Tribal Health Problems, Disease Burden and Ameliorative Challenges in Tribal Communities with Special Emphasis on Tribes of Orissa

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Abstract

About a half of the autochthonous people of the world with about 635 tribal groups and subgroups including 75 primitive tribes live in India. The state of Orissa occupies a unique position in the tribal map of India having 62 scheduled tribes including 13 primitive tribes with a population of over 8.15 million constituting 22.3% of the population of the state as per 2001 Census. There is a paucity of comprehensive health research among the tribal populations of India. Most of the studies are isolated and fragmentary in nature. There is an urgent need for initiating the area specific, tribe specific, action oriented health research in consonance with the felt needs of the tribal communities. The research should be mission oriented, having practical applications and directed towards improving the quality of life of tribal people. The health scenario of tribes of Orissa presents a kaleidoscopic mosaic of various communicable and noncommunicable diseases in consonance with socio-economic developments in the state. The wide spread poverty, illiteracy, malnutrition, absence of safe drinking water and sanitary conditions, poor maternal and child health services, ineffective coverage of national health and nutritional services, etc. are the major contributing factors for dismal health in tribal communities of Orissa.

There is a heavy burden of communicable, noncommunicable and silent killer genetic diseases prevalent in tribal communities of Orissa. Many of the infectious and parasitic diseases can be prevented with timely intervention, health awareness, and information, education and communication (IEC) skilled activities. In spite of the tremendous advancement in the field of preventive and curative medicine, the health care delivery services in tribal communities especially in Orissa are still poor and need amelioration and strengthening with sustenance on the guidelines suggested to achieve the targeted goals of health for all in India. Unless locality specific, tribe specific and need-based health care delivery system is evolved which is appropriate, acceptable, accessible, and affordable, the goal of health for all would remain a Utopian dream!

Introduction

It is fascinating that about a half of the indigenous people of the world, i.e. 84,326,240 is living in India as per 2001 census, which constituted 8.2% of the total population of India. There were about 635 tribal groups and subgroups including 75 primitive communities who have been designated as ‘primitive’ based on pre-agricultural level of technology, low level of literacy, stagnant or diminishing population size, relative seclusion (isolation) from the main stream of population, economical and educational backwardness, extreme poverty, dwelling in remote inaccessible hilly terrains, maintenance of constant touch with the natural environment, and unaffected by the developmental process undergoing in India. There is a consensus that these scheduled tribes are the descendants of aboriginal population in India (Bhasin and Walter 2001).

The state of Orissa, the most picturesque state in Eastern India, occupies a unique position in the tribal map of India having 62 scheduled tribal communities, unevenly distributed in forest and hilly areas including 13 primitive tribes with a population of over 8.15 million constituting 22.3% of the population of the state as per 2001 Census. The tribal panorama presents a kaleidoscopic mosaic in Orissa with various ethnic, linguistic, cultural, religious, moral values, traditions, folklore styles, food habits, and genetic strands maintaining at various levels of development – social, cultural and economic life. They mainly depend on hunting and food gathering and shifting cultivation. They are not a homogeneous mass and cannot be lumped together for assessing their health needs and problems in Orissa. They live in varied habitats, climatic conditions and ecological niches.

According to the World Health Organization (WHO), the definition of health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The health status of any community is influenced by the interplay of health consciousness of the people, socio-cultural, demographic, economic, educational and political factors. The common beliefs, traditional customs, myths, practices related to health and disease in turn influence the health seeking behaviour of autochthonous people (Balgir 2004a). Health is an essential component of the well-being of mankind and is a prerequisite for human development. If general health of an average non-tribal Indian is inferior to the Western and even many Asian counterparts, the health of an average Indian tribal is found to be much poorer compared to the non-tribal counterpart. The health status of tribal populations is very poor and worst of primitive tribes because of the isolation, remoteness and being largely unaffected by the developmental process going on in India.

The United Nations (UN) members met in 2000 and set themselves eight goals to be achieved by 2015. Of these goals, reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria and other diseases related to the health segment were included. The first goal ‘of eradicating extreme poverty and hunger’ also contains a nutritional element which is health related. In the developing world, death rates in children under five are dropping, but not fast enough. Eleven million children are still dying every year, from preventable or treatable causes. More than half a million women die each year during pregnancy or childbirth. AIDS has become the fourth largest killer worldwide, and in parts of Asia, HIV is spreading at an alarming rate. The blight of malaria and tuberculosis continues.

Clearly, the challenges for India are multi-faceted. In rural areas, reducing child mortality and improving maternal health are major challenges. HIV is spreading fast in urban and slum areas. Health care in India has been neglected because of insufficient spending by the government. The Central Government has vowed to increase spending on health to 6% of Gross Domestic Product (GDP) by 2010 (as revealed recently by Union Health Minister that India would be able to meet the UN Millennium Development Goals, of which health is an important segment), and has unveiled a National Rural Health Mission. If this dream comes true, villages would have 24-hour health care services provided by an army of paramedics.

Tribal communities in general and primitive tribal groups in particular are highly disease prone. Also they do not have required access to basic health facilities. They are most exploited, neglected, and highly vulnerable to diseases with high degree of malnutrition, morbidity and mortality (Balgir, 2004). Their misery is compounded by

poverty, illiteracy, ignorance of causes of diseases, hostile environment, poor sanitation, lack of safe drinking water and blind beliefs, etc. The chief causes of high maternal mortality rate are found to be poor nutritional status, low hemoglobin (anemia), unhygienic and primitive practices for parturition. Average calorie as well as protein consumption is found is below the recommended level for the pregnant as well as lactating women. Some of the preventable diseases such as tuberculosis, malaria, gastroenteritis, filariasis, measles, tetanus, whooping cough, skin diseases (scabies), etc. are also high among the tribals. Some of the diseases of genetic origin reported to be occurring in the Indian tribal population are sickle cell anemia, alpha- and beta-thalassemia, glucose-6-phosphate dehydrogenase (G6PD) deficiency, etc. (Balgir, 2004b). Night blindness, sexually transmitted diseases are well known public health problems of tribals in India.

Health scenario in orissa

The Health Strategy of Orissa in 2003 has advocated the improvement in health status of tribal population by reducing the morbidity and mortality in them. Tribal people suffer from special health problems disproportionately such as malaria, sexually transmitted diseases, tuberculosis, nutritional deficiency diseases, genetic disorders like glucose-6-phosphate dehydrogenase (G6PD) deficiency, sickle cell anemia, etc. The situation analysis of health indices of the tribal population in Orissa is worse than the national average: infant mortality rate 84.2, under five mortality rate 126.6, children underweight 55.9, anemia in children 79.8, children with acute respiratory infection 22.4, children with recent diarrohea 21.1, women with anemia 64.9 per 1000. A high incidence of malnutrition has also been documented in tribal dominated districts of Orissa. This scenario presents a very grim picture about the general health and quality of life of the tribal people in Orissa. There is an urgent need to combat the health problems and take the rehabilitative measures to alleviate the sufferings of the dwindling masses in the state of Orissa.

Tribal health culture

Tribal communities are mostly forest dwellers. Their health system and medical knowledge over ages known as ‘Traditional Health Care System’ depend both on the herbal and the psychosomatic lines of treatment. While plants, flowers, seeds, animals and other naturally available substances formed the major basis of treatment, this practice always had a touch of mysticism, supernatural and magic, often resulting in specific magico-religious rites (Balgir, 1997). Faith healing has always been a part of the traditional treatment in the Tribal Health Care System, which can be equated with rapport or confidence-building in the modern treatment procedure. For example, the doctor priests of the Saora tribe utilize several herbs and roots in conjunction with their magico-religious rites in Orissa. Health problems and health practices of tribal communities have been profoundly influenced by the interplay of complex social, cultural, educational, economic and political practices. The study of health culture of tribal communities belonging to the poorest strata of society is highly desirable and essential to determine their access to different health services available in a social set up.

The common beliefs, customs, traditions, values and practices connected with health and disease have been closely associated with the treatment of diseases. In most of tribal communities, there is a wealth of folklore associated with health beliefs. Knowledge of folklore of different socio-cultural systems of tribals may have positive impact, which could provide the model for appropriate health and sanitary practices in a

given eco-system. The health culture of a community does not change so easily with changes in the access to various health services (Balgir, 2004a). Hence, it is required to change the health services to conform to health culture of tribal communities for optimal utilization of health services.

Health is a universally cherished goal. Health cannot be forced upon the people. The organization of health services to all people is considered to be the key step towards development (Srinivasan, 1987). It is an important input for the development of man and, thereby, to social and economic development of the country. Health is widely linked with development. A rapid and equitable economic development is a good health input and an adequate and equitable health care system stimulates development with improving human productivity. This is the reason; why the investment in health is, sometimes, called an investment in human capital.

Health care is one of the most important of all human endeavours to improve the quality of life especially of the tribal people (Balgir, 1997; 2000a, 2005a). It implies the provision of conditions for normal, physical and mental development and functioning of human being individually as well as in a group. A great realization has come from the medical scientists that human being can no longer be treated as an anatomical and physiological entity, and that man's individuality should be understood in terms of perceptions, culture and belief system (Balgir, 2000a). Studies by anthropologists indicate that traditional medicines do exist and persist even though the health consumer has now access to western medicine. There is a need to scientifically study the traditional tribal medicine and healing systems and combine them with modern allopathic system so as to make it available and affordable for the poor tribal population.

As we know that the health comes by evolution, not by revolution. Health must meet the need of the people, as they perceive them. Health cannot be imposed from outside against people's will. It cannot be dispensed to the tribal people. They must want and be prepared to do their share and to cooperate fully in whatever the health programs a community develops (Balgir, 2000a). The problems of shortage of food, poverty, population expansion, malnutrition, health, hygiene and disease burden still persist in 60% rural population in India. Proper health and balanced nutrition are, therefore, considered as some of the prime requirements for application of biotechnology in improving the quality of life of rural poor.

It implies sufficient knowledge about the culture, environment, natural and human resources, skill endowments and the belief systems of a set of people (Balgir et al. 2002, 2005a). This approach is best suited to study the behaviour of the people in health and disease, encompassing the biocultural and eco-environmental aspects of the concerned tribal population. It is envisaged to upgrade the health and nutritional status of human rural poor using emerging applied tools.

Tribal health problems

The primary health care infrastructure provides the first level of contact between the population and health care providers and forms the common pathway for implementation of all the health and family welfare programs. It provides integrated promotive, preventive, curative and rehabilitative services to the population close to their hearth and home. A majority of the health care needs of the tribal population are taken care of either by the trained health personnel at the primary health care level or by their own traditional

indigenous health practitioners at village level. Those requiring specialized care are referred to secondary and tertiary sector. The tribal population is not a homogeneous one. There are wide variations with regard to education and health status, access and utilization of health services among the tribal populations (Balgir, 2000a).

Keeping in view that most of the tribal habitation is concentrated in far flung areas, forestland, hills and remote villages, and in order to remove the imbalances and provide better health care and family welfare services to scheduled tribes, the population coverage norms of establishment of rural infrastructure have been relaxed.

The primitive tribes in India have distinct health problems, mainly governed by multidimensional factors such as habitat, difficult terrains, varied ecological niches, illiteracy, poverty, isolation, superstitions and deforestation. The tribal people in India have their own life styles, food habits, beliefs, traditions and socio-cultural activities. The health and nutritional problems of the vast tribal populations are varied because of bewildering diversity in their socio-economic, cultural and ecological settings (Balgir 2000a). However, data analysis in view of their ecological, ethnological, cultural and biological diversity is lacking in India.

The health care services and challenges in rural and tribal areas are a complicated phenomenon such as:

- Concept of health and disease is rather traditional which results in their not seeking treatment at an early stage of physical maladjustment and frequent refusal of preventive measures in rural areas and their idea of medical care is some treatment not easily accessible and available. Lack of motivation of people for availing medical care at the initial stage of the disease.
- Limited paying capacity or habit of getting treatment always free of cost.
- Comparative inaccessibility of medical care services due to under-developed communication and transport facilities.
- Nonavailability of qualified medical practitioner in the village.
- Qualified health workers and professional medical and paramedical staff do not want to work in rural and tribal areas because of professional, personal and social reasons.
- Nonavailability of private or governmental doctor as and when need arises.

A look into the pattern of rural health services shows that the scarcity of trained manpower for health is a major problem and obstacle to the extension of health services to rural and tribal areas. Moreover, the qualified health workers do not want to work in rural and tribal areas because of professional, personal and social reasons.

The health problems of rural and tribal populations cannot automatically be overcome by establishing more primary health centres and subcentres and also imparting training to more health personnel or providing integrated health services by a single authority or by a number of agencies. An integrated health services would be operated on a teamwork basis by division of labour so that the greatest possible use of professional skills could be made. While the physician is the central figure in the health center complex, the efficiency and output health services would depend upon the supporting

personnel consisting of nurses, various categories of paramedical (Laboratory Technician, Pharmacist, Multipurpose Health Worker, Genetic/Marriage Counselor, *Anganwadi* worker, etc.) and auxiliary staff.

Managerial skills and controlling power of the doctor to coordinate various activities and maintenance of infrastructures including vehicles and procurement of equipments, medicines, vaccines, etc. on regular basis are highly desirable. There is a complete lack of managerial training, financial empowerment and facilities available to the doctor to efficiently and effectively monitor and carry out public health duties in the rural setting and tribal areas. This drastically affects the well-being and tribal health in the state.

Frequent transfers and absenteeism of the staff, favouritism and corrupt practices hinder the smooth functioning of the Primary Health Centre (PHC), which have adverse health effects on the tribal population.

Disease burden

Any tribe must be encouraged to organize itself in order to take advantages of the programs designed for the development and health in the light of human genetics, prophylactic immunization, socio-cultural traditions and eco-friendly environment. It has been observed in Orissa that the tribal communities are vulnerable as well as have major threat of the following major health problems:

1. Communicable diseases : The people in their daily life consciously or subconsciously modify the environment and ecological aspects of their habitat, which in turn increase the risk for communicable diseases. The communication of diseases is dependent either on the direct contact or on the indirect agents like breathing, sputum, stool, saliva, urine, etc. The venereal diseases are communicated through direct contact and tuberculosis is communicated through indirect contact such as breathing. Thus, the communicable diseases are those diseases, which pass from infected person to a healthy person by direct or indirect contacts through infectious agents. Sometimes, viral or bacterial infections cause death in a large numbers (in epidemic form) and threaten the survival of mankind.

There are several communicable diseases prevalent among the tribals of Orissa. These are: Tuberculosis, Hepatitis, Sexually Transmitted Diseases (STDs), Malaria, Filariasis, Diarrhoea and Dysentry, Jaundice, Parasitic infestation, Viral and Fungal infections, Conjunctivitis, Yaws, Scabies, Measles, Leprosy, Cough and Cold, HIV/AIDS, which is spreading like wild fire, etc. due to lack of sanitation and unhygienic living (Balgir 2005a). They frequently become victims of repeated epidemics of the above-mentioned contagious diseases.

Leprosy is communicated through intimate and prolonged contact with the patient. The unhygienic conditions play a major role and disease is manifested in skin, mucous membrane and nerves and caused by mycobacterium leprae. Poor diet and nutrition enhances susceptibility of communication to infectious diseases. Besides, lack of personal and domestic hygiene, overcrowded living are also the causative factors responsible for this kind of disease. Currently, the leprosy prevalence rate in Orissa is 1.91 per 10,000 populations as against the national rate of 1.34 per 10,000 populations. Beside the other communicable diseases like diarrhea, measles, typhoid, and influenza are also reported among the tribals of Orissa.

Lymphatic filariasis (LF) is one of the major tropical diseases associated with disfigurement of grossly swollen limbs and genitals. Globally around 40 million people almost in 80 countries where the disease is endemic have clinical LF, and another 80 million are infected with the parasite. More than 1000 million people live in the endemic areas and are at risk of becoming infected. Human infection with the parasite leads to damage in the lymphatic vessels that lead to a wide range of temporary or permanent disabilities. The state of Orissa is highly endemic for filariasis. The LF can be eliminable. The Global Programme to Eliminate Lymphatic Filariasis (GPELF) recommends that all those who live in endemic communities be treated once in a year with a single dose of appropriate antifilarial drug like diethylcarbamazine (DEC). Though this drug has limited effect on adult filarial worm, it clears microfilariae from infected humans and deprives mosquitoes for opportunity to pick up infection from affected host to healthy individual. Elimination of LF by 2015 is the goal prescribed in National Health Policy of India.

As per the disease profile of filariasis in Orissa, a total of 43,646 persons were examined during the year 2004 and out of these, 797 were microfilaria positive and 3,050 had full-fledged disease, giving microfilaria rate of 1.82 and disease rate of 6.98 and endemicity rate of 8.81 in Orissa. Tribal people in coastal Orissa are equally vulnerable to this health problem.

Malaria is emerging as the major public health problem in all tribes of Orissa. Local outbreaks due to malaria are of frequent occurrence, and the morbidity and mortality associated with the disease is alarming. The environment is conducive to mosquito proliferation, survival and longevity; all these prerequisites lend to active transmission of the malaria pathogen. Owing to the heavy rainfall and high humidity, mosquito fauna is rich and breeding habitats are diverse. The transmission of malaria is perennial and persistent in Orissa. This type of malaria is often termed as tribal malaria. In the tribal pockets, most people live under poor socio-economic conditions and are vulnerable to malaria transmitted by efficient vectors. Resistance to chloroquine (the commonly used anti-malarial) in Plasmodium falciparum (Pf) infection is wide spread. Plasmodium vivax (Pv) is highly susceptible to chloroquine and, thus, should always be the first line of treatment, but recently it has been reported that malaria has also become chloroquine resistance in some tribal pockets of Orissa. The problem is further compounded by the poor administrative control for organized malaria control operations.

Malaria is the foremost public health problem in Orissa contributing 23% of malaria cases, 40% of Plasmodium falciparum (Pf) cases and 50% of malaria deaths in India. More than 60% of tribal populations of Orissa live in high-risk areas for malaria. Though the tribal communities constitute nearly 8% of the total population of India, they contribute 25% of the total malaria cases and 15% of the total Pf cases, leading to 30-50% malaria deaths in India. A high transmission of Pf is in the forest regions because malaria control in such settlements is unattainable due to technical and operational problems. During the year 2002-03 in Malkangiri, Kandhamal and Keonjhar districts of Orissa, the slide positivity rate (SPR) was recorded to be high in Bondo (14.2%), Didayi (14.4%), Juang (9.5%) and Kutia Kondh (10.5%) with the high Pf rate in Bondo (93.5%), Didayi (92.7%), Juang (91.2%) and in Kutia Kondh (92.7%) tribe. The spleen rate in children between 2 to 9 years was also high in Bondo (25.8%), Didayi (35.1%), Juang (24.4%) and in Kutia Kondh (26.3%) tribal population in Orissa.

Insecticide impregnated mosquito nets popularly known, as medicated nets is one such approach to ward off the dreaded vectors to reduce the man mosquito contact. This strategy is simple, cost-effective, environment friendly, sustainable and involves the much needed community participation which is vital to the success of any health program. This method of vector control when integrated with health education, inter-sectorial cooperation and biological control, coupled with early detection and prompt treatment will provide a long lasting solution in keeping with the global strategy for malaria control.

Diarroheal disorders are communicable waterborne diseases like gastro-intestinal disorders including acute diarrhea and are responsible for high morbidity and mortality. In tribal areas of Orissa, the diarrheal/dysentry diseases including cholera occur throughout the year attaining peak during the rainy season (from June to October). During the year 2002-03, Bondo (12.7%), Didayi (13.2%), Juang (12.6%) and Kutia Kondh (10.4%) children (0-6 years) and Bondo (10.9%), Didayi (11.6%), Juang (6.9%) and Kutia Kondh (10.2%) adult population had acute diarrhea. The bacteriological investigations of rectal swabs revealed Vibrio cholerae (2.5%), Escherichia coli (39.2%), Salmonella (0.2%) and Shigella spp. (1.8%) in all culture positive cases, while 56.3% of rectal swabs were culture negative. The acute diarrheal problems were basically due to poor environmental hygiene, lack of safe drinking water, improper disposal of human excreta, aggravated by low literacy, socio-economic status coupled with blind cultural belief, lack of access to medical facilities leading to serious public health problems.

Intestinal parasitism (protozoan and helminthic infestation) is a common public health problem in Bondo (44.6%), Didayi (44.9%), Juang (31.9%) and Kutia Kondh (41.1%) tribals in Orissa. Amongst helminthic infestations, the hookworm is most common in Bondo (21%), Didayi (18.7%), Juang (14%) and Kutia Kondh (18.2%) children aged 0-14 years. Both infective and noninfective scabies is prevalent in tribal communities, i.e. in Bondo (20.6%), Didayi (6.9%), Juang (10.7%) and Kutia Kondh (15%) of Orissa.

2. Non-communicable diseases : Education, especially the female education, is generally considered a key factor to development. Female education is believed to have a great influence on the maternal and child health as it enhances the knowledge and skills of the mother concerning age at marriage, contraception, nutrition, prevention and treatment of diseases. This also means that the higher infant and child mortality rates among the poorly educated mothers are due to their poor hygienic practices. Moreover, maternal education is related to child health because it reduces the cost of public health related to information on health technology.

It is expected that the increase in literacy rate of a community would reduce the fertility, morbidity and child mortality or in other words, improve the health status of the community as a whole. Mortality decline can be achieved by widely distributed public health services such as information technology, immunization, sanitation, nutrition, adding preventive and curative services to improve the maternal and child health.

Lack of proper health education, poverty, faulty feeding habits and irrational beliefs aggravate the health and nutritional status of these underprivileged people in India (Balgir, 2000a). According to National Nutrition Monitoring Bureau (NNMB) report (2000-01), the state of Orissa continues to have the 2nd highest position for undernutrition among the ten states of India. While comparing the aggregate figures for chronic energy deficiency (CED), i.e. Body Mass Index (BMI) less than 18.5 in adult men and

women in ten states, the level of CED was higher in Orissa. The prevalence of CED in adult men in the state was 38.6% as compared to aggregate of 37.4%, whereas, the CED for adult women was 46% against 39.3% of aggregate. As malnutrition is known to lead susceptibility to infectious diseases to death, the mortality rate in primitive tribes may be attributed to malnutrition. Four primitive tribes, namely, Bondo (16%), Didayi (19%), Juang (25.1%) and Kutia Kondh (26.6%) showed severe malnutrition (based on Gomez classification) as mentioned above, respectively in Malkangiri (Bondo and Didayi), Keonjhar (Juang) and Kandhamal (Kutia Kondh) districts of Orissa. The severe anemia (Hb< 7 g/dl) ranged from 0.6 to 2.3%, moderate (Hb 7-9 g/dl) from 7.4 to 13.6% and mild (Hb 9-11 g/dl) 30.7 to 48.2% in the above primitive tribes. Anemia was more common in females than males. The majority (51.2%) of these tribals showed microcytic and hypochromic blood picture suggestive of iron deficiency anemia. There was a positive correlation between hookworm infestation and anemia due to indiscriminate defecation, bare foot and lack of health awareness. Drug administration intervention revealed reduction in worm infestation (51.2%) and improvement of anemia (34.8%) in individuals belonging to above tribes. The CED was also found very high in Lanjia Saura (89.4%) and Kutia Kondh (88.9%) of Rayagada district of Orissa.

A study in Ashram school Gond children of Kalahandi district showed visible conjunctival pallor of 34.3%, vitamin A deficiency 15.2%, Vitamin B deficiency of 15.6%, iodine deficiency of 17.4%, scabies 27.2% and dental caries of 20% (Balgir et al., 2002). Another study (Balgir et al., 1998) on tribal children of Sundargarh and Mayurbhanj districts of Orissa represented moderate to severe anemia of 68-75%, lower mean heights and weights in comparison to ICMR standards (ICMR Report, 1984). However, a cross-sectional evaluation of physical growth and development among the tribal children aged 6-14 years of Mayurbhanj and Sundargarh districts who were staying in Ashram School Boarding and growing their own fruits and vegetables for consumption revealed the better health and nutritional status of Ashram school children than the ICMR average for Orissa (Balgir et al., 1999). Deficiency of essential dietary components leads to malnutrition, protein calorie deficiency and micronutrient deficiencies like vitamin A, iron and iodine deficiency.

Public health policies are not adopted and implemented in vacuum; they are the outcome of social and political change. The forces of change need to be understood in the interest of public health. Conditions of environmental sanitation are deficient, combined with limited access to preventive and curative health care, result in high incidence of infectious diseases and high state of morbid conditions in the tribal population of Orissa. It is well established that undernutrition impairs body's defence mechanism and undernourished children are more susceptible to various infections. It is observed that higher fertility and higher infant and child mortality and also maternal mortality are interlinked phenomenon based on health and nutritional status of a community.

Consumption of hooch is a habit with most tribals and considered to be the main reason for the community's backwardness. More people die of hooch-related causes in tribal areas than anywhere else in Orissa. With the literacy rate being low, most tribals spend their hard-earned money on liquor instead of finding a way out of poverty. But the bulk of the earning is spent on buying hooch. Hooch gets the boot in tribal population. The women organizations in tribal areas are pleading for ban of sale of country liquor. Some tribal villages gave up opium addiction also. The winds of change are blowing across tribes and tradition-driven villages of Orissa. Both of these are small, albeit

significant, instances of a change in the mindset of people who have long been tied to habits or tradition.

Liver cirrhosis due to excessive drinking of country made alcohol, hypertension due to excessive salt intake, chronic respiratory diseases due to excessive smoking, oral cancer (due to regular betel nut chewing), malnutrition, nutritional deficiency disorders like iron deficiency anemia, iodine deficiency (goitre), avitaminosis, etc. form a major chunk. Cardio-vascular diseases are very uncommon among the tribals of Orissa.

There are several other environmentally caused health hazards due to poor sanitation, poor disposable facilities for human excreta, animal waste, sewerage and sullage, etc. associated with illiteracy, extreme exploitation by the local elites, etc. However, in some tribes the indigenous way of treatment for some common ailments using herbs and other forest flora or fauna products is much more advanced than the modern allopathy in some cases.

3. Silent killer genetic diseases : Genetic disorders are gaining prominence and have profound health implications in morbidity status of tribals in Orissa (Balgir 2004b, 2004c, 2005b). Sickle cell anemia and glucose-6-phosphate dehdrogenase (G-6-PD) enzyme deficiency are the two important genetically determined disorders, which play an important role in human health and disease.

Out of the 62 scheduled tribes in the state of Orissa, 18 major scheduled tribes each comprising more than 1 lakh individuals as per 1991 census were studied. These major scheduled tribes included Bathudi, Bhumiz, Kolha, Lodha and Santal from Mayurbhanj district, Bhuyan, Kharia, Kissan, Munda and Oraon from Sundargarh district, Bhatra from Nawarangpur district, Gond from Kalahandi district, Kondh from Kandhamal district, Paraja from Koraput district, Bondo and Didayi from Malkangiri, Juang from Keonjhar and Saora from Ganjam and Gajapati districts in Orissa.

The frequency of blood group B showed preponderance over blood group A among Bathudi, Bhuyan, Kissan, Kolha, Kondh, Munda, Oraon, Paraja, Santal and Saora tribes. In Bhumiz, Gond, Kharia and Lodha tribes the opposite was true, thereby showing their ethnic diversity. The frequency of Rhesus-negative phenotype was very low (range zero to 2.1%) among all the tribes of Orissa, and among Bhumiz, Kharia, Kissan, Kolha, Lodha, Munda, Paraja, Santal and Saora tribes it was completely lacking (Balgir et al, 2004).

The distribution of sickle cell disorders varied from zero to 22.4% among 18 major tribes studied here from Orissa. High frequency of the disorders was observed among the Gond (22.4%), Bhatra (18.1%), Paraja (14.8%), Kharia (7.4%) and Saora (7.3%) tribes. While Bhuyan, Kissan, Kolha, Lodha and Oraon tribes lacked them, the distribution of beta-thalassemia showed wide range of variation, i.e. from zero to 8.5% among them, high incidence of the trait was noted among Paraja (8.5%), Santal (8.0%), Lodha (6.7%), Bhatra (6.6%), Kondh (6.3%) and Saora (6.2%). The low frequency of sickle cell gene was found in Bondo (0.6%), Didayi (3.2%), Juang (1.3%) and in Kutia Kondh (1.5%) tribe of Orissa (Balgir, 2004d; Balgir et al 2004; Balgir, 2005b).

The distribution of β-thalassemia trait showed wide range of variations, i.e. from 0% to 8.5% among the major tribes of Orissa. High incidence of β-thalassemia trait was noted among Paraja (8.5%), Santal (8.0%), Lodha (6.7%), Bhatra (6.6%), Kondh (6.3%), Saora (6.2%), and so on in the decreasing order. The prevalence of beta-thalassemia

was low in Bondo (0.5%), Didayi (3%), Juang (2.6%) and Kutia Kondh (2.3%) tribe of Orissa (Balgir et al, 2004, Balgir, 2005b).

The distribution of G-6-PD deficiency among 18 major scheduled tribes of Orissa was studied and the enzyme deficiency was quite high, varying from 5.1 to 15.9% (Balgir 2004d, Balgir et al 2004). The frequency of deficiency was high in males (range 4.3-17.4%) than in females (range 0.0-13.6%). Both deficient female heterozygotes and homozygotes were encountered. High incidence of G-6-PD deficiency was observed among Munda (15.9%), Paraja (15.9%), Kharia (14.2%), Bhuyan (12.9%), Kolha (9.8%), Bathudi (9.5%), Bhumiz (9.5%), Santal (9.0%) and Oraon (8.2%) tribes. The frequency of G6PD deficiency was recorded to be low in Bondo (0.4%), Didayi (1.6%), Juang (7.3%) and Kutia Kondh (4.8%) tribes (Balgir et al, 2004, Balgir, 2005c).

Recently, the G-6-PD enzyme deficiency among the tribes (Bathudi, Bhuyan, Munda and Santal tribes) of India has been identified as a new variant, called 'G-6-PD Orissa' which had only 10-20% of the normal enzyme activity and normal electrophoretic mobility, but had five-fold higher Michael's constant for the substrates which actually translates roughly into five-fold lower activity at limiting substrate concentrations and showed the increased thermostability than normal enzyme (Kaeda et al., 1995). This means that the anti-malarial drugs like primaquine and many other compounds such as phenacetin, furadantin, certain sulphonamides and acetyl salicylic acid (aspirin), etc. should be administered with caution among the tribal populations of India including of Orissa, which may cause hemolytic crisis and, sometimes may even be fatal.

Hereditary hematological disorders such as hemoglobinopathy and thalassemia syndrome (Balgir and Sharma, 1988; Balgir, 1996a, 1996b), glucose-6-phosphate dehydrogenase enzyme deficiency (Balgir, 1989) and hemophilia, and colour blindness (Balgir, 1999a), chromosomal aberrations, congenital malformations, inborn errors of metabolism, etc. are encountered among the tribal populations. The preventive and control strategies along with remedies for some of these hereditary disorders have also been highlighted elsewhere (Balgir, 1996c, 1999b, 2000b, 2004b).

4. Reproductive health : After India's independence, government institutions gradually opened in rural areas inhabited by indigenous people. Male officers from the developed coastal plains were posted in these government offices temporarily, usually for a period of two to three years. Since the tribal areas were underdeveloped and lacked necessities of civilized lifestyle, the officers who were posted in tribal areas did not bring their families with them. During their stay, some of them entered into bigamy by marrying innocent young tribal women. This did not cost them much and provided a solution to their loneliness and physical or sexual needs. Two or three years later, they could leave the area leaving the tribal wife and children without any support. This illegal and inhuman practice by the government officials remained unknown to the public in the coastal plains. Further, the dark side of these activities was the grabbing of land by outside people in the tribal areas, sexual exploitation of innocent tribal women, and extortion of forest produces by non-tribal traders, stood as a challenge before the indigenous women living in the forests of Southern Orissa. This has led to the spread of certain diseases prevalent only in the coastal belt, but now common among the tribals.

In tribal areas there is a lack of infrastructure particularly related to the supply of drinking water, electricity and educational and health services. The tribal territory is rich in mineral, forest and water resources, but the poorest of the poor live here. The

area has also an abundance of rare flora-fauna and is rich in bio-diversity. Despite this, tribes have to migrate in search of their livelihood, have low access to heath care and education and have higher morbidity and mortality. Thus, it is required that the development processes are speeded up in the tribal areas ensuring that the fruits of development must reach the tribal communities. The development process has displaced sizable number of tribal people from their natural habitat and from the sources of their livelihood in recent times. This has further kept them below poverty line.

The infant mortality rates (per 1000 live births) were very high in four primitive tribes, namely, Bondo (139.5), Didayi (131.6), Juang (132.4) and in Kutia Kondh (128.7) with high maternal mortality rate (per 1000 female population) in Bondo (12), Didayi (10.9), Juang (11.4) and Kutia Kondh (11.2) tribe. The life expectancy was low in Bondo (48.7), Didayi (57.1), Juang (49.6) and Kutia Kondh (50.7 years). The crude birth rate (per 1000 population) was also low in Bondo (18.3), Didayi (24.3), Juang (22.3) and Kutia Kondh (21.6) with the high crude death rate (per 1000 population) in Bondo (19.2), Didayi (23.7), Juang (21.2) and Kutia Kondh (20.9) population. The average number of pregnancies was found to be 5.09 in Kutia Kondh tribe. The unhygienic and primitive parturition practices were mainly responsible for high maternal mortality. Among Kutia Kondh tribe, the delivery was conducted by the mother herself in a half squatting position holding a rope tied to roof of the house. This helps her in applying pressure to deliver the child. In complicated labour, obviously, it might lead to maternal as well as child mortality. The respiratory diseases including upper respiratory tract infections were more commonly prevalent in Bondo (14.9%), Didayi (16.6%), Juang (8.3%) and in Kutia Kondh (13.6%) tribe, which accounted for a high infant mortality due to inadequate vaccination, lack of early diagnosis and treatment and prevention.

It is interesting to note that the number of conceptions, surviving children, abortions and stillbirths per mother was higher in carrier couples of sickle cell disease than in the normal parents. The number of per mother deaths of offspring below one year was four times higher in carrier parents than in the normal parents. Similarly, the number of deaths of offspring below ten years of age in sickle cell trait parents was five fold higher than in the normal couples in Orissa (Balgir, 2005d). Both the number of abortions and stillbirths per mother was almost two times higher in sickle cell carrier parents than in the normal couples. Further, it was noteworthy that the fertility or the number of conceptions per abnormal couple (in sickle cell carrier) was higher than in the normal couples. This means that the abnormal couples produced more children than the normal parents to ensure the survival of some of them (Balgir, 2005d).

For the first time this study revealed that hereditary causes, apart from others, were also responsible for the high neonatal/infant mortality in Orissa. This study, which dealt with the reproductive outcome in carrier parents (couples) of sickle cell disease, had shown that the reproductive wastage (abortions and stillbirths) in such families was almost double as compared to normal parents (Balgir, 2006). These results were consistent with our previous findings (Balgir et al., 1997). Moreover, the number of deaths of offspring below one year of age and below 10 years of age in such union was four and five times, respectively higher than in the normal parents. Further, the infant mortality rate was comparatively higher in couples with sickle cell trait (80.3) than in the normal couples (26.7). These findings are detrimental to the progeny of sickle cell trait couples and are substantially contributing to the high neonatal/infant mortality rate in the state of Orissa (Balgir, 2005d, 2006).

Ameliorative challenges

There are several challenges for policy makers, planners, administrators, implementers, doctors, social workers and nongovernmental organizations (NGOs) for the amelioration of tribal communities in the Eastern Ghats. Some of the suggestions are listed here for giving at least some relief to the suffering tribal masses:

- A complete Mini Hospital or Health Unit (including a medically qualified Doctor, a Laboratory Technician, a Pharmacist and a Staff Nurse with required medicines and basic laboratory testing set up, etc.) in a Mobile Van should be set up which will cater to the health needs of the tribal community in a group of adjacent villages fixing a date at least weekly or preferably in the weekly tribal market to minimize the tribal sufferings.
- A mass awareness and preventive programme about common prevalent diseases should be launched at weekly markets in tribal areas with increased interaction of Health Workers with the participation of local population.
- Mass screening for genetically transmitted diseases such as hemoglobino-pathies, b-thalassemia syndrome, G6PD deficiency, hemophilia, colour blindness, etc. should be continued at an interval of certain period for carrier detection among the high risk tribal communities.
- Providing Genetic/Marriage Counsellor to affected tribal communities and families for the prophylactic guidance and future reproductive decisions.
- Providing social and economic incentives and support for combating the common prevalent communicable and noncommunicable diseases in the tribal community.
- Maintenance of registry of common prevalent diseases will be an added advantage for future course of action and effective mobilization of health care machinery of the district, state or the region.
- For nutritional deficiencies, localized research should be directed towards the easily or cheaply available food items, which could provide necessary nutrients with change of dietary practice to the vulnerable families and segments of the society.
- Local agricultural produce should be marketed by the tribal cooperative societies rather than individually for the better profit without involving the intermediary agents. Financial incentives should be given for the transport of agricultural produce and communication. Services of anthropologists are indispensable for such monitoring.
- To achieve operational efficiency in the health care delivery programs, efforts should be made to involve local tribals (preferably girls) with economical incentives, traditional dais, traditional healers in the health and family welfare delivery system after giving them proper training. Preventive approach like immunization, anti-infection measures and various other prophylactic aspects should be given more importance.
- Constraints and bottlenecks of the existing health and family welfare delivery system should be identified, specifying clearly the infrastructure required, strategies to be developed which are in consonance with the felt needs of the local tribal population.

In spite of the tremendous advancement in the field of preventive and curative medicine, the health care delivery services in tribal communities especially in Orissa are

still poor and need amelioration and strengthening with sustenance to achieve the targeted goals of health for all in India. Unless locality specific, tribe specific and need-based health care delivery system is evolved which is appropriate, acceptable, accessible, and affordable, the goal of health for all would remain a Utopian dream!

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