gynaecological and obstetric outcomes of domestic violence.
5. To study its perceived health consequences with special reference to reproductive health.
6. To report how women cope with domestic violence.

Methodology:

As it is a multi-centric study, it is initiated in all the six zones of India i.e. Northern, Southern, Eastern, Western, Central and Northeast zones. Three states from each zone are selected to have a wider representation of the zone. Since the prevalence rate of domestic violence is different for each state, the sample also differs which is calculated based on the NFHS-2 data. The RMRC, Bhubaneswar was given the responsibility of conducting the study in Eastern zone. The zone consists of Orissa, West Bengal, Bihar and Jharkhand states. The prevalence of domestic violence is largest in Orissa (28.9%) followed by Jharkhand (26.6%), and it is lowest in West Bengal (17.6%). The Jharkhand being a newly created state is a part of Bihar and reported 26.6% violence rate, the sample for this state has been calculated considering this rate. Thus, the sample considered for the three states are: 432-450 for Orissa, 469-500 for Jharkhand and 710-750 for West Bengal. The total sample required from Eastern Zone would be 1700.

Both urban and rural areas were considered for sampling. From each state four districts were selected from different corners of the state. Keeping in view the 70:30 ratio of rural: urban population, the sample sizes were calculated. The details of the sampling are provided in the previous annual report.

The study involved collecting both quantitative and qualitative data. The research team met village/community heads, elders, etc. before initiating the data collection. Rapport is established in the community and especially the woman is taken into confidence to get data on violence particularly. All married women of each household in the age group between 15-49 years were sampled. Corresponding to the women sample, men of the neighbouring village were selected. The quantitative data were collected from men and women by using a structured questionnaire. The qualitative data were collected through focus group discussions and case studies. The case studies were aimed to explore the coping strategies of women who experienced domestic violence. Standard methodology is followed during collection of qualitative data. The details of samples size are shown in the Table 1. The quantitative data were computerized through Epi-Info and qualitative data were processed and being analyzed through Atlas for Windows.

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Co-Investigators:

Dr. B. V. Babu, Dr. A. Mohapatra

Funding:

Extramural (ICMR Taskforce)

Starting date: March 2004

Closing date: January 2006



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Results:

The investigation created three principle measures for domestic violence against women: psychological violence, physical violence and sexual violence. These behaviour-based outcomes measured both lifetime prevalence (occurred at least once in women's married life) and during pregnancy. Overall, about 58% of women in Orissa, 62% in women of West Bengal and 68% women in Jharkhand reported experiencing at least one form of violence. Up to 51% women reported psychological violence, 21% women reported physical violence and 34% reported sexual violence (Fig. 1). The prevalence of all forms of violence is highest in Jharkhand state, followed by West Bengal and Orissa. However, the sexual violence is more prevalent in Orissa than in the remaining states of the Eastern zone.

An attempt was made to assess the impact of occurrence of domestic violence on reproductive Health. Survey of the women who were pregnant earlier revealed 29.8% of women reported at least one form of violence during pregnancy. The rates of pregnancy outcome among these women are compared with those women who have not reported any form of violence during pregnancy (Fig. 2). A few women who are presently pregnant are excluded from the analysis. It is clear that violence has a strong association with pregnancy outcome. The percentage of full term live births is significantly lower among women who experienced violence during pregnancy than their counterparts. Violence has been linked significantly with increased risk of pre-term births, stillbirths and spontaneous abortions/miscarriages. Thus, violence operated through multiple pathways to affect women's sexual and reproductive health.

Conclusion:

The study indicated that the domestic violence in terms psychological, physical and sexual harassment against women is linked with increased risk of pre-term birth, stillbirths and spontaneous abortions/miscarriages.

Table 1. The details of the sample of various surveys

Name of the State	Habitat	Quantitative data collected		FGDs conducted collected	Case studies
		Male	Female		
Orissa	Rural	320	320	4	2
	Urban	142	140	4	4
Jharkhand	Rural	352	352	4	4
	Urban	150	150	4	2
West Bengal	Rural	528	528	4	5
	Urban	224	224	4	1
Total Sample		1716	1714	24	18

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Fig. 1. Overall prevalence of domestic violence

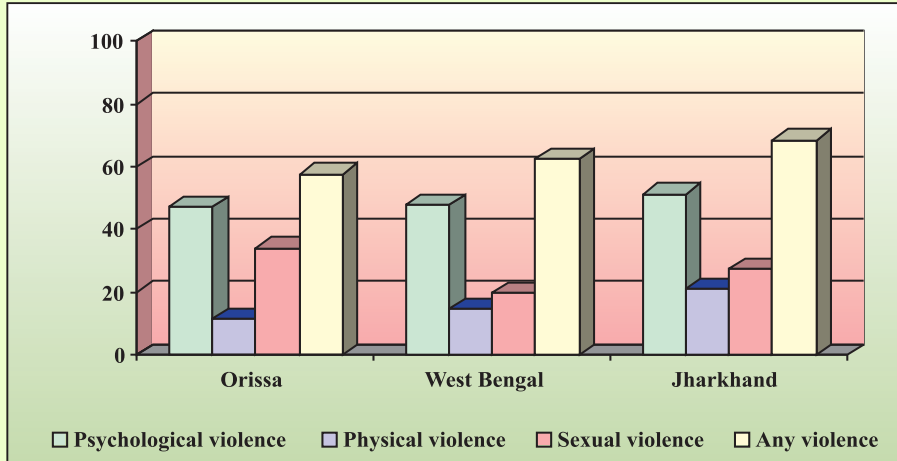
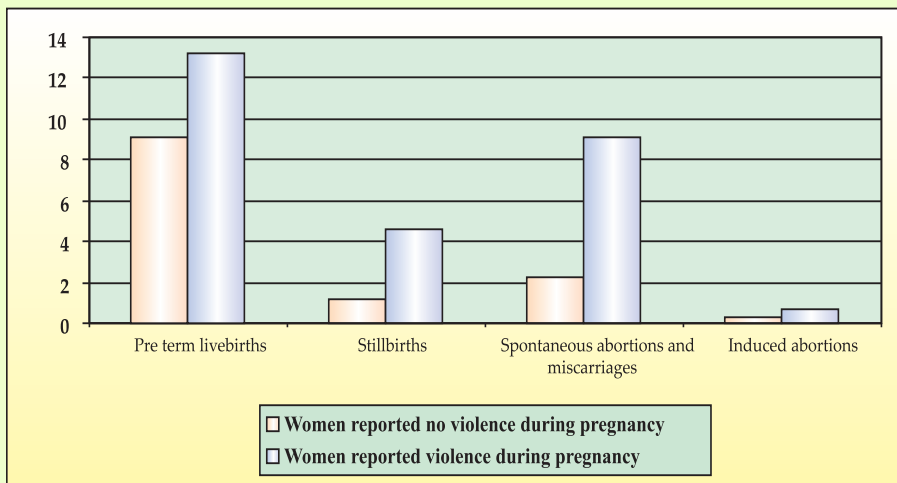


Fig. 2. Indicators of reproductive outcome among women reported violence during pregnancy and women with no such experience



4. Identification of serum immunosuppressive factors in human filariasis

Objectives

1. To identify the immunosuppressive factors in sera of microfilaraemic subjects.
2. To correlate the degree of immunosuppression with presence/intensity of infection with adult stage parasite.

Results:

A hyporesponsive state characterized by low T-cell proliferation and down regulated IFN- γ production has been observed in microfilaraemic individuals and individuals harbouring CFA. The hyporesponsive state in microfilaraemic individuals has been shown

Principal Investigator:

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Co- Investigators:

Dr P.K.Sahoo, Dr B.Ravindran

Funding:

Intramural

Starting Date: Feb 2002

Closing Date: Jan 2005



Completed Studies

to be largely specific for filarial antigens. The proliferative response to non-filarial antigens (PPD) has been found to be similar in both microfilaraemic and amicrofilaraemic individuals. The mf +ve serum mediated inhibition was demonstrable in PBMC collected from different amicrofilaraemic individuals. The percentage inhibition varied between Mf carriers sera indicating a role of serum factor(s) in mediating suppression of PHA induced T-cell proliferation. One of the objectives of this study is to study serum-mediated suppression of T-cell proliferative response in filariasis. Phytohaemagglutinin (PHA) mediated proliferation of T-cells was not inhibited by sera of amicrofilaraemic individuals. The mf +ve serum mediated inhibition was demonstrable in PBMC collected from different amicrofilaraemic individuals. The percentage inhibition varied between Mf carriers sera indicating a role of serum factor(s) in mediating suppression of PHA induced T-cell proliferation. The nature of immunosuppressive factors in microfilaraemic sera is being analyzed. The serum inhibitory factor was resistant to heat treatment at 56°C for 30 mins

indicating a lack of role for complement components. Further, Aminoguanidine, an inos inhibitor failed to reverse serum mediated inhibition. A Th2 type of hyporesponsiveness state observed in microfilaraemic individuals is associated with high levels of IL-10 production. Since IL-10 and TGF-b have been shown to play an important role in down regulating antigen specific proliferative responses in microfilaraemic sera, we measured anti-inflammatory cytokines such as IL-10 levels in sera of patients with different clinical manifestations of filariasis. IL-10 levels did not differ significantly between asymptomatic mf carriers and subjects with cryptic infection. Significantly elevated levels of IL-10 were observed in acute filariasis in comparison to endemic normals, mf positive cases and cryptic

cases. We studied the relationship between serum levels of TGF-b and % inhibition of proliferative responses. To understand the mechanism underlying the inhibitory activity of microfilaraemic sera we examined the role of apoptosis in this process. The degree of apoptosis in the 96 hr cultured PBMCs was scored using Annexin-V - 7-AAD double staining by Flow cytometer. The percentage of cells undergoing apoptosis was found to be significantly higher in case of PBMCs cultured with microfilaraemic sera in comparison to autologous sera.

Conclusions:

Microfilaraemic sera mediate profound inhibition of PHA induced T-cells proliferation. Inhibitory serum factor is dialyzable and is stable at 56°C, 30 min; it does not appear to be circulating TGF-β since serum levels did not correlate positively with percentage inhibition. Inhibition of proliferation by sera does not appear to be mediated by induction of Nitric oxide. The possible cytotoxicity to lymphocytes mediated by inhibitory sera was studied. Serum inhibitory factor(s) in mf carriers induced apoptosis of lymphocytes indicating that induction of apoptosis by serum inhibitory factors is one of the important mechanisms underlying the inhibitory activity of microfilaraemic sera.



Inauguration of Auditorium, Guest House, Hostel and Animal House in RMRC by Prof. N.K. Ganguly, DG., ICMR, New Delhi.