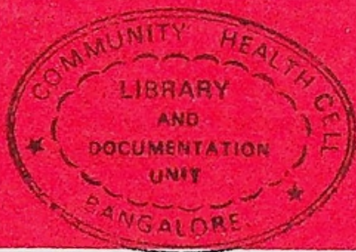




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HIGHLIGHTS OF TRIBAL HEALTH RESEARCH UNDER INDIAN COUNCIL OF MEDICAL RESEARCH

Tribals constitute about eight per cent of India's population and their largest concentration (about 87%) is in the central belt of the country comprising Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, Andhra Pradesh, Orissa, Bihar and West Bengal (U.P. Sinha, Unpublished data, 1986). About one fourth of the country's tribal population live in Madhya Pradesh (23.7%) followed by Maharashtra (11.3%), Orissa (10.8%), Bihar (10.2%), Gujarat (9.5%) and Rajasthan (8.4%). Altogether there are 427 tribal communities of which, *Gonds* and *Bhils* are the largest. From among these, the tribes which are in an extremely under developed stage have been listed as primitive tribes and their total number is 52¹.

The tribals mostly live in forests and hilly terrain isolated from other societies, and have their own way of living and different socio-cultural settings. Illiteracy, poverty, lack of proper health and education facilities, faulty feeding habits, certain irrational belief systems and special tribal mores are the factors which aggravate their health and nutritional status. The growth of the tribal communities is very uneven and in a few communities, there is a definite decline threatening the very existence. This decline may not be due to a low level of fertility but to a rather high level of mortality and existing bad health practices. For these special reasons the fertility, morbidity and mortality profile of tribal communities is vastly different from the other communities in the country, and

therefore, research in tribal health is an important field in biomedical sciences. The Indian Council of Medical Research (ICMR) encourages research in the underprivileged population and many of its institutes conduct health studies among the tribals. In 1984 the Council established the Regional Medical Research Centre (RMRC) for Tribals at Jabalpur (MP) to undertake research primarily on tribal health, in addition to other regional health problems. This write up summarises the studies on tribal health undertaken by the RMRCs at Jabalpur, Port Blair and Bhubaneswar and other ICMR Institutes.

An integrated multidisciplinary approach to the tribal health problems has been adopted by the RMRC, Jabalpur and other Centres and Institutes. The studies have indicated that genetic disorders (haemoglobinopathies), communicable diseases and nutritional disorders form the bulk of their health problems.

Health and Nutrition

Studies were undertaken by the RMRC, Jabalpur, on the health and nutritional status of seven primitive tribes and a few nonprimitive tribes of the State of Madhya Pradesh.

Yaws was believed to have been eradicated from Madhya Pradesh, however, a survey by the RMRC, Jabalpur, in *Abujhmarias* of Bastar district revealed a

resurgence of yaws and on the recommendations of the Centre, the State Government had initiated an eradication programme. After three penicillin campaigns, the prevalence of yaws reduced considerably from 7 to 1.7 per cent within a span of two years (RMRC, Jabalpur unpublished data). A very high prevalence of rickets induced genuvalgum (65%) was also reported in the same tribe. The population was found to be anaemic (40% had severe anaemia with haemoglobin levels < 7 g/dl). In the *Baigas* of Baigachak area of Mandla district, high prevalence of goitre and intestinal parasites was observed^{2,4}. In *Birhors* of Raigarh district, nutritional deficiency disorders showed high prevalence. Suggestions were made for immediate intervention programmes for anaemia and vitamins A and B Complex deficiencies (anaemia – 29% and B Complex deficiency – 24%) and eye camps for cataract (in age group 40+, 35.8%). Among the *Bharias* of Patalkot valley in Chhindwara district, based on the RMRC, Jabalpur, finding of 11.6 per cent goitre among children below 5 years, the State Government launched an intervention programme which resulted in a sharp decrease in goitre prevalence. Among the other primitive tribes, scabies was a major health problem, besides urinary tract infection and malnutrition. Pulmonary tuberculosis was very high (12.7 per thousand) in *Saharia* tribe of Morena district. The *Hill Korwas* and *Kamars* of district Raigarh and Raipur did not have any special health problem.

The National Institute of Nutrition (NIN), Hyderabad, carried out detailed studies on the health and nutritional status of tribals in Sarguja, Bastar and Jhabua districts of Madhya Pradesh. The study suggested a package of activities to be implemented in the tribal areas. Broadly they are (i) treatment of minor ailments like cough, fever, skin and eye infections, dysentery and diarrhoea; (ii) motivation and mobilization of tribals towards acceptance of ongoing programmes of health and nutrition; and (iii) encouragement of positive health behaviour with gradual weaning away from irrational beliefs and habits. A neutral, non committal attitude should be maintained towards the habits which are not harmful (NIN, unpublished data).

Surveys on health and nutrition conducted by the RMRC at Port Blair, among the Andamanese in 1976 and 1989 suggest that they suffer from tuberculosis, syphilis and anaemia. This study also revealed deficiencies of caloric intake, vitamins and iron in their food.

The nutritional study conducted among the *Onges* showed that their dietary intake was adequate. Except for

vitamin A deficiency, no evidences of any other malnutrition was detected among them. A health survey carried out by the RMRC, Port Blair in 1993 in the tribe in Dugong Creek showed high prevalence of intestinal parasitoses, *Trichuris trichura* being the commonest. About 40 per cent of the *Onges* had skin infections, mainly ring worm and scabies. The RMRC has also carried out health surveys among the Nicobarese settled in Little Andaman. Intestinal parasitoses was found to be common, *Ascaris lumbricoides* being the commonest parasite. Clinically osteoarthritis of hip and knee were found to be common among Nicobarese adults.

In 1989-90, a sample survey of the tribal population of Janadu hills located in Ambedkar and Sambuvarayar districts of Tamil Nadu was undertaken by the Tuberculosis Research Centre (TRC), Madras, to obtain the prevalence of tuberculosis infection and disease rates. The study observed that the burden of illness is the same as that of the plains.

Studies have been undertaken by the Desert Medicine Research Centre (DMRC), Jodhpur, in Banswara, Dungarpur and Serohi districts of Rajasthan during 1989-90. Malaria, conjunctivitis and chronic respiratory diseases were common ailments observed among the tribals.

A study undertaken by the RMRC, Bhubaneswar in the tribal dominated districts of Orissa viz. Sundargarh, Koraput, Mayurbhanj and Keonjhar indicated that the child mortality at age 2 was highest in Koraput and Keonjhar and lowest in Mayurbhanj. However, the mortality rate rose from age 2 to 5 years, it was 27 per cent in Sundargarh, 25 per cent in Mayurbhanj, 16 per cent in Koraput and 11 per cent in Keonjhar. The major diseases were dysentery, A-vitaminosis, upper respiratory tract infection, scabies, malaria and anaemia. These diseases accounted for almost 40 per cent of illnesses.

The RMRC, Jabalpur, investigated the high infertility in *Khairwar* tribe of Kusmi block of Sidhi district. A high percentage of married males and females (57 and 70% respectively) in the reproductive age group were found to have syphilis. The Centre had suggested suitable measures to the State Government to improve the situation.

A study of fluoride osteopathy with genuvalgum syndrome in some villages of Mandla district was carried out by the RMRC, Jabalpur in 1995-96. The most affected village was Tilaipani where 52 per cent children less than 15 years of age had severe genuvalgum of grade IV and

73 per cent had marked dental fluorosis. This disease has been detected for the first time in central India. On the recommendations of the Centre, the State Government has planned a detailed intervention programme including alternative source of water supply in several hundred villages of the district.

Diarrhoeal Diseases

The RMRC, Jabalpur, studied post measles dysentery epidemics in 1986-87 in the tribal districts of Bilaspur, Bastar and Seoni. A rapid epidemiological investigation was undertaken to investigate the cause of the epidemic and to provide guidelines for action. The stool culture yielded multidrug resistant *Shigella dysenteriae* type-1 as the cause of the epidemic. It was resistant to commonly used antimicrobials except furazolidone.

A study on the effect of oral rehydration solution (ORS) supplemented with lactobacilli on diarrhoeal morbidity was carried out in Mandla (predominantly tribal) district. The findings suggested that lactobacilli supplemented ORS rather than nonsupplemented ORS is effective in reducing the duration of diarrhoea in pre-school children.

The National Institute for Cholera and Enteric Diseases (NICED), Calcutta, studied the prevalence of diarrhoeal diseases amongst the tribals of Car Nicobar island in 1988. The incidence of diarrhoea was found to be as low as 0.2 episode per child per year in children below 5 years. The ORS utilization rate was 47 per cent. It was also observed that the amount of fluid (ORS/home available fluids—mostly green coconut water) administered was inadequate in 59 per cent of the cases of diarrhoea. Enquiries on the nutritional management of diarrhoea revealed that all the mothers (100%) preferred to continue breast feeding during diarrhoeal episodes in children⁵.

During 1993, the NICED, Calcutta and RMRC, Bhubaneswar, studied an outbreak of acute diarrhoea resulting in deaths primarily in adults in Nawrangpur and Koraput districts of Orissa. The outbreak was mostly confined to the tribal population. Epidemiological and microbiological investigations revealed that this outbreak was caused by *Vibrio cholerae* O1 serotype ElTor. *V. cholerae* O1 strains were uniformly resistant to furazolidone⁶.

Virus Diseases

The National Institute of Virology (NIV), Pune, carried out a serosurveillance for HIV infection among tribal populations in three districts of Pune, Thane and Dhule in Maharashtra. Out of total 3048 samples screened, 10 samples (0.3%) were found ELISA positive, and only two samples (0.06%) were found WB positive⁷.

Serosurveillance of HIV infection was done by the RMRC, Bhubaneswar, among the tribals of Phulbani district. All samples were found ELISA negative.

In 1992, an outbreak of measles in the tribal population of Vavar village of Thane district, Maharashtra, was investigated by the NIV. The investigation suggested the need to immunize the children of remote isolated population on a priority basis⁸.

Malaria and Filariasis

The RMRC, Jabalpur, investigated an outbreak of malaria in a tribal block of Jabalpur in 1987. It was noticed that there was a complete breakdown of surveillance and an acute shortage of anti-malarials, the fever rate was very high in the community. Out of the samples collected, 73.7 per cent slides were positive for malaria parasite and of these 75.8 per cent were *Plasmodium falciparum*. As a result, a small focus resulted in an outbreak and intense transmission in a short period. To prevent further morbidity and mortality due to malaria, suitable measures were suggested to the health authorities⁹.

Studies on malaria were carried out by the Malaria Research Centre, Delhi's field station at Mandla in a forested district consisting of 60 per cent tribals viz. Gonds, Korkus, Kols and Baigas. The area is a reservoir of intense perennial malaria transmission. Both *Plasmodium vivax* and *Plasmodium falciparum* were prevalent. The housing and outdoor habits were conducive for transmission. There were innumerable breeding sites, high transmission of malaria particularly *P. falciparum* and *P. falciparum* resistance to anti-malarials. A new malaria parasite was identified morphologically as well as by amplification of the circumsporozoite protein (CSP) gene using polymerase chain reaction (PCR) and has opened up new opportunities and challenges in the field of malaria research and control. The average Annual Parasite Index (API) of Mandla has increased from 8 in 1987 to 16 in five years.

Though the tribals form only about 8 per cent of the population, it is estimated that they contribute to about 25 per cent of the total number of malaria cases, and about 50 per cent of *P. falciparum* cases that are reported in India. It is a major health problem and merits special attention.

Epidemiological analysis of data from the endemic belts of the country has revealed high *P. falciparum* transmission in the forest of India, and these areas are dominated by the tribal population. Malaria control in these settlements has always been unattainable due to technical and operational problems. These areas are hardcore areas with pronounced problem of vector refractoriness, in *An. culicifacies* and *An. fluviatilis* in peninsular India and *An. dirus*, *An. minimus* and *An. fluviatilis* in the eastern states. The other problems are high proportion of *P. falciparum*, high level of herd immunity resulting in asymptomatic carriers, and now a pronounced problem of drug resistance, and an unending source of malaria to the rest of the country. Because of the peculiarities in the transmission dynamics in the forests and difficulties in control operations compounded by technical obstacles, this type of malaria has come to be known as forest malaria or tribal malaria, requiring specialized malaria control efforts.

The Vector Control Research Centre (VCRC), Pondicherry, has established a field station for malaria research in Jeypore, Koraput district of Orissa. The vast majority of the population in the area are tribals constituting more than 60 per cent of the total population. The VCRC has undertaken studies to understand the reasons for persistence of malaria in the area and to develop alternative control strategies. A malaria clinic is also functioning at the field station.

A number of studies on malaria prevalence and control have been carried out by the VCRC among the tribals/tribal areas of Orissa.

Studies on malaria in Koraput district of Orissa showed 13 per cent individuals (of the persons examined) positive for malaria. In infants, the parasite rate was 23 per cent and children 2-4 years old were the worst affected (parasite rate 27.2%). *P. falciparum*, *P. vivax* and *P. malariae* accounted for 80, 10 and 3 per cent infections respectively; the remaining 7 per cent being due to mixed infection. Prevalence of infection and splenomegaly was higher among children of Bonda, Kondh and Poroja tribes¹⁰.

The role of permethrin impregnated bednets at the application rate of 0.5 g(ai)/m² in reducing *Anopheles culicifacies* population in a tribal village (highly endemic for *P. falciparum*) was studied. The man-hour density was significantly reduced in the village for about three months where impregnated bednets were supplied¹¹.

A study on lambda-dacyhalothrin treated bednets as an alternative method of malaria control was carried out in tribal villages of Orissa and their efficacy was reported. Parasite rate and vector density was reduced considerably in the villages where impregnated bednets were in use¹².

A malariometric survey was carried out among the upper Bonda tribals of Koraput district. The observations showed that malaria is the major cause of morbidity followed by worm infestation and malnutrition¹³.

A study on the impact of mud plastering on the efficacy of DDT residual spraying in tribal villages of Koraput district showed that even though mud plastering reduces the effectiveness of the residual spraying to a certain extent, timely spraying and better coverage with correct dosage can still effectively reduce the malaria incidence¹⁴.

Entomological investigations on the prevalence of filariasis were undertaken in Panna district of MP. The mean microfilaria rate among the tribals was found to be lower (3.8%) than in nontribals (7.04%) of the same area. The vector density in tribal areas was observed to be very low as compared to the nontribal areas. Among the tribals, all the symptomatic cases had acute filariasis while in the nontribals only 56.4 per cent had acute and 44.11 per cent chronic filariasis. The reasons for absence of chronicity in the tribals need to be investigated further.

Diurnally sub periodic filariasis due to *W. bancrofti* had been reported to occur in the Nancowry group of islands, but not in the Andaman Islands where nocturnal periodic filaria is known to occur. A survey was conducted by the Centre for Research in Medical Entomology, Madurai, in the islands of Chowra, Nancowry, Kamorta and Trinket during September-October, 1993. The microfilariae (mf) rate was highest in Kamorta (18.35%) and Chowra (14.62%). It was 5.33 per cent in Nancowry and 1.23 per cent in Trinket. Overall disease rate was relatively low (1.9%). Incidence of mf was low in children below 10 years (3.61%) and 11-20 years (7.38%) but increased with increasing age. In 15 mf carriers parasitaemia was detected throughout a period of 24 hours, with a peak around 18 hours.

Health Care Delivery

The RMRC, Jabalpur, has conducted studies on (i) The availability, efficiency and utilization of health care services in tribal areas of Madhya Pradesh; (ii) Health care services in nontribal areas of Madhya Pradesh; (iii) Evaluation of quality of maternal and child health and family planning services at the PHC level and; (iv) Salt consumption pattern in tribal areas of MP. Based on the findings of the surveys suitable recommendations have been made.

A study to investigate the feasibility of (i) involving a literate tribal youth volunteer for detecting cases of pulmonary tuberculosis in their respective hamlets, and (ii) anti tuberculosis drug delivery to sputum positive patients at their homes by village health nurses was carried out by the TRC, Madras, in 1992-93. The study concluded that it was feasible to train literate young volunteers within a short time and also to utilise them in case finding, case holding and drug delivery for the tribal community. They can serve as an excellent model for community participation.

Haemoglobinopathies and G-6-PD Deficiency

Sickle haemoglobin, thalassaemia and G-6-PD deficiency are most common genetic diseases in Madhya Pradesh. These disorders found throughout Madhya Pradesh are more common in the tribal population. The RMRC, Jabalpur, has carried out studies in haemoglobinopathies among various tribals and nontribals, specifically among the primitive tribes of Madhya Pradesh and it has been observed that the prevalence of sickle haemoglobin among the primitive tribes ranges from zero (*Birhors*, *Saharia*, *Kamar* and *Hill Korwas*) to 13 to 22 per cent (*Bharia*, *Abujhmaria* and *Baigas*). The prevalence of G-6-PD deficiency was as high as 11.9 per cent among the *Bharia* males. β thalassaemia was found in those tribes where sickle haemoglobin was absent and vice versa. Prevalence of β thalassaemia ranged from 6.5 to 10.4 per cent in *Kamars*, *Saharia* and *Hill Korwas* respectively, while, it was absent in *Bharias*, *Abujhmarias* and *Baigas*. Both the genetic disorders are hypothesised to have evolved as advantageous selection of genes to protect them from falciparum malaria.

The Institute of Immunohaematology, Bombay, has conducted studies on genetic markers like blood groups, haemoglobinopathies and red cell enzyme deficiency like

G-6-PD in various tribal populations of the States of Madhya Pradesh, Maharashtra, Gujarat and Union Territory of Dadra and Nagar Haveli. It was found that prevalence of sickle haemoglobin was very high among *Bhilalas* of Jhabua, MP (30.5%) and *Pradhans* of Chandrapur and Yavatmal districts of Maharashtra (31%). There was high prevalence of G-6-PD deficiency among the *Kawars* of Raipur, MP (21.5%), *Warlis* in Dadra and Nagar Haveli (14.5%) and *Kokans* of Valsad district, Gujarat (14.3%).

The RMRC, Bhubaneswar, conducted a random survey of G-6-PD deficiency and haemoglobinopathies in a tribal dominated block (Banspal block) of Keonjhar district. G-6-PD deficiency was very high (11.96%) in the tribals. Abnormal haemoglobin was completely absent.

A study conducted in Ashram school children in Sudargarh district of Orissa in 1995 revealed that prevalence of sickle cell trait was 7.4 per cent in *Khaira* and 3 per cent in *Munda* tribes. The frequency of G-6-PD deficiency was considerably high among *Bhuyan* (16.7%), *Khaira* (13.9%), *Munda* (13.8%), *Oraon* (8.4%) and *Kissan* (4.1%) tribes.

In studies undertaken by the RMRC, Jabalpur, in collaboration with the Department of Biochemistry and Molecular Biology, Medical College of Georgia, Augusta, USA, a new mutation of α -1 Thal IV S-I-117 (G $\rightarrow$ A) has been detected for the first time in the world¹⁵, and two mutations of β thal, IVS 1-1 (G $\rightarrow$ A) and CD 30 (G $\rightarrow$ A) were detected for the first time in India while studying the tribal population of Madhya Pradesh. β thal intermedia with the Hb Hofu [β 26 (H₄) Val $\rightarrow$ Glu]- β^0 -thalassaemia [Codons 8/9 (+G)] combination has been found for the first time in central India in a *Gond* woman¹⁶.

In studies on haemoglobinopathies among the *Gond* tribal groups of central India, interaction of α and β -thalassaemia with β chain variants was carried out by the RMRC, Jabalpur, and it has been found that the simultaneous presence of a Thal type II with sickle or sickle β Thal improves the haematological and clinical profile of the patients. The prevalence of a thalassaemia has been found to be 85 per cent in the tribals, which appears to be the main determinant of clinical expression of sickle haemoglobin in addition to high foetal haemoglobin¹⁷.

The RMRC, Dibrugarh, in 1988, carried out studies in haemoglobinopathies among the tribals of Arunachal Pradesh. Abnormal haemoglobin E was detected among



12.0, 11.4 and 10.3 per cent *Nishis*, *Adis* and *Apatanis* tribes respectively, in heterozygous form. A case of haemoglobin EE was detected in *Mishing* tribe. The incidence of G-6-PD deficiency was found to be 19.4, 16.7 and 16.0 per cent among the *Adis*, *Apatanis* and *Nishis* tribes respectively.

Marital patterns of the tribals have been studied and found that most of them practice endogamy and consanguinity. Alliance with the first maternal cross cousin is considered as a right. The frequency of consanguinity ranged up to 82 per cent among the *Baigas*¹⁸. Since, the marital patterns have definite influence on genetic diseases, the tribes do need marriage counselling. Taking this fact into consideration a project on effect of health education and genetic counselling is being conducted by the RMRC, Jabalpur, in *Gond* tribe of Kundam block of district Jabalpur, with promising results on a mid term evaluation.

Social Science

A study on health seeking behaviour among the various tribes revealed that tribals have a strong belief in supernatural powers, evil spirits and evil eyes. They attribute illness to these and the first level of treatment was, therefore, the traditional medico-religious system. However, if affordable the tribals approach private practitioners and subcentre/primary health centre, but they prefer private practitioners, because of their easy availability, effective remedies provided and polite behaviour. Studies have shown that lack of approachability to the PHC, nonavailability of medicines at the PHC and fees charged by the PHC staff were also reasons for preferring private practitioners. The visits of the PHC staff to the areas were minimal¹⁹. The economic studies have highlighted that it was not true that the tribals do not have faith in modern systems of medicine, but it was their subsistence economic level which affected largely their decisions²⁰⁻²². Their superstitions, misbeliefs also played an important role in their decision on health problems. For example, *Kamars* of Raipur believe that child diseases like small-pox, measles, leprosy and TB cannot be cured by an allopathic doctor and that these can only be cured by a traditional healer. Certain practices were observed which affect tribal health like the use of salt after washing with water (*Bharia* tribe of Patalkot valley, Chhindwara), non exposure of children to sunlight by keeping them wrapped in cloth in cradles (*Abujhmarias* tribe of Bastar), non use of milk, as this was considered taboo (*Abujhmarias*), etc.

The RMRC, Jabalpur, carried out studies in birth related practices to understand their relationship to maternal and child health (MCH). It was observed in general, that the delivery was conducted in the squatting position as it is considered to be a less troublesome position. Arrow head, bamboo strip, new or old blade, knife, etc. were used for cutting the umbilical cord and soil or oil was applied at the stump. In most of the tribes, colostrum was not discarded. These tribals did not utilize MCH services since they considered pregnancy and delivery to be a natural phenomenon (RMRC, Jabalpur, unpublished data).

The demographic studies conducted in the various tribes indicate that fertility, in general, is low as compared to the nontribals of the same area, and, the primitive tribes have lower fertility than the non primitive tribes of the same area. Due to wide variations in socio-demographic indices observed in the various tribes and between the tribal and nontribal areas, district level planning for health and family welfare for the tribals has been advocated²³⁻³⁴.

CONCLUSION

To minimize the health problems of the tribals one should visit the field areas, identify the health problems, scientifically analyse the data and suggest possible remedies.

Despite all the efforts of the Government of India, a lot more needs to be done to improve the health status of the tribal communities. The situation calls for a close look and an in-depth analysis of the inter-play of socio-cultural and economic condition on the health behaviours of this group. The analysis would also provide an in-sight to the kind of health services needed by the different tribal communities. A fresh look is needed at the primary health care approach in these areas. Prioritization of health problems is essential to chalk out control programme for them. Unless location-specific and need-based health care delivery system is evolved which is appropriate, acceptable, accessible, and affordable, the goal of health for all which includes the concept of 'equity in health' would remain a utopian dream.

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This write-up has been contributed by Dr. G.D. Pandey, Asstt. Director, Regional Medical Research Centre for Tribals, Jabalpur.

85th ANNIVERSARY CELEBRATIONS OF ICMR

Tuberculosis and leprosy were the themes selected for the dissemination of scientific information to scientists, professionals, planners, policy makers as well as the general public in January and February 1996, respectively. Many of the Council's Institutes clubbed these activities with those relating to the National Science Day celebrations in February 1996.

The Tuberculosis Research Centre, Madras, organised an awareness programme on tuberculosis on January 22-23, 1996 which was inaugurated by Shri N. Haribhaskaran, Chief Secretary, Government of Tamil Nadu. The programme included a scientific lecture by Dr. S. Radhakrishna, former Director, Institute for Research in Medical Statistics, Madras; a two day exhibition on tuberculosis for the lay public and students (including video film shows on tuberculosis), and a quiz programme for school children. A free health check-up was also organized on the occasion in which visitors were examined and patients were advised and treated.

The National Institute of Cholera and Enteric Diseases (NICED), Calcutta, organised a symposium on January 31, 1996 highlighting different aspects of tuberculosis and the activities of the Council's Tuberculosis Research Centre, Madras. Representatives from various voluntary organizations and nursing staff from various hospitals of Calcutta participated in the symposium. Lectures/discussions were followed by an exhibition and screening of video films.

The NICED, Calcutta, organised an awareness programme on leprosy on February 28, 1996. Students and teachers from different schools, field workers from Gandhi Memorial Leprosy Foundation, Calcutta and staff of the NICED participated in the programme which included lectures/discussions and exhibition on leprosy and screening of video films.

The National Institute of Nutrition, Hyderabad brought out a special issue of the Nutrition News (January - March, 1996) featuring an article on Tuberculosis and malnutrition.

The ICMR Headquarters, brought out special issues of the ICMR Bulletin in January and February, 1996 featuring articles on Highlights of Research at the Tuberculosis Research Centre, Madras and Neuritic leprosy, respectively.

The Institute of Pathology, New Delhi, organised two lectures on February 16, 1996 — one on Tuberculosis by Dr. S. P. Khanna, Director, New Delhi Tuberculosis Research Centre and the other on Leprosy eradication: achievements and future prospects, by Dr. R.S. Misra, Consultant and Head, Department of Dermatology, Venereology and Leprology, Safdarjang Hospital, New Delhi.

The Vector Control Research Centre, Pondicherry, organised a science exhibition focussing on what the community can do to prevent/control vectors and vector-borne diseases, tuberculosis and leprosy at the VOC Higher Secondary School, Pondicherry on January 11-12, 1996. A large number of students from different schools/colleges of Pondicherry visited the exhibition. The VCRC Field Station at Cherthala (in Kerala) organised two lectures on January 17, 1996 — one on Tuberculosis by Dr. Rabindranatha, District Medical Officer, Tuberculosis Control Programme, Alleppey and the other on Leprosy by Sister Alicia Francis, Coordinator, Leprosy Control Programme, Green Garden Hospital, Cherthala.

The Centre for Research in Medical Entomology, Madurai, organised symposia on Tuberculosis and Leprosy on January 23, 1996.

The National AIDS Research Institute (NARI), Pune, organised a lecture on Rehabilitation of leprosy patients by Dr. Jal Mehta, Honorary President, Poona District Leprosy Committee, on January 29, 1996 at the BJ Medical College, Pune.

The CJIL Field Unit, Avadi (Madras) organised film shows, demonstrations and lectures on leprosy in various

schools at Avadi on January 30, 1996. An awareness programme on tuberculosis and leprosy was also organised at the Government Girls High School in Walajabad on February 27, 1996 where video films on tuberculosis and leprosy were screened. The CJIL Field Unit also organised a symposium on "Leprosy epidemiology research and National Leprosy Eradication Programme" at the Tuberculosis Research Centre, Madras, on February 5, 1996. The symposium was chaired by Dr. S.K. Noordeen, Director, Leprosy Unit, WHO, Geneva. Eminent speakers at the symposium included Dr. P.S. Rao, Director-in-Charge CLTRI, Chengalput; Dr. P.S.S. Sundar Rao, Director, SLRTC, Karigiri; Dr. H. Srinivasan, Editor, Indian Journal of Leprosy; Dr. S. Radhakrishna, Former Director, IRMS, Madras, *etc.*

The Regional Medical Research Centre (RMRC) for Tribals, Jabalpur, organised a talk on the preventive aspect of leprosy followed by a question-answer session on the topic at Jabalpur on February 25, 1996.

The Desert Medicine Research Centre, Jodhpur, organised a free health check-up camp at Village Ramdeora, near Kushtha Gram on February 28, 1996. The health camp was followed by an exhibition covering different aspects of leprosy and public meeting on the topic as also a debate for school children.

The RMRC Dibrugarh conducted a KAP study and an awareness programme among the tuberculosis patients and their attendants visiting the District Tuberculosis Centre, Margherita during January 23-25, 1996.

ICMR NEWS

Dr. B.N. Saxena, Senior Dy. Director-General and Chief, Division of Reproductive Health and Nutrition, took over as the new Additional Director-General of ICMR w.e.f. February 29, 1996.

The following meetings of various technical groups/committees of the Council were held:

Meetings of the Project Review Committees (PRCs), Task Forces (TFs), Scientific Advisory Committees (SACs) and Annual Review Meetings:

Annual Review Meeting on Traditional Remedies for Bronchial Asthma	February 23, 1996 (at New Delhi)
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Annual Review Meeting on Traditional Remedies for Diabetes Mellitus	February 23, 1996 (at New Delhi)
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TF on Venoms and Toxins	February 23, 1996 (at New Delhi)
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SAC of the Centre for Advanced Research on Standardisation and Quality Control and Formulation of Selected Traditional Remedies/ Natural Products, Jammu	February 27, 1996 (at Jammu)
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SAC of the Centre for Advanced Research for Health Consequences of Earthquake Disaster with	March 11-12, 1996 (at Pune)
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Special Reference to Mental
Health, Pune

PRC on Anatomy, Physiology and Haematology	March 12, 1996 (at New Delhi)
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Annual Review Meeting of National Cancer Registry Programme	March 13, 1996 (at Bangalore)
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TF to Study Normal Ranges of the Important Lymphocyte Subpopulation in Indian Population	March 14, 1996 (at New Delhi)
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Participation of ICMR Scientists in Scientific Events:

Dr. M.D. Gupte, Officer-in-Charge, CJIL Field Unit, Avadi, Madras, participated in the international workshop on Leprosy Research at Bangkok (March 11-13, 1996).

Dr. Roshan B. Colah, Senior Research Officer, Institute of Immunohaematology, Bombay, participated in the workshop on Molecular Techniques in Laboratory Medicine at Kuwait (March 16-20, 1996).

Dr. N. Raghuramulu, Dy. Director, National Institute of Nutrition, Hyderabad, participated in the XXVII International Vitamin A Consultative Group meeting at Guatemala City (March 18-22, 1996).

Dr. S.K. Kashyap, Director, National Institute of Occupational Health, Ahmedabad, participated in the WHO's

International Programme on Chemical Safety (IPCS) Task Group on Phosgene and Selected Chloroalkyl Ethers at Carshalton (March 18-23, 1966).

Dr. G.V. Satyavati, Director-General, ICMR, delivered the inaugural address at the symposium on Health Care in India: Present Scenario and Future Directions, at the Central Drug Research Institute, Lucknow (March 23, 1996).

Dr. V.B. Mandke, Dy. Director, Enterovirus Research Centre, Bombay, participated in the III Informal Consultation of Virologists from the SEAR Polio Laboratory Network at Jakarta (April 1-3, 1966).

Dr. D.A. Gadkari, Dy. Director and Dr. S.P. Tripathy, Sr. Research Officer, National AIDS Research Institute, Pune, participated in the meeting on HIV Vaccines for Developing Countries: Antigen Design at Boston (April 8-11, 1996).

Lectures/Orations:

Prof. T. Jacob John, Emeritus Medical Scientist (ICMR), Christian Medical College, Vellore, delivered the Amrut Mody Unichem Prize (1993) Oration of the ICMR on Preventing Poliomyelitis and Measles: From Laboratory Concepts to Community Models, at the ICMR Headquarters, New Delhi on February 28, 1996.

Dr. Brahm S. Srivastava, Dy. Director and Head, Division of Microbial Genetics, Central Drug Research

Institute, Lucknow, delivered the Dr. Y.S. Narayana Rao Award (1993) Oration of the ICMR on Search for Colonising Antigens of *Vibrio cholerae* as a Prelude to Vaccine Development, at the ICMR Headquarters, New Delhi on March 26, 1996.

Training Programmes/Workshops/Symposia held:

A training programme on Biostatistical Techniques in Controlled Clinical Trials on Traditional Medicine was held at the Institute for Research in Medical Statistics, Madras (March 4-15, 1996).

An ICMR/CONRAD workshop on Reproductive Epidemiology was held at the Indian Institute of Health Management Research, Jaipur (March 18-30, 1996).

A young scientist symposium on Frontiers of Reproductive Biology Research was held at the University of Hyderabad, Hyderabad (March 20-22, 1996).

An ICMR national workshop-cum-training programme on Quality Control and Standardization of Herbal Drugs was held at the Regional Research Laboratory, Jammu (March 25-29, 1996).

A workshop on Biomedical Communication was held at the Regional Medical Research Centre, Dibrugarh (March 26-28, 1996). The participants of this workshop were from Medical Colleges/Research Institutes and Hospitals, located in the North-Eastern part of India.

ICMR AIDED SYMPOSIA/SEMINARS/WORKSHOPS/COURSES/CONFERENCES

Symposium/Seminar/Workshop/ Course/Conference	Date & Place	Contact Address
Symposium on National Health Policy and People's Health	March 11-13, 1996; (at Allahabad)	Dr. N.P. Chaubey, General Secretary, Indian Academy of Social Sciences, Iswar Saran Ashram Campus, Allahabad.
I International Conference on Molecular Association.	March 18-20, 1996; (at Aligarh)	Prof. Pushkin M. Qureshi, Conference Director, Department of Chemistry, Aligarh Muslim University, Aligarh.
Symposium on Schizophrenia : The Indian Scene	March 22-23, 1996; (at Chandigarh)	Dr. P. Kulhara, Additional Professor, Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh.

COUNCIL'S TRAINING PROGRAMMES FOR 1996-97

Leprosy

At the Central Jalma Institute for Leprosy, Agra:

- Multidrug Therapy Orientation Course in Leprosy for Medical Officers (March 11-22, September 9-20, 1996).

Virology

At the National Institute of Virology, Pune:

- Diploma in Medical Virology (June 1996-May 1997).

Reproductive Biology

At the Institute for Research in Reproduction, Bombay:

- Training Course on Immunoassay Techniques (June 3-15, 1996).
- Training Course on Current Trends in Management of Infertility and Reproductive Disorders (September 2-13, 1996).

Endocrinology

At the National Institute of Nutrition, Hyderabad:

- Annual Training Course on Endocrinological Techniques and their Applications (August 1-September 15, 1996).

Nutrition

At the National Institute of Nutrition, Hyderabad:

- M.Sc. in Applied Nutrition (June 1, 1996-February 28, 1997).
- Annual Training Course in Nutrition (December 1, 1996-February 28, 1997).

Occupational Health

At the National Institute of Occupational Health, Ahmedabad:

- Orientation Course on Occupational Health for Industrial Medical Officers (September 17-29, 1996).

Medical Entomology

At the Vector Control Research Centre, Pondicherry:

- M.Sc. in Medical Entomology (from August 1996; for 2 years).

Laboratory Animal Technology

At the National Centre for Laboratory Animal Science, National Institute of Nutrition, Hyderabad:

- Training Course for Laboratory Animal Technicians (June 15-July 31, 1996).
- Training Course for Laboratory Animal Supervisors (September 1-November 30, 1996).

Haematology

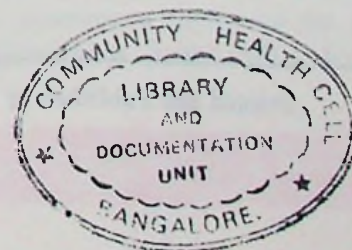
At the Institute of Immunohaematology, Bombay:

- Training Course in Transfusion Medicine for Blood Bank Medical Officers (August 5-October 4, 1996).
- Training Course in Blood Group Serology and Blood Bank Methodology for Technicians (August 5-September 4, 1996).
- Training Course in Advanced Haematology and Immunohaematology (September 17-October 4, 1996).

Biostatistical Techniques

At the Institute for Research in Medical Statistics, Madras:

- Training Course for Doctors in Biostatistical Techniques in Controlled Clinical Trials (March 4-15, 1996).



ICMR PUBLICATIONS

	Price (Rs.)
Nutritive Value of Indian Foods (1985), by C. Gopalan, B.V. Ramasastri and S.C. Balasubramaniam, Revised and Updated (1989), by B.S. Narasinga Rao, K.C. Pant and Y.G. Deosthale (Reprinted 1995)	23.00
Growth & Physical Development of Indian Infants and Children (1972, Reprinted 1989)	10.00
Studies on Weaning & Supplementary Foods (1974, Reprinted 1996)	15.00
Studies on Pre-School Children (1974, Reprinted 1984)	6.00
A Manual of Nutrition (Second Edition 1974, Reprinted 1995)	6.00
Low Cost Nutritious Supplements (Second Edition 1975, Reprinted 1994)	4.00
Menus for Low Cost Balanced Diets and School Lunch Programmes Suitable for North India (Second Edition 1977, Reprinted 1994)	4.50
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Nutrition for Mother & Child (Third Edition 1978, Reprinted 1991) by P.S. Venkatachalam & L.M. Rebello	9.00
Japanese Encephalitis in India (Revised Edition 1980)	5.00
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**Medicinal Plants of India Vol.2 (1987)	136.00

* 10 per cent discount allowed to individuals.

** 25 per cent discount allowed to individuals.

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