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A CROSS SECTIONAL STUDY OF ANEMIA IN PREGNANT WOMEN OF EASTERN COAST OF ODISHA

R S Balgir*[#], J Panda*[1], A K Panda*[1] and M Ray*[1]

Abstract: *Of the three most vulnerable segments of society, viz., infants/children, pregnant women, and old-age-people, the pregnant women are highly prone to anemia. Anemia in pregnancy is one of the major causes of maternal morbidity, mortality and reproductive wastage in the world including India. However, regional and community variations for anemia exist throughout India. This study aims at exploring the magnitude of anemia in pregnant women of coastal Odisha. A cross-sectional study of 180 pregnant women, attending two major hospitals of coastal Odisha, was carried out during 2004-2005 with special reference to vulnerable communities and district locations. Study revealed an alarmingly high incidence of 71.1% of anemia indicating poor maternal and child health care in general castes, scheduled castes and scheduled tribes of coastal Odisha. Nutritional supplementations were suggested to overcome the low level of hemoglobin and to get better pregnancy outcome in the vulnerable communities of pregnant women in coastal region of Odisha*.

Key words: Anemia, Pregnant women, Antenatal care, Community study, Coastal Odisha.

INTRODUCTION

Anemia in pregnancy is emerging as one of the major causes of maternal complications, morbidity and offspring mortality in almost all the developing countries of the world.[1] The primary purpose of screening of pregnant women is to identify the mothers and fetuses vulnerable to anemia for which early intervention has been shown to markedly reduce the maternal and child morbidity and mortality.[2] The state of Odisha especially the coastal region is highly prone to anemia due to endemicity of malaria, parasitic infestations, prevalence of hereditary hemolytic disorders, micronutrient deficiencies, socio-cultural beliefs and traditions, and unhygienic living conditions.[3]

This study aims to explore the magnitude of anemia in pregnant women attending the two Medical College Hospitals of coastal region in relation to different vulnerable communities and various districts in the state of Odisha.

MATERIALS AND METHODS

This study was carried out at the Division of Human Genetics, Regional Medical Research Centre (Indian Council of Medical Research), Bhubaneswar, Odisha during June 2004 to May 2005.

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For this study, 2-3ml intravenous blood samples were consecutively collected using disposable syringes and needles in disodium salt of Ethylene Diamine Tetraacetic Acid (EDTA) coated vials after taking informed consent from each pregnant woman visiting for antenatal check up at the Out Patient Department (OPD) of Obstetrics and Gynaecology, Capital Hospital, Bhubaneswar (116 samples) and at the OPD of Obstetrics and Gynaecology, M.K.C.G Medical College & Hospital, Berhampur (64 samples) in coastal Odisha. Background information of each woman such as name, age, residential address, etc. was also recorded.

A total of 180 blood samples were collected and transported under wet ice-cold conditions to laboratory at Bhubaneswar within 24 h of collection for hematological laboratory investigations and were analyzed following the standardized laboratory procedures and techniques on an automated Blood Cell Counter (Model MS4, Melet Schloesing Laboratories, Cergy-Pontoise Cedex, France). The classification of WHO[4] was adopted for identifying different grades of anemia among pregnant women.

RESULTS

Of the 180 pregnant women who attended the antenatal care in the hospital setting, the majority belonged to general castes 80% (144/180), followed by scheduled castes 17.2% (31/180) and scheduled tribes 2.8% (5/180) in the coastal region of Odisha. Out of 144 pregnant women affiliated to general castes, the majority (32.6%) belonged to Khandayat caste, followed by Brahmins (18.1%), Malla (8.3%), Teli (7.6%), Fishermen (4.9%), Barber (4.9%), Chasa (3.5%) and so on in the decreasing order. Among the scheduled castes, Panna (54.8%) had outnumbered the Haddi (22.6%), Dhoba (12.9%) and other castes for attending the hospital based prenatal check-up. On the other hand, a very low attendance of prenatal check-up at hospital was observed among the scheduled tribes of Odisha (Table 1).

Table 1 shows that out of a total of 180 pregnant women who approached for antenatal check-up at hospital, 10% had severe clinical anemia, about 29 to 32% had mild to moderate (7-11g/dl) anemia and only 28.9% were found with the hemoglobin level in the normal range (> 11.1g/dl).

Taking into consideration their native place or district of domicile the pregnant women were distributed according to their domicile and level of hemoglobin as per WHO classification of different grades of anemia (Table 2).

The majority of pregnant women belonged to Khurda district (35%), followed by Ganjam (33.3%), Anugul (4.4%), Cuttack (3.3%), Mayurbhanj district (3.3%) of Odisha and Srikakulum district of Andhra Pradesh (2.8%), and so on in the decreasing order. Severe anemia (Hb <7g/dl) was notably observed among the pregnant women belonging to Ganjam, Cuttack and Khurda districts. Mild to moderate anemia (Hb 7-11g/dl) was recorded in the pregnant women of coastal districts of Ganjam, Cuttack, Khurda, Anugul and Puri in Odisha state (Table 2).

Table 1: Community-wise distribution of pregnant women with different grades of anemia in Odisha

Caste/Tribe	Name of Community	N	Pregnant women with different grades of Anemia			
			Severe Hb <7.0g/dl n	Moderate Hb 7-10g/dl n	Mild Hb 10.1-11.0g/dl n	Normal Hb >11.1g/dl n
General Castes	Brahmin	26	6 (23.1)	5 (19.2)	8 (30.8)	7 (26.9)
	Karan	8	1 (12.5)	3 (37.5)	3 (37.5)	1 (12.5)
	Khandayat	47	4 (8.5)	13 (27.6)	14 (29.8)	16 (34.0)
	Teli	11	2 (18.2)	2 (18.2)	3 (27.3)	4 (36.4)
	Chasa	5	0 (0.0)	1 (20.0)	1 (20.0)	3 (60.0)
	Fisherman	7	0 (0.0)	3 (42.8)	3 (42.8)	1 (14.3)
	Weaver	4	1	2	1	0
	Barber	7	0 (0.0)	4 (57.1)	1 (14.3)	2 (28.6)
	Gauda	4	0	0	2	2
	Mali	2	0	1	0	1
	Sunari	4	0	2	1	1
	Dumal	2	0	0	1	1
	Carpenter	2	0	1	1	0
	Malla	12	1 (8.3)	4 (33.3)	4 (33.3)	3 (25.0)
	Reddy	1	0	0	1	0
	Muslim	2	0	0	1	1
Scheduled Castes	Haddi	7	0 (0.0)	3 (42.8)	1 (14.3)	3 (42.8)
	Bauri	2	0	1	0	1
	Panna	17	3 (17.6)	6 (35.3)	5 (29.4)	3 (17.6)
	Dhoba	4	0	4	0	0
	Gonda	1	0	0	0	1
Scheduled Tribes	Munda	1	0	1	0	0
	Paraja	1	0	0	0	1
	Santhal	2	0	0	2	0
	Saora	1	0	1	0	0
Total		180	18 (10.0)	57 (31.7)	53 (29.4)	52 (28.9)

*Figures in parenthesis are percentages

DISCUSSION

It is a matter of public health concern that a cross-section of 180 pregnant women attending 2 major hospitals for antenatal care in coastal Odisha who were screened for different grades of anemia have revealed an alarmingly high incidence of 71.1% of anemia, indicating very poor maternal and child health care in the region. Several epidemiological studies have shown that both low and high hemoglobin (Hb) concentrations are associated with increased adverse birth outcomes, including fetal death, intrauterine growth retardation, preterm delivery and low birth weight.[5-9] The key argument supporting anemia is related to the fact that red blood cells contain hemoglobin which is an essential component of the respiratory system for oxygen transport. Any substantial reduction in hemoglobin and red blood cells reflects a reduced capacity of oxygen transport to tissues. Such a reduction in oxygen transport can be regarded as an adverse health outcome. Thus, iron deficiency has a definite effect on health due to anemia. This further

Table 2: District-wise distribution of pregnant women with different grades of anemia in Odisha

Name of District in Odisha State	N	Pregnant women with different grades of Anemia			
		Severe Hb <7.0 g/dl n	Moderate Hb 7-10 g/dl n	Mild Hb 10.1-11.0g/dl n	Normal Hb >11.1 g/dl n
Sundargarh	2	0	1	0	1
Mayurbhanj	6	0 (0.0)	0 (0.0)	4 (66.7)	2 (33.3)
Jajpur	1	0	0	0	1
Dhenkanal	1	0	1	0	0
Cuttack	6	1 (16.7)	2 (33.3)	2 (33.3)	1 (16.7)
Jagatsinghpur	1	0	0	1	0
Khurda	63	1 (1.6)	16 (25.4)	23 (36.5)	23 (36.5)
Puri	12	0 (0.0)	2 (16.7)	5 (41.7)	5 (41.7)
Ganjam	60	14 (23.3)	27 (45.0)	7 (11.7)	12 (20.0)
Gajapati	1	1	0	0	0
Jharsuguda	1	0	0	1	0
Bolangir	2	0	1	1	0
Boudh	2	1	0	1	0
Anugul	8	0 (0.0)	2 (25.0)	2 (25.0)	4 (50.0)
Kandhamal	3	0	3	0	0
Nayagarh	3	0	1	1	1
Koraput	3	0	1	1	1
Srikakulum, A.P.	5	0 (0.0)	0 (0.0)	4 (80.0)	1 (20.0)
Total	180	18 (10.0)	57 (31.7)	53 29.4)	52 (28.9)

*Figures in parenthesis are percentages

supports the earlier contention that maternal morbidity, mortality and fetal wastages are considerably high in the state of Odisha.[2]

In looking at pregnancy-related or reproductive outcomes, anemia is an undesirable health outcome and a predictor or cause of other adverse outcomes, i.e., maternal and fetal mortality, preterm birth and low birth weight. Some studies found an association between anemia and adverse pregnancy outcomes[10-12] whereas the other studies did not show any significant association.[13] Maternal nutrition is an important predictor of perinatal results. This concept has gained more importance in recent years due to the growing acceptance of the 'fetal origin of adult disease' hypothesis. Understanding the effect of maternal hematological parameters on obstetric outcome has public health importance because these indicators are associated with the infant health and survival and influence the intra-uterine life development and health in later life.

It is a matter of concern that out of 180 pregnant women who attended antenatal care in the hospital in the present study, the majority belonged to general castes (80%), a limited number to scheduled castes (17.2%) and only few to scheduled tribes (2.8%) in coastal

Odisha. This reflects the poor compliance with the National Rural Health Mission (NRHM) program of the government of India which needs further strengthening and streamlining. As Table 1 shows, out of a total of 180 pregnant women who approached for antenatal check-up at hospital, 10% had severe clinical anemia, about 29 to 32% had mild to moderate (7-11g/dl) anemia and only 28.9% of the pregnant women had the hemoglobin level in the normal range (> 11.1g/dl). Of the major causes of maternal mortality continue to be unsafe abortions, antenatal and post-partum hemorrhage, anemia, obstructed labor, hypertensive disorders and post-partum sepsis among others. Anemia is a major cause of maternal mortality in India.[9-12]

Anemia is the most common nutritional deficiency disorder in the world. The prevalence of anemia in pregnant women in developed and developing countries was 14% and 51% respectively and 65-75% in India as per World Health Organization Report.[1] India contributed about 80% of the maternal deaths due to anemia in South Asia.[13, 14]

About 95% of anemia cases during pregnancy are due to iron deficiency. The cause is usually inadequate dietary intake (especially in adolescent girls), a previous pregnancy, or the normal recurrent loss of iron in menstrual blood (which approximates the amount normally ingested each month and thus prevents iron stores from building up). Early symptoms are usually nonexistent or nonspecific (e.g. fatigue, weakness, light-headedness/fainting, mild dyspnea with exertion). Other signs and symptoms may include pallor and, if anemia is severe, tachycardia or hypotension. Anemia increases the risk of preterm delivery and postpartum maternal infections. Treatment is directed at reversing the anemia. Transfusion is usually indicated for severe anemia or if the constitutional symptoms are present. In the present study, severe and mild to moderate anemia was recorded among the pregnant women of coastal Odisha.

Preventing or treating anemia, whether moderate or severe, is desirable. Since iron deficiency is a common cause of maternal anemia, iron supplementation is a common practice to reduce the incidence of maternal anemia. Nevertheless, the effectiveness of large-scale supplementation programs needs to be improved operationally and where multiple micronutrient deficiencies are common supplementation beyond iron and folate can be considered.[9,11,12] The patho-physiological mechanism of producing very high hemoglobin concentrations during the pregnancy causes high blood viscosity which results in both, compromised oxygen delivery to tissues and cerebro-vascular complications; and can produce a high hemoglobin concentration because of reduced normal plasma expansion and cause fetal stress due to reduced placental-fetal- perfusion. Thus, the high concentration of hemoglobin in some pregnant women is due to pregnancy related complications.[10]

The maternal nutritional para-meters are associated not only with infant health and survival but they may also influence its development and health in

later life. Understanding the effect of maternal adiposity on obstetric outcome has public health importance. Moreover, these are modifiable risk factors implicating that a large amount of morbidity (fetal and maternal) can be reduced by taking timely measures. Good health of an adolescent girl not only leads to a better maternal health but is also an indicator of giving birth to a healthy child, as the fetus derives all nutrients from the mother. On the other hand, an unhealthy mother may give birth to an unhealthy child. In pregnant women, nutritional deficiencies can be overcome by taking balanced diet or additional dietary supplementation.

Iron and folate supplementation during pregnancy is commonly practiced to prevent maternal anemia, which is often caused by iron deficiency. Part of the rationale for this practice is the high iron requirement during pregnancy, almost 3 times more than that required for non-pregnant women of childbearing years, which is difficult to meet from dietary sources.[11] Another reason for supplementation is that anemia caused by iron deficiency alone or in combination with other factors, i.e., folate deficiency, vitamin A deficiency and malaria, has been implicated as having several negative effects on maternal and fetal health. Therefore, anemia prevention through iron supplementation may help to improve reproductive outcomes. In the present study, low hemoglobin level in the pregnant women may be attributed to the above listed nutritional deficiency related factors. On the other hand, reduced hematological indices such as MCV (Mean Corpuscular Volume), HCT (Hematocrit) and MCH (Mean Corpuscular Hemoglobin) may be accounted for the hemolytic genetic defects of hemoglobin in the pregnant women.

A healthy woman is an anchor to a happy and healthy family life and is an asset to the nation. The fundamental issues concerning women and their health care are: sanitation, nutrition, pregnancy, childbirth, prenatal and postnatal care. Women face high risk of malnutrition, development and growth retardation, affliction of diseases, disabilities and even death at 3 critical stages of life – infancy, early childhood and reproductive phase. The high rates of maternal, neonatal, infant and child death are associated with the early marriage in India. Women are basic health care providers yet they have limited access to health care. Every five minutes, a woman somewhere in India dies due to complications attributed to pregnancy or childbirth.

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TRIBAL HEALTH INEQUITY : CHALLENGES REMAIN

***M Muniyandi,*[*] *Neeru Singh*[*#]**

"Humanity's greatest advances are not in its discoveries but in how those discoveries are applied to reduce inequality."

Bill & Melinda Gates Foundation, 2007

INTRODUCTION

In general, tribals in India are geographically and culturally isolated and depict varied social as well as economic development. Moreover, their problem affecting a given group differs from area to area. A number of commissions and committees have been appointed to identify the impediments to their development in the country and these committees have recommended a number of measures to eliminate the socio-economic imbalances existing in the tribal areas. Several programmes have been launched to remove these stumbling blocks to benefit the tribal population beginning from the first Five Year Plan. In spite of these efforts, the tribes show a great variation in their economic, social, political, educational and health spheres.

There is a consensus agreement that the health status of the tribal population has been consistently poor among the primitive tribes because of illiteracy, isolation and remoteness. These tribals confined to hilly and densely forested areas, with poor social development, economically dis-advantaged and continue to remain marginalised unaffected by the developmental processes going on in the country.[1] An integrated multidisciplinary approach has been adopted by different researchers to study the tribal health problems in the country which indicates that the primitive tribes have distinct health problems, mainly governed by multi-dimensional factors like their habitat, difficult terrain, ecologically variable niches, illiteracy, poverty, isolation, superstition and deforestation.[2,3]

The current communication describes the tribal health inequity in India and challenges faced in reducing the gap.

DEMOGRAPHIC PROFILE

As per Census 2001, India ranks the second largest concentration of tribal communities in the world, representing 8% of India's population. There are about 654 Scheduled Tribe (ST) communities across the states in India and 75 of the STs are most backward and are termed as "primitive tribal groups".[4] Seven Indian states account for more than three-fourth (75%) of the total tribal population in the country. The main concentrations of tribals occur in the central India and in the north-eastern states. The predominantly tribal-populated states of the country

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(based on the tribal population being more than 50% of the total population) are: Arunachal Pradesh, Meghalaya, Mizoram, Nagaland and Union Territories of Dadra and Nagar Haveli and Lakshadweep.

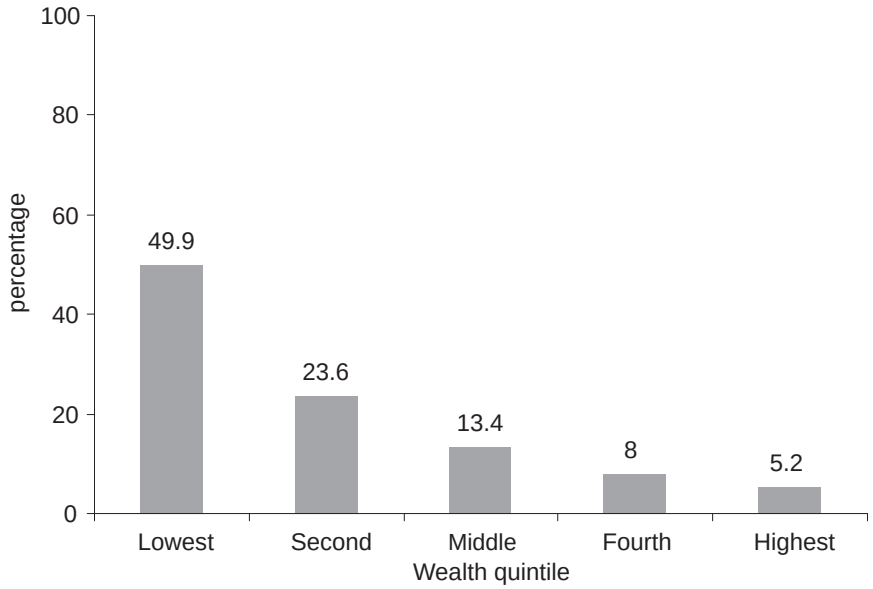
SOCIO-ECONOMIC PROFILE

Tribal people live in geographical isolation, mostly in remote and inaccessible hilly areas. They are referred to as 'backward' due to their lack of capacity to utilize the opportunities of development offered to them. As per National Family Health Survey (NFHS-3), 66% women and 39% men were illiterate. Considerable proportions have traditional beliefs and constitute the poorest of the poor segment of the Indian population.[5] NFHS-3 constructed wealth index, based on the economic status of house-holds asset data and housing characteristics showed that the percent distribution of the tribal sample population by wealth quintiles was half of the persons in the lowest wealth quintile (Figure1).[6] Over the past three decades, epidemiological studies[7, 8] have confirmed the existence of socioeconomic inequalities in a range of health outcomes, including premature mortality, cardiovascular disease, under-nutrition, diabetes and self-reported ill health.

GENERAL HEALTH PROFILE

Box-1 shows the selected adult health indicators among tribal population such as prevalence of sexual transmitted disease (STD) syndromes,[9] vaginal discharge, dysurea, hypertension;[10] child health indicators[11] such as acute respiratory infections, diarrhoeal diseases, conjunctivitis, skin infections; and elderly health indicators[12] such as average number of illnesses per elderly person, common disabilities like vision, hearing impairment, mobility-related problems, gastrointestinal problems like acid peptic disease, non-specific fever and iodine deficiency disorder.

Figure 1: Distribution of wealth quintiles of tribal population in India



Source: National Family Health Survey (NFHS-3) 2005-2006, IIPS, Mumbai, India 2007

In addition, NFHS-3 depicts diabetic mellitus (women 349, men 477); Asthma (women 1749, men 1973) and Thyroid disorders (women 753, men 567) per 1,00,000 population. These data together indicate the gravity of health ailments associated with tribals.

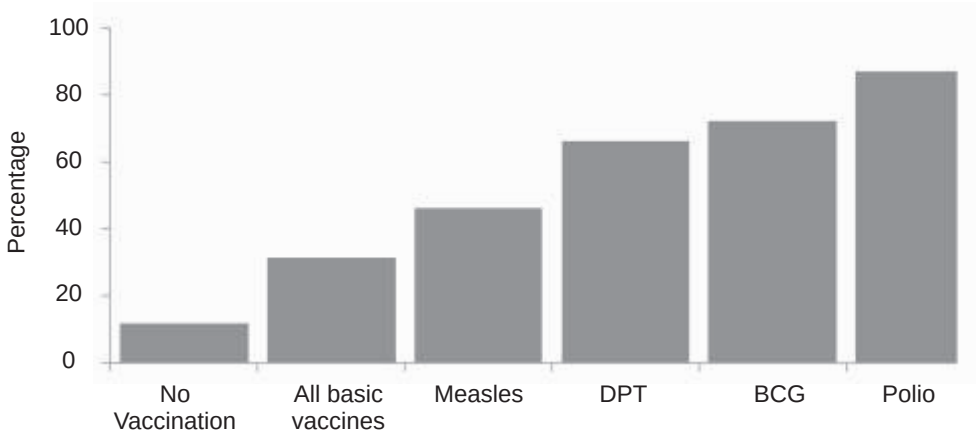
CHILD HEALTH PROFILE

Malnutrition is widespread not only in India but also in all the developing countries.[13,14] According to Rao et al. (2005), children account for about 18% of India's population and among them one third are malnourished.[15] The prevalence of malnutrition is highest among tribal children due to their inherent perceptions about health and well-being of children. It has been reported that these perceptions impact the nature of care and child health. For example, the notion that, "*All seedlings may not grow into a good crop, Many of them may die in due course. Likewise, not all children would survive with good health"* is a common belief.[16] Similarly, tribal children are severely stunted and wasted within the first ten months of their birth as compared to the non-tribal children. Also all child mortality indicators such as neo-natal mortality rate, post-neonatal mortality rate, infant mortality rate and under-five mortality rate show higher incidence among tribal children.[17] Figure 2 shows the immunization coverage among tribal children. It clearly indicates that only one-third of the tribal children have received all basic vaccinations.

ACCESS TO HEALTH CARE

Primitive tribes often lack motivation to avail medical care at the onset of a disease due to limited paying capacity, inaccessibility to medical care owing to poor communication and transport facilities, and non-availability of qualified medical practitioner. Qualified health care workers and medical professionals refrain to work in tribal areas because of personal and social reasons. Further, access to health care is influenced by a variety of socio-economic variables, sex, age, social status, region, the type of illness, perceived quality of the service,

Figure 2: Vaccination status among tribal children



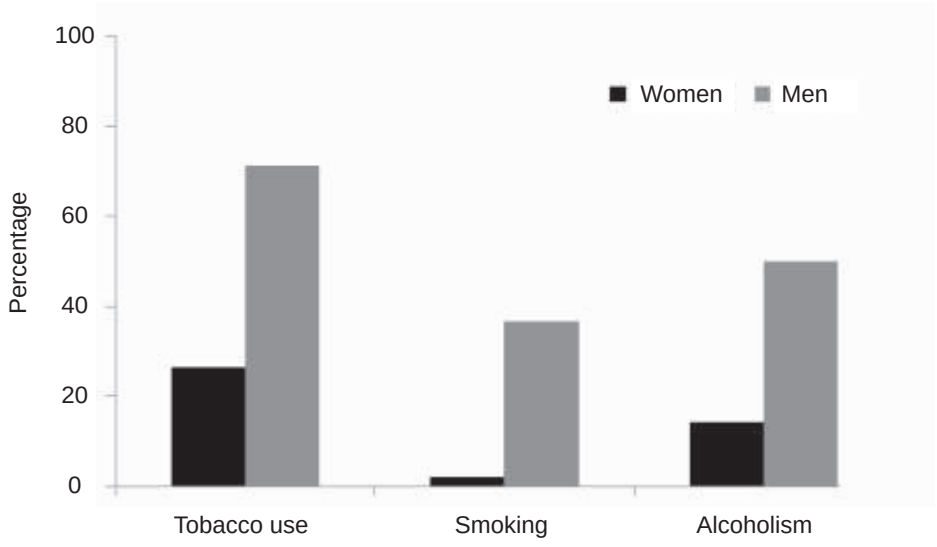
Source: National Family Health Survey (NFHS-3) 2005-2006, IIPS, Mumbai, India 2007

knowledge about causes of ill health and choices available.[18] The care seeking behaviour and access to health services among tribal population are significantly different as compared to the non-tribals.[19,20,21] The knowledge regarding transmission of vector borne and microbial diseases, self protection and treatment seeking behaviour continues to be poor and varies between urban and rural counterparts.[22] Studies indicate that the tribals do not avail government health services for malaria[23] or reproductive health care.[24] A recent study indicated that there is growing an evidence that 88% of the tribal respondents feel that modern medicine is the best remedy for STIs. However, only a few of them availed modern medical care for STIs, 27% resorted to traditional healers, and 30% utilized home remedies.[25] Similarly, awareness regarding modern contra-ceptives being a healthy practice did not encourage its adoption. The local practitioners and traditional healers are most accepted health care providers as they are considered as the part of their community. Thus, there is a need for the coordination between public health system and traditional health care providers to improve the health of tribal community.

LIFE STYLE BEHAVIOURS

The tribal practice has distinct life styles, food habits, beliefs, traditions and socio-cultural activities. The health and nutritional problems of these populations are varied due to incomprehensible diversity in their socio-economic, cultural and ecological settings.[26] As per the NFHS-3 survey, 71% of men and one-fourth (26%) of women are tobacco users. Similarly, other behaviours like smoking (37% vs 2%) and alcoholism (50% vs 14%) were also higher among males as compared to females (Figure 3). These are risky life styles that can lead to many a diseases like cancer, heart disease, tuberculosis, HIV etc.; thus, necessitating

Figure 3: Unhealthy behaviour among tribal population



Source: National Family Health Survey (NFHS-3) 2005-2006, IIPS, Mumbai, India 2007

the prevention and control intervention of tobacco use among them.

INFECTIOUS DISEASES (Tuberculosis and HIV)

In India, the Annual Risk of Tuberculosis Infection (ARTI) rates ranges between 1.0% and 1.9% in different zones of the country.[27] Very little information is available on the ARTI among the tribal populations. A survey[28] carried out in a tribal population of North Arcot district in southern India showed an infection prevalence of 5% with computed ARTI of 1.1%. In another survey,[29] conducted among Saharias of Madhya Pradesh, the prevalence of infection and ARTI were found to be very high at 16.9% and 3.6% respectively. Similarly, a survey[5] carried out in a tribal community of Car Nicobar island reported that the prevalence of infection and ARTI were 16.4% and 2.4% respectively. Based on these evidences, India's Revised National TB Control programme has initiated the Tribal Action Plan for tuberculosis control to provide special provision in tribal areas such as creating additional health facilities, more mobile clinics etc.[30] The NFHS-3 is the first national survey in India to include the HIV testing. It was designed to provide a national estimate of HIV in the household population. It was observed that the prevalence of HIV among tribal population was very low, 0.25 [female 0.12 and male 0.39].

CHALLENGES TO REDUCE THE GAP

Today's great health challenge is equity; particularly among the marginalized and socially excluded groups. Tribals require intensified actions to reduce the health gap. In this agenda, the challenges faced are:

- **Financing of Tribal Health Care** is a major concern throughout the world. Policy makers are considering or implementing various financing strategies to strengthen the tribal health care. Implementation of these strategies is likely to have a substantial impact on the equity of health care financing. Equity in health care financing is assessed by the degree of inequality in paying for the health care between households of unequal ability.[31]
- There is a need to promote the economic, social and environmental changes in tribal areas that will improve the quality of life. This will empower the individuals and tribal communities to take control of their lives.
- Need for investment in life skills and culturally acceptable and tailored information, particularly the support to improve well-being and encourage healthier lifestyle choices.
- Create new knowledge (scientific evidence based) and understanding, and to share the learning to encourage more effective partner-ships on health challenges.
- Social networks and social support have been recognised as important Social Determinants of Health. Poor social networks and low social support are more frequent among socio-economically disadvantaged people; this needs to be strengthened within and outside the tribal areas.

- **Tribal Health Evidence Network** may provide a platform for better use of strong scientific evidences in tribal health policy making. Network will synthesize the evidence and publish it in various forms, and provide access. It is noteworthy that the Regional Medical Research Centre for Tribals (RMRCT), Indian Council of Medical Research, Jabalpur is continuing to publish a biannual publication on tribal health in the name of "Tribal Health Bulletin" aiming to disseminate scientific evidences to reach wider scientific communities in the world working on tribal health.[32]
- **Tribal Health Data Base** data or indicators and statistics are essential for monitoring the situation and trends in tribal health, and can help in evaluating the impact of tribal health policies and programmes. Nevertheless, tribal health data need to be assessed, synthesized and combined with research findings to generate evidences to inform policy choices. Policy-makers need trustworthy, up-to-date tribal health information to take appropriate actions on tribal health improvement.
- **Investment for Tribal Health Research** scientific grants and research programmes focusing on the tribal health need to highlight the deficiencies and the critical need for increased funding. Operational research is critical to improve current strategies and provide evidence to optimize the utility and integration of existing tools in tribal health development programme settings. Encouragement is essential to all current and future funders for tribal health research to help and translate any basic science discovery or theory into action (translational research) in a more efficient and cost-effective manner.
- Political will is necessary to implement any government programme and to encourage other social programmes to eliminate the tribal health inequities. Broad and multi-sectoral coordination is required to reduce the health inequities, and government must take the lead.

GLOBAL ACTION ON EQUITY AND HEALTH

Equity has been a stated or implied goal of health policy in many countries and international health organisations for decades.[33,34] Way back in 1978 at the WHO conference in Alma Ata, a global health strategy was launched by the World Health Assembly with the goal of "Health for All by the Year 2000".[35] In 2008, the goal was reviewed commitment to the goal of "Health for All" and endorsed primary health care as a strategy for reducing the region's persisting inequities in health. The WHO in Geneva launched a global initiative on Equity in Health and Health Care from 1995-1998.[36] Equity concerns were also prominent in parts of the 2000 Millennium Declaration, which gave rise to the "Millennium Development Goals".[37] In 2005, WHO established the "Commission on Social Determinants of Health" (CSDH), which produced its final report in 2008, including abundant evidences on the origins of inequities in the distribution of the underlying determinants of health.[38] Moreover, the

United Nations has identified equity in health as a marker of overall development. The report of the UN Secretary-General and the theme of the Annual Ministerial Review[39] in 2009 was "Implementing the internationally agreed goals and commitments in regard to global public health" and it includes a strong focus on equity and health.

CONCLUSION

Achieving 'Health for all' or 'Universal Health Care' based on the principles of equity and solidarity requires not only a good management but also renewed approach. Achieving health equity requires interventions focused on the determinants of the disease burden to ensure the good health outcomes for all individuals. The development of such a system should consider the scope and capability, standard of care, and a social-biomedical approach to create a health safety net for both individuals and society.[40] When one or more of these elements are out of balance, health inequalities flourish. The goal of a functional health system is to provide safe, proven and cheap interventions to those in need, especially to the underprivileged and under-served groups, and tribes are one among them. Form this write-up; we conclude that among the vulnerable populations, tribals need to be more cared for with regards to both clinical and social aspects to reduce the health inequity. For instance; The Revised National Tuberculosis Control Programme already has enhanced norms for tribal areas in that there is relaxation for setting up the Designated Microscopy Centres and Tuberculosis Units as compared to the non-tribal areas. Knowledge gaps on tribal health need to be addressed and policy makers, researchers and academician altogether need to ensure the tribal health development as an overall development of India's health.

Health should not be a luxury afforded to only those with means and resources; it is a fundamental right of all people, regardless of socio-economic status. Improving the health of a population and reducing health inequities can substantially improve the welfare not only of the individual but of society as well.

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Box-1. Selected health indicators of tribal population

- At least one STD syndrome 12.7%
  - Women 17.6%
  - Men 8.4%
- STD in the age group
  - 30-34 years 16.2%
  - 35-39 years 14.7%
- Commonest syndrome in
  - Women: Vaginal discharge 16.0%
  - Men : Dysurea 1.8%
- Hypertension
  - Women 42.2%
  - Men 31.8%
- Others
  - Acute respiratory infections in children 25.5%
  - Acute diarrhoeal diseases 5.8%
  - Conjunctivitis 1.5%
  - Skin infections 1.2%
  - No. of illnesses per elderly person 3.0
  - Gastrointestinal problems 2.6-20%
  - Non-specific fever 10.2-24.2%
  - Iodine deficiency disorder 4.2-6.0%
  - Disabilities (vision, hearing, mobility) considerable

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AN ANALYTICAL STUDY OF PRESENTING COMPLAINTS OF TRIBAL AND NON-TRIBAL PATIENTS ATTENDING THE ORTHOPEDIC OUT PATIENTS DEPARTMENT IN A MEDICAL COLLEGE HOSPITAL

Sanat Singh *[#], K.K. Dhruv**, Sujata Netam **

Abstract: *A comparative study to identify the orthopedic ailments of 1869 tribal and non-tribal patients attending hospital was conducted. These subjects were registered between 12-5-2007 and 10-5-2008. Among 1869 patients, 1457 (77.94%) were tribal and the rest 412 were non-tribal. Out of 1457 tribal patients, 903 (61.96 %) were females while amongst 412 non-tribal, 203 (49.27 %) were females. Records of all sampled 1869 patients were analyzed and inferences were drawn. As far as tribal male and female are concerned, there was more proportion of tribal female exposed to injury in comparison to their male counterparts. On further analysis, it was observed that tribal males and females got most of the fractures in both extreme age groups, i.e., under 15 years of age and 65 and above age. As far as tribal and non-tribal females are concerned, it was observed that higher proportion of tribal females showed fractures of all sites except elbow and hip in comparison to their non-tribal female counterparts. Regarding males, higher proportion of non-tribal males showed fracture of elbow, hip, femur, tibia/fibula, ankle, foot, toes etc. In contrast, tribal men carried higher proportion of injuries to other bones than those mentioned above*.

Key-words - Injury, Fracture, Pegs

INTRODUCTION

Orthopedics is one of the oldest medical disciplines yet remains at the forefront of intellectual and technological development in medicine as we move into the next millennium and for good reason. Accidents are epidemic in the developed countries, causing more deaths than any other single illness except perhaps cardiovascular diseases and cancer. Presently they rank 4th in order amongst the chief causes of death. Even in the developed countries, there is a significant increase in the incidence of accidents and rank 6th or 7th commonest cause of mortality.[1,2] According to the road accident report of the highways ministry (report of transport research wing, Govt. of India), the country lost over 1.36 lakhs lives in 2010 that is higher. Records show that national highway still accounts for the major share of 36 % fatalities at the time when the government of India has accelerated their expansion and construction to meet the 20-km per day target. Report further shows that trucks and tempos are most accident prone leading to maximum road fatalities (29 %) in 2010, and two-wheelers account for

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about 60 % of the country's total vehicle population. According to the report, more than half of the fatalities are from Maharastra, Tamil Nadu, Madhya Pradesh, Karnataka and Andhra Pradesh. Maharastra shows the highest accident rate (14.3 %).[3] Thus, there is an urgent need of the expert's modern orthopedic care. Tuberculosis (T.B.) remains the scourge of the world and mainly affects the musculoskeletal system. The world population is getting older developing Osteo-Arthritis (OA) and demanding to be kept active. The general population is playing more sport and incurring injuries which need good surgical attention.[4] Presently, no studies are available; therefore, present study was initiated that will encompass the recommendations of the World Health Organization (W.H.O.) study group (1957) to obtain a comprehensive picture of a health problem / disease.[5,6] The authors have undertaken this study with an objective to know about the presenting complaints of tribal and non-tribal patients attending the Orthopedic Out Patient Department (O.P.D.) in Medical College.

MATERIAL AND METHODS

The study was conducted in the O.P.D.of Govt.Medical College, Jagdalpur (Bastar), India. Bastar division is spread over 52,214 square km. Most of the area is covered by dense forest and hills. Bastar comprises seven districts namely Dantebada, Sukuma, Bastar, Sukuma, Kondagaon, Naryanpur and Bijapur. The population of the division as per 2011 census was 30, 88,414. Out of this, more than 70 % are tribals. Bastar is known world over for its unique and distractive tribal heritage. The Bastar Dussehra is the traditional celebration of the gaiety of tribals.

The records of 2086 patients attending the Orthopedic OPD of the first author between 12.05.2007 and 10.05.2008 were collected and analyzed. Out of 2086 patients, 217 patients were excluded from the study due to lack of details of illness and other complaints. Thus, 1869 were included in the study. Out of these 1869 patients, 1457 (77.94%) were tribals and the rest 412 were non-tribals. Out of 1457 tribal patients, 903 (61.96 %) were females while amongst 412 non-tribals, 203 (49.27 %) were females. Presenting complaints were mainly divided into 2 categories: (A) Injury and (B) Other than injury. Records of all sampled 1869 patients were analyzed and inferences were drawn.

OBSERVATIONS AND DISCUSSION

On analysis of the collected data, it was noted that out of 1869 patient attending Orthopedic O.P.D. for their presenting complaints, there were 1457 (77.95%) tribal and the rest 412 (22.04%) were non-tribals (Table 1).On further analysis, it was observed that out of 1457 tribals, higher proportion 903 (61.97%) was of females in comparison to their 554 (38.07%) male counterparts. In contrast, among non-tribals, the proportion of male (50.72%) was higher in comparison to the female (49.72%). Table 1 further reveals that both tribal and non-tribal patients belong to all age group and both sexes. Maximum numbers of patients (280) were between ages 55 to 64 years.

Table 1: Distribution of patients (tribal and non-tribal) as per their presenting complaints (n=1869)

Presenting complaints		Age and Gender														Total		Grand total
		<15		15-24		25-34		35-44		45-54		55-64		65 and above				
(A) Site of injury		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Shoulder	Tribal	7	15	3	3	4	2	1	4	6	10	3	6	8	25	32	65	97
	Non-tribal	3	2	00	1	00	00	1	1	3	2	1	2	2	4	10	12	22
Arm	Tribal	6	9	3	5	3	4	4	3	5	6	2	5	3	9	26	41	67
	Non-tribal	00	1	00	2	00	00	2	00	1	2	1	2	1	2	5	9	14
Elbow	Tribal	5	15	3	10	3	12	6	7	3	7	5	10	3	7	28	68	96
	Non-tribal	4	8	2	4	1	9	00	1	00	3	4	3	3	2	14	30	44
Wrist, palm and fingers	Tribal	5	3	7	10	4	5	8	12	6	5	10	8	5	15	45	58	103
	Non-tribal	1	00	2	2	1	2	2	3	2	1	00	1	00	1	8	10	18
Hip	Tribal	1	2	3	00	2	3	6	5	4	3	9	5	3	10	28	32	60
	Non-tribal	2	00	2	00	2	1	2	1	1	2	4	11	5	6	18	21	39
Leg	Tribal	7	12	4	6	1	4	3	8	00	3	4	10	6	11	25	54	79
	Non-tribal	3	4	2	2	2	1	00	1	4	00	3	2	5	00	19	10	29
Knee	Tribal	6	13	8	21	6	15	7	20	2	4	7	6	6	14	42	93	135
	Non-tribal	2	3	2	6	2	1	1	2	1	00	00	00	3	2	11	14	25
Ankle, foot and toes	Tribal	3	16	13	17	8	10	12	15	11	16	6	20	30	30	83	124	207
	Non-tribal	00	4	00	3	6	00	7	3	8	3	8	6	8	8	37	27	64
Others-neck, chest, spine etc.	Tribal	3	10	3	11	15	14	15	11	14	8	6	8	4	30	60	92	152
	Non-tribal Tribal	5	6	6	00	4	4	6	2	6	3	6	1	7	2	40	18	58
Multiple site (more than one of the above)	Tribal	12	42	16	26	9	37	15	30	11	24	8	19	21	8	92	186	278
	Non-tribal	3	4	2	6	4	6	2	4	3	2	4	1	2	2	20	25	45
(B) Other than injury	Tribal	6	2	10	8	18	6	16	8	15	12	18	22	10	32	93	90	183
	Non-tribal	1	2	1	2	2	4	2	3	4	6	7	5	10	5	27	27	54
Total		85	183	92	145	97	140	118	144	110	122	127	153	147	125	763	1106	1869

Notably; among tribals, female patients were predominant (Table 1). Further analysis revealed that proportion of tribal male incurred injuries to wrist, palm, fingers (8.12%), hip (5.05%), ankle, foot, toes (14.93%) etc. in comparison to their female counterparts. Multiple site injuries were encountered by tribal females. Higher proportion of tribal males (16.78%) attended O.P.D. for presenting complaints of non- injury associated illness (rheumatoid arthritis, osteoar-

thritis, cold abscesses bone, frozen shoulder etc.) as compared to tribal female counterparts (9.96%).

Site specific injury particularly in shoulder 12(5.92%), elbow 30 (14.77%), hip 21 (10.34%), knee 14(6.89%) etc. were higher in non-tribal females in comparison to non-tribal males. Similarly, presenting complaints of non-injury related ailments (rheumatoid arthritis, osteoarthritis, frozen shoulder, sciatica etc) both non-tribal men and women attended nearly in equal numbers. This indicates change in the life style of the afflicted patients. Site specific injury in legs 19(9.09%), ankle, foots and toes 37(10.83%) etc. was higher among non-tribal men as compared to women.

Table 2 shows the comparison between tribals and non-tribals with regard to specific injuries. Table clearly indicates that 79.3% of 461 tribal males and 58.8% of 204 non-tribal males were injured in contrast to 75.02% of 853 tribal females and 55.6% of 176 non-tribal females.

Table 2 : Distribution of Fractures as per their site (n=1246)

Site of Fracture		Age and Gender														Total		Grand total
		<15		15-24		25-34		35-44		45-54		55-64		65 and above				
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Shoulder /Clavicle	Tribal	5	12	3	2	3	1	1	2	6	8	2	4	7	19	27	48	75
	Non-tribal	3	2	00	1	00	00	1	1	3	1	1	1	00	2	8	8	16
Humerus	Tribal	2	4	2	1	1	1	2	1	1	2	1	1	1	3	10	13	23
	Non-tribal	00	1	00	1	00	00	1	00	00	2	00	00	1	1	2	5	7
Elbow	Tribal	4	14	2	8	3	9	5	6	3	5	4	8	3	5	24	55	79
	Non-tribal	3	10	1	5	00	7	00	2	00	2	3	2	3	1	10	29	39
Radius &Ulna	Tribal	2	3	00	2	1	1	00	00	2	2	00	3	1	4	6	15	21
	Non-tribal	00	00	00	1	00	00	1	00	00	00	1	1	00	00	2	2	4
Wrist, palm and fingers	Tribal	3	2	5	8	3	3	6	11	4	3	7	6	3	13	31	46	77
	Non-tribal	1	00	2	1	1	00	1	1	1	00	00	00	00	00	6	2	8
Hip	Tribal	1	1	2	00	1	1	5	3	3	1	7	4	2	8	21	18	39
	Non-tribal	1	00	2	00	1	00	1	1	1	1	4	8	3	3	13	13	26
Femur	Tribal	3	6	2	3	00	1	1	3	00	1	2	5	4	4	12	23	35
	Non-tribal	1	00	1	00	1	00	00	00	2	00	1	00	3	00	9	00	9
Knee	Tribal	4	10	6	14	5	11	6	17	1	2	5	4	14	11	31	69	100
	Non-tribal	1	1	1	2	2	00	00	00	1	00	00	00	2	1	7	4	11
Tibia &Fibula	Tribal	3	5	1	2	1	2	1	5	00	1	2	3	2	6	10	24	34
	Non-tribal Tribal	1	1	00	1	00	00	00	00	2	00	00	00	1	00	4	2	6

Table contd.....

Ankle , foot and toes	Tribal	2	14	10	15	6	7	9	13	8	14	5	18	21	24	61	105	171
	Non-tribal	00	1	00	00	4	00	5	00	6	1	5	2	6	2	26	6	32
Others-neck,chest spine etc.	Tribal	2	9	2	9	14	12	13	9	13	6	4	7	2	26	50	78	128
	Non-tribal	4	4	5	00	3	3	6	1	6	2	5	1	6	2	35	13	48
Multiple site (more than one of the above)	Tribal	11	37	15	25	8	29	13	19	10	15	7	16	19	7	83	148	231
	Non-tribal	3	4	2	3	4	3	2	1	3	1	4	1	2	1	20	14	34
Total		58	141	62	104	62	91	78	96	75	70	69	95	106	141	508	738	1246

Table also indicates that the tribal males and females aged below 15 and above 65 years were more prone to fracture. In case of tribal females, 16.71%cases of fractures were noted in those below 15 years of age as compared to 10.92% in tribal males. Among 65 years and above, relatively equal number of males (21.58%) and females (20.00%) encountered fracture. It was further noted that the proportion of tribal males who got fracture in shoulder/clavicle 27(7.37%), humerus 10(2.73%); wrist, palm, fingers 31(8.46%), hip 21(5.73%), ankle, foot and toes 61(16.66%) and others, i.e., neck, chest and spine 50 (13.66%) was higher in comparison to their female counterparts who got proportionally more fractured in elbow 55(8.59%), radius/ulna 15(2.34%), knee 69(10.78%), tibia/fibula 24(3.75%) and in multiple sites, i.e., fracture on more than one site 148 (23.12%).

As far as tribal and non-tribal females are concerned, it was observed that higher proportion of tribal females were fractured at all sites except elbow and hip in comparison to their non-tribal females counterparts.

From above observations and discussion, the authors inferred that the Govt. Medical College, Jagdalpur (Bastar) caters to tribal needs and is acceptable to them for medical services. The present study aims to open avenue for further detailed studies.

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EPIDEMIOLOGICAL PROFILE OF ISCHAEMIC HEART DISEASE PATIENTS

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Abstract: *Nearly 50% of all heart attacks and strokes occur without any warning in people with no diagnosed heart disease. Thus, identifying risk factors early is essential for delaying this disease and for its prevention. The present study was carried out to determine the epidemiological profile of IHD patients. A retrospective study was conducted consisting 100 participants (IHD patients) with or without diabetes as sample population. Age, sex, diet, weight, smoking, family history, blood pressure and laboratory investigations for serum cholesterol, HDL and LDL cholesterol were carried out. Statistical analysis was expressed in Chi-square test. In general, 31.50 % male patients were of 51-60 years of age in comparison to 34.44% female patients belonging to 61-70 years of age group. Incidence of IHD was higher amongst males as compared to females in both the groups. Fifty-four percent cases of IHD patients with diabetes were smokers. Moreover, diabetic IHD patients suffered from hypercholesterolemia in comparison to non- diabetic patients.*

Key words: Obesity, Hypertension, Life-style.

INTRODUCTION

It is well established fact that urban Indian life styles are changing due to globalization and endangering the traditional life styles and habits. In general, Indians are born with thinner arteries and genetic risk for cardiac diseases. With changing lifestyles, Indians are increasing their risk for heart diseases with poor physical activity, a high-fat diet and low intake of fruits and vegetables. Often people in smaller cities smoke and eat more fat rich food and low quantities of fresh fruits and vegetables in comparison to the residents of larger metros who tend to be less active. Obesity, high blood pressure and high cholesterol are on the rise due to these sedentary lifestyles. In fact, even literate middle class urban Indians tend to be less aware about risk factors of heart diseases. In view of the above facts and recommendations of the World Health Organization (WHO), the authors have undertaken this study with the objective to identify the epidemiological profile of IHD (Ischaemic Heart Disease) patients.

MATERIAL AND METHODS

The study was conducted in the Deptt. Of Medicine, Raipur Medical College from May 2003 to May 2004. A total of 100 patients of both the sexes suffering from IHD were included in the present study.

The National Cholesterol Education Programme (NCEP) ATP III LDL, HDL and Triglycerides classification was followed.[1]

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Total Cholesterol:	< 200mg/dl	- Desirable
	200 – 239mg/dl	- Border line high
	240mg/dl or more	- High
HDL Cholesterol :	<40mg/dl	- Major risk factor
LDL Cholesterol:	Less than 100mg/dl	- Desirable
	100 - 129mg/dl	- Border line high
	130 – 159mg/dl	- High
	160 – 189mg/dl	- Very high
Triglycerides:	<150mg/dl	- Normal
	150-199mg/dl	- Border line high
	200-499mg/dl	- High
	>500mg/dl	- Very high

FINDINGS AND DISCUSSION

Table 1 reveals the sex and age of IHD patients. It was observed that 73 % patients were males. The table also reveals that maximum 31.50 % male patients belonged to 51-60 yrs of age in comparison to their female counterparts who were older (61-70 years). As can be seen from Table 2, majority of IHD patients consumed non-vegetarian food (male 87.67% and female 92.50%). Further; it was observed that out of 50 cases of IHD with diabetes, 54 % were found to be smokers as well. In comparison, among the 50 cases of non-diabetic IHD patients, 56 % were smokers. This difference is statistically not significant. However, it was observed that overall incidence of IHD was higher among smokers. Moreover; amongst the 50 cases of diabetic IHD patients, 24 % patients also had a history of alcohol consumption. When family history was collected, it was observed that among 50 diabetic IHD patients, 10 % had prior family history of IHD and hypertension. In comparison, only 4% non-diabetic patients carried a family history of IHD and Hypertension. This difference was statistically significant.

Table 1: Age and sex distribution of IHD patients

Sex	Age in Years					
	31 - 40	41 - 50	51 - 60	61 - 70	71 +	Total
Male (n=73)	07 (9.60)	13 (17.80)	23 (31.50)	21 (28.76)	09 (12.37)	73 (100.00)
Female (n=27)	03 (11.11)	06 (22.22)	07 (25.92)	10 (34.44)	01 (03.44)	27 (100.00)

Figures in parenthesis indicate percentage

Table 2: Distribution of IHD patients as per Diet

Sex	Vegetarian	Non Vegetarian	Total
Male (n=73)	09(12.37)	64(87.67)	73(100.00)
Female (n=27)	02(07.40)	25(92.50)	27(100.00)

Figures in parenthesis indicate percentage

Table 3 : Distribution of IHD patients as per Smoking Habit

Sex	Smoker	Non smoker	Total
Male (n=73)	55(75.34)	18(24.65)	73(100.00)
Female (n=27)	03(11.11)	24(88.88)	27(100.00)

Figures in parenthesis indicate percentage

Comparison of bodyweight of diabetic and non-diabetic IHD patients is given in Table 4. Among diabetic IHD patients, only 28 % showed normal weight as per index, 48 % were overweight, 2% were underweight and 22 % were obese. In comparison; among non-diabetic patients, nearly half were normal and 40 were overweight. This difference was found statistically significant ($p<0.05$). Hypertension among diabetic and non-diabetic IHD is summarized in Table 5. When compared the normo-tensive, pre-hypertensive, Stage-I and Stage-II respectively hypertensive patients showed statistically significant difference ($p<0.05$).

Table 4: IHD patients as per Bodyweight

Bodyweight	IHD patients with diabetes n=50	IHD patients without diabetes n=50
Overweight	24 (48)	20(40)
Normal weight	14(28)	24(48)
Underweight	01(02)	01(02)
Obese	11(22)	05(10)

Figures in parenthesis indicate percentage

Table 5: Distribution of IHD patients as per their stage of Hypertension

Sex	Stage of Hypertension				
	Normotensive (<120/<80)	Pre-Hypertensive (120-139/80-89)	Stage -I Hypertension (140-159/90-99)	Stage -II Hypertension (>160/>100)	Total
Male n=73	12(16.43)	27(36.98)	12(16.43)	22(30.13)	73(100.00)
Female n=27	05(18.51)	09(33.33)	06(22.22)	07(25.92)	27(100.00)

Figures in parenthesis indicate percentage

Post parandial glucose level at the time of admission was also compared. It was observed that out of 50 cases of diabetic IHD patients, 18 % were in good control group, 20 % had fair controlled blood glucose and 62 % exhibited poor control; whereas amongst 50 cases of non-diabetic IHD, 80 % showed good control blood glucose and only 20% were in fair controlled group. These observations are highly significant ($p<0.05$).

Plasma cholesterol is a well recognized risk factor for atherosclerosis in related diseases particularly Coronary Heart Disease. Table 6 shows that out of one hundred cases more than 50 % (both males and females) showed that their serum cholesterol level was higher than normal and lies in the Group-II and Group-III. HDL Cholesterol was lower than 40mg/dl in 16 % in 50 diabetic IHD; whereas out of 50 cases of non- diabetes IHD patients, only 10% had lower than 40mg/dl HDL Cholesterol. The comparison between the IHD Cholesterol value of less than 40 and more than 40mg/dl in the studied samples was found to be statistically insignificant ($p>0.05$). Further analysis of LDL Cholesterol levels among diabetic and non-diabetic patients revealed that 8 % IHD with diabetes carried <100 LDL Cholesterol and 92 % had > 100 LDL Cholesterol. Among the non-diabetic IHD patients, 18% showed <100 LDL Cholesterol and 82 % > 100 LDL Cholesterol levels. On statistical analysis, this comparison was also found to be statistically insignificant.

On further analysis, it was noted that diabetic-IHD patients' Serum triglycerides levels from <150mh/dl, 150-199mg/dl and 200-499mg/dl in 34%, 34% and 32% cases respectively. Similarly, in non-diabetic IHD patients, serum triglycerides level was 54%, 36% and 10% for the respective categories. Majority of the patients showed serum triglycerides level more than 150 mg/dl and that was statistically significant.

A relative preponderance of males is the unanimous finding of all those who have studied Myocardial infarction (MI). This is not surprising as atherosclerosis is often associated with IHD and predominantly found in men than women. This could be due to the hormonal

Table 6 : Distribution of IHD patients as per Serum Cholesterol level

Sex	Serum Cholesterol level			
	Group–I (<200mg%)	Group-II (200 – 240mg%)	Group –III (>240mg%)	Total
Male n=73	33(45.02)	22(30.13)	18(24.65)	73(100.00)
Female n=27	10(37.03)	09(33.33)	08(29.62)	27(100.00)

Figures in parenthesis indicate percentage

Table 7: Distribution of IHD patients as per Random blood sugar level (RBS)

Sex	Random blood sugar level			
	Group –I (<160mg/dl)	Group-II (160– 200mg/dl)	Group –III (>200mg/dl)	Total
Male n=73	65(89.04)	03(04.10)	05(06.84)	73(100.00)
Female n=27	22(81.48)	05(18.51)	00(00.00)	27(100.00)

Figures in parenthesis indicate percentage

Table 8: Distribution of IHD patients as per Obesity

Sex	Obese	Non Obese	Total
Male (n=73)	43(58.90)	30(41.09)	73(100.00)
Female (n=27)	17(62.93)	10(37.40)	27(100.00)

Figures in parenthesis indicate percentage

difference in women. The sex incidence of MI in the present study was nearly similar to that reported by Mehta and marginally lower as reported by Shah VV.[2,3] The diminution of the male-female-ratio after menopause and equally high incidence of oophorectomized women make it likely that female sex hormone have protective action. Some evidence to the contrary however has been reported recently. The lack of this sex difference in Negro indicates that the immunity of white American women may be dependent on some other influence.

In India, dietary pattern shows divergence in different ethnic flocks in the same geographical area; and, with the given sample size, it is difficult to draw any effect of dietary pattern in the genesis of coronary artery diseases in the present study. Enas et.al. reported equal number of vegetarian and non-vegetarian in their study.[4] Mehta and Pathak had reported more number of vegetarians in comparison to non-vegetarians.[2,5] Moreover, in the present study, 80% population of Chhattisgarh belongs to OBS, SC and ST and minorities group and are pre-dominantly meat eaters. The dietary habits of the cases of IHD in the present study reflect only the majority of population of the state.

Smoking is widely recognized as an important risk factor for coronary artery disease in men with the risk of MI and sudden death and associated with the number of cigarettes smoked daily. It is uncertain, however, whether the excess of CHD (Congenital heart disease) among smokers is caused by extensive coronary atherosclerosis. Although cigarette smokers have an atherogenic lipoprotein profile, their increased mortality from CVD (Cardiovascular disease) is independent of lipid concentration. There was high prevalence of cigarette smoking among patients with the clinical evidence of MI but unobstructed coronary arteries. Therefore, non- atherogenic-mechanism such as nicotine and carboxyhaemoglobin, fibrinogen or white blood cells may be involved in the etiology of CVD among smokers. Vytillingham observed that 60% subjects had a history of smoking and 40% were non-smokers. Thus, the findings of the present study and others are comparable.[6]

It is often believed that hypertension, central obesity and diabetes are a part of cardiovascular dysmetabolic syndrome known as IRS (Insulin Resistance Syndrome). It may be either genetic or acquired. Earlier studies on a family manifestation of CAD (Coronary artery disease) in 3 generation sharing common risk factors like hypertension, central obesity, NIDDM (Non-insulin-dependent diabetes mellitus) and dislipidernia shows that a 80 year old elderly man presented to them with dyspnoea and precordial discomfort was found to be hypertensive, obese and diabetic. He continued to smoke and used to get repeated spells of acute breathlessness and succumbed to one of such attacks. Few years later, his grandson presented with angina. He had hypertension, central obesity and diabetes. On questioning, his father was also found to be hypertensive, heavy

smoker and dyslipidemic. Thus, they attempted to highlight the role of hereditary in determining the etio-pathogenesis of CAD in a single family. Marianne et.al concluded in their study that a family history of HTN (Hypertension), obesity, diabetes,or stroke was a significant risk factor for obesity and hyperlipidemia.[7] MMTFuh et.al. found that elevated levels of BP are associated with elevated risks of stroke [8] and MI. Neaton concluded that systolic BP markedly increases the risk of non-fatal MI and cardiovascular deaths among general population.[9] Thus, even among the individuals without diastolic hypertension, isolated increase in systolic BP is a risk factor. Gupta et.al. reported that increasing hypertension is significantly correlated with CHD (Congenital heart disease) in urban areas but not in the rural areas.[10]

Serum cholesterol and IHD: Shah reported that the patients with acute MI cases had serum cholesterol <200 mg/dl (33% patients), 50 cases had 200-250 mg/dl and 17 cases had 250mg/dl. [3] The present studies are in accordance with the above findings. Kaul in his study reported HDL (High-density lipoprotein) <40 mg % in 55.9% and 38.7% male patients in Delhi and Haryana respectively.[1]

LDL Cholesterol: A rising trend in LDL (Low-density lipoprotein) cholesterol was observed in last decade, which has been proved by a large follow up study of Gupta from Jaipur who found LDL level of 107.6 ± 39 mg% in 1415 male cases in the year 1992.[10] On second examination this level rose to 122.7 ± 33mg% in the year 2000. Similarly; among females, levels increased from 101.3 ± 34mg to 133.8 ± 37mg within the same period.

Serum triglycerides: Kaul reported triglyceride level < 150 mg% in only 45.2% in urban males and 35.7% in urban females.[1] Indian population in general is known to have hypertriglyserdemia as an important component of dislipidemia. Several studies have reported high triglyceride levels among normal population. There has been a definite increasing trend in the incidence of hyperglyceremia in Indian population in last decade. Gupta reported rise in the serum triglyceride levels from 126.1 ± 55mg% to 153.1 ± 85mg% in male population in Jaipur between 1992 and 2000 and from 131.1 ± 62 mg % to 250.9 ± 73mg% in female population in the same period.[10]

Overweight and IHD:The findings of the present study including those regarding men aged 45 or older and women aged 55 or older are in accordance with the data of the Indian Heart Watch, the country's largest ever heart risk survey of 6000 men and women from 11 cities.[11,12]

Around 79% of men and 83% women (who participated in the study) were found to be physically inactive, while 51% men and 48% women had high fat diets. About 60% men and 57% women were found to have a low intake of fruit and vegetables, while 12% men and 0.5% women smoked. Around 41% of men and 45% of women were overweight or obese. High blood pressure was reported in 33% men and 30% women, while high

cholesterol was found in one-quarter of all men and women. Diabetes was also reported in 34% men and 37% women in earlier survey.[11,12]

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AN ANALYTICAL STUDY OF POSTPONEMENT OF ELECTIVE CASES IN MAHARANI HOSPITAL, JAGDALPUR (Bastar)

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Abstract : *Often not all the cases posted for elective operation are operated as scheduled. Such postponed cases are a great burden to the patients as well as hospital. The present study attempts to identify the proportion of postponed cases and the reasons for their postponement. The study was conducted at Maharani Hospital, Jagdalpur (Bastar) from 01-12-2008 to 31-05-2009. The data was collected in a preset proforma. Statistical analysis was expressed in simple terms of proportion. Thirty percent cases were postponed on the day of surgery. Causes of such postponement are lack of availability of operation theatre (59.7%), medical reasons (9.8%), change in the surgical plan (5.4%), administrative reasons (3.7%) and miscellaneous reasons (4.2%). Operation of 16.2 % cases were postponed due to delay in the arrival of patients.*

Key words: Elective cases, Postponement

INTRODUCTION

Elective cases are the cases that are operated during the routine days and as scheduled. The list of operations prepared for a particular day is sent to Operation Theatre (OT) a day earlier. However, it has been noted that due to several reasons, operations could not be carried out as scheduled. Late cancellation of scheduled operations is a major cause of inefficient use of OT and a waste of resources as well as a great burden (physical, psychological and financial etc.) to the patients and their families. This study was undertaken at Maharani Hospital, Jagdalpur (Bastar) that is situated in the tribal heart land of India. This hospital is the main hospital catering to the people of this area belonging to all socioeconomic strata. This hospital acts as a referral center to the whole of Bastar division and more than 70 % of the patients admitted here belong to tribal population. Hence, postponement of elective surgery causes a great hardship to them. The major tribes of the Bastar region are Gond, Abhujmaria and Bhatra Bhatra that are divided into the sub-castes as San Bharta, Pit Bharta, Amnit Bhatra, Halba, Dhurvaa, Muria and Bison Horn Maria. The Gonds of Bastar are one of the most famous tribes in India, known for their Ghotul system of marriage. Gonds are also the largest tribal group of central India population wise.The tribes of Bastar region are known for their unique and distinctive tribal culture and heritage all over the world. Each tribal group in Bastar

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has its own distinct culture and these tribals enjoy their own unique traditional living styles.

Each tribe has developed its own dialect and these tribals differ from each other in terms of their costume, eating habits, customs, traditions and even the forms of gods and goddesses they worship. A large number of Bastar tribals continue living in the deep forests and avoid interacting with the non-tribals in order to protect their own unique culture. The tribes of Bastar are also known for their colorful festivals, arts and crafts.

The Bastar Dussehra is the most famous festival of the region. The tribals of Bastar were also amongst the earliest to work with metal and have expertise in making beautiful figurines of tribal Gods, volvie, animals, oil lamps, carts and animals etc.

Map of Bastar Division



Keeping in view the recommendations of the World Health Organization (WHO) study group in 1957, present study was undertaken with an objective to obtain a comprehensive picture of a health problem / disease among these tribals and to know the proportion of the postponed cases, if any, alongwith their reasons and to formulate some policies to avoid the postponment.

MATERIALS AND METHOD

The study was conducted at Maharani Hospital, Jagdalpur (Bastar) between 01-12-2008 and 31-05-2009. Five hundred and thirty patients scheduled for elective surgical procedures were taken as samples. Of them, 47% were males and remaining females.

A cancellation on the day of intended surgery was defined as the operation that was either scheduled on the final theatre list of that day (generated at 15:00 hours on the previous day) or was subsequently added to the list and that was not performed on that day. On the day of surgery, the intended list and a list from the surgeon in charge who prepares the list of cancellations with reasons were obtained. The data were collected in preset prorformas.

OBSERVATIONS AND DISCUSSION

Analysis of data revealed that 161 (30.3%) of 530 cases scheduled for operation were postponed on the day of surgery. Among these; 96 (59.7%),17 (10.8%), 09(05.4%), 06(03.7%) and 07(04.2%) cases were postponed due to lack of availability of operation theatre, medical reasons, due to change in the

surgical plan, administrative reasons (autoclave/instruments/linens not available) and miscellaneous reasons (non-availability of the surgeon/ ICU bed / ventilator / adequate blood product / refusal of consent by the patient etc.) respectively. Moreover, 16 % (26) cases were postponed due to late arrival of patients (Table 1).

contained more than 5 patients scheduled for surgery. Table 2 further reveals that the operation of the list carrying more than 3 patients were often cancelled. Table further indicates that 3 operations were delayed even from the list containing single patient.

Table 1: Reasons for the cancellation of elective operations

S.No	Reasons	Number	Percentage
1	Lack of operation rooms	96	59.7
2	Medical reasons of the patients	17	10.8
3	Patient didn't turn up	26	16.2
4	Change in the surgical plan	09	05.4
5	Administrative reasons	06	03.7
6	Miscellaneous reasons	07	04.2
7	Total	**161**	**100.00**

Table 2 reveals that all 530 cases were accommodated in 130 OT(Operation Theatre) lists. Among 130 lists in paranthesis (14, 19, 40, 49 and 08)

Schofield et al (2005) in their study of the cancellation of intended surgery at a major hospital in Australia reported cancellation of operation in 11.95 %

Table 2: Relation of the number of cases posted in a single OT list and those postponed

S.No.	Number of cases in OT list	Number of OT list	Number of cases postponed
1	01	14	03
2	02	19	08
3	03	40	52
4	04	49	83
5	05 and above	08	15
6	Total	130	161

cases.[1] The reasons included were non-availability of bed (18.9%), out of theatre time (16.1%), non-arrival of patients (10.5%), unfit patients (09.2%) and cancellation by patients themselves or by their relatives (08.2%).

Jonnalagadda et al (2005) found unavailability of staff (19%) as the major cause followed by non-availability of beds (13%) and no showing-up (09%).[2] Vinukondaiah et al (2000) noted lack of surgery time (65.2%) as a major cause while emergency during the elective surgery (13.9%) and lack of fitness (11.3%) were other causes.[3] Windokun et al (2002) reported that only 38 % of the booked surgery were performed and the reasons for the cancellation included non-availability of surgeons (62%), postponment by surgeons (18%) and patients' non-preparation (10%).In the present study, non-availability of OR (operation room) time was the most common reason for the postponement.[4]

Hsiao et al (2004) suggested that minimal invasive surgery tends to save time in transportation of equipments and thus optimizing the utilization of OR time.[5] Ogden GR et al (2000) reported OR run time in 27% of cases, that was due to improper utilization of OR time and delay by junior surgeons/anesthetists assigned to cases.[6] Pandit JJ et al (2006) concluded that over-running OR list was the commonest cause of the cancellation on the day of operation (50% lists were overbooked and 50% overran their scheduled time).[7]

The anesthesia time was variable among patients even for the similar surgeries due to patients' physical condition, anesthetist's expertise and other technical problems. In contrast, Hussain AM et al (2005) reported that surgery in 08 % cases cancelled because of anesthesia related issues.[8]

Fischer SP (1996) noted that medical cancellation is generally presumed to be yet another cause.[9] Medical cancellations include hypertension, onset of respiratory tract infections, uncontrolled diabetes and an acute onset of cardiovascular abnormalities.

CONCLUSION AND RECOMMENDATIONS

Present study and other studies indicate that many of the on-the-day surgery postponement of the elective surgeries are potentially avoidable. Cancellation due to lack of theatre time indicates a scheduling problem and underestimation of surgery time by the performing surgeons. The requirement of the instruments necessary for the scheduled surgical list should be discussed a day prior to planning OR list and arranged. Prior information will help in substitution of other waiting cases. All the patients who met PACU criteria need to be discharged promptly to prevent delay in shifting out of the operated patient. Day care patient should be counseled adequately to report as required. Computerized scheduling should be updated to create a realistic elective schedule. Audit should be carried out at regular intervals to identify the effective functioning of the OT.

In the present study, non-availability of OR time was the most common reason. The authors noted that cancellations due to lack of theatre time were mainly a scheduling issue by wrong understanding

of the surgery time necessary for the procedure. Surgeons in general add higher number of patients to the OT list to reduce the waiting list in anticipation of unexpected cancellations. Lastly, anesthetist and surgical issues may delay the planned list.

Unanticipated cancellation of the scheduled operation on the day of surgery is a matter of concern. Late cancellation of scheduled operations is a major cause of inefficient use of OR and waste of resources. It also induces stress and depression due to costs, working days lost for the patients and disruption in daily life. As more than 70 % patients are tribals admitted to hospital, any delay or postponement causes hardship to these patients that travel from far-flung areas of the Bastar division. Major hospitals invest considerable resources for the maintainance of operating suites and for hiring the anesthesiologist, surgeons and staff for the scheduled surgery.

Postponement of cases due to medical illness can be avoided by inferring patients' history of illness at the time of admission, so in the case of medical illness, patient need to be referred to the appropriate consultants in time.

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MORBIDITY PROFILE OF SICKLE CELL DISEASE IN TRIBALS OF MADHYA PRADESH, CENTRAL INDIA

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Abstract: *A total of 97 sickle cell disease patients belonging to scheduled tribe category were registered in the sickle cell clinic to identify the clinical profile and natural history of sickle cell disease. Of these, 65% were in pediatric age group and 35% of the patients were adults. Splenomegaly was reported in 70.1% patients. About 30% patients had non palpable spleen. Forty-seven percent of patients had history of blood transfusion. About 7.2% of cases had multiple blood transfusions. The most frequent clinical manifestations observed among SCD patients were Pallor (96.9%), Icterus (89.7%), Joint pains (80.4%), fever (73.2%), abdominal pain (36.1%), chest pain (20.6%) and Joint swelling (15.5%). General weakness was observed among 76.3% of patients. Majority of the patients (61.9%) had onset of the disease before the 6 yrs of age. Only 5.2% of patients showed first manifestation of the disease after 14 years of age. The mean haemoglobin levels of adult female was 6.2g/dl while it was 8.2g/dl for adult male and 7.7 g/dl in Children.*

INTRODUCTION

Sickle cell disease is the structural disorder of haemoglobin that results in anemia. In India, it is reported mainly among tribal populations of central and southern parts of India.[1-3] The haplotype of sickle haemoglobin gene prevalent in various tribal populations of Central and Southern India reveals that the gene is identical in nature.[4,5] In India, the disease is of milder type than in Africa.

The present paper is a part of detailed epidemiological, clinical, hematological and genetical profile of Sickle cell disease (SCD) patients as observed at sickle cell clinic of Regional Medical Research Centre for Tribals (RMRCT) operational at NSCB Medical College, Jabalpur. The present study also presents the clinical profile and the natural history of sickle cell disease to evolve a protocol for the management and prevention of the sickle cell disease in context of Central India.

METHODOLOGY

Two-three milliliter of venous blood sample was drawn into an EDTA vials from each patient with consent. Patients were referred from various Out Patient Departments of Netaji Subhash Chandra Bose Medical College, Jabalpur to genetics laboratory at the Regional Medical Research Centre for Tribals, Jabalpur. Patients identified as sickle cell disease by appropriate laboratory techniques were registered in the sickle

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cell clinic for detailed clinical assessment and follow up. Of the 700 registered Sickle cell disease patients, 97 patients belong to scheduled tribe community (ST). The clinical history and various investigations were recorded in structured proforma. Efforts were made for follow-up at 3 month intervals during which clinical examination as well as hematological investigations were repeated and events during the interval were recorded.

Complete blood count was done by automatic blood cell counter. Presence of sickle haemoglobin was identified by sickling test with 2% sodium metabisulphite and confirmed by electrophoresis on cellulose acetate membrane with Tris-EDTA-Borate buffer at pH 8.6. [6] Estimation of Hb F was done by alkaline denaturation method. [7] Genotyping of patients was confirmed by the blood testing of both the parents.

RESULTS

The age and sex distribution of the sickle cell disease patients of tribal category is given in Table 1. About 65% patients were below 14 years of age and 35% were adults. Overall 63.9% were male and 36.1% patients were female. In the adult group, about 56% patients were male and 44% were female. Among the patients lower than 14 yrs, male and female were 68% and 32% respectively.

Pallor and Icterus were observed among majority of the patients (96.9% and 89.7% respectively). The other most frequent clinical symptoms observed among these patients were Icterus (89.7%), Joint pain (80.4%), general weakness and fatigue (76.3%), fever (73.2%) and abdominal pain (36.1%). About 15.5% patients had joint swelling and 20.6% of the patients complained of chest pain (Table 2). Hepatomegaly was observed among 38.1% of the patients (30.9% children and 7.2% adults). Jaundice was also observed in 17.5% patients.

As per WHO criteria, 81.4% patients had low blood pressure while only 10% of patients exhibited normal blood pressure. This low blood pressure may be due to low blood volume. About 41.2% patients had respiratory tract infection and were treated with appropriate anti-biotics. Breathlessness was seen in 7 patients

Table 1: Age and Sex distribution of Sickle cell disease patients registered in the clinic (n=97)

Age group (Yrs.)	N	Male (%)	Female (%)
1-5	16	81.3	18.7
6-10	25	68.0	32.0
11-14	22	59.1	40.9
14+	34	55.9	44.1
Total	97	63.9	36.1

and one patient complained of breathlessness even at resting position. These symptoms could be due to severe anemia. Epistaxis was noted in 2 cases. Leg ulcer was also observed in one patient. Tuberculosis was observed in 1 patient. Lower limb pain was seen in 55.7% of patients while 37.1% patients had pain in upper limbs. Knee pain was seen in 40.2% patients and 15.5% patients had ankle pain. About 36.1% patients complained of backache and 23.7% patients had muscular (calf) pain (Table 2). Majority of these patients were relieved of these symptoms with appropriate analgesic/antipyretic drugs and proper hydration suggested as part IEC. About 48.5% patients required hospitalization and most of them due to severe anemia required blood transfusion. However, few of them were hospitalized for severe attacks of pain either due to vaso-occulo crisis or splenic sequestration.

Splenomegaly was the most common clinical sign reported among 70.1% patients of all age groups

Table 2: Common Clinical Features observed in Sickle cell disease patients (n=97)

Findings	Percentage of Cases
Joint pain	80.4
Fever	73.2
Abdominal pain	36.1
Gen. weakness, fatigue & giddiness	76.3
Joint swelling	15.5
Chest pain	20.6
Pallor	96.9
Icterus	89.7
Hepatomegaly	38.1
Jaundice	17.5
Low BP	81.4
Respiratory tract infection	41.2
Epistaxis	2.1
Chest pain	20.6
Leg ulcer	1.0
Pain in lower limb	55.7
Pain in upper limb	37.1
Pain in knees	40.2
Pain in ankle	15.5
Breathlessness	7.2
Hospitalization	48.5

(Table 3). Splenomegaly was significantly high ($p<0.05$) in pediatric age group (77.8%) as compared to adults (55.9%). Non palpable spleen was observed in 29.9% patients. About one-third of the patients in pediatric group showed non-palpable spleen while nearly half of the adults (44.1%) carried non-palpable spleen. None of these patients underwent splenectomy.

Overall 47.4% patients had history of blood transfusion at least once (Table 4). About 39.7% children and 61.8% adults had a history of blood transfusion. About 7.2% patients had history of multiple blood transfusions. In total, half of the patients (52.6%) had no history of blood transfusion. About 60.3% of pediatric group and 38.2% of adults had no history of blood transfusion. It was also observed that frequency of the cases that had received multiple transfusions increased with the age, i.e., 6.3% in the pediatric group and 8.8% in the patients above 14 years.

The haematological parameters of sickle cell disease patients are given in Table 5.The mean haemoglobin levels of adult male was 8.2 2.2g/dl and it was 6.2 1.9g/dl for adult female patients. The mean haemoglobin levels of children was 7.7 1.7g/dl. All the 3 groups (adult male, adult female and children) had low red cell indices. The mean fetal haemoglobin level of this group ranged from 8.7% in adult females to 14.7% in adult males. The age at first manifestation of the disease was also noted. The presenting symptoms at the time of early manifestation were fever, joint pain, musculo-skeletal pain, anemia, jaundice and chest infection.

Table 3: Status of Spleen in Sickle cell disease patients (n=97)

Age group (Yrs.)	N	% of patients who had non-palpable spleen	% of patients who had spleenomegaly
Below 14 Yrs.	63	22.2	77.8
Above 14 Yrs.	34	44.1	55.9
Total	97	29.9	70.1

Table 4: History of blood transfusion in Sickle cell disease patients (n=97)

Age	N	% of patients who had no history of blood transfusion	% of patients who had history of blood transfusion	% of patients who had history of multiple blood transfusion
Below 14 Yrs.	63	60.3	39.7	6.3
Above 14 Yrs.	34	38.2	61.8	8.8
Total	97	52.6	47.4	7.2

Table 5: Haematological profile of Sickle cell disease patients

Group	N	Hb (gm/dl)	PCV (%)	TRBC (X106)	MCV (fl)	MCH (pg)	MCHC (gm/dl)	HbF (%)
Male	15	8.2 ± 2.2	25.4 ± 6.4	3.1 ± 1.2	77.8 ± 11.3	25.1 ± 3.5	32.5 ± 2.5	14.7 ± 6.7
Female	12	6.2 ± 1.9	20.9 ± 5.8	2.7 ± 1.0	79.5 ± 9.4	23.5 ± 3.1	29.5 ± 1.4	8.7 ± 3.3
Children	52	7.7 ± 1.7	24.1 ± 4.4	3.3 ± 0.9	73.6 ± 12.0	24.2 ± 4.1	31.8 ± 2.5	11.7 ± 4.6

Table 6: Distribution of patients according to age of onset for the disease (n=97)

Age Group (In years)	% of Patients
1-5	61.9
6-10	28.9
11-14	4.1
15+	5.2

Distribution of patients according to the onset of the disease has been shown in Table 6. Sixty-two percent patients showed disease specific features before attaining the age of 6 years ($p<0.05$). Only 5.2% of patients showed first disease manifestation after 14 years of age. About 28.9% patients had their age of onset of disease between the ages of 6-10 and 4.1% of patients between ages 11-14.

DISCUSSION

Data presented here does not indicate the prevalence rate of the sickle cell disease in the ST community but clearly highlights the wide presence of the disease in Central India. The rigid caste system does not allow inter-caste marriages and this probably has limited the spread of sickle cell gene to the other tribal populations of the area.[8] Males account for 68% of cases which is interesting as sickle cell disease is not sex linked. The high proportion of the male patients may be due to the widely prevalent social evil of male preferential treatment in Indian society. Male predominance has been reported from India [9-10] as well as in other countries.[4]

Interestingly, no child below the age of one year was recorded in the study. This could be due to lack of symptoms and/or death of infant's prior disease diagnosis. The small number of patients above 14 years of age group (35%)

suggests that either the morbidity load is low in these patients or the chances of survival are lower than those above 14 years of age.

One of the main organs to be affected in sickle cell disease is the spleen. In sickle cell disease, the spleen generally enlarges during the first decade of life and then undergoes progressive atrophy due to repeated attacks of vaso-occlusion and infarction leading to autosplenectomy.[11] However; at times, splenomegaly persists beyond the first decade of life and in the adult life.[12] The reasons are unknown. In the present study, splenomegaly observed in 70% patients. The primary goal of blood transfusion is to correct the oxygen carrying capacity and to improve micro vascular perfusion by decreasing the proportion of sickle red cells in circulation. In the present study, about 50% patients had history of blood transfusion with at least one blood transfusion. Recurrent attacks of fever, joint pain, body pain, musculo-skeletal pain, respiratory infection, jaundice, anaemia and splenomegaly are the main features of the sickle cell disease patients in the ST community of the study area. Therefore, it is advisable that whenever these symptoms are noted, they should be tested for Sickle cell disease through proper laboratory diagnosis like sickling test and haemoglobin electrophoresis.

At the sickle cell clinic of RMRCT, Jabalpur, efforts are being made to provide a complete management of the disease through counseling and clinical care. These include supplementation of folic acid (5 mg/daily), prophylaxis use of either long acting penicillin or oral penicillin up to the age of 10 years that is helpful in preventing the frequency of sickle cell crisis. These patients were advised to seek immediate symptomatic treatment as and when needed with analgesic/anti-pyretic and appropriate antibiotics with adequate hydration to avoid crisis.

These patients are also advised to avoid disease precipitating factors like exposure to extreme climatic conditions, excessive dehydration and excessive physical and mental stress. It has been observed that these efforts have significantly lowered the need for blood transfusion in patients and only seek blood transfusion when haemoglobin level falls below 5gm/dl. In general, repeated blood transfusion and iron therapy give rise to increased iron load and may prove detrimental. As the data indicates that a large number of sickle diseases patients reside in the tribal dominated area, there is a strong need to provide appropriate genetic counseling to patients and parents. Pre-marriage counseling and blood testing of the individuals will be helpful in lowering the marriages between two carriers so as to avoid the birth of homozygous child.

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Back cover : Baiga Woman and Child

