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An Investigation into Socio Economic and Demographic Variation of Cancer Incidences: A Study among the Khasi tribe in Meghalaya
-Phrangstone Khongji

Effectiveness of Weekly Supplementation of Iron to Control Anaemia among Adolescent Girls of Lodha and Rural Area of Narayangarh (West Bengal), India
-N. Mandal, A. Bera, S.Maity and D. Sahu

Indigenous Knowledge of Health Care System among the Karbi Tribal Group of Assam
-Somenath Bhattacharjee

Maternal and Child Health Care: A Study among major tribal communities in Jajpur District of Odisha
-K.N.Dash

Ethno-medicine practice among the Chothe tribe of Manipur, Northeast India
-Cheithou Charles Yuhlung and Mini Bhattacharyya

Study on the Prevalence of Haemoglobinopathies and G6PD Deficiency among Scheduled Tribe and Scheduled Caste Populations of Chhindwara District, Madhya Pradesh
-M.P.S.S.Singh, R.B.Gupta, Rajiv Yadav and S.Rajasubramaniam

Transformation of Leisure Activities and Lifestyle of Tribals in Rajasthan
-Alok Kumar Meena

Mean Age at Menarche and Menopause among Dibongiya Deoris of Assam
-Juri Borah and Sarthak Sengupta

Behavioural Dimensions of Reported Reproductive Tract Infection among - the Tribes: Experience from primitive Lodha Tribe of Eastern India
-Kalyan B. Saha, Uma Chatterjee Saha, Samiran Bisai and H. C. Shrivastava

Utilization of Antenatal Care Services by Tribal women in Chhattisgarh, India
-D. Kumar, A.K.Goel and A.Verma

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- An Investigation into Socio Economic and Demographic Variation of Cancer Incidences: A Study among the Khasi tribe in Meghalaya — 1
  -Phrangstone Khongji
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  -N. Mandal, A. Bera, S.Maity and D. Sahu
- Indigenous Knowledge of Health Care System among the Karbi Tribal Group of Assam — 23
  -Somenath Bhattacharjee
- Maternal and Child Health Care: A Study among major tribal communities in Jajpur District of Odisha — 33
  -K.N.Dash
- Ethno-medicine practice among the Chothe tribe of Manipur, Northeast India — 40
  -Cheithou Charles Yuhlung and Mini Bhattacharyya
- Study on the Prevalence of Haemoglobinopathies and G6PD Deficiency among Scheduled Tribe and Scheduled Caste Populations of Chhindwara District, Madhya Pradesh — 59
  -M.P.S.S.Singh, R.B.Gupta, Rajiv Yadav and S. Raja subramaniam
- Transformation of Leisure Activities and Lifestyle of Tribals in Rajasthan — 64
  -Alok Kumar Meena
- Mean Age at Menarche and Menopause among Dibongiya Deoris of Assam — 73
  -Juri Borah and Sarthak Sengupta
- Behavioural Dimensions of Reported Reproductive Tract Infection among the Tribes: Experience from primitive Lodha Tribe of Eastern India — 79
  -Kalyan B. Saha, Uma Chatterjee Saha, Samiran Bisai and H. C. Shrivastava
- Utilization of Antenatal Care Services by Tribal women in Chhattisgarh, India — 91
  -D. Kumar, A.K.Goel and A.Verma

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AN INVESTIGATION INTO SOCIO ECONOMIC AND DEMOGRAPHIC VARIATION OF CANCER INCIDENCES: A STUDY AMONG THE KHASI TRIBE IN MEGHALAYA

Phrangstone Khongji [a]

Abstract: *National Cancer Registry Programme (NCRP,2013) reveals that Age standardised rate per 100000 populations of cancer incidences in males is 273.4 in Aizawl district of Mizoram state followed by 216.0 of East Khasi Hills district of Meghalaya.[1] Cancer of the Oesophagus is the leading site in the registries of Assam and Meghalaya. The present study highlights cancer incidences by characteristics like by levels of education, occupational status and income levels and marital status, which is not provided in (Population Based Cancer Registry) PBCRs reports. A total of 50 numbers of respondents were identified from Mylliem Block in East Khasi Hill District, Meghalaya, India. The information was collected through structured questionnaire. The data coded and entered in SPSS 16.0 software and analysis is carried out. Results indicate that throat cancer may be the highest in number among the surveyed respondents. The study also reveals that the incidences of cancer is high among respondents of age group 45–49, working as private employees, entrepreneurs and those in farm and agriculture, with no formal education When it comes to cost of treatment 24(48%) respondents indicated that they spent above Rs 100000/-(1667 US $) towards treatment*.

Keywords: Cancer, Socio- Economic, Chi Square, Multinomial, Khasi tribe.

INTRODUCTION

The Global Cancer report 2014 reveals that in the year 2012, the worldwide burden of cancer rose at an estimated 14 million new cases per year and is expected to rise to 22 million annually within the next two decades.[1] Over the same period, cancer deaths are predicted to rise from an estimated 8.2 million annually to 13 million per year. Globally, in 2012 the most common cancers diagnosed were those of the lung (1.8 million cases, 13.0% of the total), breast (1.7 million, 11.9%), and large bowel (1.4 million, 9.7%). The most common causes of cancer death were cancers of the lung (1.6 million, 19.4% of the total), liver (0.8 million, 9.1%), and stomach (0.7 million, 8.8%). The global burden of cancer has more than doubled during the past 30 years. In 2008, it was estimated that there were over 12 million new cases of cancer diagnosed, 7 million deaths from cancer and 25 million persons suffering from cancer. The continued growth and ageing of the world's population will greatly affect the cancer burden. By 2030, it could be expected that there could be 27 million incident cases of cancer, 17 million cancer deaths annually and 75 million persons alive with cancer within five years of diagnosis.[2]

The world cancer report 2014 described that as a consequence of growing and ageing populations, developing countries are disproportionately affected by the increasing numbers of cancers. More than 60% of the world's total cases occur

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in Africa, Asia, and Central and South America, and these regions account for about 70% of the world's cancer deaths, a situation that is made worse by the lack of early detection and access to treatment. In India, cancer is a major public health issue and has become one of the ten leading causes of death in the country. It is estimated that there are about 28 lakh cases of cancer at any particular point of time with 10 lakh new cases occurring every year. About 5 lakh deaths occur annually in the country due to cancer. As per WHO Report 2005, the estimated Cancer Deaths in India is projected to increase to 7 lakh by 2015. The burden of cancer is expected to further increase due to increase in life expectancy, demographic transitions and the effects of tobacco and other risk factors. 40 % of cancer cases are due to Tobacco use. The leading sites of cancer are the oral cavity, lungs, oesophagus and stomach among men and cervix, breast and oral cavity amongst women (Planning commission, 2011).[3]

The leading site of cancers is varied in different parts of the country. Among males the leading site of cancer is Lung cancer in the PBCR of Delhi, Mumbai, Bhopal, Kolkata, Bangalore, Chennai, Thiruvanathapuram. Cancer of the Mouth is the leading site among males in PBCR of Ahmedabad. In North East, the leading site among males is Cancer of the Oesopahgus in Assam, Stomach cancer in Mizoram and Sikkim, Lung cancer in Manipur. The leading site of cancer among females is Cancer of the Breast in PBCR of Delhi, Mumbai, Bhopal, Kolkata, Bangalore, Chennai, Thiruvanathapuram and Ahmadabad. In North East the leading site among females is Breast cancer in Assam, Cancer of the Lung in Mizoram and Manipur and Stomach cancer in Sikkim (Planning commission, 2011).[3]

According to the World Cancer Report, 2014, the spiralling costs of the cancer burden are damaging the economies of even the richest countries and are way beyond the reach of developing countries, as well as placing impossible strains on health-care systems. In 2010, the total annual economic cost of cancer was estimated to reach approximately 1.16 trillion USD. Yet about half of all cancers could be avoided if current knowledge was adequately implemented. Access to effective and affordable cancer treatments in developing countries, including for childhood cancers, would significantly reduce mortality, even in settings where health-care services are less well developed. “The rise of cancer worldwide is a major obstacle to human development and well-being. These new figures and projections send a strong signal that immediate action is needed to confront this human disaster, which touches every community worldwide, without exception,” states Dr Christopher Wild, Director of IARC and co-editor of the report. [2]

OBJECTIVES

The objectives of the study are

1. To find the disparities in demographic variation of cancer incidences in the State.
2. To find the disparities in Socio Economic variation of cancer incidences in the State.

3. To find the cost factor related to cancer treatment.

Review of literature

The NCRP (2013) reveals that at the national level, cancer of the lung, mouth, oesophagus and stomach are the leading sites across all registries.[1] Among females, cancer of the breast and cervix are the leading sites of cancer in 18 out of 25 PBCRs. Age adjusted rate (AAR) per 100000 population in males is 273.4 in Aizawl district of Mizoram state followed by 216.0 of East Khasi Hills district of Meghalaya. Cancer of the Oesophagus is the leading site in the registries of Assam and Meghalaya. In connection with the use of tobacco, East Khasi Hills district of Meghalaya has the highest relative proportion with 69.3% and 43.0% for males and females respectively. East Khasi Hills and Meghalaya as a whole shows the highest AAR in cancer of the oesophagus (in both males and females) and cancer of the hypopharynx and larynx in males. Among males, 14.8% males in the age group 0 to 64 years in East khasi Hills district are likely to develop cancer during their lifetime and this figure is just next to Aizawl district. In Meghalaya state, the leading cancer sites for males were: Oesophagus (29.8%), Hypopharynx (11.5%), Stomach (7.4%), Lung (5.9%) and Mouth (5.2%). The respective CR and AAR per 100000 population for these sites were: Oesophagus (24.0, 46.2), Hypopharynx (9.3, 17.4), Stomach (6.0, 13.4), Lung(4.8, 10.9) and Mouth(4.2, 8.1). The leading cancer sites for females were: Oesophagus (21.9%), Breast (11.2%), Cervix Uteri (10.4%), Mouth (6.8%) and Stomach (6.5%). The respective Crude incidences rate (CR) and AAR per 100000 populations for these sites were: Oesophagus (9.9, 19.8), Breast (5.1, 9.1), Cervix Uteri (4.7, 7.8), Mouth (3.1, 6.1) and Stomach (3.0, 5.2). East Khasi Hill district of Meghalaya had the highest relative proportion of cancer associated with the use of tobacco for males and females at 69.3% and 43.0 respectively when compared to all sites of cancers. Mortality to incidence ratio is 31.2% and 29.6% for males and females respectively compare to the highest MI ratio of 71.8% and 67.2% in Barshi Rural.

Khongji (2012), indicates that the incidences of cancer for all sites can significantly increase in the state of Mizoram and Diburgarh district of Assam state through the year 2016. There can be a moderate rise of cancer incidences for males in the state of Manipur and Kamrup district of Assam. A decrease of cancer incidences for females can be witnessed in the state of Manipur, Kamrup district of Assam. Sikkim is the only state which can witness a declining trend in cancer incidences through the year 2016.[4]

According to the report by Dikshit, et.al, (2012) of the center of Global health research, Canada, it reveals that across states, a 30 year old man in the North East has the highest chance (11.2%) of dying from cancer before attaining the age of 70 years. The same report also reveals that probability of death among women is highest (6.0%) for North.[5]

Ramnath et al, (2010) reveal that the total cancer cases in India are likely to go up from 979,786 cases in the year 2010 to 1,148,757 cases in the year 2020. The tobacco-related cancers for males is

estimated to go up from 190,244 in the year 2010 to 225,241 in the year 2020. Similarly, in female cases will go up from 75,289 in year 2010 to 93,563 in the year 2020.[6]

Daixin Y, et al., (2010) found that significant variations were detected in socio economic status (SES) disparities within each of 4 major racial/ethnic groups (non-Hispanic white, black, Hispanic, and Asian/Pacific Islander) for all five major cancer sites. Female breast cancer and prostate cancer incidence increased with increased SES in all groups, with the trend strongest among Hispanics. Incidence of cervical cancer increased with decreased SES, with the largest gradient among non-Hispanic white women. Lung cancer incidence increased with decreased SES with the exception of Hispanic men and women, for whom SES gradient was in the opposite direction. For colorectal cancer, higher incidence was associated with lower SES in non-Hispanic whites but with higher SES in Hispanics and Asian/Pacific Islander women.[7,8]

Need of Study

In recent years, a mounting body of evidence suggests that increasing wealth, economic opportunities and education have led to better health, an increasing life expectancy and a growing and ageing population. Such global transitions are also associated with less favourable consequences including the increasing prospects of, and accessibility to, unhealthy lifestyle behaviours, including tobacco use, increased consumption of highly calorific foods, and a reduction in physical activity. The cumulative impact of these lifestyle choices on the world's larger and increasingly aged population has led to an increase in the burden of non-communicable diseases in many low- and middle-income countries undergoing human transition including India.[8] In recent years cancer cases and death have risen alarmingly in the state of Meghalaya and data shows that the cancer incidences in the state have risen as 518 cases in 2005, 759 cases in 2006, 865 cases in 2008, 888 in 2009, 1007 in 2010 and 348 cases till Mar 2011.[5]

With the alarming rise of cancer cases in the state and as suggested by NCRP Bangalore, the registry has advised to the government of Meghalaya to make cancer as a notifiable disease in the state. The above mentioned PBCR undoubtedly provides a wealth of information on cancer incidences and mortality by site, sex, age group at state and certain district levels. However certain vital information are still missing when it comes to information of cancer incidences by other background characteristics like by levels of education, occupational status and income levels and marital status. The present study thus will bridge this gap through an independent pilot study in a small scale and try to addresses this lacunae and when found useful, can be replicated in a large scale to cover the entire state with an optimum sample size so that all vital information can be included.

DATA AND METHODOLOGY

The primary objectives in the present work is to fill some lacunae in the report of PBCR collected, compiled and published by National centre for diseases

informatics and research, National cancer registry program under the Indian council of Medical research. With limited fund constraint of Rs 1 lakh (1667 US $) which is self-funded by the researcher, a small pilot study could only be taken up with limited number of respondents. This study aims to explore incidences of cancer by demographic and socio economic indicators, the target population are those cancer patients/ close relatives of cancer victims.

Identification of respondents was done with Hospital records of cancer patients available with Civil Hospital, Shillong. The address information from these records was considered as a sampling frame. However, due to funds constraints the research team to utilised probability sampling for the purposed of data collection. Then the respondents were contacted by telephonic appointment and whoever was willing to provide the detail information about the subjects were eventually visited by the data collector and information was gathered through a semi open ended structured questionnaire.

Ethical procedure was followed at each step of the research process right from the permission to access the data of the respondents from Civil Hospital, Shillong, the request for the appointment with the respondents, the consent of the respondents/key informants for the collection of information and maintenance of confidentiality of personal information of the respondents during data analysis and publishing of research findings.

A total of 50 numbers of respondents were identified from only block viz Mylliem Block in East Khasi Hill District, Meghalaya state, India. The information collected through the structured questionnaire includes age, gender, occupation, religion, educational status, Household income, marital status and some open ended questions about the symptoms, type of diagnosis, kind of treatment, duration of treatment and cost of treatment. A single question was asked about the diet content and another question about the consumption of betel nut /smoking/taking tobacco and consumption of alcohol. The survey was carried out in the month of March to June, 2014. The data coded and entered in SPSS 16.0 software and analysis is carried out by the use of percentages, cross tabulation, chi square test and Multinomial logistic regression.

RESULTS AND DISCUSSION

Interpretation of the result on Percentages

Table-1 shows the demographic information of the respondents and Table 2 reveals type of cancer respondents. In connection to the duration of treatment, a high proportion of the respondents mentioned to 9–12 months as depicted in Table 2. When it comes to cost of treatment 13 (26%) average money spent was between Rs. 50000 (833 US $) to Rs. 100000 (1667 US $) and 24 (48%) mentioned respondents indicated that they spent above Rs. 100000 (1667 US $).

A single question was asked about the diet content and another question about the consumption of betel nut /smoking/ taking tobacco and consumption of alcohol. Table 2 reveals that 8 (16%)numbers of respondents consumed betel nut, 18 (36%) respondents

Table 1 : Respondents by selected background characteristics

Background characteristics	Number of Respondents
Age	
0 - 29	0
30 - 34	2
35 - 39	5
40 – 44	4
45 – 49	10
50 – 54	5
55 – 59	7
60 – 64	5
65 – 69	3
70 – 74	7
75 – 79	2
80+	0
Gender	
Male	21
Female	29
Religion	
Christian	44
Traditional	2
Others	4
Marital Status	
Married	24
Separated	1
Widow/Widower	17
Unmarried	2
Educational Level	
No Education	15
Below 8	9
8 to 10	2
10+2	18
Graduate	4
Others	2
Occupation	
Govt. Employee	7
Private Sector	4
Entrepreneurs	7
Agriculture	2
Unemployed	1
Housewives	14
Others	15
Household Income (In Rs. per month)	
<5000	3
5000 – 10000	16
10000 – 50000	17
>50000	1

Table 2 : Respondents by selected characteristics.

Characteristics	Number of Respondents
Type of cancer	
Mouth	2
Liver	2
Skin	3
Kidney	2
Bone	1
Others	3
Throat	13
Oesophagus	4
Stomach	5
Cervical	6
Breast	3
Lung	6
Total	50
Duration of treatment	
1 week	4
2-3 months	8
3-5 months	3
6-8 months	5
9-12 months	18
13-18 months	3
18-24 months	3
25-36 months	4
37+ months	2
Total	50
Cost of treatment	
below 5000	1
5000-10000	3
10000-50000	8
50000-100000	13
100000 and above	24
Missing	1
Total	50
Eating / Consumption of	
Betel nut	8
Smoke	3
Betel nut and smoke	7
Betel nut and Tobacco	18
Betel nut, Smoke and tobacco	7
Betel nut, alcohol and tobacco	3
Missing	4
Total	50
Health Insurance covered	
MHIS	2
Mediclaim	1
Others	2
None	45
Total	50

consumed betel nut and tobacco and only (6%) have betel nut, tobacco and alcohol. In spite of the high cost involved in the treatment of cancer, 45 (90%) did not have access to Medical insurance like MHIS, Medi-claim and others.

Interpretation of the result on Cross tabulation

Cross tabulation run between type of cancer and gender shows that the association of these two characteristics is statistically significant with the Pearson Chi-Square of 0.001 level of significance. Out of 21 males 12 of them acquired throat cancer and out of 29 females 6 of them acquired cervical cancer, 4 oesophagus cancer, 3 breast cancer, 3 skin cancer, 3 lung cancer. Cross tabulation run between type of cancer and occupation shows that the association of these two characteristics was also statistically significant with the Pearson Chi-Square of 0.002 level of significant. By occupation, 14 numbers of housewives acquired cancer, 7 govt employees, 7 entrepreneurs and 15 from other occupation acquire cancer.

Cross tabulation run between type of cancer and Marital status shows that the association of these two characteristics is statistically significant with the Pearson Chi-Square of 0.001 level of significant. The table reveals that 24 married respondents and 17 widow / widower respondents acquired cancer. Type of cancer and educational status/background was not statistically significant associated and the data reveals that cancer incidences cut across educational background. Similarly, type of cancer and Household income also did not correlate significantly

Interpretation of the result on Multinomial Logistic Regression (MLR)

As a dependent variable/indicator is "Type of cancer" whose responses ranging from Lung, Mouth, cervical, Brest etc., the magnitude of association with the independent variables can be appropriately measured by Multinomial Logistic Regression (Table 3-5). The corresponding independent variables taken in the regression are given in Table1

Throat Cancer

The highest type of cancer incidences among the respondents was throat cancer which accounts for 13 cases among the total of 50 and it is mostly prevalent in the age group 45–49 with the odds ratio of 166.8. When the respondents are categorized into various occupational groups, then Private employees had the highest odds of incidences of throat cancer followed by respondents who are entrepreneurs and then by those who are working in agricultural sectors. As the result from multinomial regression shows that respondents who are graduates has the highest chance throat cancer followed by those with No education. Those respondents whose family income is more than Rs 50000/- as considered as redundant as there are only two samples and hence cannot be interpreted in the analysis. With regards household income it was observed that those with income greater than Rs 50000/- carried higher odds of probability to throat cancer. Another important finding that is reveal in the model is that with respect to marital status, that respondent who is separated

has the highest chance to acquire the present type of cancer.

Lung Cancer

A total of 6 respondents were suffering from Lung cancer, 3 are males and 3 females. The MLR model indicates that above data reveals that occupation is a detrimental factor in the incidences of Lung cancer, as the chances of the diseases is high in those respondents working as entrepreneurs with odds of 5.8. The Chances (odds) of Housewives getting the disease is same as those working as Govt. employees. Across educational status, respondents with No education have the highest chance of having Lung cancer. With respect to Marital status, those respondent who are separated has the highest chance (odds of 3.6) to obtained the present type of cancer followed equally likely by those who are married and widowed/widower with an odds of 0.751 and 0.795 respectively.

Cervical cancer

A total of 6 female respondents reported to cervical cancer. The result from the MLR model reveals that women respondents in the age group 45-49 have the highest chance of getting cervical cancer. Also those with age group 55-59, 60-64 and 75-79 have very high probability of getting the diseases. Thus this disease is likely to occur to women respondents' age group 45+. By occupational status, women respondent who are private employees have the highest chances of getting this type of cancer with an odds of 605 followed by those who are working in agricultural sector with an odds of 108. By educational status, women respondents who are graduates have a very high chance of getting this cancer with odds of 10.2 followed by those who have no education with an odd of 8.5. By marital status, women who are separated have the highest chance (with an odd of having cervical cancer.

Stomach cancer

The model in the analysis shows that women respondent is more likely to have stomach cancer. By age groups respondents in the age group 45-49 have highest chance of having this type of cancer with odds of 209.7 followed by those in the age group 60-64 with odds of 100.7. There is also likelihood for respondent age group 40-44 in getting this disease with odds of 57.1. By type of occupation, respondent working as private employees have high chances of getting this cancer followed by those who are entrepreneurs. Govt employees have the least chance of getting the type of cancer. No information reveal about the degrees of incidences by educational status and economic status in the present model. By marital status, respondent who are separated have the highest chance of having stomach cancer with and odds of 8000.9.

Oesophagus cancer

Only 4 female respondents reported to having Oesophagus cancer. This is substantiated by the logistic regression model in the present analysis. By age group, respondents in the age group of 45-49 have the highest chance (with an odds of 7.1) of getting this type of cancer followed by those in the age group of 70-74 with an odds of 6.1 and also by

Table 3: Type of Cancer by Gender and Marital status

Type of Cancer	Gender		Total	Marital Status				Total
	Male	Female		Married	Seperated	Widow/ Widower	Un Marrried	
Mouth	0	2	2	1	1	0	0	2
Liver	0	2	2	0	0	0	0	0
Skin	0	3	3	2	0	0	0	2
Kidney	1	1	2	0	0	1	1	2
Bone	0	1	1	0	0	0	1	1
Others	3	0	3	3	0	0	0	3
Throat	12	1	13	6	0	7	0	13
Oesophagus	0	4	4	3	0	1	0	4
Stomach	2	3	5	2	0	1	0	3
Cervical	0	6	6	2	0	3	0	5
Breast	0	3	3	1	0	2	0	3
Lung	3	3	6	4	0	2	0	6
Total	21	29	50	24	1	17	2	44
Pearson Chi-square test	Value	df	Sig*		Value	df	Sig*	
	33.074	11	.001		62.091	30	.001	

*Asymtotic Level of statistical significance (2-sided), df - degrees of freedom

Table 4: Type of Cancer by Occupation

Type of Cancer	Occupation							Total
	Govt Employee	Private Sector	Entre-preneur	Agricul-ture	Un employed	House-wives	Others (specify)	
Mouth	0	0	1	0	0	0	1	2
Liver	0	0	1	0	0	1	0	2
Skin	0	0	0	1	0	1	1	3
Kidney	0	0	0	0	0	1	1	2
Bone	0	0	0	0	1	0	0	1
Others	2	0	0	0	0	0	1	3
Throat	2	2	1	0	0	1	7	13
Oesophagus	0	0	0	0	0	3	1	4
Stomach	0	1	2	1	0	1	0	5
Cervical	2	0	0	0	0	3	1	6
Breast	1	1	0	0	0	1	0	3
Lung	0	0	2	0	0	2	2	6
Total	7	4	7	2	1	14	15	50
Chi-Square Tests	Value	df	Sig*					
Pearson Chi-square test	1.053E2	66	.002					

*Asymtotic Level of statistical significance (2-sided), df - degrees of freedom

Table 5. Result of the Multinomial logistic regression of type of cancer with corresponding background Characteristics.

Background Characteristics		Type of cancer															
		Skin		Kidney		Throat		Oesophagus		Stomach		Cervical		Breast		Lung	
		Sig	OR	Sig	OR	Sig	OR	Sig	OR	Sig	OR	Sig	OR	Sig	OR	Sig	OR
Gender	Male	0.56	0.144	-	-	-	-	0.22	0.008	0.53	0.155	0.23	0.004	0.23	0.013	-	-
	Female®	-	1.0	-	-	-	-	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0
Age Group	30 – 39	0.45	0.001	0.36	0.068	0.23	0.005	0.55	0.0	0.14	0.007	0.36	0.002	0.26	587	0.25	0.009
	40 – 44	0.12	4.97	0.48	347.8	0.54	2.57	0.26	1.31	0.25	57.15	0.41	29.9	0.45	88.6	0.14	0.027
	45 – 49	0.36	454.8	0.47	478.3	0.62	166.8	0.34	7.14	0.23	209.7	0.52	102.5	0.35	126	0.23	0.181
	50 – 54	0.58	0.039	0.66	36.11	0.84	0.023	0.45	0.08	0.86	0.005	0.26	4.62	0.45	1.28	0.56	0.003
	55 – 59	0.96	10.39	0.78	23.64	0.31	16.49	0.78	5.38	0.45	6.123	0.11	99.6	0.36	9.79	0.42	0.023
	60 – 64	0.74	7.25	0.52	160.5	0.52	9.07	0.66	1.62	0.63	100.7	0.46	85.2	0.56	43.2	0.33	0.089
	65 – 69	0.25	0.4	0.46	23.8	0.11	0.0602	0.53	2.59	0.54	0.004	0.79	42.3	0.45	0.314	0.41	0.13
	70 – 74	0.15	993.1	0.33	0.096	0.13	0.087	0.41	6.15	0.66	0.004	0.43	4.12	0.12	1.095	0.62	0.003
	75 – 79	0.26	28.9	0.45	79.4	0.26	23.53	0.30	2.10	0.74	6.63	0.55	80.1	0.14	189	0.21	0.339
	80+®	-	1.0	-	1.0	-	1.0	-	1.0	0.69	1.0	-	1.0	-	1.0	-	1.0
Education Level	No Education	0.58	0.096	0.36	13.7	0.55	2.5	0.24	0.018	0.45	0.025	0.23	8.59	0.47	0.006	0.45	0.106
	Below 8	0.46	0.009	0.45	0.96	0.23	0.539	0.36	0.026	0.19	0.0	0.45	0.072	0.56	0.032	0.52	0.008
	8 – 10	0.78	0.0	0.89	0.055	0.73	1.076	0.45	9.941	0.56	0.009	0.89	0.137	0.84	0.018	0.71	0.001
	10+2	0.85	0.21	0.75	3.07	0.14	14.52	0.62	0.135	0.45	0.007	0.21	10.25	0.41	0.097	0.63	0.01
	Graduate	0.96	0.004	0.11	0.108	0.36	0.001	0.89	0.009	0.73	0.006	0.25	0.009	0.32	0.036	0.56	0.047
Kind of Occupation	Govt Emp	0.14	0.0	0.56	0.006	0.56	0.0054	0.25	0.032	0.37	0.006	0.56	0.003	0.25	0.002	0.14	0.0
	Privt Emp	0.25	118.0	0.45	6.54	0.45	203	0.36	12.738	0.36	157.3	0.85	605.8	0.65	2.399	0.53	0.896
	Entrepreneurs	0.35	17.0	0.78	0.92	0.74	20.9	0.45	0.502	0.45	57.9	0.31	6.64	0.45	47.2	0.62	5.87
	Agriculturist	0.36	346.0	0.66	11.46	0.12	9.7	0.41	0.213	0.66	2.26	0.35	108.9	0.23	50.5	0.51	0.007
	Un employed	0.64	0.0008	0.14	0.007	0.32	0.714	0.85	0.047	0.49	0.618	0.16	0.002	0.46	0.042	0.84	0.002
	House Wives	0.75	74.6	0.12	1.03	0.91	0.844	0.20	0.034	0.45	20.24	0.45	0.398	0.25	27.4	0.77	0.857
	Others®	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0
Household Income (in Rs)	< 5000	0.16	0.0016	0.36	0.008	0.84	0.018	0.45	0.006	0.41	0.076	0.45	32	0.78	0.0	.25	0.006
	5000-10000	0.89	0.0039	0.14	0.003	0.31	0.023	0.23	0.0020	0.32	0.123	0.28	12	0.45	0.045	0.31	0.001
	10000-50000	0.42	0.0019	0.99	0.4	0.52	0.056	0.65	0.0	0.55	0.453	0.99	20	0.21	0.097	0.16	0.007
	50000+®	-	1.0	-	1.0	-	1.0	0.41	1.0	-	1.0	-	1.0	-	1.0	1.0	1.0
Marital Status	Married	0.83	0.215	0.51	0.001	0.87	13.47	0.23	1.027	0.42	0.377	0.45	31.06	0.45	0.07	0.25	0.751
	Seperated	0.45	0.002	0.21	0.008	0.861	922.5	0.14	0.011	0.23	89.4	0.26	212.6	0.63	0.157	0.26	3.632
	Widow/Widower	0.55	0.003	0.67	0.005	0.54	19.9	0.23	0.257	0.45	0.203	0.36	19.15	0.25	0.029	0.45	0.795
	Un married	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	-	1.0	1.0	1.0

® Reference category, OR – odds ratios, Sig – Level of statistical significance

respondents in the age group of 55-59 with an odds of 5.3.

Breast cancer

Only 3 female respondents reported to having Breast cancer. This is substantiated by the MLR model in the present analysis. Breast cancer seems predominant to those women respondent in the age group 30-39, followed by those in the age group 75-79 and those in the 45-49 age group.

Skin cancer

Only 3 female respondents reported to having Skin cancer. This is substantiated by the MLR model in the present analysis. By age group, respondents in the age group of 70-74 have the highest chance (with an odds of 993.1) of getting this type of cancer followed by those in the age group of 45-49 with an odds of 454.8. By type of occupation, respondent working in agriculture sector have relatively high chances of getting this cancer followed by those who are working as private employees. By marital status, respondents who are married have a relatively high chance (with an odds of 0.215) of getting this type of cancer.

Kidney cancer

1 male and 1 female respondent reported to have Kidney cancer. By age group, respondents in the age group of 45-49 have the highest chance(with an odds of 498.3) of getting this type of cancer followed by those in the age group of 40-44 with an odds of 347.8 and also by respondents in the age group of 60-64 with an odds of 160.4. By type of occupation, respondent working in agriculture sector have relatively high chances(with an odds of 11.4) of getting this cancer followed by those who are working as private employees(with an odds of 6.5).

SUMMARY

- Out of the 50 respondents surveyed in the present study, 13 respondents acquired throat cancer, 6 acquired cervical cancer, 6 lung cancer, 5 stomach cancer, 4 oesophagus and few other acquired other sites of cancer.
- In connection to the duration of treatment, a high proportion of the respondents mentioned as 9 – 12 months.
- When it comes to cost of treatment 13 (26%) mentioned that they spent between Rs 50000 (833 US $) to Rs 100000 (1667 US $) and 24 (48%) mentions that they spent above Rs 100000 (1667 US $).
- 8 (16%) respondents consumed betel nut, 18(36%) respondents consumed betel nut and tobacco and only (6%) have betel nut, tobacco and alcohol.
- 45(90%) did not have access to Medical insurances like MHIS, Mediclaim and others.
- The most statistically significant association through the Cross tabulation run between type of cancer with Gender, Occupation and Marital status.

- The highest type of cancer incidences among the respondents is cancer of the throat which accounts for 13 cases out of the total of 50. The significant detrimental factors for this type of cancer are those respondents: of age group 45–49; private employees, entrepreneurs and those working in agriculture; graduates has the highest chance throat cancer followed by those with No education; respondents whose household income is greater than Rs 50000/- have a higher odds of probability to throat cancer; respondent who are separated has the highest chance to obtained the present type of cancer.
- Incidences of Lung cancer was high in respondents working as entrepreneurs; respondents with No education have the highest chance of having Lung cancer; with respect to Marital status, those respondent who are separated has the highest chance to this type of cancer.
- The significant detrimental factors for Cervical cancer are those women respondents: in the age group 45-49+; private employees and those working in agricultural sector; who are graduates followed by those who have No education..
- The significant detrimental factors for Stomach cancer are respondents: who are women; respondents in the age group 45-49 have highest chance of having this type of cancer followed by those in the age group 60-64 and those in the age group of 40-44.
- The significant detrimental factors for Oesophagus cancer are respondents: who are women; respondents in the age group of 45-49 followed by those in the age group of 70-74 and also those in the age group of 55-59; respondents who are working as private employees; respondent with an educational level of 8-10 standard; respondents who are married.
- The significant detrimental factors for Breast cancer are respondents: who are females; those women respondent in the age group 30-39, followed by those in the age group 75-79 and those in the 45-49 age group..
- The significant detrimental factors for Skin cancer are respondents: who are women respondents in the age group of 70-74 followed by those in the age group of 45-49; respondent working in agriculture sector have relatively high chances of getting this cancer followed by those who are working as private employees; respondents who are married have a relatively high chance of getting this type of cancer.
- The significant detrimental factors for kidney cancer are respondents: in the age group of 45-49 have the highest chance followed by those in the age group of 40-44 and also by respondents in the age group of 60-64; working in agriculture sector followed by those who are working as private employees; who are not educated and have a relatively high

chance followed by those who are graduates; whose income is Rs 10,000/- plus have high chances of having cancer. No conclusive evidence is revealed by the model on the incidences of this type of cancer by marital status.

CONCLUSION

Throat cancer seems to be the highest incidences of cancer among the surveyed respondents. There can be various factors leading to this type of cancer and probability one of the causing factor in the present study is the eating of betel nut, tobacco and consumption alcohol. Age wise it was observed that individuals belonging to age group 45 – 49 showed high prevalence of all cancers observed.

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EFFECTIVENESS OF WEEKLY SUPPLEMENTATION OF IRON TO CONTROL ANAEMIA AMONG ADOLESCENT GIRLS OF LODHA AND RURAL AREA OF NARAYANGARH (WEST BENGAL), INDIA

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Abstract: *According to the 2011 census India has more than a million tribals who constitute 8.6% of Indian population. The Lodha are one of the important primitive tribe in eastern India. They mainly live in the Paschim Medinipur, Bankura and Purulia district in West Bengal, Mayurbhanj district in Orissa and east and west Singbhum district of Jharkhand. In West Bengal, the numbers of Lodha are 84,966 i.e. 1.9% of all Scheduled Tribes (Census-2001) hold 6th position. In the present studies 3 blocks in Paschim Medinipur district were included, wherein the number of Lodha population was 12099 in Narayangarh block (Census-2001). Traditionally Lodhas are hunting-gathering tribe. But, due to rapid de-forestation and forest reservation, their traditional activities are in danger. As a result they are practice agriculture, work as day labour, agricultural labor etc. They take rice twice a day, in the early morning, they take stale rice with some amount of salt and green chilies and in the evening, they consume boiled rice along with gruel. A portion of it is kept for fermenting to make known as handia. Handia is consumed by persons for all ages and sexes. They have tradition of smoking biri or chuta (country made cigarettes). They also prepare a kind of country liquor by fermenting Mahua flowers. Pulses and vegetable curry, though occasionally prepared, also supplement their diet. They eat the meat of all kinds of animals, including the cattle, pig, goat, fowl, dead animals and occasionally snake, lizard, toad etc. A national nutritional anaemia-control programme in India, focusing on supplementation of iron to pregnant women after the first trimester of pregnancy, failed to make an impact. It is prudent to recommend the correction of iron stores before the woman becomes pregnant. 'Efficacy' of weekly supplementation of iron has been proved to improve iron stores in adolescence in many studies abroad and in India. The objective was to study the 'effectiveness' of a weekly iron-supplementation regimen among rural, and tribal girls of Narayangarh block of Paschim Midnapore district, West Bengal, India. A baseline and the mid-term assessments were done using the cluster-sampling techniques. In each stratum, 30 clusters were identified. Twelve and 10 adolescent girls from each cluster were identified in the baseline and mid-term surveys respectively. The hemoglobin estimation was done using the Hemo Cue system.*

The overall prevalence of anaemia reduced significantly to 54.3% from 65.3%. Similarly, a significant rise in the mean hemoglobin levels was also seen among tribal and rural girls.

Key words: Adolescents, Anaemia, Iron-deficiency, Iron, Iron supplementation, Nutrition, Slums, India

INTRODUCTION

The Lodhas are one of the important primitive tribe in eastern India. They mainly live in the Paschim Medinipur, Bankura and Purulia district in West Bengal, Mayurbhanj district in Orissa and east and west Singbhum district of Jharkhand. In West Bengal, the numbers

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of Lodha are 84,966 i.e. 1.9% of all scheduled Tribes (Census-2001) and rank 6th position. In 3 studied blocks in Paschim Medinipur district, the number of Lodha population is 12099 (Census-2001). They belong to Proto-Australoid group who have lost their original linguistic tongue and have adapted to speak in the regional language. They were designated as one of the criminal tribes, till the revocation of the Criminal Tribes Act of 1952. They are not interested to receive schooling in the pre-independent India, post independence; Government of India designated them as Denotified Tribe.

Traditionally Lodhas are hunting-gathering tribe. However with rapid de-forestation and forest reservation, their traditional activities have been changed. As a consequence they have opted to carrying out agriculture. In addition they are also involved manual and agricultural labour and many other activities.

Rice forms the staple food of the Lodha. They take rice twice a day, in the morning they consume stale rice with some amount of salt and green chilies. In the evening, they take boiled rice along with gruel. A portion of it is kept for fermenting to make liquor, locally known as *handia.* They smoke *biri* or *chuta* (country made cigarettes) which is made by rolling Sal leaves and locally produced tobacco leaves. They also prepare a kind of country liquor by fermenting Mahua flowers. Occasionally pulses and vegetable curry are prepared to supplement their diet. They eat the meat of all kinds of animals, including the cattle, pig, goat and fowl snake, lizard, toad etc. Food is generally cooked by boiling and roasting processes.

Iron-deficiency anaemia is a serious public-health concern in most developing countries. It is very common in rural and tribal population. In India, the prevalence of anaemia among adolescent girls is 90%.[1] It results in increased maternal mortality and decreased child survival, as supplementation during pregnancy fails to restore the iron status.[2] Iron-deficiency anaemia is estimated to cause 591,000 perinatal deaths and 115,000 maternal deaths globally. [3] The associated loss of healthy life-years amounts to more than 19 million disability-adjusted life-years (DALYs) from perinatal causes and more than three million from maternal causes.[4]

'Efficacy' of weekly supplementation of iron has demonstrated an improvement in iron stores in adolescence in many studies in India [5-7] and abroad.[8-10] The objective of the present study was to study the 'effectiveness' of a weekly iron-supplementation regimen through the government health system among rural, and tribal girls of Narayangarh block in Paschim Medinipur district of West Bengal, India.

MATERIALS AND METHODS

The study was carried out in Narayangarh block, a forested block in Paschim Medinipur. It is one of the Integrated Tribal Development Project (ITDP) block. Tal-Birkanrh village Narayangarh block is a lodha dominated village and situated near the Nayagram Police Station and Subarnarekha River. The total population of this block is 372,645. The villages are totally covered by the forest. Lodhas of these villages are dependent on forest and its products. Except this, they also

work under different governmental scheme under Panchayet.

In the present study unmarried, non-pregnant, adolescent girls, aged 14–18 years, in 3 villages of Narayangarh block in Paschim Midnapur district were selected. The study covered 372,645 people from Tal-Birkanrh village for tribal, and 2 villages in rural area of Narayangarh block. The girls were given weekly supplementation with iron folic acid tablets (100-mg iron and 0.5-mg folic acid) and were trained in life-skill training sessions for 3 hours every day for 3 days. The training module was aimed at educating the beneficiaries on nutrition and adolescent issues, such as family and gender differences, adolescence and accompanying changes, and pregnancy and related issues. This opportunity was also used for explaining the importance of consumption of iron folic acid tablets and ensuring compliance over the period. Anganwadi workers of the Integrated Child Development Services (ICDS) Scheme carried out these activities in their areas. The distribution of iron folic acid tablets was facility-based, i.e. anganwadi. The supplies were replenished during their monthly review meetings at the Primary Health Centre.

The baseline assessment was done during 31 March–April 2010 using the cluster-sampling techniques. Considering the 50% prevalence of anaemia, the sample size required was at 7.5% precision, alpha of 5% with design effect of 2, was 342 in each stratum (tribal and rural) 30 cluster were identified. In total 12 adolescent girls from each cluster were identified following the standard procedure and were included in the study, after obtaining verbal consent.[11] A pre-designed and pre-tested questionnaire was used for collecting data. The HemoCue system was used for estimating haemoglobin.[12] Anemia was defined when the hemoglobin levels were less than 120 g/L. The hemoglobin levels between 100 and 119 g/L were classified as mild anaemia, 70 and 99 g/L as moderate anemia, and less than 70 g/L as severe anemia.[2]

The same methodology was used for evaluating the programme after 30 months of the intervention. Considering the 50% prevalence of anaemia, the sample size required at 7.5% precision, alpha of 5% with design effect of 1.8 (calculated from the baseline study using the Epi Info software (version 6.04), From each cluster, 10 adolescent girls were identified, instead of 12, in the baseline assessment. The decision was also influenced by the fact that, during the baseline assessment, it was difficult to get 12 adolescent girls from each cluster, as most adolescent girls in rural and tribal areas working, and operationally difficult. A two-month recall period was used for evaluating the compliance. During these 2 months, an adolescent girl was expected to consume a maximum of 9 tablets.

Statistical analysis

Data, thus, collected were analyzed using the Epi Info software (version 6.04). The CSample program of the Epi Info software was used for finding out the variance as data were collected by the cluster-sampling technique. Two tailed *t*-test was used for comparing the means. The chi-square trend was used for studying the trend in different grades of anaemia.

RESULTS

At baseline, the overall prevalence of anaemia was found to be 65.3%. It was the highest among the tribal girls (68.9%), and (62.8%) among rural girls (Table 1). The overall mean hemoglobin level was 110.4 ± 18.3 g/L. The mean hemoglobin levels among tribal and rural girls were 108.2 ± 19.5 g/L, 112.6 ± 17.0 g/L, respectively (Table 2).

The overall prevalence of anemia declined significantly at the time of evaluation from 65.3% to 54.3%. The decline was statistically significant ($p<0.001$) among the tribal girls (68.9% to 48.6%) and among the rural girls (62.8 % to 51.6) (Table 1). Similarly, a significant rise in the mean hemoglobin levels was also observed among the tribal and rural girls. The overall mean hemoglobin level also increased significantly ($p<0.05$) from 110.4±18.3 g/L to 115.9±15.9 g/L (Table 2). A significant declining trend was observed in different grades of anaemia among the tribal and rural girls. (Table 3). Consumption of iron and Folic acid tablets also increased during the study period (Table 4).

Table1: Baseline and mid-term prevalence of anemia

Area	Basline prevalence (n=360)	Mid-term prevalence (n=300)	P value
Rural	226 (62.8%)	155 (51.6%)	<0.001
Tribal	248 (68.9%)	146 (48.6%)	<0.001
Total	474/720 (65.8)	301/600 (50.2)	<0.001

Table 2: Mean haemoglobin levels at baseline and mid-term

Area	Basline Haemoglobin (mean±SD) (n=360)	Mid-term Haemoglobin (mean±SD) (n=300)	P value
Rural	112.6±17.0	115.6±16.3	<0.05
Tribal	108.2±19.5	116.2±15.4	<0.001
Total	110.4±18.3	115.9±15.9	<0.05

Table 3: Grades of anaemia at baseline and mid-term

Area	Basline (n=360)	Mid-term (n=300)	P value (c^2-treand)
Rural			
No anaemia	134 (37.3%)	141 (47.6%)	
Mild anaemia	165 (46.0%)	110 (37.2%)	
Moderate anaemia	53 (14.8%)	44(14.9%)	
Severe anaemia	8 (1.9%)	1(0.3%)	<0.001
Tribal			
No anaemia	112 (31.1%)	151 (50.8%)	
Mild anaemia	147 (40.8%)	106 (35.7%)	
Moderate anaemia	88 (24.4%)	40 (13.5%)	
Severe anaemia	13 (3.6%)	0	<0.001

Table 4: Programme performance in tribal and rural areas

Area	No attended in life-skill training (n=360)	Consumption of IFA during the last two months (n=300)	
		No. consumed (n=300)	Consumption (mean±SD) (n=300)
Rural	243(81.0%)	284 (94.7%)	7.15±2.2
Tribal	236 (78.7%)	276 (92.0 %)	6.77±2.6

DISCUSSION

Nutritional anemia is an end-result of long-term negative iron balance, culminating in poor immune function and decreased work performance. Poor fetal outcome may occur if iron deficiency in the first trimester of pregnancy occurs.[13] The national nutritional anemia-control program in India, focused on supplementation of iron to pregnant women after the first trimester of pregnancy), [14] failed to make any impact observed in other countries.[15] Over the past decade, the proportion of low-birth weight babies have failed to decline.[16] This is directly related to child survival and to the physical and mental growth of children as nutritional anemia in women increases the risk of maternal mortality, reduces the gestational period, increases the risk of low-birth weight, and increases perinatal mortality.[17]

Prevention of iron deficiency during pregnancy and young childhood is essential as it can lead to lasting damages.[18] As interventions during pregnancy have failed, it is necessary to correct the iron status even before the woman becomes pregnant. Because of considerable overlap in increase in iron requirements due to growth, onset of menses, and costs of pregnancy, there is a limited opportunity to acquire a sufficient iron store prior to pregnancy to meet the increased demand of pregnancy. [19] This makes iron supplementation during adolescence very essential.

Supplementation of iron has been recommended in adolescent years [20] mainly because of 3 factors: first, 16–55% of girls are already anemic by the time they become pregnant; second, pregnancy is too short a period of time in which to reduce pre-existing anemia; third, existing intervention channels can only be used for targeting adolescent girls with iron intake. [21,22] The effectiveness of daily iron-supplementation programmes has been questioned because of the low efficiency of health services and the lack of compliance of the target groups. [6] The use of intermittent supplementation schedules has been suggested as a way to improve compliance by reducing side-effects. Several studies conducted among preschool and school-age anemic children have shown that the efficacy of an intermittent iron-supplementation schedule is similar to that of daily dosing.[6,7]

The present study has shown the effectiveness of the weekly supplementation of iron folic acid tablets in rural and tribal areas. Alternative modalities, such as peer educators, school-based approach, or house-to-house approach to improve the compliance may be worked out. Implementation of the program through existing resources makes the intervention sustainable. Mehta (1998) also reported an increase in the mean hemoglobin level from 10.445+1.21 g/dL to 11.99+1.19 g/dL and reduction in prevalence to 50% after weekly supplementations of iron and folic acid for 25 weeks,[5] which were comparable with daily supplementation. Sharma *et al*.(2000) also reported that the public-health approach, consisting of a single weekly iron supplementation through schools and welfare centres, may turn out to be a better strategy to combat anemia in adolescent girls.[23] A meta-analysis of intermittent supplementation of iron concluded that weekly supplementation of iron is efficacious though less than the daily regimen and recommended that supervision of iron supplementation whether daily or weekly is essential. But, where daily supervision of iron supplementation is not possible, weekly supervised supplementation may be the feasible alternative.[24]

To conclude, considering the biological and operational feasibility and the effectiveness of the intervention, weekly supplementation of iron to adolescent girls should be universally started in rural and tribal areas to correct the iron stores of women prior to becoming pregnant.

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INDIGENOUS KNOWLEDGE OF HEALTH CARE SYSTEM AMONG THE KARBI TRIBAL GROUP OF ASSAM

Somenath Bhattacharjee [a]

Abstract: *Every culture irrespective of its simplicity or complexity has its own belief and practices related to the health care system. Particularly among the tribal people, the method of health care system is immensely associated with their religious belief, along with the interference of soul, spirit and deity. Their daily livelihood depends upon a number of natural resources, in this regard; the traditional health care practice needs attention. In case of any health issue or its method of treatment it is transformed into a community matter.*

The present study was carried out on the Karbi tribal group of Karbi Anglong, Assam. The district is largely covered by a forest and several other natural resources. It is a zone of rich flora and fauna species and these resources are used by the local population in every perspective of their life. The Karbi people have a strong belief in supernatural powers and its impact on their health. They are psychologically dependent on the traditional healers and medicine man for their health ailments. The traditional healers use a number of locally available plant resources for treatment. In particular, in the cases of reproductive mother-child health, a number of fauna products are used by them. Thus a number of locally available plant and animal resources bear a special resemblance in traditional medical practices. The present study was initiated with the prime objective to identify the relationship between traditional cultural practices, environmental resources and indigenous knowledge of health care system among the Karbi people.

Key words: Environment, Flora, Fauna, Traditional healer, Culture, Indigenous knowledge, Health.

[I] Indigenous Knowledge of Health Care System

Every culture, irrespective of its simplicity and complexity, has its beliefs and practices concerning diseases. No culture toils in a meaningless fashion in treatment of diseases. Every culture evolves its own system of medicine. The treatment of disease varies from one group to another. It has been noted that, in the rural areas, the belief of interference of a supernatural power is particularly strong in the context of health and diseases. Majority of their socio-cultural activities revolve around Gods and Spirits. They identify the supernatural powers with group of powerful forces and deities that control and influence the happenings in their community. It may be pointed out that disease and treatment, particularly in the simple societies cannot be properly understood in isolation. Health and treatment are very much connected with the environment, particularly the forest ecology. The health care system and traditional treatment are based on their deep observation and understanding of nature and environment.[1]

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Health has been defined in a number of ways-

Dubos (1968), defined health as, "a modus vivendi enabling imperfect men to achieve a rewarding and too painful existence, while they cope with an imperfect world." [2] World Health Organization 1948, defined Health as "a state of complete physical, mental and social well being and not merely an absence of disease or infirmity".[3]

The concept of health, disease and treatment vary according to the culture of different communities and ethnic groups. Moreover a particular culture is guided by the traditional customs and every member of the culture is ideally expected to confirm to it. In a given set up for human being disease threatens not only the ones state of wellbeing and that of other people in the group, but it also threatens the integrity of the community as a whole. In every culture there is a repository of values and belief systems built around important life experiences viz. birth, illness, and death and disease that reduce the strength of the people to hunt or gather food, to perform agriculture and all other vital occupational and necessary activities. In such circumstances, the traditional healers find a means to prevent misery. Traditional way of treatment is inevitable among the simple societies, although modern treatment is applied in different circumstances. The traditional medicine can be stated as the sum total of all knowledge and practices used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusive on practical experiences and observation. Their traditional medicine is of various kinds like Folk medicine, Ethno medicine, Ayurveda, Unani, Sidhha and Nature Care, which differ from each other in term of tools, techniques, ideas and beliefs.[4]

The Anthropological perspective of health is mostly considered under the domain of Medical Anthropology. It involves analysis of health in the context of culture, social behavior, economic system and human biology. In Medical Anthropology, the examination of health issues extends to include knowledge, meaning, social behaviour and biology generally related to well being, suffering misfortune, life cycle and survival. [5] It is to be mentioned here that, Medical anthropology is not only limited to the extent of providing fruitful strategies to the health planners, but it has its own theoretical dimensions; it is not only a way of viewing the state of health and disease in a society, but a way of viewing the society itself. Medical Anthropology concerns itself with the many factors that contribute to disease or illness and with the ways that various human populations respond to disease or illness. Fabrega 1971, in a definition of Medical Anthropology has expressed that a Medical Anthropology enquiry will be defined as one, "that elucidates the factors, mechanisms and processes that play a role on or influence the way in which they respond to illness and disease. It also examines these problems with an emphasis on patterns of behaviour."[6]

In most cultures, there is a specialist who treats illness, injury and disease who is also associated with religious practices. Such medico-

religious practitioner is also considered to be a practitioner of magic, witchcraft traditionally. In this context, particularly in India along with the ethnic and cultural diversity, the folk medicine and indigenous knowledge of health care system are quite variable from one another.

[II] Traditional Health Care Practices of the Karbi people

The Karbi Anglong district is situated in the central part of Assam. It is bounded by Golaghat district in the east, Meghalaya and Morigaon district in the west, Nagaon and Golaghat district in the north and North Cachar Hill district and Nagaland in the south. The district is dense with tropical forest covered hills and flat plains situated between 25^0 33' N to $26^0$35' N Latitude and $92^0$10' to $93^0$50' E Longitude. Due to variation in the topography, this hill zone experiences different climates in different parts. The winter commences in October and continues till February. During summer, the atmosphere becomes sultry. The temperature ranges from 6° - 12° and 23° -32 ^{o} Celsius in the summer. The average rainfall is about 2416 mm. The population of the district is predominantly tribal. The major tribal ethnic groups of this district are Karbis, Bodos, Kukis, Dimasas, Hmars, Garos, Rengma Nagas, Tiwas. Besides, a large number of non-tribals also live in this hill region. The Karbis are the indigenous community of this region.

Geographical area of this district is 10,434 sq. km, and accounts for 13.3% of the total geographical area of the State. It mostly consists of undulating and hilly terrain with numerous rivers and streams. The district could be broadly divided into 2 physiographic units viz. hills and plains. About 85 %t of the district is covered by the hills. As per the State of Forest report 1999 of Forest Survey of India, Dehradun, 6044 sq. Kms. of the district were under dense forest cover while 2776 sq. kms was under open forest cover.[7] The important forest types found in Karbi Anglong District are:-

1. Moist semi-evergreen forests.
2. Moist Mixed Deciduous forests.
3. Riverrain Type.
4. Miscellaneous type with scattered pure or mixed patches of bamboos.

To study the indigenous knowledge of health disease and treatment of the Karbi people, intensive field work was conducted in the selected villages of Karbi Anglong district. The studied areas were one of the oldest settlements of the Karbi people. The study was conducted among 300 families with a total population of 1653. Among them there were 852 males and 801 females.

METHODOLOGY

In this study Preliminary Census schedule was applied to collect data about their period of present occupational pursuits, daily working schedule, demographic composition, concept of health, disease and treatment and their daily food habit. Further, interviews were taken from the key informants to know about their traditional cultural practices particularly focusing on the issue of folk culture. Thereafter, case studies were taken on the people who are involved with different occupational pursuits and in this regard,

their resources of economy were given a major emphasis. Case studies were also taken on their traditional health care practices and in this concern the prime importance was focused on locally available medicinal plant resources and their way of utilization by the studied people.

The study was conducted during the period of January 2011 to February 2013. There were four divisions of the total field work. Two to three times of field work was done under each division as per the requirement.

Division-1: Fore mostly, the general observation of the village was done along with the completion of Preliminary Census Schedule (PCS) to know the demographic composition of the studied people.

Division-2: Case studies were taken on the concerned families. It was focused on the issues of their historical background, traditional occupational pursuit, present economic pursuit, indigenous knowledge of traditional health care practices, magico-religious healing practices.

Division-3: Detailed open structured interviews were taken from the key informant, eldest person of the settlement, leader of the traditional political organization of the concerned society, administrative authority related with the studied settlement. It focused on the relevance of locally available floral and faunal resources in their traditional healing practices, concept about different benevolent and malevolent spirits related to their health aspects.

Division-4: The data was collected to find out the interaction between cultural and environmental dimensions of health care practices among the Karbi people.

OBJECTIVES

The present study is primarily focused on three important aspects-

1. To know about the relationship between man, environment and traditional health care practices.
2. To know about the cultural aspects associated with traditional health care practices.
3. To know about different local medicinal plants and their importance in the traditional health care practices of the concerned people.

Traditional Karbi Notion of Illness:

The Karbis believe in multiple deities and regards all objects on earth as having divinity or possession of supernatural power and therefore worship hills, mountains, rivers etc. They further believe that diseases are caused by different malevolent spirits and by appeasing the benevolent spirits it can be redressed. Karbis regard both binary spiritual concepts as possessing divinity which can harm as well as bring peace and prosperity to the people such as good health, wealth, favourable weather, etc. Karbis worship household deities called *Hem Angtar* and these deities are propitiated annually. There are deities which are propitiated as and when required are called *Habit ase* (non-household gods).

The disease condition or the notion of illness is being referred by the Karbis as *se kelong*. When a person falls ill, for example, after coming from forest, the household members attribute the cause

due to encounter of evil spirits and initiates propitiation of the spirits. In case the patient does not respond to normal traditional treatments, the household members seek the help of wise man to ascertain the cause of the illness. The wise man through divination identifies the deity/spirit responsible for the illness and suggests certain rituals for recovery of the patient. This act of divination is called *Sang Kelang.* The practice is more prevalent in remote areas where modern medical facility is a far cry. Sickness, if long continued or severe, is frequently attributed to witchcraft (*maja*) and the patient is said to be *maja kelong*-witchcraft has got hold of him.

Traditional healthcare practices of the Karbis:

Traditional healthcare practices of the Karbis include both local and oral applications, and rituals to cure host of diseases like anemia, muscular inflammation, pain (analgesia), etc. *Keso* or illness is also called *se-kelong*, a generic term for contacting illnesses and its treatment is called *se-kelang*. *Se-kelang* therefore, involves numerous sacred healing incantations, chants, prayers and rituals and in some cases administration of plant and animal products. The rituals may be widely divided into (a) *kapherem* and (b) *karkli*. In *kapherem*, a cure for certain *keso* (pain or illness) is sought by performing healing chants involving external application of saliva of the mouth (*kehi/kangthok*) and mild blowing of air (*kebut*) on the afflicted portion of the body. *Kapherem* is performed for the cure of numerous pain or *keso* such as (1) *Ingki Angmi* (toxins of caterpillars), (2) *Bap Ase*, (3) *Ingthum* (Boils/Furuncle), (4) *Methan Kekor* (Dog bite), (5) *Pok Avur* (epidemic of stomach disease), (6) *But Pharo* (Acute Stomach ache), (7) *Chor Kedong* (Thorn inflicted injury), (8) *Me Kapherem* (Burn), (9) *Inghai* (lymph adinitis), (10) *Han Kangri* (Vegetable Poisoning), (11) *Sor Kapherem* (Acute pain), (12) *Mek Avur* (Epidemic of eye disease), (13) *Chainong a-But* (Acute stomach pain), (14) *Thengkur* (Poisoning) and (16) *Phurui Kangthok* (Snake bite) etc. to cite a few. In *kapherem*, blood-sacrifice is generally not involved. In extreme cases when the *keso* does not respond to *kapherem*, blood-sacrifice or *karkli* is resorted to. Philosophically, therefore, in traditional Karbi healing system, blood-sacrifice is not the first option.

In *karkli*, a priest resorts to reading of entrail and liver of sacrificed chickens, goats or pigs. This practice of divining, known since the time of ancient Etruscans, Romans, and the Mesopotamians is known as *haruspicy*, *hepatoscopy* or *hepatomancy*, the inspection of the entrails of sacrificed animals, especially the livers of sacrificed sheep and poultry. The practice is also known as 'Extispicy (from Latin extispicium), the practice of using anomalies in animal entrails to predict or divine future events. Organs inspected include the liver, intestines, and lungs. The animal used for extispicy must often be ritually pure and slaughtered in a special ceremony.' Besides the reading of the entrails and livers etc., the direction of the head and wings of the sacrificed chicken is also examined. Karbi people use a number of locally available plant resources to redress their different

ailments. The collection of such resources, its purification and further the method related with the preparation of medicine from them, are the integral part of their cultural tradition, customs and taboo. A few of such plants and their specific utilization are mentioned in Table1.

Meanwhile, fish is symbolically used in almost all Karbi rituals and it plays a

Table 1: List of locally available floral resources utilized by the Karbi people as medicinal resources

Sl. No.	Botanical name of the plant	Local name	Consumed for	Method of use and dosage
1	***Abrus precatorius*** Linn.	Chuselok	Cough	Two table spoons of fresh juice, twice daily after meals for six days.
2	***Acmella paniculata***	Bapchuki	Stomachache	One table spoon of leaf juice is taken after meals, twice daily for five days.
3	***Adhatoda zeylanica***	Jok –an-kelok	Dysentery	Juice of two matured leaves, trice daily before meal for three days.
4	***Alpinia galanga***	Phrikangnek	Bronchiits	Half a tea cup of rhizome juice, once daily after meal for ten days.
5	***Alternanthera sessilis***	Raeaba	Skin disease	Fresh leaves paste applied on the affected parts twice daily for eight days.
6	***Amorphophalus bulbifer***	Hen saiku	Piles	100g tuber boiled and taken with rice twice daily for a month.
7	***Antidesma acidum***	Ingchum	Apepetizer	Two boiled tender shoots taken with rice, once a day for five days.
8	***Arisaema tortuosum***	Chamua	Piles	50g tuber boiled and taken with rice, twice daily for a month.
9	***Beta vulgaris***	Bengali dido	Jaundice	50g boiled tender shoots taken once a day with meal for ten days.
10	***Calamus rotang***	Pri	Vitality	50g boiled tender shoots taken with meal for twenty days.
11	***Cassia tora***	Bapduli	Jaundice	Five table spoon of leave juice once daily after meal for fifteen days.
12	***Chenopodium album***	Churu	Dysentery	Two table spoon of leave juice thrice daily after meal.
13	***Cissus quandragularis***	Repichingthun	Joint pain	25gn of boiled stem taken with meal once daily for ten days.
14	***Clerodendrum serratum***	Phelang-riho	Wound	Matured fruits are crushed and make into a paste and then applied on the affected parts.

15	***Commelina benghalensis***	Kurveng	Earache	Two drops of leaf juice are applied on the effected ear once daily for three days.
16	***Curcuma amada***	Tharmit tharve	Gastritis	Two table spoon full of rhizome juice twice daily after meal for five days.
17	***Cycas pectinata***	Or –oh	Gastritis	Three table spoon of leaf
18	***Drymaria cordata***	Kur-vengso	Sinusitis	Two drops of warm leaf juice are applied as drops once daily for six days.
19	***Homalomena aromatica***	Ok hi atehang	Joint pain	Petiole paste applied on the affected parts twice daily for a month.
20	***Lippia geminata***	Lopong brik	Conjunctivitis	One drop of leaf juice applied once daily for three days.
21	***Nyctanthes arbor-tristis***	Hewali	Malaria	Half a tea cup of leaf juice once daily after meal for ten days.
22	***Oroxylum indicum***	Nopak ban	Intestinal worm	Two boiled flowers twice daily after meal for seven days.
23	***Solanum nigrum***	Pharchingki	Intestinal worm	Three matured fruits once daily after meal.
24	***Physalis peruviana***	Thebongkang	Stomach pain	25g of boiled tender shoot taken with meal once a day for five days.
25	***Paederia foetida***	Rikang menthu	Gastritis	Four table spoon full of leaf juice, once daily after meal for a week.
26	***Vitex negundo***	Vorke abap	Malaria	50g leaves boiled in 300ml water till the quantity become half and then taken twice daily after meals for fifteen days.
27	***Xanthium strumarium***	Parok hanthor	High blood pressure	225g of boiled shoot taken with meal twice daily for twenty days.
28	***Zingiber zerumbet***	Phrilangdung	Blood dysentery	Two table spoon of rhizome juice taken after meal for five days.

Source: Field Study, 2011-2013

very crucial role in the traditional health care practices of the Karbi people.

Ritualistic use of fish among the Karbis: All rituals are associated with various healing practices or general well being of individuals, household or village communities which are performed either at home, within the boundary of a village or in the woods (in a safe distance from village). Fish is symbolically used in all the healing practices. Fish (of any species) is collected from rivers (or from ponds these days) one day ahead of the ritual and brought home which is then cooked (only boiled without adding any flavor or salt). The boiled fish is then wrapped in a leaf

and tied with nine strands of *jintak* (bamboo rope). This fish thus sanctified is called *beng* which is offered at the altar where the particular deities are worshipped.

Beng is used in the rituals for *Hem Angtar* or household deities such as *Peng*, *Rong Arnam*, *Chojun* and *Rongker*. In the beginning of the ritual the *Kurusar* or priest pay obedience and honour to his predecessors by offering rice beer followed by *beng*. By this practice the *kurusar* is said to inform his *kuru* or predecessors that the former is performing the ritual acquired from them and did not act unilaterally and ask for blessings for smooth conduct of the ritual. Ritual without honouring the *kuru* by the *kurusar* is said to be incomplete. *Beng* or sanctified fish is not offered at rituals generally performed in the woods called *bit-ase* such as *duikrai* or *chekama*.

During *Chojun*, the supreme deity of Karbi pantheon *Arnam Kethe* (variously known as *Barithe, Abinong*, *Athak Asor* etc.) is offered live fish or *ok-kereng* of two varieties namely *nune* (*Amblypharyngodon mola*, *Danio aequipinnatus*) and *ok-langso* (*Channa gachua*) along with *chehe* (*Carcinus* sp.) and *kumphi* (*Dytiscus marginalis*).

Use of fish to cure mental depression-like condition (*Nihu kachingtung*):

As a society, Karbis are organized around a network of kinship relations. The maternal uncles are held in high esteem in Karbi society and traditionally, it is customary for all sisters to pay periodic homage/obeisance to their brothers. When a sister's son/daughter is afflicted with certain socially defined abnormalities, they approach a "*sang kelang abang"* or a diviner who performs certain rituals to identify the particular brother (elder or younger) who is to be ritually propitiated. This ceremony /ritual is called *Nihu kachingtung* or *nihu kachiri* (longing of maternal uncle). The particular *nihu* (maternal uncle) is approached, offered customary wine, who will then give six fist-full of rice and six pieces of *toman* (dried fish prepared out of bigger varieties of fish of any species) for the afflicted person. The quantity of ritual gift is five fist-full of rice and five pieces of *toman* if the afflicted person is female and six fist-full of rice and six pieces of *toman* if the afflicted person is male. If the person partakes the ritual gifts (of rice and *toman*), the abnormalities are said to be cured.

It was also observed that the villagers had a strong belief related with the influence of soul for different health anomaly. They had a strong faith on the malevolent impact of evil wind, evil eye and charming arrow. The only way to get rid from the ill health condition is to please the soul with magico-religious performances. Such performances were conducted with sacrifices of animals, with a strong faith that it will redress the evil effect of the soul on different ill health condition. The sacrifices were usually performed by the Magico-religious healers of the village.

The Karbis regard both Gods and Devils as possessing divinity which can do harm as well as bring peace and prosperity to the people. In this concern a number cultural norms are associated with their reproductive mother-child health issues. A prospective mother is

supposed walk across the river, streams and hilly areas, with the belief that through such movements she will be blessed by the nature. It is a cultural taboo for her to consume the flesh of tortoise or chameleon. They believe that complicated situations during pregnancy occur due to curse of evil spirit known as *Hi-i- phuri.* In such cases a wise man sacrifices a cock and offers the blood to the evil spirit. Just before one month of the expected delivery, the concerned families invite a wise man to perform the *Voti-langpon kevar* ritual to prevent the influence of any evil spirit that may cause hindrance during pregnancy. Ultimately it is obvious that, a number of cultural practices and environmental resources are intimately related with the traditional health care practices of the Karbi people.

GENERAL OBSERVATION

The fundamental universal concept of health care practices is to cure and prevent diseases and illness. Ever since the attainment of culture building capacity by man, there have been attempts to devise cures for multifarious diseases. Man since his emergence remained engaged in attempting to combat different fatal diseases. Folk medicine has served this purpose over the last 3,000 years or so in India. In the historic past at all levels of socio-cultural development there could hardly be any group of population that has not had its own concept of health, disease and treatment. The people of a habitation region in general become knowledgeable about the curative or preventive medicinal plant species abounding in the region. The concerned people are apt to learn the utility of some herbs available near at hand. The people living in the sub mountainous region of Karbi Anglong, as sedentary inhabitants, came into intimate contact with various geo-physical features and environment. Simultaneously, they gain a distinctive knowledge of the total environs of the habitat. The Karbi people used a large number of medicinal plants for their self therapy. Besides the use of different herbs by common people, the traditional healers had the knowledge to use the herbal medicine and to diagnose the bodily disorders. Such traditional healing practices are acclaimed to have classic effective value on account of their being non toxic, non cost worthy and easy availability. Further, a number of physical ailments were attributed to different super natural causes. Different magico-religious practices were widely conducted to cure such maladies.

The concerned people had a strong faith on evil eye, evil wind and charming arrow. To redress the malevolent effect of such evil forces a number of magico religious healing practices were performed by the magico-religious practitioners of the studied area. Even the elderly members of the concerned community also had the knowledge about different magico-religious healing practices. It is to be mentioned here that economic scarcity was a major hindrance for the studied people to avail the modern medical treatment. In such circumstance the environmental resources and cultural practices had played a major role in their traditional health care system; as well as an intimate psychological dependency could be also noticed on it.

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MATERNAL AND CHILD HEALTH CARE: A STUDY AMONG MAJOR TRIBAL COMMUNITIES IN JAJPUR DISTRICT OF ODISHA

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Abstract: *The maternal and the child health care are important indicators of overall health status and well being of the population. The tribal individuals especially women and children require special attention if their health status is to be improved. Nutritional anemia is a major problem among women and children in tribal communities of Jajpur district of Odisha. The institutional delivary and post-natal health check-up is low among them. The child immunization is also poor. Poverty, ignorance, poor sanitation, geographical location, illiteracy, socio-cultural beliefs, poor infrastructural development in tribal areas have contributed largely to the inability of the maternal and child health programmes in reaching out to the tribal communities. There is an emerging need to pay greater attention to these issues among tribal communities of jajpur district of Odisha. Promoting holistic policies and program in dealing can solve this problem. In order to improve maternal and child health status, the health care delivery should be designed for each specific tribal community in a manner so specific their needs*.

Key words: Malnutrition, anemia, immunization, institutional delivery, ante-natal check-up.

INTRODUCTION

Recently there has been a perceptible change regarding the concept of development. The development goals are no longer defined in terms of the economic growth exclusively. Compared to other developing countries, India has been lagging due to lack of political commitment in recognizing health as an essential component of human development. This led to low investment and improperly formulated policies and implementation thereof. There are disparities among different social groups with regard to access to and utilization of health care services in some tribal concentrated states. The central and state Government needs to show commitments to correct these inequalities and gaps in health care and the health system to provide optimum benefits to the people. Thus, it is felt that the development process needs to be geared up in the tribal areas ensuring that the fruits of development must reach the tribal communities. The health of the tribal people in India is not at par with the non-tribal people. Generally the health status of the tribal people is poor and being largely unaffected by the developmental process in India. Majority of these populations still lack even primary health care access, with consequent reduction in the mobility. Hence the health problems need special attention in the context of tribal

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communities of Odisha. The maternal and child health care problems of diverse tribal communities in Odisha have been found to be unique and present a formidable challenge for which appropriate solutions need to be formulated by health planners and researchers. The high death rate indicates the poor state of affairs with respect to availability of health care facilities among them. Maternal and child health care are largely neglected among the tribal groups.[1]

METHODOLOGY

The present study was conducted among the four major tribal communities in the Jajpur district of Odisha using a combination of qualitative and quantitative methods. The data was collected from both primary and secondary sources. In the present study, purposive sampling technique was followed by keeping clearly defined objectives, the sample for the present study comprised of 233 families. Data has been collected from a total number of 1175 residents (610 males and 565 females) by participant observation method. An interview schedule was developed for collecting the detail information about maternal and child health care to achieve reliability and study the issue more intensively.

OBJECTIVES

The objective of the present study is to assess the status of maternal and child health among the major tribal communities of Jajpur district of Odisha and to find out viable measure to improve the health condition of the tribals in the district.

Maternal and child health scenario in Odisha

The maternal mortality rate (MMR) is 258 for Odisha and that of the country is 212 (National Health Profile-2011).[2] The anemia in children is 79.8 and women with anaemia were 64.9. A high incidence of malnutrition has also been documented among the tribes of Odisha. Poor maternal health results in low birth weight and pre-mature babies. Infant and childhood diarrheal diseases, acute respiratory infections and malnutrition contribute to high infant mortality rates among the tribes of Odisha. Maternal mortality was also high among them. In Odisha, according to a study, there is a high incidence of spontaneous abortions – an indicator of pregnancy wastage and a possible contributor of pre-natal and maternal mortality.[3]

RESULTS AND DISCUSSION

The Jajpur district is located in the eastern region of Odisha. The district extends from 85^0 40' east longitude to $64^0$44' east longitude and from $20^0$43' latitude to $21^0$10' north latitude covering an area of 2887.69 km^2. The district is famous for rich mineral content like iron and chromites.

The total tribal population in the district is 1,25,989 in number, out of which males are 64,198 and females are 61,719. The tribal population constitutes 7.76% of the total population of the district. The Mundas are 35,685, Shabars are 31,840 and Kolhas are 18,569. In this district four MADA pockets are operating for development of the tribals. The sex ratio is highest among the Kolhas (972) and lowest among the Mundas (904). The highest literacy rate is 37.26% and the

lowest is 28.68% among the tribals in Jajpur district of Odisha.

Nutrition and anaemia is a major problem for women and children in tribal Odisha.[4] Malnutrition among women can result slow recovery from illness and very common among women of reproductive age group and pre-school children.

The health of infants and children in tribal societies is determined by nutritional status and chronic illness is

Table 1: Comparative rate of malnutrition in India (% in Odisha and India)

State	Children under three years		Women (15-49 Years) with BMI below normal(18.5)		11th Plan Goal reduction by fifty percent
	Under weight	Anaemia	Body-Mass Index	Anaemia	
Odisha	44.0	74.2	40.5	62.0	22.0
All India	45.9	79.2	33.0	56.2	23.0

Source-NFHS, 2005-2006 and 2007-2012

heightened risk of adverse pregnancy out-comes.[5] On the basis of calorie intake itwass noticed that most of the tribal communities are affected by malnutrition and the proportion of females suffering with different grades of anaemia is more than that of males.

Table–1 indicates that 44% and 74.2% of the children under 3 years are underweight and suffering from anemia respectively in Odisha. Similarly 62% women (15-49 years) were also suffering from anemia, indicating that anemia is associated with poor nutrition among children. Basu and Jindal (1990) reported that infant mortality is very high i.e. 179.75/1000 among Kutia Kandhs.[6] Likewise, Basu and Kshtriya (1992) reported that the infant mortality rate among Dudh Kharia of Odisha was 102.4/1000.[7] Jhansi Rani (2009) reported that the child death rate among the Bondas was 207 against the state figure of 148.8 for the tribal population in Odisha.[8]

Table 2: Health characteristics of Tribes and Social Groups in Odisha

Region/ Group	Infant Mortality	Under -5 Mortality	Anaemia (<11gm/dl)	Stunted (Height for Age)	Wasting Mortality (Weight for Height)	Underweight Mortality (Weight for Age)
India	57	74	70	48.0	19.8	42.5
Odisha	65	91	65	45.0	19.5	40.7
SC	73.7	91.8	63.5	49.7	19.7	44.4
ST	78.7	136.6	80.1	57.2	27.6	54.4
Others	53.1	64.2	58.2	33.6	12.8	26.4

Source: Govt. of Odisha, Tribal Health, 2010-2011 and NHFS 2005-2006.

Table 3: Child immunisation and ANC visit of different communities

Category	Child Immunisation		ANC visit (3 or more) percentage points	Hospital delivery	Delivery assisted by health personal	Anaemia		IFA Consumption (Mothers)
	Complete	Zero				Children	Mother	
SC	59.5	3.7	58.6	30.2	39.1	63.5	64.2	64.7
ST	30.4	22.3	46.0	11.7	17.3	80.1	73.8	58.3
OBC	59.4	3.1	66.3	40.6	53.6	58.7	58.6	72.8
Others	58.0	15.9	77.4	60.4	66.9	58.2	53.4	72.1

Source: Govt. of Odisha, Tribal Health (2010-2011)

Table-2 indicates that infant and child health status among the tribal communities of Odisha. The infant mortality rate is 78.7 among the Scheduled Tribes, higher than Scheduled Castes (73.7) and other categories (53.1) of population. The under-5 mortality among the scheduled Tribe is 136.6 which are also much higher than Scheduled caste (91.8) and others (64.2). Moreover, it is also higher than the state and national figures. Among the Scheduled Tribes, the anemia (80.1), stunted (57.2), wasting (27.6), and underweight (54.4) were found. These figures are comparatively higher than the Scheduled Castes and others. Vaccination and immunization of infant and children have been inadequate among tribal communities. In addition socio-cultural beliefs tend to aggravate the problem of infant and child health. A study of National Program in Odisha by Nutritional Foundation of India, 1987 reported that cohort rates for the

Table 4: Socio-Demographic Profile of villages of four tribal communities.

Socio-Demographic Data	Shabars	Munda	Kolha	Ho
Name of the villages	**Ranibandhi, Khandiabandhi**	**Bahalisahi, Khandara**	**Balligotha, Balagia**	**Sahapur, Barabanki**
Total household in the sample villages	62	65	54	52
Total tribal population in the sampled villages	313(100%)	320(100%)	288(100%)	244(100%)
Total tribal males in the sampled village	163(52.07%)	168(52.5%)	146(50.69%)	133(54.5%)
Total tribal females in the sampled village	150(47.92%)	152(47.5%)	142(49.3%)	121(49.59%)
Sex ratio in the sampled villages	920	904	972	909
Literacy rate in the sampled villages	37.26%	32.75%	28.68%	33.40%
Industrial labour occupation rate in the sampled villages	18.53%	41.56%	36.88%	27.72%

periods (1977-81) of the neo-natal, post-natal and infant mortality rates among tribes of 5 districts have been as high as 92.9, 67.0 and 60.2 respectively.[9]

Adult women receive less health care than men in tribal societies of Odisha. Maternal health is poor due to non-provision of anti-natal care treatment of anemic mothers, less institutional deliveries and post-natal care. Maternal mortality directly related to pregnancy and child birth was found to be appreciably high among tribal population in the state. Women in the reproductive age group of 15-49 years were more vulnerable to maternal mortality and morbidity. According to NHFS-III, in Odisha, the institutional delivery was 44.3% and is alarming in the tribal dominated district of Malkangiri (7.1%), Raygada (11.9%), Gajapati (13.0%), Keonjhar (15.5%), Nuapada (16.6%), Koraput (16.9%) and Nawarangpur (19.9%).[9]

Table-3 depicts the comparison in hospital deliveries among Tribal,and non tribal communities and clearly indicates lower number institutional deliveries among tribals. Iron deficiency anaemia was highest among the tribal women (73.8%) where as the percentage among the Scheduled Caste, Other Backward Caste and general population were 64.2, 58.6 and 53.4 % respectively. Similarly, the ante-natal check up was lowest among tribals (64.3%). The delivery assisted by health personnel was also lower (17.3%) in comparison to other categories of social groups. As regard to consumption of IFA tablets by expectant mothers, the Scheduled Tribe population was very poor among all the social categories. Iron deficiency, failure to get ante-natal check up may be accounted for reasons of low weight at birth and other related problems.[10]

Table 5: Maternal health care and child immunisation among the tribals of Jajpur district of Odisha

Sl. No.	Name of the Tribe	Child Immunization		ANC visit (3 or more times)	Hospital delivery	Delivery assisted by health worker	Anaemia		IFA consumption (mothers)	Delivery with a post-natal check up within two days of birth (%)
		Complete	Zero				Child	Mother		
1	Shabar	39.3	19.3	48.2	18.7	21.3	82.4	75.8	62.3	18.2
2	Munda	34.4	21.6	47.8	16.8	19.4	83.6	76.3	61.2	16.5
3	Kolha	31.8	23.7	46.7	15.3	17.8	84.2	78.8	59.7	14.6
4	HO	43.5	20.8	46.6	17.2	18.6	81.7	74.5	61.8	15.3

Maternal and Child Health Care Issues in the Study Area

Table 4 shows the socio demographic profile of tribal communities in Odisha.

The table-5 depicts that the status of child immunization among the major tribal communities of Jajpur district of Odisha. The tribal are not motivated for immunization. The complete immunisation i.e. DPT, OPV, BCG were administered to maximum 43.5% of Ho, whereas lowest 31.8% of Kolha children received it. Interestingly 23.7% of Kolha children have not received any kind of immunization at any time of their life.

There is a need of strengthening effort of performance in administration of vaccines for measles and vitamin-A prophylaxis among the tribal communities to improve infant and child death rates in communities of Jajpur district. The prevalence of common childhood diseases was found to be high among them. It reflects the poor efficiency of health services. Since the Government institutions are the only source of vaccination for most of the tribals, the immunisation coverage is not satisfactory.

The table-5 also indicates that the institutional deliveries were only 18.7% among the shabars, which is highest among all the tribal communities of the district. Only 15.3% of births occurred with the help of health facilities among the Kolhas which is lowest among the tribal communities of Odisha. The percentage of deliveries with a post-natal check up within two days of birth among the Shabars was 18.2%, which also was highest among tribals. The study revealed that unhygienic and primitive birth practices are mainly responsible for ill health of pregnant women.

Tribal women of this district are deprived of the basic health facilities as regards to ante-natal care and number of visits by health workers to the expectant mother for check up. The data reveals that 23.7% of Kolhas, and 19.3%, the lowest among the Shabars have never underwent pre-natal check up. An inadequate health care system coupled with lack of awareness, inaccessible geographical conditions, low economic status and socio-cultural beliefs are some of the major factors that creates hindrance in the way of safe deliveries and post-natal care of the expectant mothers of tribal communities of the district. Thus improving the coverage of ante-natal programs requires special efforts to reach the tribal communities of Jajpur district of Odisha.

Anemia is a major cause of maternal mortality among the tribal communities of Jajpur district of Odisha. It also contributes indirectly by aggravating other complications of pregnancy. Anemia has profound effect on psychological and physical health. It lowers resistance to fatigue, affects working capacity under conditions of stress and increase susceptibility to other diseases. Among the women of Kolha community, 78.2% and 84.2% of pre-school children are were anemic and was highest among the studied population. All other tribal communities in the district are similarly affected by anemia. The high rates of anaemia among tribal communities are related to deficiencies of micronutrients such as iron and zinc. IFA tablets are not consumed by some pregnant women though they are supplied by health workers. A high proportion of low birth weight and stunted children were observed among anemic and malnourished mothers. It is further observed that illiteracy, ignorance and socio-cultural conditions hinder the tribal women in accepting modern health care practices.

CONCLUSION

The child and maternal health care is an important indicator of the socio-economic development and quality of life and was found to be poor the among tribal

communities of Jajpur, Odisha Therefore more focus through various nutrition and health interventions of the Government is essential. Innovative interventions of reaching health care, immunization and health and nutrition education to the tribal people need to be evolved on priority basis.

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ETHNO-MEDICINE PRACTICE AMONG THE CHOTHE TRIBE OF MANIPUR, NORTH-EAST INDIA

Cheithou Charles Yuhlung [a1] and Mini Bhattacharyya [a]

Abstract*: The paper focuses on ethno-medicine practiced by the Chothe an indigenous tribe of Manipur. Chothes have been practicing ethno-medicine since time immemorial, however their tradition have deteriorated with ignorance of traditional values. But, few herbs and plants are still used in the treatment of various ailments and diseases till date. There are about 47 ethno-medicinal plants and 8 religious significant plants identified that are considered useful. Most of these plants identified were consumed as daily food items, while some are used for specific remedial purposes in the treatment of certain types of ailments and diseases like fever, cough, asthma, bronchitis, gastritis-ulcer, jaundice, piles, etc. Besides, some of these plants have religious significance too. The changing environmental conditions worldwide have also impacted on their food habits, health and lifestyle which now pose a threat to their existing life.*

Keywords: Practices, Ethno-medicines, Chothe tribe, Indigenous, treatment, diseases.

INTRODUCTION

The Chothe is a small indigenous tribe of Manipur, located in the North-Eastern region of India. The North-Eastern region is inhabited by many distinctive tribes, sub-tribes and ethnic groups. The region is identified and ranks 8th amongst the 34 'Bio-diversity Hotspots' region of the world.[1,2] It is located in temperate tropical rain forests zone within 23°51' N and 25°41' N Latitudes and 93°3' E and 94°4' E longitude bordering Myanmar.[3] This region is richly supported with diverse flora, fauna and several crop species.

Traditionally, before advanced technology and pharmaceutical medicines were developed, almost every community of the past and present, small and great used various herbal plants as medicines in the treatment of various human ailments. Chakraborty et al.(2012) is of the opinion that the North-Eastern ethnic communities based their traditional knowledge of medicine on their needs, instinct, observation, trial and error, and long experience in the healing methods. Such knowledge often served as an important part of their cultural identities.[4] Pfoze (2012) said that it is estimated that a total of 60% of the world population and 80% of the population in developing countries depend on traditional medicines, mostly plant drugs for their primary health care needs. [5] In most developing countries like India the flora remain virtually unexplored from practical utilization, yet past experiences have shown that many valuable drugs have been derived from plants.[6] Singh and Arora (1978) report that about 800 species of wild edible

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plants occur in different floristic regions are consumed by the tribal communities of the region, and that about 50 % of the plants identified from the region have medicinal values.[7] Mao AA (2009) states that about 50% of the total 17500 flowering plants hail from the region and 40% of them are endemic.[8]

The World Health Organization (WHO) recognizes the healing properties of these traditional medicinal herbs and therefore suggests research should be stepped up.[6,9] Hazarika (2012) reports that WHO estimates about 80% of the population of most developing countries rely on herbal medicines for their primary healthcare need.[10] Shankar (2013) reported medicinal plants exploration in North Eastern India including crude drugs including medicinal plants produce in the markets.[11] Various attempts have also been made for the acclimatization through cultivation of medicinal plants from one zone to another in the Region. The crude drugs produce from the region are traded in the markets of Assam, West Bengal, Bihar and even in the Central market of Delhi. Despite the news of over exploitation of medicinal plants in the region, alertness has been created among the dedicated researchers to continue their exploration and document the various ethno-medicines amongst various ethnic tribes and groups. Thus, many local Indian scholars have began their ethno-medicinal studies among various North-Eastern tribes like by Shankar- Mishing,[12] Khongsai- Arunachal Pradesh;[13] Ripunjoy- Kachari;[14] Das-Cachar;[15] and Basumatary-Bodo of Assam;[16] Jamir-Ao of Nagaland;[17] Singh-Khasi;[18] and Jaiswal- Jaintia of Meghalaya;[19] Rajkumari- Chiru;[20] and Pfoze- Mao;[5] Prakash- Rongmei;[21] Yumnam- Meitei;[22] Singh;[23] Jain-of Manipur;[24] Rai- Mizoram[25] etc.

The Chothe, practice ethno-medicines for certain ailments and diseases. This traditional method of healing and curing has been handed down orally from one generation to the next in the form of folklore, folktales, and axioms. Accordingly, it is seen that they used various parts of the plant like leaves, barks, seeds, roots and also herbs, creepers, climbers, shrubs, grasses, etc, as single item or by mixing with other ingredients in the treatments of certain ailments, sicknesses and diseases. These plant items are used in diverse forms of- fresh or raw, dry or powder, or as culinary or concoction, or as tonic.

OBJECTIVE OF THE STUDY

The basic object of the present study is to explore and document the ethno-medicinal plants used by Chothe in the treatment of various ailments and diseases. The rapid decline in usage, ignorance, and change in climate, environment and advancement in pharmaceutical medicines has posed a serious threat to their practices. The study is expected to have immense value and relevance for the future generation as well as enriching the existing knowledge in the area of indigenous ethno-medicinal studies.

AREA OF THE STUDY

The study area is based in the state of Manipur, India. The study covers the indigenous entire community of Chothe inhabiting in two districts of Bishnupur and Chandel.

MATERIALS AND METHODS

The study is carried out among 10 select Chothe respondents (since the population is small); represented by village chiefs, priests, elders, senior leaders besides two elderly women. The primary sources of data were collected using interview-scheduled guide techniques. For the comparative analysis of the data, secondary sources like published works and web based information were also utilized.

ABOUT THE TRIBE

Historically, the Chothe has been described as one of the oldest tribes that migrated to southern Manipur prior to 15th century, much before other new ethnic tribes entered.[26-28] They have distinctive language, kinship, culture, religion, economic and political institutions. They belong to the Mongoloid racial stock and speak Sino-Tibetan language of Tibeto-Burman family under the Chin-Kuki and Naga-Kuki linguistic group as 'Old-Kuki' speakers.[29] According to Census of India 2011, the Chothe population is 3850 (1706/M-1879/F) and the literacy rate is 69.79%.[30] Although Chothe have a very small population and as a recognized Scheduled Tribe of Manipur under the Government of India Act of 29th October 1956.[27] The majority of Chothes are now Christians, and only a handful of them especially from Lamlanghupi village of Bishnupur district still practice their indigenous faith who upholds their traditions and customs. The various neighbouring tribes of Chothe are like Aimol, Chiru, Anal, Moyon, Monsang, Lamkang, Tarao, Maring, Rongmei (Kabui / Zeliangrong), Kom, Thadou speaking groups (New-Kuki) and the Meitei.

Table 1: Common Type of Ailments and Diseases Treated by Chothe Tribe

Sl. No	Types of Ailments and Diseases
1.	Cough, Fever, Toothache, Bronchitis, Tonsillitis, Asthma, Astringent.
2.	Cuts, Wounds, Blood clotting, Sprang, Fracture of bones.
3.	Stomach-ache, Burning sensation of stomach, Dysentery, Diarrhoea, Acidity, Gastric, Chronic -ulcer, Constipation, Lack of appetite, Piles, Intestinal worm dispeller, Carminative stimulant.
4.	Hypertension, Giddiness, Nausea, Astritis, Rheumatism.
5.	Jaundice, Liver problems, Hepatic problem, Anti-pyretic.
6.	Paralysis, Epilepsy, Muscular pains, Nervous spam, Depression.
7.	Boil, Scabies, Septic, Allergy, Anti -insecticides, Anti -wormicide, Smallpox, Minor tumour, Measles, Ringworm, Haemorrhoid, Extra tissue growth.
8.	Urinary problem, Stone Kidney problem, Gonorrhoea, Uterine problem.
9.	Blood purification, Enhance body immune system, Enhance body stimulant.
10.	Antidotes of dog bite and snake bite, Termination of conception of a child (Abortion).

Table 2: Chothe Indigenous Medicinal Plants and Its Treatment Methods

Sl. No.	Botanical name [Family]- Common name	Chothe name- [H,Sh, T, C]	Manipuri name [Seasonal (S)/ Perennial (P)]	Parts used [Forms]- [Orally (O)/ Externally (E) used]	Diseases –Treatment Methods and its dosages
1.	*Centella asiatica* Linnaeus. Urb. [Apiaceae]- Asiatic Pennywort	*Anleiphon/ Ariphon*- [H]	*Peruk* [S]	Leaf and stem (whole plant) [Raw]- (O), (Served as culinary)	Hypertension, Gastritis, Chronic ulcer, Constipation, Blood Purification. i) Persons suffering from serious hypertension, gastritis, chronic ulcer may take about 30 -60ml of the extract liquid obtained from crushing the whole plant (leaf and stem). A spoonful of honey may be mixed or taken singularly as tonic before each meal regularly for a period of 1 week or more, depending upon the seriousness. If needed, the liquid may be diluted with some water and taken. ii) Persons suffering from mild hypertension, weak immunity, constipation or wished to enhance blood purification system may take a glass full of the boiled plant as concoction after or before meal or anytime. iii) The Chothe as health precautionary measure often eats the whole plant by boiling or as simple cooked curry or in raw form mixed in chutney to enhance body stimulation.
2.	*Oroxylum indicum*Linn. Kurz. [Saururaceae]- Lizard tail	*Anleithaang* [H]	*Toningkok* [P]	Leaf and stem [Raw] – (O), (Served as chutney)	Gonorrhoea i) Persons suffering from gonorrhoea may take about 20-30ml liquid of the crushed leaves and white stems mixed with little local salt before meal regularly for a week or till one gets cured. ii) Chothe eats this herb along with chutney made of local dry fish, chilly and other ingredients by those who like the strong aroma.
3.	*Eryngium foetidum* Linn. [Apiaceae]- Saw tooth	*Awa-neem (Somey)* [H]	*Awa-phadigom* [S]	Leaf or whole plant [Raw] –(O), (Served as culinary)	Liver and Hepatic problems. i) Person suffering from liver and hepatic problems may take about 10-15ml of the extracted liquid of the leaf obtained by crushing mixed with a spoonful of honey regularly before each meal for a period of 1- 2 weeks. ii) The Chothe often served the leaves especially in beef curry, or adds the raw leave in dry meat chutney as it enhance its taste and aroma.

4.	*Eupatorium, cammanoi* Linn. [Asteraceae]- Hempagrimony	*Aripung/ Renglei* [H]	*Langthar ei* [S]	Leaf [Raw] –(O), (Has religious significance)	Acidity, Gastritis and Burning Sensation. i) Person suffering from frequent acidity or gas formation in the stomach may take about 10 -20ml of the extracted liquid of the leaves obtained by crushing in empty stomach before each meals or atleast three times in a day. Or one may dilute the liquid with little water in a glass mixed with little salt and have it. ii) If a person suddenly suffers from burning sensation of stomach from excess of eating chill y may eat few fresh leaves and later drink a glass of water, or have it in tonic form as described above for immediate relief from the pain. iii) It is also used in certain offertory rituals.
5.	*Lantana camara*Linn. [Verbenaceae]- Big/ wild sage	*Aring toh*[Sh]	*Nongban lei* [P]	Leaf [Raw] –(E), (Served as culinary)	Blood Clotting for Cuts and Wounds, Acts as Anti-fungal, Microbial and Insecticidal. i) If a person suffers from minor cuts and wounds few fresh leaves may be crushed and the paste is immediately applied on the parts of cut or wound to stop from bleeding. This leaf is considered the best remedy for blood clotting and healing the cut or wound fast. It is also believed to act as anti - fungal, microbial and insecticidal. ii) The tender leaves are eaten as simple curry with dry meat or fish, but seldom taken.
6.	*Curcuma zedoaria*Christm. Roscoc. [Zingiberaceae]- Turmeric	*Aisan* [H]	*Yaingang* [S]	Rhizome [Raw]–(O), (Has religious significance as well as eaten as culinary)	Carminative Stimulant, Intestine Worms, Cut, Complexion. i) Person suffering from indigestion, weak bowel or abdomen muscles, and carminative problems may drink about 30-50ml of the extracted liquid obtained by crushing the raw rhizome of *Aisan* by mixing with little water and salt. This tonic should be taken before morning's food in empty stomach atleast for 3-4 days. However, it is recommended to have once or twice ina month as health precaution as it helps in strengthening the bowel muscles and stimulates the digestive systems. ii) This *Aisan* tonic is also given to children believed to suffer from infested intestinal worms like tape worms, ascaris, etc. 2-3 times in a week. iii) If a person suffers from a major cut or wound on any body parts, the paste of crushed raw turmeric mixed with little mustard oil and lime (limestone)may be applied on the cut area and bandaged

					for 2 -3 days. Because of its special property as a good agent of blood clotting and antiseptic, the wounds are healed faster with dry skin. iv) The raw turmeric is roasted and eaten as chutney considered good for complexion. v) Chothe served it in culinary for colour and flavour. Sometimes the fresh leaves are used in preparing a special cuisine by wrapping the local small fish mixed with chilly and salt, where the package is roasted under the hot fire ash or steamed above the rice. vi) The Chothe believed that the colour and odourof *Aisan* can dispel evil spirits. Therefore, they applied on their forehead while going in unknown forest areas. When feared from nightmares or to avoid from bad dreams they kept it below their pillow along with few pods of garlic.
7.	*Curcuma caesia* Roxb. [Zingiberaceae]- Black turmeric/ Black zedoary (Ginseng)	*Aisan ahang* [H]	*Yaimu* [S]	Rhizome [Raw] – (O), (Has religious significance)	Smallpox, Tumour, Dispeller of Magical Spell. i) If a person suffers from smallpox or minor tumour the crushed rhizome is mixed with little mustard oil and is applied on the smallpox area or around the tumour. This procedure is repeated till the disease is cured. The patient (if feels) may eat some amount of the fresh or dry rhizome about 10 -20mg after food. ii) Traditionally, some local medicine manor priest gives to a person considered suffering from the magical spell and charms to drink the crushed liquid of this rhizome mixed with little water and salt after offering ritual. This tonic is taken for 3-4 days any time of the day. This rhizome (ginseng) is considered rare to find.
8.	*Zingiber officinale* Rosc. [Zingiberaceae]- Ginger	*Aithing* [H]	*Shing* [S]	Rhizome [Raw] – (O/E), (Eaten as culinary and has religious significance too)	Cough, Bronchitis, Piles and Divination Purposes. i) If a person suffers from both cough and bronchitis, one may chew piece of raw ginger time to time till one gets cured, or about 5 -10ml of the crushed juice is mixed with little salt and taken before food till one gets cured. ii) As a precaution, a piece of ginger may be boiled along with red tea and is taken regularly to enhance body stimulation or immune system. iii) Person suffering from constipation may insert inside ones anus small amount of the crushed ginger mixed with little mustard oil or burnt kerosene residue.

					While person suffering from minor piles may repeat this process till it requires. iv) The Chothe, besides using fresh ginger in curry also use for ritual purposes especially for divination.
9.	*Allium sativum* Linn. [Alliaceae]- Garlic	*Satun* [H]	*Chanam* [S]	Bulb [Raw] – (O), (Used as culinary and has religious significance)	Fever, Paralysis, Muscular Pain. i) Person suffering from slight fever, rheumatism, arthritis or semi -paralysis may apply the ointment prepared with few pods of garlic and some pure mustard oil after heating up on the fire in a bowl. The ointment may be applied as balm massaging the painful joints, forehead, chest, back, palm and feet till the body temperature returns to normal condition. ii) The Chothe, besides serving as daily culinary item believed that the smell can dispel the evil spirit. So when they suffer from bad dreams or nightmares used to keep it under their pillow or mattress.
10.	*Alpinia galangal*Linn. Willd. [Zingiberaceae]- Greater galangal	*Marou (Brou)* [H]	*Kanghu* [S]	Rhizome [Dry] – (O), in powdered form	Piles and Termination of Conception of a child (Abortion). i) Person suffering from piles may drink about 30 -40ml of the extracted liquid obtained by crushing the rhizome in the morning for a week or till one is cured. For taste, a spoonful of honey may be added. ii) Woman who wants to terminate early conception of a child may drink about 50-60ml of the extracted liquid of it early in the morning in empty stomach till it ovulates. iii) As health precautionary measure, the Chothe and neighbouring tribes sometimes consumed along with chutney, especially mixed with dry beef meat or boiled hides.
11.	*Spilanthes acmella* Murr. [Asteraceae]- Toothache plant	*Mashisapi* [H]	*Leisabi* [S]	Flower [Raw] – (O/E), (Served as culinary too)	Toothache. i) If a person suffers from toothache the flower may be crushed with hands and inserted in the cavity of the toothache or put around the aching tooth time after time till it gets relief. ii) Fresh leaves are a lso eaten boiled or as simple cooked curry with dry fish or meat.
12,	*Benincasa hispida* Thunb. Cogn. [Cucurbitaceae]- Ash-gourd/ Winter melon	*Maipoy* [C]	*Torbot* [S]	Fruit [Raw] – (O/E), (Served as culinary too)	Giddiness, Nausea and Chronic ulcer. i) Person suffering from frequent giddiness or nausea may apply the paste of this matured *Maipoy* fruit above the head. The preparation method is that the outer green cover of the fruit is removed and the inner white

					fruit is sliced into small pieces (semi - paste form) with a spoon without touching ones hand for the required purpose. The paste is poured into a thin cloth and wrapped directly on the head. ii) Person suffering from chronic ulcer may also eat it in boiled form in empty stomach each morning or as simple cooked curry regularly.
13.	*Gynura cusimbua*D. Don/S.Moore . [Asteraceae]- Hill gynura	*Muhun lou* [H]	*Tera paibi* [S]	Leaf [Raw] – (E)	Cuts and Wounds. i) If a person suffers from cuts and wounds may crushed the leaves and the paste is applied on the cut or wounds immediately to stop from bleeding as it helps blood clotting and acts as antiseptic.
14.	*Plantago erosa* Wall.ex Roxb. [Plantaginaceae]- Plaintains	*Antapot* [H]	*Yampat* [S]	Leaf/ stem [Raw] – (E), (eaten as culinary too)	Boils and Wounds. i) Person sufferi ng from boils may heat up little on the fire the fresh leaves till it gets decoloured. Then it is smashed little and is applied on the boil part with little opening in the tip. This is repeated till the pus comes out or it is healed. ii) The tender leaves are also eaten boiled or as simple cooked curry.
15.	*Elsholtzia blanda*Benth. [Lamiaceae]- Lomba	*Lengtu* [H]	*Lomba* [S]	Leaf and flowers [Raw] – (O), (Eaten as culinary too)	Asthma, Nervous spasms. i) Person suffering from asthma and nervous spasms may take about 2 tea spoonful of the extracted liquid of the crushed leaves mixed with some water daily before each meal, till it gets cured. ii) The leaves and flowers are added as flavour in fish curry and chutney.
16.	*Menthe arvensis* Linn. [Lamiaceae]- Spearmint	*Nungsi hidak* [H]	*Nungsi hidak* [P]	Leaf [Raw]- (O)	Stomach ache, Gastric, Antipyretic. i) Person suffering from stomach ache, gastric and antipyretic cases may take about 10 -20ml liquid of the crushed fresh leaves (or mixed with little honey) twice a day. ii) The fresh leaves are also eaten with chutney or along with some types of fruits to reduce sourness.
17.	*Oroxylum indicum*Linn. Kurz. [Bignoniaceae]- Indian trumpet flower	*Maklong* [T]	*Samba* [S]	Bark and leaf [Raw] – (O/E),	Piles, Muscles/Joint pains, high Blood pressure and Epilepsy. i) Persons suffering from pile may sit on the warm boiled water of the plant bark kept in a tub. The plant bark should be peeled upwards with one breath. This process is continued till one gets relief. ii) If a person suffers from muscle/ joint pains may take a bath with the boiled water of the bark or leaves. Or a small towel may be dipped in the boiled hot water of the leaves/ bark, and balms the joint pain parts.

					iii) The tender leaves are eaten as chutney with a belief that it reduces high Blood Pressure, and also by those who suffer from epilepsy.
18.	*Amaranthus spinosus* Linn. [Amaranthaceae]- Spiny amaranth	*Si-ake anbu Arintoipa* [H]	*Chengkruk Tingkhangpanbi* [S]	Leaf, Stem [Raw] – (E), (Eaten as culinary)	Extra tissue growth, Haemorrhoid. i) Little lime (limestone) is applied on the mother (first) extra tissue growth on a person whether on the hand or leg. Then, when the tissue becomes little soft, the tip of the matured stem (stalk) is smashed repeatedly against the extra tissue growth by pouring water above it. This is repeated by adding the lime and washing time to time till it bleeds. It is believed that if the mother tissue cell is completely uprooted the other tissues would miraculously fade away slowly. The Manipuris called it *sarik* because it grows in branches. It is not Keloid but looks alike. ii) The tender leaves are also cook with dry fish and eaten as simple curry.
19.	*Mimosa pudica* Linn. [Fabaceae]- Sensitive plant/ (Touch-me-not)	*Ajakpi thingna* [H]	*Kangphaikaithabi* [P]	Leaf, root [Raw] – (O)	Post-delivery Uterine pain. Women suffering from post-delivery uterine pain may take about 10-20ml of the liquid obtained by crushing the leaves and roots as tonic (or mixed with honey) before meal till one gets relief.
20.	*Justicia adhatoda* Linn. [Acanthaceae]- Adulsa/ Malabar nut	*Anha (Chikpa)* [Sh]	*Nongmankha* [P]	Leaf and flowers [Raw] – (O), (Eaten as culinary)	Cough and Cold, Rheumatism, Feverish, Muscular/ Joint pains, and Termination of Conception. i) For those who are suffering from slight cough and cold, and muscular/ joint pains few tender leaves is added in hot boiling water and is taken down after few minutes. About half/ full glass of the liquid is served as concoction (mixed with little salt or without) after each meal or atleast three times a day. ii) About 50-60ml of the liquid extracted from the fresh leaves is drunk early in the morning in empty stomach by woman who wants to terminate early conception of a child. If required they may also have in the evening when the stomach is empty, for a period of 1 week or more.(This is considered a secret treatment). iii) The tender leaves (or along with flower) is served as simple culinary mixed with dry fish or beef. The leaves are added just few minutes before the curry is taken down. This sourness acts as body stimulant.

21.	*Solamum virginuanum* Linn. [Solanaceae] - Yellow berried nightshade (small variety)	*Samtuk arikpa* [Sh]	*Leipungkhang* [S]	Fruit [Raw,] – (O), (Eaten as culinary)	Piles, Measles and Cough. i) The raw fruit is crushed and mixed wi th little honey and taken before each meal. Person with serious pile case that bleeds may take three times in a day, till it cures. ii) Babies and children suffering from measles may take the grind fresh fruits mixed with little honey time to time till it is completely expel out and cured. iii) The young fruits are steamed and prepare as chutney or added in simple local dishes to prevent from cough and other ailments.
22.	*Antidesma acidum* Retz. [Phyllanthaceae]-	*Tuitrit* [Sh]	*Ching Yensin* [S]	Leaf [Raw] – (O), (Eaten as culinary)	Indigestion and Enhance Immune System. i) Person suffering from indigestion or wish to enhance immune system may drink half a glass of the boiled leaves as concoction anytime of the day (better after food). ii) As health precautionary measure, the boiled leaves after squeezing out the sourness is served along with meat chutney.
23.	---	*Ching Pathikhom* [H]	*Ching pathikhom* [S]	Leaf/ whole plant [Raw] – (O), (Eaten as culinary)	Enhance Blood Purification. i) Person who wants to enhance blood purification may take about 10-20ml of the liquid obtained by crushing the leaves mixed with little honey before food for a week or more till satisfied. ii) People who like its strong aroma adds in culinary as flavour.
24.	*Hibiscus cannabinus* Linn. [Malvaceae]- Green/ Red sorrel	*Anthui* [Sh]	*Sougree (ashinba)* [S]	Leaf and seed cover [Raw/ dried] – (O), (Eaten as culinary)	Jaundice, Enhance Immune Systems and Refreshes the body. i) If a person suffers from jaundice the fresh leave, or along with the outer covering of the seed is boiled in about 1 litre of water and half a glass is served as concoction twice a day anytime. Even the cooked leaves maybe eaten. ii) The leaves and seed covers either fresh or dry is served as simple cooked curry or eaten along with chutney to enhance body stimulation or immune systems.
25.	*Cynodon dactylon* Pers. L. [Poaceae]- Doob/ Bermuda-grass	*Sanahuplang/ Tingthou* [H]	*Tingthou* [S]	Leaf [Raw] –(O), (Has religious significance)	Urinary Problem. i) If a person suffers from urinary problem, he may take about 2 tea spoonful of the crushed young tender leaves of *Tingthou* mixed with little water and honey early in the morning before food. ii) It has religious significance too, and is connected to python mythology.

26.	*Clerodendrum colebrookianum* Linn. Moon. [Lamiaceae]- Bleeding heart	*Anphui (Sok noudon)* [Sh]	*Moirang Khanum* [S]	Leaf [Raw] – (O), (eaten as culinary)	Best for Hypertension and Controls high Blood Pressure. i) If a person suffers from hypertension, anxiety and high Blood Pressure may take a glass full of the fresh boiled leaves of *Clerodendrum* after each meal or anytime till the pressure reduces. But prolong or excess intake of this concoction is considered bad. ii) The fresh leaves are also eaten as culinary in pork and beef curry time to time as delicacy.
27.	*Rhus succedanea* Linn. [Anacardiaceae]- Wax tree/ Wild varnish dry galls	*Hokma* [Sh]	*Heimang* [S]	Leaf and Fruits [Raw and dried] – (O)	Dysentery, Indigestion, Constipation and Body stimulant. i) Person suffering from dysentery may eat raw t he tender leaves of *Hokma* mixed with little salt till it suspense, or ii) About half/ full glass of the boiled dry fruit is mixed with little salt and sugar, and taken as concoction 2/ 3 times a day till one gets relief. iii) Person suffering from constipation may drink the grind seeds powder mixed in hot water along with little chilly and salt, which served as enema. iv) It is also believe to enhance body stimulant if served time to time along with tea mixed with sugar.
28.	*Ocimum sanctum*[Labiatae]- Holy basil/ Krishna tulsi	*Tulsi* [H]	*Tulsi* [S]	Leaf [Raw] – (O), (eaten as culinary)	Cough, Bronchitis, Tonsillitis, Asthma. Person suffering from bronchitis, stomach problem, fever, cough, cold and congestion of lungs may take about 2 tea spoonful of the extracted leaves juice mixed with honey 3 times a day till it cures.
29.	*Oxalis corniculata*Linn. [Oxalidaceae]-	*Yensin arikpi* [H]	*Yensil* [P]	Leaf/ Whole plant [Raw] – (O)	Indigestion, Gastric and Blood purification. i) Person suffering from indigestion or gastric may take about 20-30ml of the extracted liquid of the plant before food by mixing with little water and honey or salt for a week or till it is cured. ii) Person who wants to enhance blood purification may serve a glassful of the (half) boiled plant mixed with little salt as concoction for a week or time to time.
30.	*Oenanthe javanica* Blume DC [Apiaceae]-	*Komprek* [H]	*Kongprek* [S]	Leaf [Raw] – (O). (eaten as culinary)	Hypertension, Indigestion, Blood Pressure. i) Person suffering from hypertension and indigestion may take about half a glass of the extracted liquid of the crushed fresh leaves after mixing with little water before food or after as tonic (may add little honey if needed). ii) The fresh leaves areal so served as culinary with dry fish or dhal curry, or eaten raw with chutney to reduce blood pressure.

31.	*Musa sapientum* Linn. [Musaceae]- Banana stem/ Pseudostem and flower	*Changlong* [Sh]	*Laphu and Laphu tharow* [P]	Stem and Flower [Raw, as concoction] – (O), (Eaten as culinary)	Chronic ulcer, Constipation, Diarrhoea and Lactation. i) Person who suffers from prolonged chronic ulcer may drink about half a glass (60ml) of the extracted liquid of the edible young fresh banana stem (*Pseudostem*) in empty stomach once a day it is give relief. ii) If a person suffers from consti pation or want to improve lactation in child birth the banana flowers (bulb) may be eaten boiled or in raw form as chutney. iii) The young stems are especially cooked along with pork curry as delicacy.
32.	*Nicotiana tabacum*Linn. [Solanaceae] - Tobacco leaf	*Thankna bu* [Sh]	*Hidak Mana* [S]	Leaf [Raw or dried] – (E)	Acts as insecticides, Itchy, allergies, insects bite, leech bite. If an insect or leach bites a person the dried tobacco leaf is smashed/ chewed little and applied on itchy parts or around the allergie s areas because it act as repellant.
33.	*Polygonum posumba* [Polygonacea e]- Knot grass	*Phakphai* [H]	*Mayang lomba* [S]	Leaf [Raw or dried] – (O)	Hypertension, Tonsils and Throat problems. i) Person suffering from hypertension, tonsillitis and other throat problems may take about 20 -30ml of the fresh extract liquid of the leaf mixed with little honey as tonic for 3/ 4 days before food. ii) Fresh leaves are added in fish chutney for its aroma and to enhance its taste.
34.	*Plantago erosa* Wallich. [Plantaginace ae]-	*Anpat* [H]	*Marok sabi* [S]	Leaf [Raw/ fresh] – (E)	Boil and Urinary problem. i) The matured leaf is heated on fire and applied on the boil part, time after time till it is cured. ii) Those suffering from urinary disorder may eat fresh tender leaves as simple boiled curry.
35.	*Psidium guajava* Linn. [Myrtaceae]- Guava	*Bareitun* [T]	*Pongtol* [S]	Leaf and fruit [Raw and unripe fruit] – (O)	Dysentery and Diarrhoea. i) Person suffering from dysentery or diarrhea may eat some fresh tender leaves of guava, with salt if needed be. ii) Even the unripe guava fruit is considered good for those suffering from dysentery since it reduces the problem.
36.	*Parkia roxburghii* A.DC Merr. G.Don [Mimosaceae / Fabaceae]- Tree been (Monkey rice)	*Yongtak* [T]	*Yongcha k* [S]	Seed [Dried] – (O), (Served as culinary)	Chronic ulcer, Dysentery, and Diarrhoea. i) To be served as concoction. Some amount of the dried outer cover of the long tree been seeds is boiled with water for about an hour. When it is cold, about half a glass of it is drank before food regularly for a week or more till it reduces the problems. The clumsy taste seems to have immediate effect as a good suspension. ii) The soft part of the seed covering and seeds are eaten as curry or chutney by different preparation methods.

37.	*Carica papaya* [Caricaceae]- Papaya	*Awathapi* [Sh]	*Awathabi* [S]	Fruit [Raw] – (O/E),	Chronic ulcer, Gastritis and Dog bites. i) Person suffering from severe or mild chronic-ulcer may eat lots of papaya either ripe or unripe daily. ii) If a person is bitten by a dog, he may eat lots of unripe papaya immediately, besides applying a slice of the outer green cover along with the pus on the bitten spot in order to reduce or extract the poison. iii) The unripe papaya is also eaten as boiled or mixed in chutney.
38.	*Meyna laxiflora* Robyns. [Rubiaceae]- Muyna/ Helu/ Alu	*Theipi* [T]	*Heibi* [S]	Leaf and dry fruit [Raw]- (O) (Has religious significance)	Blood purification. i) To enhance blood purification of a person the fresh leaves may be eaten as chutney time to time. ii) If suffered from const ipation the fruits may be eaten. iii) Chothe used the leaves in certain village religious ritualistic offerings.
39.	*Zanthoxylum acanthopodium,* [Rutaceae]-	*Singree* [Sh]	*Mukthrubi* [S]	Leaf and seed [Fresh leaf and dry seeds] – (O/E)	Cough, Ashma and Astritis. i) If suffered from cough, astritis and asthma the leaves are boiled and the steam is inhaled. And also, about half a glass of the boiled water may be served as concoction till it is cured. ii) Some amount of fresh leaves is added as flavour in dog meat curry, considered better than the dry seeds.
40.	*Prunus persica.* Linn. [Rosaceae]- Peach	*Chumprei* [T]	*Chumbrei* [S]	Leaf [Fresh matured leaf] – (E)	Wounds and Worms, Anti-wormicide. If a wound is infested with worms or became septic the fresh matured leaves are c rushed and the paste is applied on the wound (or the liquid may be squeezed into the wound before applied). This is usually used on animals like pig, cow and buffalo.
41.	*Dactyloctenium aegyptian* Linn.Willd. [Poaceae]- Egyptian crowfoot grass	*Phuiphung* [H]	*Pulei manbi* [S]	Root [Dried] –(O)	Asthma and Tonsillitis. i) Person suffering from asthma and tonsillitis may drink about 10-20ml of the liquid obtained from crushing the roots by mixing with little salt twice a day till it gets cured. ii) The dried roots are added in beef and fish curry for its unique aroma.
42.	*Cannabis sativa*. [Cannabaceae]- True hemp	*Ganja* [H]	*Ganja* [S]	Leaf [Raw]- (O)	Diarrhoea, Dysentery and Lack of appetite, Depression. i) Person suffering from diarrhoea or dysentery may drink about 10-20ml of the liquid obtained by crushing the leaves once a day after food. ii) Those suffering from lack of appetite may fry the leaves mixed with rice flour and taken little before food. iii) Person suffering from serious depression may smoke mildly the dry leaves as cigarette or in pipes.

43.	*Ficus carica* [Moraceae/ Agaonidae]- Hairy fig	*Theichang* [H]	*Heirik* [S]	Leaf [Raw]- (E)	Ringworm and Scabies. i) Person suffering from ringworm may rub the leaf on the ringworm area or the scabies part still it bleeds little. Later one may wash it with clean water and apply some oil around it.
44.	*Sacharum officinarum*. [Poaceae/ Graminaceae]-Sugar cane	*Molshu/ Maanshu* [Sh]	Chu [S]	Stem [Fresh juice] – (O)	Jaundice. Person suffering from jaundice may drink 1 or 2 glassful of freshly extracted sugar cane juice 3/4 times daily, especially in the morning for 2/3 weeks till one gets cured.
45.	*Azadirachta indica* A.Juss. [Acanthaceae]- Neem	*Theichak* [T]	*Neem* [S]	Leaf and bark [Raw]- (E)	Cough, Skin diseases, Toothache. i) Person suffering from cough and other skin diseases may boiled the fresh leaves in a pot of water and bath everyday till it gets cured. ii) The bark or twig is used in cleaning the teeth or for toothache.
46.	*Citrus* × *limon*Linn./ Burm [Rutaceae]- Lemon	*Champra* [Sh]	*Chambra* [S]	Fruit [Fresh]- (O)	Kidney (Stone) problem. Person suffering from kidney stone problem may drink the mixture of fresh ripen lemon jui ce with a local hen egg in empty stomach in the morning. The egg is dip into the glass filled with the lemon juice for about 12 hours. Then, the cellulose of the egg is removed slowly and the mixture is stirred well and drank in empty stomach early in the morning. Later after 20 minutes, one may drink lots of water before anything is taken. This process may be repeated and taken till one gets relief.
47.	*Phyllanthus emblica* [Labiateae] – Gooseberry	*Theichuraa / Shuru* [Sh]	*Heikru* [S]	Bark and fruit [Fresh/ Dry]- (O/E)	Cough and Cold, Sore Eye, Body stimulant. i) If a person feels weak or suffers from cough and cold the fresh fruits are eaten raw, or in dried or roosted form. ii) For sore eyes few drops of the extracted juice may be poured into it till one gets cured. iii) The extracted liquid obtained from the crushed fresh bark is mixed with little water and taken for body stimulant.

Abbreviations: Linnaeus (Linn.), Herbs (H), Shrub (Sh), Tree (T) Climber (C); Seasonal (S), Perennial (P).

Other significant indigenous medicine

Thunderbolt Stone: In case of fever and stomach ache the Chothe use about 10-20 ml of thunderbolt stone liquid obtained by rubbing against a hard stone mixed with little water. Sometimes a tea spoonful of honey may be added to the liquid. This thunderbolt stone has religious significance in connection with to mythical belief.

Fermented Rice Beer Residue: In case sprained or fractured of leg or hand the fresh fermented rice beer residue (i.e. the fermented rice) is wrapped around the

sprained or fractured part for 2- 3 days. This process is repeated with the new fermented rice till it is cured. Sometimes, if the injury is very serious some fresh turmeric is crushed and mixed along with it, and then applied as paste on the injured part.

Discussion on the Chothe Ethno-medicinal plants

Among the Chothe about 55 varieties of ailments and diseases were found to be treated with the use of 47 ethno-medicinal plants identified, as shown in Table 1& 2. Some of them are like cough, fever, headache, cuts, wounds, tonsillitis, gastritis, dysentery, chronic ulcer, liver problem, jaundice, kidney and urinary problem, sprain, fractured of bones, Gonorrhoea, smallpox, measles, dog bite, snake bite, termination of conception, etc.

These ethno-medicinal plants are seen administered in two forms i.e. i) Orally/ internally and ii) Externally. Firstly, it is administered orally in the form of-tonic or concoction or as culinary, especially the fresh leaf or part of the plant. The administration is specifically for the remedy of ailments like stomach ache, headache, chronic ulcer, gastritis, menstrual cycle, etc. Secondly, it is administered externally in the form of - ointment or paste or balm for the cases of cuts, burn, fracture, septicemia etc.

Therefore, on the criteria of the administration forms - 29 plants are used orally and 11 externally, while 8 are used both orally as well as externally. However, based on the nature of these plant parts used it is found that about - 40 of these plant parts are used in raw or fresh forms, 3 in dry forms, and 4 orally and externally. The medication method depends upon the types of illnesses or diseases, and also upon the expertise of the village priest or medicine man. Moreover, it depends on the nature, quality, and source of the extract obtained and used.

On the basis of the structural types, the indigenous medicinal plants may be divided into four categories as: (a) Herb, (b) Shrub, (c) Tree, and (d) Creeper. In this regard, there are 26 herb plants, 14 shrub plants, 6 trees, and 1 climber/ creeper. Out of these 47 identified plants, 39 are seasonal (S) while 8 plants are perennial (P) in nature (see Table 2).

With regard to the 'parts of the plant used', it is found that out of 47 ethno-medicinal plants identified Chothes use the leaves of 30 plants, stem 7, 5 whole plant (leaf and stem/ flower), 4 rhizome, 4 flower, 8 fruit, 3 seed, 1 bulb, 3 bark and 2 root parts.

The Chothe traditional curing and healing methods is not limited only to human beings but also extends even to animal kingdoms like cows, buffaloes, pigs, horses, domestic fowls, dogs, etc. that suffered with certain illnesses, infection or injuries. The Table 2 shows about 8 of the identified Chothe medicinal plants have religious significance. They are basically used to evade the evil spirits from contacts, nightmares, bad dreams, sicknesses or diseases, and also in rituals of personal or family or village offerings.

The significance of all these Chothe ethno-medicinal plants and herbs have taste, smell, generally most of it has its own unique qualities. Some have pleasing or strong aromatic smell, some

are attractive in looks, some has sweet flavour, some slightly bitter to extremely bitter in taste, some are little pungent while others has no taste at all. Some are available at the courtyard while others are grown in the thick forest areas only. Most of these plants bloom flowers for very short period, and are mostly seasonal plants. The non-eatable or poisonous plants are used especially for external purposes only.

Chothes consume these herbal plants as vegetables or prepare traditional food items by boiling or cooked curry considering these as good for health, often with or without knowing the actual medicinal properties. They learnt that some plants leaf/ seed/ rhizome gives better taste when cooked with specific items like with dry fish or meat, or when mixed with certain appropriate ingredients. For example, the leaf of *Awaneem* (*Eryngium foetidum*) is added in fresh beef curry to enhance the taste and aroma, or *Singree* (*Zanthoxylum acanthopodium)* in fresh dog meat curry to reduce the foul smell. Their simple traditional local food habit is believed to have kept them healthy and strong, and free from various ailments in the past. It is also noticed that most of these plants are commonly eaten by the North-Eastern and Asian communities. However, presently Chothes have changed their food habits from simple cooked to fried curry because of the impact of westernisation and mixing with the other communities.

Value of traditional medicinal knowledge

The invaluable knowledge of ethno-medicine of Chothes is usually retained by the village priest, local medicine men, village elders and grandparents. Apart from general medicinal plants, some medicinal plants are kept very confidential by them with a clear intention that the healing power may lose its charm. According to Pr. Roushi (87/M) a local medicine man of Ajouhu said that “In the past, if we freely shared our valuable knowledge and its secret treatment methods with others it was strongly believed that the medicinal power was reduced when used”. Therefore, they hardly shared such invaluable knowledge for fear of losing its potency of the plants and its application. Similarly, N.S Jamir from the perspective of Naga tribes of Nagaland said that 'traditional knowledge is confined chiefly to the folk-healers and old-folks residing in villages. They believed the knowledge of the medicinal efficacy of plants are lost to posterity so they do not divulge the secret in fear that their professional supremacy will be at stake and the use of medicinal potency of the plants would be weakened or nullified.[31] Rajkumari (2013) also states that amongst the Chiru tribe of Manipur the traditional knowledge system is restricted to few identified persons in the community and the knowledge is generally inherited through the oral transfer and that generally in family lineage as there is no written document.[20]

Hence, it is pertinent for such reasons that they did not openly disclose or freely share their secret knowledge and expertise to younger generations. But they claimed to share only to their most trusted person like his son or disciple whom they believed can continue practicing their secret tradition of healing

and curing complicated sicknesses, even to the extent of killing a rival with magical-witchcraft. Roushi, further said that “In olden days, there used to be even competition amongst fellow village priests or local medicine men or with fellow neighbouring priests in their expertises with regards to deadly magical witchcraft of healing and curing practices, and psycho-warfare where fear was instil upon one another so that people did not simply advantages of one's skills and talents without prior approval”.

CONCLUSION

The study reveals that the Chothe used more of leaf, stem and rhizome in the treatment of various ailments and diseases often orally as concoction. Some are eaten as food items while others are used for external purposes only. Single plants are found using for multi-sicknesses. Most of the sicknesses treated are of common ailments and diseases.. Depending upon the degree of illness, magical-religious ceremonies are also employed by the village priest in the healing and curing methods. Medicinal plants for Diabetes, HIV, Hepatitis, etc. are unknown because such diseases were unknown to them before, but on experimental basis, some are using certain plants to treat these new diseases. It may be noted that besides these few plants identified, there are still several other plants which are known and unknown to the Chothe, and not recorded here.

Most importantly, changes in eco-system, deforestation, jhum farming, constrain of economy, Christianity, ignorance of people, lack of awareness of conservation and preservation, unsystematic collection and destruction of identified plants and its natural habitat, besides other factors have seriously posed a threat to the existing ethno-medicinal plants in North-East India.

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STUDY ON THE PREVALENCE OF HAEMOGLOBINOPATHIES AND G6PD DEFICIENCY AMONG SCHEDULED TRIBE AND SCHEDULED CASTE POPULATIONS OF CHHINDWARA DISTRICT, MADHYA PRADESH

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Abstract: *Blood samples of Scheduled tribes (Gond and Korku) and Scheduled caste (Katiya, Mehra and Basod) from Chhindwara district of Madhya Pradesh were screened for sickle haemoglobin, beta thalassaemia and G6PD deficiency. Among Scheduled tribe (ST) populations of this district, the sickle cell trait was significantly higher in Korku tribe (17.2%) than in Gonds (4.3). Katiya showed 24.9% sickle trait followed by Basod (22.0%) and Mehra (19.8%). Three individuals of Korku (ST) were found to be Sickle cell disease (homozygous). About 3.4% of Mehra, 2.2% of Katiyas were homozygous sickle gene. No Gond (ST) or Basod (SC) in the studied populations was homozygous for Sickle cell disease. The Beta thalassaemia trait was found to be 4.8% and 2.9% among Korku and Gonds respectively. The Beta thalassaemia trait ranged from 1.1% among Katiyas to 5.2% among Mehras. G6PD enzyme deficiency was 5.6% in Korkus followed by Katiya (3.9%), Gond (3.7%) respectively. Notably none of the Mehras or Basods were deficient. Frequency of sickle cell gene was higher among SC population (0.1464 in Katiya, 0.1336 in Mehra and 0.1100 in Basod). Frequency of sickle cell gene was 0.0980 in Korku and 0.0215 in Gond. Frequency of beta thalassaemia gene was calculated as 0.0259 for Mehra, 0.0240 for Korku, 0.0200 for Basod, 0.0143 for Gond and 0.0055 for Katiya. All the studied communities were in equilibrium state for sickle cell haemoglobin and Beta thalassaemia gene as per Hardy-Weinberg's law (p>0.05).*

INTRODUCTION

Sickle haemoglobin and thalassaemias are inherited autosomal disorders of hemoglobin that results in hemolytic anemia. These disorders lead to life threatening crisis in homozygous state. On the other hand, G6PD deficiency results in hemolysis on the administration of some oxidant drugs and anti-malarials. About 5% of the world's population carries genes for hemoglobinopathies and about 3,00,000 infants are born each year with major hemoglobin disorders – this include more than 2,00,000 cases of sickle cell anaemia in Africa.[1] Sickle-cell anaemia is particularly common among people ancestral origin from sub-Saharan Africa, India, Saudi Arabia and Mediterranean region.Population migration resulted in increased gene frequency in the American continent. [1] The prevalence of the sickle-cell trait varies from 10% to- 40% across equatorial Africa and 1% - 2% in the North African coast and less than 1% in South Africa.[1]

Survival advantage of sickle-cell trait against malaria resulted in high frequencies of the mutant gene especially in areas of high malarial

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transmission.[1] In India, the sickle cell trait prevalence varies from 0 to 41% among diverse groups and it is highly frequent among scheduled tribes as compared to other ethnic groups.[2] The present study was initiated by Regional Medical research centre for Tribals (Indian Council of Medical Research), Jabalpur to identify the status of hemoglobinopathies and G6PD deficiency among Scheduled tribe and Scheduled caste populations of Chhindwara district of Madhya Pradesh during 2002-03. As per the census 2001, the total population of Chhindwara was 18,49,283. Tribal population and Scheduled caste population constituted about 34.7% and 11.6% of the total population of the district respectively. Gond and Korku of Scheduled tribe (ST) and Katiya, Mehra, Basod of Scheduled caste (SC) were included in this study.

MATERIAL AND METHODS

Five hundred ninety-nine blood samples of Scheduled tribe (349 from Gond and 250 from Korku) and 347 samples of Scheduled caste (181 from Katiya, 116 from Mehra and 50 from Basod) from Chhindwara district were collected and screened for sickle haemoglobin, β thalassaemia and G6PD deficiencies. All blood samples were collected in EDTA vials. Presence of sickle hemoglobin was identified by sickling test with 2% sodium metabisulphite and confirmed by cellulose acetate membrane electrophoresis at pH 8.6 as described earlier.[3] HbA_2 was quantified by column chromatography to diagnose the beta thalassaemia trait.[4] G6PD deficiency was detected by using DCIP decolorization method.[5] Gene frequencies were calculated by gene counting method And statistical significance was determined by Chi-square test.

RESULTS

The status of sickle haemoglobin, beta thalassaemia and G6PD deficiency among scheduled tribe and scheduled caste populations of Chhindwara district are given in Table-1. Among the 2 tribal populations, sickle cell trait was significantly higher in Korku tribe (17.2%) when compared with Gonds (4.3%). Three individuals of Korku tribe were found to be homozygous for sickle haemoglobin (HbSS) and no homozygous individual was identified among the Gonds tested. When tested for Beta thalassaemia trait, it was found that 4.8% Korkus and 2.9 % Gonds were carriers of beta-thalassemia gene defect. About 5.6% of Korku tribes tested and 3.7% of Gonds were found to be deficient for G6PD enzyme. Among the 3 Scheduled caste populations of the district, 24.9% of Katiya individuals were sickle cell carriers (HbAS) followed by Basod (22.0%) and Mehras (19.8%). Four individuals of Mehra (3.4%) community and 4 members (2.2%) of Katiya were found to be homozygous for sickle gene mutation (HbSS). No Basod tribe tested was sickle cell diseased. The prevalence of Beta thalassaemia trait was 5.2% among Mehras, 4.0% in Basods and 1.1% among Katiyas. The prevalence of G6PD deficiency was 3.9% and 2.6% among Katiya and Mehra communities respectively. No G6PD deficiency was detected among the screened Basod individuals.

Table1: Percent prevalence of haemoglobinopathies and G6PD deficiency among ST and SC populations of Chhindwara district

Group	Population	N	Sickle cell trait (AS)	Sickle cell disease (SS)	Beta thal. trait	G6PD def.
ST	Gond	349	4.3	0	2.9	3.7
	Korku	250	17.2	1.2	4.8	5.6
SC	Katiya	181	24.9	2.2	1.1	3.9
	Mehra	116	19.8	3.4	5.2	2.6
	Basod	50	22.0	0	4.0	0

The calculated gene frequencies of sickle haemoglobin gene(β^s) and beta thalassaemia are given in Table-2. The frequency of β^s gene among Korku tribe was 0.0980 and it was 0.0215 among Gond tribes of Chhindwara district. Similarly, the gene frequency of beta thalassaemia gene was 0.0240 in Korku individuals and 0.0143 in Gond tribes respectively. The gene frequency of β^s gene for scheduled caste individuals of of Katiyas, Mehras and Basods was 0.1464, 0.1336 and 0.1100 in that order. Corresponding gene frequency for beta thalassaemia gene was 0.0055, 0.0259 and 0.0200. The expected frequency for birth of children with sickle cell disease (homozygous) in Korku and Gond tribes was 9.6 and 0.5 per thousand respectively. Likewise 21.4/1000 in Katiya, 17.9 /1000 in Mehra and 12.1/1000 Basod are expected to be born with sickle homozygous condition. Similarly, the expected frequency for birth of child with beta thalassaemia major was 0.6/1000 in Korku and 0.2/1000 in Gonds. The expected frequency for birth of beta thalassaemia major children among Mehra is 0.7/1000 and 0.4/1000 in Basod population.

All communities of scheduled caste and scheduled tribe of this district were in equilibrium state for both sickle and beta thalassaemia gene as per Hardy-Weinberg's Law ($p>0.05$).The Chi-square value for the comparison between

Table 2: Calculated gene frequencies for ST and SC populations of Chhindwara district

Population	Gene freq. of 'β^s'	Gene freq. of 'β-thal.'	Expected frequency (per 1000 births)	
			Sickle cell disease	Beta thalassaemia major
Gond	0.0215	0.0143	0.5	0.2
Korku	0.0980	0.0240	9.6	0.6
Katiya	0.1464	0.0055	21.4	0
Mehra	0.1336	0.0259	17.9	0.7
Basod	0.1100	0.0200	12.1	0.4

Korku and Gond tribes showed the statistically significant ($p<0.05$) difference between them that indicates the heterogeneity in regard to the distribution of sickle haemoglobin. The Chi-square value for the comparison between 3 scheduled caste populations of Chhindwara district showed statistically non-significant difference ($p>0.05$) which is the indicative of homogeneity in regard to the distribution of sickle haemoglobin.

DISCUSSION

Sickle hemoglobin is prevalent in different tribes of the Madhya Pradesh[6-12] and ranges from 0 to 20% with a mean of 6.1%.[13] In Central India, sickle hemoglobin among SC populations ranges from 1.9 to 20% with a mean of 9.8% and corresponding values for ST populations are 0 to 14.3% with a mean of 6.9%.[13] In the present studies, the prevalence of sickle haemoglobin was significantly lower among Gond tribes when compared with scheduled caste populations (Katiya, Mehra and Basod). According to Previous studies among the prevalence of sickle cell trait was 13.8% (N=296) and 11.4% (N=299) respectively for Korkus and Gonds of neighboring district of Betul.[14] Korku tribes of both districts show homogeneity in their regard to the distribution of sickle hemoglobin. On the other hand, Gond populations of both districts showed heterogeneity with respect sickle gene distribution. In Mehra and Basod of Betul district, the prevalence of sickle cell trait was 32.4% (N=352) and 19.5% (N=123) respectively.[14] In the present study of Chhindwara district, it was 19.8% and 22.0% respectively. It may be noted this difference could be due lower sample size of Basods in the present study. Mehra populations of both districts also showed heterogeneity in the distribution of sickle hemoglobin. Expected frequency of birth of homozygous children per 1000 births for these populations in Chhindwara district as calculated was 17.9/1000 for Mehra and 12.1 for Basods. These expected higher frequencies can be lowered through pre-marriage counseling and education. No significant difference was observed in the prevalence of beta thalassaemia trait between scheduled caste and scheduled tribe populations other than in between Katiya (SC) and Korku (ST). Notably, the expected frequency of beta thalassaemia major in these communities was very low. The present report depicts status as observed in 2002-03 among these populations. In order to ascertain the prevailing frequencies and incidence of Sickle Cell disease and Beta Thallsassemia, study needs to be undertaken afresh.

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TRANSFORMATION OF LEISURE ACTIVITIES AND LIFESTYLE OF TRIBALS IN RAJASTHAN

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Abstract: *Leisure is a complex phenomenon pervading every society. Leisure has meant different things to different people and the concept of leisure has changed with the times. Leisure is considered as an experience of freely, actively and responsibility involved in work, play and worship. It is well accepted fact that leisure and lifestyle experiences are culturally determined and each region has its own values and tradition in terms of the importance attached with it and the institutional engagements that shape it. The study focuses on a significant social change and transformation of leisure activities and life style of tribals in Rajasthan. Modernization, globalization and urbanization lead not only to the growth of commercialism, but also transformed the leisure and lifestyle of tribals. A sharp decline in group- oriented activities can be seen in the tribal region. Chaupal (group of people sitting and chatting) circus, puppet shows and village fair in tribal area which were the main leisure and lifestyle of tribals are in ruins and replaced by tea stalls, filmy songs and dances, cinema, TV and use of mobile, etc. Artistic, religious (visiting temples and attending religious discourses or sermons) and cultural activities have been declining and are replaced by watching cinema, smoking, chewing tobacco etc. Traditional games like kho-kho, kabbadi, wrestling, gilli-danda, mardadhi, playing cards and chaupad etc. were main leisure pursuit of tribals has been replaced by modern games like cricket and football. Family-oriented activities like folk songs, dances, music, during festivals and marriages are now restricted from week to one day activity and more within domestic sphere rather than public sphere. In the present paper an attempt has been made to identify the different forces of changes and their effect on leisure activities and lifestyle of tribals in Rajasthan and some suggestions can be given to restore the traditional leisure activities and life style of tribals*.

Key Words: Liesure and Lifestyle, Chaupal, Commercialism, Traditional Games, Family Oriented Activities.

INTRODUCTION

Leisure is a mental and spiritual attitude, a prerequisite for the apprehension of reality. It is a receptive and contemplative attitude of mind, a capacity to step in oneself in the whole of creation. It is a form of silence.[1] "Leisure has been referred to as a state of freedom from work or absence of obligations".[1]

"Leisure, in the vedantic understanding, would be a state of 'being' as against one 'having' or 'doing. It is a realisation of freedom that is absolute and unencumbered by any trace of anxiety or stress" [2] Leisure as an experience, generally takes place outside working hours and can be understood and explained only in the context of culture, traditions, customs and behaviour of a particular social organization. Social and cultural structure of the organization influences the nature and form of leisure and its activities and each organization

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has its own values and tradition in terms of the importance attached with it and the institutional engagements that shape it. Within social structure leisure has meant different things to different people and they have myriads of things to do in the free time. Miller and Robinson (1963) believe that leisure and recreation are cultural universals, being found as common elements in the behaviour of individuals in all societies.[3]

Leisure has now become an essential and important feature of a person's life. Leisure itself helps in generating new structures and social norms. The type of leisure enjoyed and pursued by a person or people not only reflects their status in a society but also reflects the general character, nature, organization and structure of that society. "In a given society at a particular time, it allows, dictates, or conducive to, a particular mode of leisure but also determines the extent and limit of participation" (Iswar modi).[1] Leisure implies time and freedom of choice, and the ways of spending leisure are conditioned by age, sex, occupation, income, education and cultural background, etc.

The social change that has overtaken Indian society has caused a transformation not only in its structure but also in values in which there is greater emphasis on individualism. The change in values is also the result of greater urbanization and consumerist attitudes. The growth of the globalization has fostered an increase in the transforming the social order. Social transformation and change is an ongoing process and all the societies of the world are undergoing change since time immemorial and tribal groups are no exception to this process. Indian society viewed from a historical perspective reveals the diversities in the patterns of leisure and has the unique characteristics of leisure continuum in terms of media, form and participation. The present form of modernization of Indian tradition reveals the co-existence of diverse leisure patterns derived from an amalgamation of folk and urban influences.

India has a largest concentration of tribal population. Though scattered all over the country their concentration is mainly in the rural and remote areas of northern and central India. Tribes constitute one of the socially excluded sections of Indian society for centuries. The most excluded and underdeveloped among them are the numerically small primitive tribal groups. They are considered to be the original inhabitants of this subcontinent having a very simple way of life. Over generations, tribal communities have remained isolated from the mainstreams of social and economic development. Due to this the knowledge about tribal groups and community in India is very insignificant and insufficient. The tribal population is not a socially, culturally and ecologically homogenous entity. Tribal communities and groups belong to different ethno-lingual entity, profess diverse faith and are at various levels of social and economic development.

Oxford Dictionary defines 'Tribes' or 'Tribals' as a group of people in a primitive or barbarous stage of

development acknowledging the authority of a chief and usually regarding themselves as having a common ancestor.

Tribe generally means an ethnic group, geographically isolated or semi-isolated, identified with one particular territory and having distinct social, economic and cultural traditions and practices. After more than six decades of Indian independence, the term has undergone various changes.

OBJECTIVES

1. To examine the traditional leisure activities and life styles of tribals.
2. To observe the daily activities of the tribals.
3. To assess the awareness among the tribe due to education and information.
4. To identify the forces of transformation and changes among tribes.
5. To find the impact of globalization, modernization, urbanization, liberalization and commercialization on tribal lifestyles.
6. To observe the decline in values, caste Panchayats, religious faith, joint family system and traditional occupation.

METHODOLOGY

The primary objective of the study was to examine the perception of free time and leisure among the tribal people of Rajasthan. The present study also attempts to identify the traditional activities, Group- oriented activities, family-oriented activities, religious and cultural activities. Further, identify the different forces of changes and their effect which transformed the leisure activities and lifestyle of tribals. The study was based on eight months of fieldwork during 2012-13 in 3 villages of tehsil thanagazi; district Alwar, Rajasthan, India. As the present study was done exclusively among the tribes, so 3 tribal dominated villages, namely Bhopala (Tribal population is nearly 400 out of total 700 i.e. 57.14%, Kabligarh (Tribal population 77.77%), and Kaled (a very interior and underdeveloped village, lack of communication and transport, tribal population 75%.) were selected from thanagazi tehsil in Alwar district of Rajasthan.

Tools for Data Collection: The present study was based on both the primary and secondary data collected through field survey with structured interview schedule. First-hand information was collected by observation and interviews. The primary data consists of various responses from Tribal people of above villages. Questions relating to the respondents understanding of free time, leisure activity and involvement (qualitative and quantitative) were asked. Whereas, the secondary data was collected from the source book on tribals, old literature regarding leisure and lifestyles of people living in Rajasthan, Census report, journals and relevant references.

Criteria for Selection of Villages and Respondents: Considering the aim and objectives of the proposed study, taking many criteria for selection i.e. population of the village, distance from tehsil and district headquarter, means of

communication etc. above three villages were selected.

For the study 161 peoples (age between 18 to 75) were selected from 3 villages (few people from dhani were also interviewed). The various sub-structural variables such as age, education, monthly income, marital status, mode of living etc. are important factors in the study of patterns of leisure. Therefore Data was collected from all possible sections i.e. aged and young people, male and females, educated and uneducated, employed and unemployed etc. Observation was done to see the daily lifestyle, traditional and modern behaviour pattern, manners and customs of the people. The Study is based on 8 months of field wok during 2012-2013 in three villages of Thanagazi tehsil district Alwar, Rajasthan.

For the study we have interviewed total 161 respondents which includes both men and women.50 respondents (25 women and 25 men) from Bhopala village, 50 respondents (25 women and 25 men) from kabligarh village, 61 respondents (25 women and 36 men) from kaled village.

Traditional patterns of leisure and lifestyles

The elders had vivid memories of the old tradition, customs, leisure and lifestyles. In the past group- oriented activities were the most important leisure in the tribal region. The most important group oriented activity of village was Chaupal. Chaupal was the lifeline of male villagers and all the major discussions from local to international, gossiping and smoking hukka. Daily debates as well as village decisions were the main attraction of Chaupal. Aged villagers were the given respect at the time of discussions. Village wells were also very important for females, not only to fetch the water but also to chat, gossip and discuss the daily family life.

Politics-oriented activities were also very important and powerful among tribals. Tribal chiefs were among the most respected persons among them. For all the disputes the decisions of tribal chiefs were final decision makers.

The other leisure activities were village *melas* in tribal area. *Melas* were very popular and attended by large crowds due to various reasons. These *melas* serves multiple purposes but one of the most important aspects of it relates to the leisure activity and recreational life of the tribal people. During *melas* tribals (both male and female) dress in their best and clean clothes, wear ornaments and enjoy shopping (new artificial ornaments, bangles, fashionable items, local weapons, toys and other essential items), selling their products, watching circus, dances, puppet shows etc.

Religion-oriented activities are very important among tribals. The influence of religion on all walks of life in the tribal community is so all-encompassing that leisure cannot be untouched. “Religious practice is one of the most conspicuous aspects of any religion, and it can be interpretated as a ritual for maintaining the institutional creed”. (*Requena Miguel and Stanek Mikolaj*) Institutionalized festivals of great importance like holi, diwali, dashera, sankranti, raksha bandhan etc. have a

unique place in tribal society. The festivals and celebration centred around religious events. The celebration and feasting during religious occasion was also the important core activities, and group participation was an essential ingredients. Ramleela was enjoyed by the tribals with great enthusiasm. During holi, gangaur, teej, and other festivals as well as marriage and child birth ceremony, tribal females sing traditional songs. Besides these major celebrations many other activities and local festivals take place which have been celebrated for hundreds of years. The occasion may be the day of a particular god or local deity, (like chauth, gangaur, shivratri, janmastmi, shitla-asthmi) etc. During fast and festivals, preparations of special dishes were dedicated to god as well as distribution to Brahmins, cows, dogs, and crows were a unique feature of leisure. Religious activities also include occasional as well as daily Bhajan and kirtan in temples during morning and evening hours.

Traditional games like kho-kho, kabbadi, hocky, kusti, gilli-danda, mardadhi, sitolia, kanchae, rounder, playing cards, shatranj and chaupad etc. were main leisure pursuits of tribals. The other traditional ways of enjoying leisure were activities like road side games of dice and pawns, lattu, acrobatics and jugglery, idolatry etc. Swimming in kund/johad were most common means of leisure activities among tribals.

Family-oriented activities like folk songs, dances, music, during festivals and marriages were the main leisure activities for the tribal women. During the festivals females decorate their houses with maandna and rangoli; group songs and dances during nights, visit their relative's house and prepare delicious food. The arrival of guests and relatives were also the occasion of celebration. Marriages celebration begin fortnight before the ceremony. A marriage or child birth in any family is celebrated by the whole community.

Sexual education and regulation of sexual relationship was also important features of family oriented activates. Sex education was given due importance and youths were encouraged for sex relationship. Family is also regarded as the first agency of socialization. Family imparts the knowledge of culture; traditions; knowledge of forests, agro-economic activities, and indigenous skills to new generation. Marriage is also very important institution of society. It was more of a contract based on cooperation and reciprocal needs. Generally marriage takes place at a late age and full liberty were given to the couples to understand each other.

Transformation of leisure and lifestyle

Societies throughout the world are experiencing profound social and economic transformations, resulting in significant changes in the amount and pattern of free time available to the individual over the course of life. These trends have direct implications for a variety of leisure activities.

So long as a person or people pursue their leisure within the sanctioned or institutionalized frame of norms, there is no danger to the system and the system survives with no major changes, but as soon as a section of society begins

to indulge in leisure pursuits which are non-institutionalized a process of decay starts and that society will inevitably undergo major changes. On the whole, changes either in the social structure or in the structure of leisure influence each other and there exists a kind of concomitance between the two.

However, during transition, when the socio-economic structure changes, there is a flux in the nature and patterns of leisure, and many traditional activities lost importance. The pressures of urban life make people adopt new schedules of work and personal habits and motivate them to use of modern modes of leisure. Due to the impact of urban influence, many leisure activities changed as well as replaced by another one. Due to liberalization of economy and fast moving life people do not enjoy longer spans of leisure. The situation therefore, leads to short term diversions which do not consume much of the very valuable time. Growing affluence and prosperity, influence of Mass media has dominated and acquired an important place in modern society and is reflected in the lifestyles of tribal people.

Today in the present time group-oriented activities lost their importance and replaced by individual activities in the tribal area. Chaupal lost its importance, only few old people sit and gossip there. Today young generation do not have enough time to sit or gossip or take part in any debate with elders. Now they sit and gossip on the tea stalls and usually discuss about their carrier. The differences in the attitude, economic growth, changing values and carrier oriented approach transformed the total leisure and life style of young generation.

Due to education and occupational mobility large number of tribals have migrated from their native place and settled in urban areas, therefore political institutions get ruined and the power of tribal chiefs have declined. The village *melas* (fair) in tribal area are not very popular today and attended by very few people. These melas are now surviving due to some religious and leisure activities. The shopping in the melas is replaced by new markets developed in village itself as well from the nearby town market. Circus, local dances, puppet shows and Swang have lost their relevance and almost replaced by cinema halls, mobile phones, T.V and satellite TV etc.

Although the influence of religion and importance of festivals have a unique place till today in tribal society, but The festivals and celebration centred around religious events, have lost their charm. The styles of celebration and activities during festivals have changed. Now people enjoy the festivals in a very small pear group and spend more money on lavishness. During fast and festivals, preparations of special dishes in house are replaced by market products and ready-made sweets. Very few people do fast during the festivals, and young generation tries to avoid going temple. Bhajan and kirtan in the temples have reduced and are occasional feature of religious activities of tribals. It can be individual religious change or can be attributed to generational replacement.

Traditional games which were main leisure pursuit of tribals have been

replaced by modern games like cricket, football and volleyball. Development of roads in the villages ended the road side games. Due to commercialization, satellite and TV, new generations tribals have adopted modern games. Due to modernization, hygiene and lack of water reservoirs, many people do not know how to swim. Family oriented leisure activities have now been restricted from week to one day activity and more within domestic sphere rather than public sphere. Now during the festivals people decorate their houses with lights, scenery and flowers. Social visits, going to local market, Parks, libraries, museums and visiting temples in the evening are some modern outdoor leisure activities of tribals. Due to rural development village wells have been replaced by the individual water connection in the houses, therefore the female gossip and chat on the well is now almost absent.

Now due to contact with non tribals and following the hindu customs and traditions, tribals showing rigid attitude towards the sexual behaviour of their young generation, the parental control on their children become stronger and freedom given to marital partners were curtailed to a great extent.

After cultural contact and rapid spread of education, several changes in the marriage institutions among tribals have occurred. Now change in the marital age; increasing dowry demand; increasing role of parents; and increasing rituals etc. can be seen among tribals.

Globalization and the subsequent transformation of the modern economy, improved transportation and vehicle ownership increased the mobility and has altered the work environment of tribal areas and life styles.. Frequent migration from villages to big cities for work and education has also transformed the leisure and life style. Due to economic prosperity, construction of new pucca houses, purchasing of modern means of leisure items, shifting the children from Govt. schools to English medium private schools for higher-quality education and to achieve upward mobility for the family are some new trends of leisure and life styles among tribals.

The transformation and changes among tribes has resulted in loss of traditional culture, values and thus there is an urgent need for promoting the importance of indigenous culture and traditions among tribes.

FINDINGS

Data available revealed that of the total respondents, 45.96. % were between 45 to 75 years of age, 32.91% were between 25 to 44 years and only 21.11% were between 18 to 25 years.

- Majority of respondents i.e. 38.50% were illiterate, 29.19% were educated up to primary, 18.01% were educated up to secondary level, 8.69% were graduates and only 5.59% were post graduates.
- Majority of respondents i.e. 53.41% were from joint family, whereas 45.58% were from nuclear family.
- Majority of respondents 45.34% were in favour of modern lifestyle and leisure and 22.36% were in favour of traditional lifestyle whereas 32.29%

were in favour of both lifestyles simultaneously.

- Nearly 83.22% respondents appreciated the traditional leisure of chaupal and village well whereas 16.77% criticised the traditional lifestyle and leisure as well as considered them as waste of time.
- Out of total respondents, 52.17% accepted the importance of religion and worship their deity daily 40.37% appreciated the religious belief but worship their deity occasionally, whereas only 7.45% respondents do not worship.
- Majority of respondents, 84.47% of the respondents indicated that the types and period of leisure activities were to a great extent affected by their occupation and income, Whereas 15.52% responded that leisure activities can be enjoyed by everyone irrespective of money and job also.
- Nearly 75.15% respondents want to protect their indigenous culture, traditions, leisure activities and lifestyle from the forces of transformation, whereas 24.84% respondents do not care for the transformation that ruin their indigenous culture.

CONCLUSION

Study finds Modernization, globalization, liberalization, commercialization of economy and urbanization, improvement in the education are some of the forces that have transformed the leisure and lifestyle of tribals.

A sharp decline in group- oriented activities, family oriented activities, traditional sports, religious activities, martial activities, sexual oriented activities and adoption of new leisure and lifestyle, increased mobility, economic prosperity, adoption of new education and employment are some changes that can be seen the region.

The study showed that the tribal people's perception of leisure activity and lifestyle is influenced by socio-cultural and socio-economic factors identified during the analysis.

Notes:

1. Chaupal---Group of people sitting, chatting and gossiping at a common place
2. Hukka—smoking with traditional instrument made of mud and stick
3. Melas—fair
4. Swang--disguising dancing and singing and discourse on a particular theme
5. Sankranti—kite festival
6. Dhani—Hamlets
7. Ramleela--Ten days stage show before dashera festival
8. Gangaur—Celebration of women
9. Teej--Celebration of women
10. Bhajan—Religious song
11. Kirtan—Religious song
12. Kusti—Wrestling
13. Gilli-danda—Played with two sticks
14. Mardadhi—Played with ball of cloth
15. Shatranj—Chess
16. Sitolia—Played with ball and seven stones
17. Kanchae—Played with marbles
18. Rounder—Played like baseball

19. Chaupar—Ludo
20. Swang- Play by artists
21. Maandna—Home decoration with mud
22. Rangoli—Home decoration with colours
23. Johad—Reservoir
24. Lattu---Played with string and wood toy

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MEAN AGE AT MENARCHE AND MENOPAUSE AMONG DIBONGIYA DEORIS OF ASSAM

Juri Borah[a1] and Sarthak Sengupta[a]

INTRODUCTION

Menarche and menopause are inevitable and universal reproductive occurrences in the life of a woman. Menarche starts off the reproductive phase, whereas menopause marks the end. Both are considered as significant milestone in women's reproductive period. Menarche signifies that a girl is mature for marriage and capable of conceiving. On the other hand menopause indicates cessation of reproductive function and introduces women to a new phase of life.

The literature reveals that the mean age at menarche and menopause varies widely among various ethnic groups. Researchers have reported genetic factor as the most influential factor in determining the time of first menses.[1] Different socio-economic factors are also associated with the variation in mean age at menarche.[2,3] Similarly menopause has also been affected by several intrinsic as well as extrinsic factors that includes genetic, socio-economic, nutrition, marital status, parity, geographic and climate, smoking habit, disease, drugs and contra-ceptives.[4,5] Some studies also reveal that early age at menarche is associated with early age at menopause[6,7] and lower number of parity is associated with early age at menopause.[8]

In North East India works on variation in mean age at menarche and menopause is scanty. Only a few researchers have made contribution in this regard. Studies on menarcheal age of the Mongoloid population groups of North East India is carried out by Gogoi (1972),[9] Khatoniar (1972),[10] Das et al (1980),[11] Sengupta (1982),[12] Das (1985),[13] Maheo and Kalla (2000),[14] Singh (2006),[15] Baruah and Sengupta (2009),[16] and many others. Similarly variation in the mean age at menopause has been reported by Gogoi (1972),[9] Das (1985),[13] Saikia and Das (2012).[17]

In this paper an attempt has been made to examine the mean age at menarche and menopause among the Dibongiya Deori population inhabiting in Narayanpur area of Lakhimpur district, Assam. An attempt has also been made to compare the present data with other Mongoloid population of North East India reported earlier. Deori, a plain scheduled tribe of Assam is concentrated mainly in Dhemaji, Lakhimpur, Sonitpur, Jorhat, Sibsagar, Dibrugarh and Tinsukia district of Assam and also in Lohit district of Arunachal Pradesh. The four *khels* (territorial groups) of Deoris are Dibongiya, Tengapania, Borgonya and Patorgonya. However, it has been reported that the last group has become

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extinct.[18] In the present day Assam, the original Deori dialect has been preserved only by Dibongiya Deori sub- group.

MATERIALS AND METHODS

The present study was carried out among two Dibongiya Deori villages (Majorcha-pori and Pichola Deori Gaon) of Lakhimpur district of Assam. The data from 147 menarcheal and 19 menopausal women were collected. Information was obtained from the subjects by retrospective method depending on recall. In certain cases some local events were considered as landmark and the ages were cross checked with those events. The necessary statistical analyses were done to analyze the data.

RESULTS AND DISCUSSION

Percentage distribution of Dibongiya Deori women menstruating at different ages are presented in the Table 1. From the Table it is apparent that the menarcheal age varies in between 9 to 18 years. Maximum number of women reported their age at menarche at 14 years (27.89%) followed by 15 years (23.13%), 13 years (18.37%) of age. Interestingly, 0.68% of the women experience their menstruation at the age of 18 years. The mean menarcheal age among the Dibongiyas is 13.85 ± 0.14 years.

Table 2 shows the mean age at menopause of Dibongiya Deori women. Nineteen women had attained menopause at the time of survey. The range of menopausal age varied between 40 to 53 years. Relatively higher number of such women is recorded (5; 26.32%) in 48 years of age. The mean age at menopause among them calculated as 46.61 ± 0.65 years.

The data on mean menarcheal age of the present Dibongiya Deori sample has been compared with the other Mongoloid population group from North East India (Table 3). Fairly higher mean value of age at menarche is seen among the Kabui (15.40 years and 15.15 years)[16,19] which is followed by Angami Naga (15.00 years), [20] Ao Naga (14.88 years), [21] Mao Naga (14.59 years 2000),[14] and Meities (14.34 years). [19] Very Low

Table 1: Percentage distribution of the age at menarche

Age in years	Percentage
9	2.04
10	4.76
11	1.36
12	8.84
13	18.37
14	27.89
15	23.13
16	10.20
17	2.72
18	0.68

Mean age at menarche= 13.85 ± 0.14

Table 2: Percentage distribution of the age at menopause

Age in years	Percentage
40	5.26
42	5.26
45	15.79
46	10.53
47	21.05
48	26.32
49	5.26
53	5.26

Mean age at menopause= 46.61 ± 0.65

Table 3: Mean age at Menarche among Dibongiya Deori and some other Mongoloid Population Groups of North East India

State/Population group	No	Mean ± S.E. (in years)	t-value	Source
ASSAM				
Deori	147	13.85 ± 0.14	-	Present Study
Ahom	164	12.24 ± 0.09	9.47*	Baruah and Sengupta, 2009
Ahom	264	12.96± 0.60	1.44	Gogoi,1972
Ahom	162	12.51±0.10	7.88*	Sengupta and Rajkhowa, 1996
Ahom	194	12.60± 0.12	7.35*	Sengupta,1982
Ahom	77	12.83± 0.12	6.00*	Das,1983-1986
Ahom	77	12.25 ± 0.13	8.00*	Balgir,1994
Ahom	415	12.60 ± 0.07	8.93*	Dutta and Sengupta, 2012
Ahom	50	11.65	-	Srivastava and Goswami,1968
Ahom	66	12.29	-	Das *et al*,1980
Mishing	82	12.68	-	Das *et al,*1980
Mishing	165	12.97 ± 0.08	5.18*	Baruah and Sengupta,2009
Mishing	355	12.26± 0.08	9.35*	Buzarborua and Das(Unpub)
Sonowal Kachari	200	12.77± 0.12	6.35*	Deka,1976
Sonowal Kachari	108	12.5±0.17	6.14*	Saikia and Das, 2012
Sonowal Kachari	32	12.22± 0.18	7.41*	Balgir,1994
Sonowal Kachari	185	12.5 ± 0.08	7.94*	Baruah and Sengupta,2009
Sonowal Kachari	200	12.45±0.10	8.24*	Kalita and Sengupta, 1997
Khamiyang	40	12.80 ± 0.13	5.25*	Das,1985
Khamyang	212	12.91 ± 0.10	5.53*	Dutta and Sengupta, 2012
Mikir	52	12.75 ± 0.18	5.00*	Khatoniar,1972
Garo	95	12.55 ± 0.09	7.65*	Das and Saikia,1999
Lalung	51	12.36 ± 0.06	10.64*	Das *et al,*1980
Turung	32	13.06 ±0.20	3.29*	Das,1985
Tangsa	129	14.21±0.12	0.65	Saikia and Das, 2006
ARUNACHAL PRADESH				
Adi	109	14.45 ± 0.98	0.61	Duarah, 1969

Adi	17	13.47 ± 0.36	0.97	Balgir,1994
Singpho	95	12.59 ± 0.15	6.30*	Kar and Mahanta, 1995
Apatani	219	13.40 ± 0.08	2.65*	Jaswal and Jaswal, 1981
Apatani	13	13.61± 0.66	0.35	Balgir, 1994
MANIPUR				
Meitei	161	12.77 ± 0.04	7.71*	Devi and Singh, 1982
Meitei	410	13.28 + 0.04	4.07*	Devi, 1985
Meitei	487	14.34	-	Chakrabartti, 1986
Kabui	484	15.15	-	Chakrabartti, 1986
Tangkhul	307	13.93	-	Chakrabartti, 1986
Tarao Naga		13.46	-	Singh, 1989
Mao Naga	536	14.59 +1.03	0.25	Maheo and Kalla, 2000
Ithing	99	14.03 ± 0.12	1.06	Devi and Singh,2006
Meitei	200	13.60±0.10	1.47	Singh,2006
Pangals	164	14.40±0.08	3.24*	Singh,2006
Nepali	231	14.03±0.10	1.06	Singh,2006
Khongsai(Saikul)	335	14.53±0.21	2.83*	Khongsai, 2012
Khongsai(Imphal)	127	13.9±0.08	0.29	Khongsai, 2012
Kabui	129	15.40±0.23	5.96*	Singh,2006
MEGHALAYA				
Christian Khasi	119	14.60	-	Nag, 1965
Non Christian Khasi	131	14.10	-	Nag, 1965
Christian Rural Khasi	155	13.09 + 0.06	5.43*	Barua and Das, 1983
Christian Urban Khasi	161	13.80 + 0.06	0.36	Barua and Das, 1983
Non-Christian Rural Khasi	160	13.7 + 0.07	0.88	Barua and Das, 1983
Non-Christian Urban Khasi	165	13.6 + 0.06	1.79	Barua and Das, 1983
NAGALAND				
Zemi Naga	214	14.13	-	Bhowmik *et al.* 1971
Angami Naga	50	15.00	-	Suri, 1985
Ao Naga	150	14.88 ± 0.11	6.06*	Sengupta and Purnungla, 2005
Naga	15	13.80 ± 0.26	0.17	Balgir, 1994

Note: * indicates statistically significant at 5.0% level of probability

mean age at menarche is recorded among the Ahom population (11.65 years).[22] From the t-test of significance, it is apparent that the present sample exhibits significant difference from several other Mongoloid population of the region. The mean menarcheal age of the present sample is in agreement with that of Tangsa (14.21 years), Adi (14.45 years and 13.47 years), Apatani (13.61) of Arunachal Pradesh; Mao Naga (14.59), Khongsai Kuki (13.90 years) of Manipur, Naga (13.80), Non-Christian Rural Khasi (13.7) and Christian Urban Khasi (13.80) of Meghalaya.

The mean age at menopause observed in the present study is also compared with the other Mongoloid population from North East India (Table 4). It is apparent from the table that reasonably higher mean menopausal

age is documented among the Ao Nagas of Nagaland (51.33 ± 0.44 years) [21] which is closely followed by the Ahom population (48.44 ± 0.52 years)[9] and Mishing population (48.40 ± 0.60 years).[16] Fairly low mean age at menopause is reported from Tangsas (40.98 ± 0.69 years) [17] of Arunachal Pradesh. The result of t- test reveals close affinity of the present population with many other population groups under consideration from Assam as well as Nepali (47.44±0.38 years; Singh 2006) and Kabui population from Manipur (45.73±0.71 years). [15]

The present study indicates a good deal of variation in both mean menarcheal and menopausal age among various population groups of North East India. Such variation may be due a number of intrinsic as well as extrinsic factors on it. It is expected that further intensive studies will throw much light in this respect.

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Table 4: Age at Menopause among the Dibongiya Deori and some other Mongoloid population Groups of North East India

Population	No of Women	Mean ± S.E.	t-value	Source
Deori	19	46.61 ± 0.65	-	Present Study
Ahom	55	46.80 ± 0.63	0.21	Barua and Sengupta, 2009
Ahom	36	48.44 ± 0.52	2.20*	Gogoi,1972
Ahom	87	46.32 ± 0.27	0.41	Sengupta and Rajkhowa, 1996
Ahom	140	46.16 ± 0.31	0.63	Dutta and Sengupta, 2012
Sonowal Kachari	66	47.22 ± 0.29	0.86	Sengupta and Kalita, 1997
Sonowal Kachari	68	47.12 ± 0.50	0.62	Barua and Sengupta, 2009
Sonowal Kachari	45	44.8 ± 0.41	2.35*	Saikia and Das, 2012
Mishing	40	48.40 ± 0.60	2.04*	Barua and Sengupta, 2009
Tangsa	32	40.98 ± 0.69	5.93*	Saikia and Das, 2006
Turung	10	44.30 ± 0.66	2.48*	Das,1985
Garo	26	45.85 ± 0.41	0.99	Das and Saikia, 1999
Singpho	30	43.63 ± 0.48	3.68*	Kar and Mahanta, 1985
Khamyang	8	46.25 ± 1.58	0.21	Das,1985
Khamyang	60	47.75 ± 0.31	1.58	Dutta and Sengupta, 2012
Ao Naga		51.33 ± 0.44	6.05*	Sengupta and Purnungla, 2005
Meitei	65	44.85±0.16	2.63*	Singh,2006
Pangal	36	43.14±0.41	4.51*	Singh,2006
Nepali	75	47.44±0.38	1.11	Singh,2006
Kabui	44	45.73±0.71	0.92	Singh,2006

Note: * indicates statistically significant at 5.0% level of probability

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BEHAVIOURAL DIMENSIONS OF REPORTED REPRODUCTIVE TRACT INFECTION AMONG THE TRIBES : EXPERIENCE FROM PRIMITIVE LODHA TRIBE OF EASTERN INDIA

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Abstract*: Introduction: Reproductive tract infection (RTI) is the most common health problem of the rural women particularly the tribal and has a severe effect on social, psychological and economic aspect of life apart from the physical health. Therefore, present study was conducted to probe the perception, attitude and prevalence of the RTIs among Lodha tribal women. Materials and Methods: This cross-sectional survey was carried out among 500 married women in reproductive age group. All information was collected through one-to-one interview. The prevalence of the symptoms of RTI was recorded by interviewing married women distributed proportionally according to female population among 29 villages in six community development blocks with overwhelming concentration of tribe and selected systematically at most 20 women in each selected village. Results: About 69% (343/500) of the women reported suffering from one or other RTI related symptoms. The common symptoms reported among the current sufferer were lower abdominal pain (73.5%), itching or irritation around the vagina (72.6%), abnormal discharge (59.2%) and fishy smelling discharge (36.7%). Sixty three percent of women suffered from RTI experienced problems during sex. About 48% of the effected women tried in different ways to cure disease/infection and only a few (4%) visited government health institutions for services. Conclusion: Services of traditional health providers and less qualified private practitioner of modern medicine are mostly consulted for treatment. Mis-information guides the perception of Lodha women towards RTI and its symptom. Need of the hour is to develop awareness towards the infection among the masses and also strengthen the outreach services in remote tribal areas.*

Key words: RTI, sexual behaviour, reported symptoms, women, Lodha

Running title: Reproductive tract infection among the Lodha tribe

INTRODUCTION

Among the different morbidities prevalent among the tribal women in the age group 15-49 in India the common ones are the reproductive tract infections (RTI). It has a lethal and multiple effects in the life of the tribal women. RTI may lead to sterility or even death of women. Unlike other illness RTIs affect the social, psychological and economic aspect of life apart from the physical health. In male dominated society, inability of women to control their husbands from philandering and lack of decision-making power regarding sex make them vulnerable to frequent attacks of sexually transmitted infection (STI).

Such reproductive morbidities gain momentum among the tribal women

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due to many other extraneous reasons such as age old treatment techniques followed during induced abortions, home deliveries, management of uterine prolapse, etc. and unhygienic environment in which these treatments were carried out. Further, poor nourishment, lack of rest and leisure, lack of emotional support from husband also add to the risk of infection from such morbidities.

World Health Organization estimates in 2008 that each year there are over 500 million new cases of sexually transmitted infections in which 50–60% occur in developing countries. In South East Asia including India contribute more than 15% new cases each year.[1]

Different approaches were adopted in different studies conducted in this direction to assess the prevalence of the RTI. However, the figures put forward by such studies were grossly under reported.[2] The actual percentages might be much higher since it was found that due to sensitivity of the issue many women were hesitant and reluctant to cooperate in such endeavors. The data based on clinical diagnosis conducted by Tamil Nadu Voluntary Health Association during 1996-97 shows that 67 % of the women attending health camps were diagnosed as RTI patients.[3] An earlier study conducted among rural Indian women on gynecological morbidities, majority of the women were found to have at least one gynecological disease and half of them were suffering from RTI.[4-6] Another study on prevalence and patterns of gynecological morbidities among poor Indian women in four geographically and culturally different sites, based upon both women's clinical histories as well as clinical examinations, a common constellation of disorders emerged, of which reproductive tract infection are the most prominent.[7,8] **Several s**tudies from India reported that white discharge is the common symptom of RTI,[5,6,9,10] however, there are mis-conception associated with it.[11-15]

Further it is observed that physiological and social factors make women more vulnerable than men to infection with sexually transmitted infection (STI) and reproductive tract infection. Once infected, it is more difficult to diagnose STI and RTI in women compared to men because many infection occur symptomatically in women. However, such information are very less available among the tribes and particularly among the primitive ones who's world is guided by ignorance and beliefs in superstition, alienated from the health services. They live with infection, suffering the odds and consider it to be normal part of their life.

In the present study an attempt has been made to probe the perception, attitude and prevalence of the reproductive tract infections among the respondents through self reported symptoms among the Lodha women, one of the most vulnerable tribe of West Bengal in Eastern India.

MATERIALS AND METHODS

Rational for selection of the tribe: The Lodhas of West Bengal are conglomerated in a few community development blocks in the western and southwestern

part of Medinipur district (Fig.1) situated between 21^0 36' 5" and 22^0 57' 10" north latitudes and between 86^0 33' 50" and 88^0 11' 40" east longitudes.[16]

They are yet engaged in age-old economic pursuits viz., hunting, fishing and gathering. Of late they have been forced to resort to agricultural labour and unskilled daily wage earning because of



Fig 1: Study area

diminishing forestland. Their primitive-ness and the socio cultural barriers keep them away from the utilization of the existing health programme, thus rendering them a poor quality of life. Further their life style, lack of health education and illiteracy make them ignorant of the health problems particularly of reproductive health and thus become susceptible to reproductive morbidities. In addition to these, inaccessibility to health posts in their area of residence also adds to their suffering. Keeping these aspects in mind, the Lodhas has been selected for the study, such that any preventive intervention on reproductive health developed for Lodhas may be replicated for the other communities, which stands on similar level of backwardness.

Sample selection and data collection: A cross-sectional study was conducted during 1997 -98 in Paschim Medinipur district of West Bengal, India. The perceptions, attitudes and behavioural consequences were studied through focused group discussions. About 2023 ever married women in the age group 15-49 years resides in the study villages. The prevalence of the symptoms of RTI was recorded by interviewing a sample of 500 ever married Lodha women (EMLW) in the reproductive age group 15-49 years distributed proportionally according to female Lodha population among 29 villages in six community development blocks with overwhelming concentration of the tribe and selecting systematically at most 20 sample in each selected village. The sample of 500 EMLW with participation rate of 25% was determined purposefully keeping in view the small size of the tribal population in the study villages, the time and other resources constraints. Further the study villages were multi-ethnic in nature.

The reported symptoms refer to those who were suffering from RTI at the time of survey or in the recent past. The study of RTI through self reported symptoms provides key insights into women's perception of the problem and in the absence of availability of such information among the Lodha women; the present study would help increase

awareness and highlight the need for further research among them.

A hygiene index was constructed based on scaling technique with the parameters such as frequency of use of cow dung and soil on wall and floor of the house, personal cleanliness such as regularity of washing hands before eating, regularity of bathing, frequency of cleaning cloths, sanitary napkins during menstruation, etc. The index score is classified as low (4-9), medium (10-11) and high (12-13). This index is used in the logistic regression model for prediction of RTI symptoms.

A total of eight Focused Group Discussion (FGD) one in each village in the six community development blocks were conducted with the help of the females who were locally recruited. The following aspects were taken care of while including the females for FGDs - they are educated at least up to primary standard, smart enough to talk on health aspects, interested to take social services and cooperative in nature and were familiar with the Lodha tribe. These females were trained thoroughly before they were put into service.

Participants in the FGDs were selected by these pre-trained females. Case studies were also recorded to support the quantitative analysis. Impact of selected background variables on dependent variable RTI symptoms is studied by adopting a logistic regression analysis. Hygiene is studied by computing an index by scaling technique out of information collected from all the respondents on personal cleanliness including menstrual hygiene and household cleanliness. The study protocol was approved by ethics committee of the respective authority prior conducting the survey. An informed consent was also obtained from each subject before enrollment.

Statistical analysis:

Baseline characteristic data was initially presented as descriptive statistics. The impact of background variables on reported symptoms of reproductive tract infection was performed using logistic regression analysis. All statistical tests were performed by using SPSS statistical software. A p value less than 0.05 was considered as statistically significance.

RESULTS

The study of RTI among the primitive Lodha women was indeed a hard task to achieve. However, attempts were made to probe the prevalence of RTI among the sample women and their knowledge and experience of sexually transmitted infection, cares and medical attentions received to combat and check them. The findings of the various probes undertaken in different dimensions on the gamut of the prevalence of RTI are discussed below:

The study revealed that 343 women (68.6 %) out of the total sample women were suffering at the time of the survey from one or the other RTI related symptoms. Among the sufferers, 280 women (82 %) had already suffered from such symptoms prior to survey and out of 157 women who were not suffering at the time of survey, 31 % of them suffered from RTI sometimes in the past (Fig. 2).

Thus it becomes apparent that prevalence of RTI among the Lodhas was

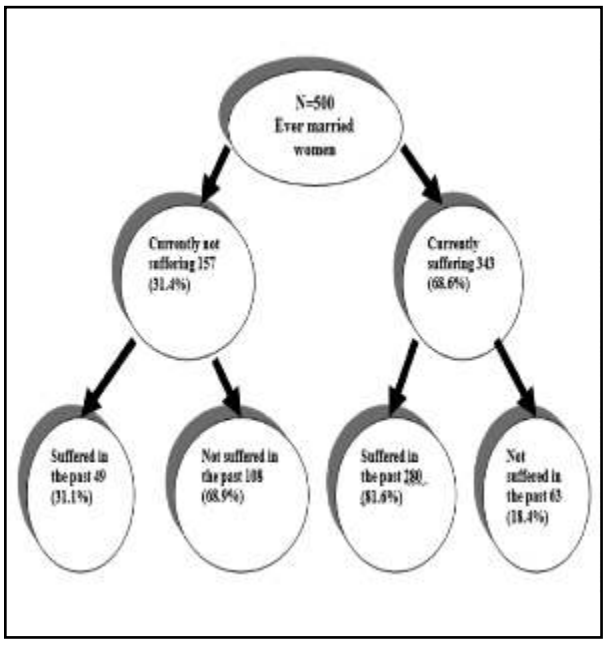

Fig 2: Reported prevalence of RTI

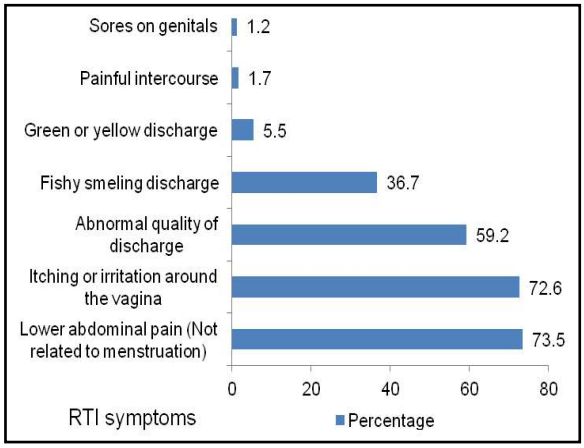

Fig 3: Distribution of women reported suffering from multiple RTI symptoms (n=343)

common and majority of them suffered from one or the other symptoms of RTI. The multiple responses to the symptoms suffering at the time of survey are depicted in Fig. 3.

Reported symptoms with background characteristics of the respondents: To obtain further insight into the prevalence of the self reported RTI, experiences of the different symptoms were cross tabulated with background variables and are shown in Table 1.

The table reveals that a good number of women with a longer duration of married life suffered from one or the other symptoms of RTI. Illiterate women reported to have suffered more from any RTI symptoms. Among the commonly reported symptom, the Lodha women engaged primarily in gathering of forest produce for subsistence reported to have suffered more from different symptoms of RTI except the fishy smelling discharge which is reported more by Lodha women engaged in other economic pursuit. Again women of higher order parity (having 3+ living children) reported to have suffered more from different symptoms of RTI, except fishy smelling discharge, which is reported more by women of lower order parity. The reported symptoms of RTI was slightly higher among tubectomized women except, the symptoms such as abnormal quantity of discharge, green or yellow discharge and sores on genitals were reported more by non tubectomized women. By and large, prevalence of vaginal irritation, abnormal vaginal discharge, fishy smelling discharge and abdominal pain were common in all types of women and are highlighted in the Table 1.

The impact of background variables on reported symptoms of reproductive tract infection is studied by adopting logistic regression analysis and the results are shown in Table 2. In addition to the background variables mentioned earlier a computed variable (index of hygiene) is added here and is described in methodology. The results reveal that by and large, level of

Table 1: Prevalence of RTI symptoms with background characteristics among Lodha tribe of Eastern India.

Background Characteristics	Percentage of women suffering from any symptoms of RTI at time of Survey or in recent past							
	V1	V2	V3	V4	V5	V6	V7	Base
Duration of married life								
Up to 10 yrs.	115 (47.5)	87 (36.0)	50 (20.7)	2 (0.8)	4 (1.7)	1 (0.4)	116 (47.9)	242
11-20 yrs.	102 (52.3)	87 (44.6)	57 (29.2)	1 (0.5)	13 (6.7)	3 (1.5)	101 (51.8)	195
21+ yrs.	32 (50.8)	29 (46.0)	19 (30.2)	3 (4.8)	2 (3.2)	-	35 (55.6)	63
Education								
Illiterate	185 (53.8)	152 (44.2)	95 (27.6)	5 (1.5)	14 (4.1)	4 (1.2)	200 (58.1)	344
Literate	175 (41.0)	51 (32.7)	31 (19.9)	1 (0.6)	5 (3.2)	-	52 (33.3)	156
Occupation								
Others	74 (37.9)	78 (40.0)	57(29.2)	1 (0.5)	9 (4.6)	1 (0.5)	97 (49.7)	195
Gatherer	175 (57.4)	125(41.0)	69 (22.6)	5 (1.6)	10 (3.3)	3 (1.0)	155 (50.8)	305
No. of children born								
1-2 child	133 (47.0)	113 (39.9)	75 (26.5)	1 (0.4)	10 (3.5)	1 (0.4)	136 (48.1)	283
3+ child	110 (52.9)	86 (41.3)	49 (23.6)	5 (2.4)	8 (3.8)	3 (1.4)	110 (52.9)	208
Use of tubectomy								
Ever Used	68 (59.1)	44 (38.3)	31 (27.0)	2 (1.7)	4 (3.5)	-	60 (52.2)	115
Never Used	181 (47.0)	159 (41.3)	95 (24.7)	4 (1.0)	15 (3.9)	4 (1.0)	192 (49.9)	385
	249 (49.8)	203 (40.6)	126 (25.2)	6 (1.2)	19 (3.8)	4 (0.8)	252 (50.4)	500

NB: V1: Itching around the vagina, **V2:** Abnormal quantity of discharge, **V3:** Fishy smelling discharge, **V4:** Painful intercourse, **V5:** Green or yellow discharge, **V6:** Sores on genitals, **V7:** Lower abdominal pain.
NB: Figures in parenthesis refers to percentages and willnot add up to 100 due to multiple responses.

education and index of hygiene was significantly an important parameter in determining the suffering from reproductive tract infection among the sample women. It is observed that among the literates the chance of RTI declines by 0.65 times compared to those who were illiterate. Further it is seen that as the personal hygiene improves the chance of reproductive tract infection declines. Compared to women who were categorized under lower level of hygiene the odds for infection declines significantly by 0.62 times among those who were grouped to be medium level of hygiene and the reported infection further declines with the improvement in the hygienic condition of the women.

To get an insight into the perception and attitude towards RTI the findings of the Focused Group Discussions (FGD) are summarized as under:

- Generally ulcers on the genital tract were perceived as an act of evil spirits, sorcerers, promiscuity, etc.
- Heat was usually related as a cause of white discharge, which is a common symptom of RTI. They felt that body heat rose due to hot and spicy food or due to consumption of

Table 2: Logistic regression results showing impact of background Variables on RTI among Lodha tribe of Eastern India.

Background variables	Exp (β)
Duration of married life	
Up to 10 years®	1.000
11-20 years	0.7887
21+ years	1.0403
Education	
Illiterate®	1.000
Literate	0.6454*
Occupation	
Agriculture®	1.000
Housewife	1.2171
Gatherer	1.1300
No. of children born	
1-2 ®	1.000
3-4	0.8219
5+	1.2022
Index of hygiene	
Low ®	1.000
Medium	0.6174**
High	0.7918
Use of sterilization	
Not sterilized®	1.000
Sterilized	1.1801
* p<0.05, ** p<0.01, ® reference category	

alcohol either by themselves or their husband. It is believed that due to heat inside, the body melts and comes out as white discharge making the women weak.

- Vaginal discharges cause major health problems to the majority of the rural women. They perceived it as a curse or wrath of god on the women as it drains out of their energies and makes them ill. However, they could not properly differentiate between normal and abnormal vaginal discharge.
- Besides these cultural beliefs, occupational hazards and physical conditions also influence perception of the women.
- They alleged IUD/Loop insertion and tubectomy as a cause for RTI as they believe that such insertions/ surgical techniques may lead to infections.

Consequences: Suffering from reproductive tract infection in all probability affects the sex relation of the women with her husband and ultimately the fertility

Table 3: Distribution of the respondents according to the consequences among Lodha tribe of Eastern India.

Consequences	Number and percentage of respondents	
	N = 500 (Total sample)	N = 343 (Among sufferers)
Sexual relation affected	206 (41.2)	206 (60.1)
Sexual relation not affected	294 (58.8)	137 (39.9)
Figures in parenthesis refer to percentages.		

pattern. Probing was therefore made during the study in this direction and responses are shown in Table 3.

The above table shows that as many as 206 women 41 per cent in the total sample and 60 per cent among the women suffering from RTI experienced problems during sex, mainly in the following ways:

- Feel dirty: 73 respondents (35.4%)
- Discomfort during intercourse: 59 respondents (28.6%)
- Pain/irritation on vagina: 43 respondents (20.9%)
- Irritation/rash on penis: 31 respondents (15.0%)

The aforesaid findings clearly demonstrate that sufferings from RTI ultimately result in discomfort, pain, irritation and feeling dirt during coitus, which ultimately affects the interpersonal life of the affected women.

Treatment Seeking Behaviour on RTI: Resorting to various types of treatments had been reported to get rid of RTI. Such treatments entirely reflected the attitude of the affected women to RTI. The study revealed that little less than half of the affected women (48 %) tried in different ways for cure of the disease/ infection related to RTI and only a few (4 %) visited Hospital/ PHC/ qualified doctors for that purpose. The affected women rather preferred consulting largely to private clinics (20 %) and traditional doctors/ quacks (23 %). Disgrace and ignorance coupled with poor pecuniary conditions prevented more than half of the affected women (52 %) from undertaking treatments of the disease/ infections.

The most of the women in the said study believed that vaginal ulcers would be cured automatically and a few of them opined that RTI did not require any treatment. Generally women hesitate to seek treatment for vaginal ulcer hence they try to manage with home remedies. Those who perceived RTI as the acts of evil eye or evil spirit will go to folk doctor. If all these attempts fail, than and only than they consult trained medical practitioners.

Further focused group discussions are conducted to understand the treatment seeking/ behavioral aspects of RTI and are summarized below.

- Perception and attitude of the Lodha women towards RTI and general health care system had a strong influence on the behaviour of women in seeking treatments.
- Stigmatizing unfriendly and unfavorable attitudes of their husband, family members, neighbours and medical staff forced the women to hide their illness and were the hindrances in seeking timely help for prevention and cure.
- Besides domestic chores, unsupportive family conditions, economic constraints and lack of excess to qualified services stood in the way of the women in seeking timely treatment.
- Moreover, age-old cultural and social barriers gave rise to embarrassment, shyness and guilt psychosis, which prevented from seeking help.

Such behavioural aspects led to actions like hiding the diseases, self-treatment, seeking help of traditional/ folk doctors, close confidants, etc.

DISCUSSION AND CONCLUSION

It is to mention here that studies based on self reported symptoms have its own inherent limitations [4,17] but it provides key insight into respondent's perception of the problem and certain extent the gravity of the problem in the area concern. More than two thirds of the respondents were reported to have suffered from reproductive tract infection. A good number of women reported to have repeated episodes of infection from RTI. The commonly reported symptoms were itching around the vagina, abnormal quantity of discharge, fishy smelling discharge and lower abdominal pain not related to menstruation. [8]

Review of some current literature on community based study documented the prevalence of RTI ranged from 14% to 84% in rural India. [4,7,18-25] Thus the present study conducted among Lodhas of eastern India in rural setup though reflects the prevalence of RTI slightly in higher size but it conforms to the existing literature.

Misinformation guides Lodhas understanding of the infection from RTI. Further stigmatizing unfriendly and unfavourable attitude of their husbands, family members and neighbours and medical staff forced the women to hide their illness and were the hindrance in seeking timely help for prevention and care. Studies conducted by Patel [26] also obtained similar findings. Literature reveals that gonorrhea, syphilis and cancroids are the common venereal diseases prevalent in the rural areas. These diseases in one way or the other may lead to RTI and hence affect child bearing. On the other hand, the people in general are reluctant either to disclose or talk about them mainly because of disgrace and ignorance. Not with standing, the study took care and ventured to investigate indirectly the existence of such diseases among the sample Lodha women through their exposure, awareness and knowledge about them. While canvassing the sensitive questions on the said sexually

transmitted diseases, the respondents were first aided about the various symptoms of each of the said diseases and thereafter their knowledge, awareness and exposure to them were noted. The findings of enquiry revealed that little less than one-fifth of the sample women (91 numbers / 18 %) were aware of the gonorrhea followed by syphilis (28 numbers/7%) and cancroids (1 respondent only/ 0.2 %). The present study revealed that little less than half of the affected women tried in different ways for cure of the disease/ infection related to RTI and only a few visited Hospital/ PHC/ qualified doctors for that purpose and mostly they preferred consulting locally available private clinics and traditional healers. In another study conducted among the Gond tribe of central India it was found that about 91% of the respondents were aware of STI but only 19% could reveal sexual means of transmission of infections. Further the study mentioned that 88% of the respondents felt modern medicine was the best remedy for STIs, only a few of them used medical treatment while suffering and take recourse to services from traditional healers and home remedies for STI treatment. [27]

Further the treatment seeking behavior among the Lodhas is also a concern as more than half of the women were prevented from seeking treatment due to ignorance and poor condition. Handful of health seekers utilized the services from hospitals / PHC/ other qualified doctors. The findings of this study among the Lodha were found to correspond to those obtained in the similar study conducted by Tamil Nadu Voluntary Health Association (1996-97) in the rural women of Tamil Nadu.[3] Thus it become apparent that prevalence of RTI is common among Lodhas and need immediate attention to overcome the situation.

Need of the hour is to arrest the spread of the infection by mobilizing the village level health workers along with traditional medicine men and local popular private practitioner to develop awareness about the deadly consequences of the infection and generate demand for the health services among the masses. The study further points to the fact that there is a need to carry out VDRL and specifically TPHA tests for syphilis, culture for gonococci to know the magnitude of gonorrhoea, ELISA for herpes simplex and HIV and also undertake in-depth microbiological study among the tribe to understand the causal agent of infection and supplement the necessary treatment immediately. Special emphasis are needed among those section of Lodha women who are aged, illiterate, engaged in gathering subsistence, higher order parity and those who were tubectomized. As preventive measure special IEC program on RTI meant exclusively for males is also needed to prevent the male to female transmission of infection and also improving male as better supportive partner in reproductive health. There is also a need to strengthen the out reach services and its sustenance in remote tribal areas for a better health tomorrow.

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UTILIZATION OF ANTENATAL CARE SERVICES BY TRIBAL WOMEN IN CHHATTISGARH, INDIA

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Abstract: *The consequence of maternal health care services in reducing maternal mortality and morbidity has attained a significant recognition. Majority of the maternal deaths can be prevented if women have access to basic antenatal, natal and postnatal care services. The aim of this study is to understand the use of antenatal health care services among 'Kamar' tribe in Raipur district of Chhattisgarh. A cross-sectional household survey was conducted to cover all ever married women aged between 15 and 49 years who had given child birth within last 5 year were interviewed. The information was gathered on socioeconomic and various aspects of maternal-care utilization. Out of 457 women, 53.4% had received at least one ANC services. The present age of women and education were found to be strong predictors (c^2 test at $p<0.05$) for the use of antenatal care. Consumption of IFA tablet was found to be about 75% and Tetanus toxoid immunization in 62.7% women during pregnancy. Complications during pregnancy noted were anemia in one-half of women and night blindness in one- fourth women. Utilization of antenatal health care services was found to be low due to lack of awareness and poverty. These factors can be improved by community based education and intervention*.

INTRODUCTION

Investigations on the issue of maternal and child health care, antenatal care is a crucial forecaster of safe delivery and provides information on health consequence and services that can improve the health of women and infants.[1,2] In accumulation, ANC has a affirmative impact on the use of postnatal health care services,[3] while PNC and intra-partum care drastically reduces maternal mortality because most deaths occur in the first week after delivery.[4,5] Understanding of the practices regarding maternity care during pregnancy of the community is essential to improve health care. The promotion of maternal and child health has been one of the most important components of the Family Welfare Program and National Population Policy-2000 [6] and it reiterates the government's commitment to the safe motherhood program within the wider context of reproductive health. The antenatal period is the period from conception to the onset of labor and it requires adequate care during this period. Antenatal care plays a critical role in preparing a woman and her family for birth by establishing confidence between the woman and health care provider by individualizing promotional health messages.[7] Further antenatal visits may raise awareness about the need for care during delivery [8] or give women and their families a acquaintance with health facilities that enables them to seek help more efficiently during a crisis.[9] Early diagnosis during pregnancy can prevent maternal ill-health, injury,

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maternal mortality, fetal death, infant mortality and morbidity. Antenatal care begins with 'history-taking' and is followed by a complete examination. Thereafter, the mother receives advice and instructions about her mode of life, diet and regular antenatal check-ups till labor sets in.

The obstetric history begins with the age of the mother and includes information about the number of years since marriage, number of pregnancies, previous deliveries, abortions, pre-term labor, complications during previous pregnancies or labor, etc. Antenatal care ideally consists of: conception counseling, assessment of risk factors, fetal well-being, complications and education about normal pregnancy, and discussion of birthing care options, expected date of delivery, etc.[10,11] Thus far the present article intends to identify the level of utilization of antenatal care services in ethnic segment in Raipur district of Chhattisgarh.

METHODOLOGY

The study was carried out among 'Kamar' primitive tribe of Raipur district in Chhattisgarh. A cross sectional descriptive survey with probability proportion to size sampling procedure was conducted to cover the study during June 2004 to May 2006. All population of 2447 was estimated to be covered among 529 households through 25 villages surveyed in the two selected Blocks Gariaband (15 village) & Chhura (10 villages). Data on various social, demographic, maternal and child health, etc, were collected by trained investigators through structured & pretested questionnaire. All 457 currently married women aged between 15 and 49 years who had delivered a child birth within preceding last five year were interviewed by house-to-house survey after obtaining the consent. The information was gathered and analyzing data using the Microsoft Excel and SPSS Version 10.0.

RESULTS

Socio- economic status: Average household size was 4.6 persons with ranges 1-12 and sex ratio of 1029 female/1000 males. Majority of the population lived as nuclear families (71.8%). These families mainly lived in kachcha (made by mud) houses and about 4% household used water from stream/river for drinking. This may be one of the causes of poor health in the tribal areas wherein water born disease spreads are prevalent. Majority of population were engaged in agriculture and bamboo related work as occupation.

Antenatal Care and Approach: Antenatal care refers to pregnancy related health care provided by a doctor or a health worker in a medical facility or at home. A total of 457 eligible (ever married in reproductive age between 15-49 years) women experienced pregnancy during past five years from the survey period. Of them about 53.4% women had taken at least one antenatal checkup during pregnancy (Table-1). Among these 17.2% women under went antenatal care checkups with private Doctor, 14.7% with Government Doctor and 68.1% by ANM/nurse working in the area or at sub center place (Fig-1). Analysis of ANC data indicated that low utilization of antenatal

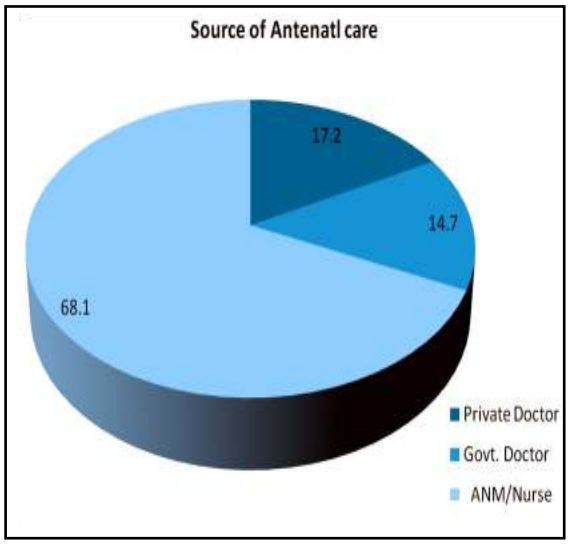
care practices were due to illiteracy and poverty, geographical location and poor awareness on MCH issues.

Majority of pregnant women underwent antenatal checkup in the second trimester. The distribution of analysis for the use of antenatal care services by women age and education standards are as follows: Utilization of antenatal care services by women were significantly higher (c^2 =8.0794 at p<0.05) among who were in the age group 20-34 years. Women's age playing an important role in the use of antenatal care services. Educated women utilized the ANC services more than others. It was observed that those with middle school literate was significantly higher (c^2 =7.1213 at p<0.05).

Table 1: Association between Antenatal care visit and Socio-demographic variable

Characteristics	N	Antenatal care n (%)	
		Received	Not received
Women age (in year)			
<20	55	21 (4.6%)	34 (7.4%)
20-34	381	208 (45.5%)	173 (37.9%)
≥35	21	15 (3.3%)	6 (1.3%)
All	457	244 (53.4%)	213 (46.6%)
Women education			
Illiterate	365	205(44.8%)	160(35.0%)
Primary	86	35(7.7%)	51(11.2%)
Middle+	6	4(0.9%)	2(0.4%)
All	457	244(53.4%)	213(46.6%)

Fig 1



Consumption of Iron Folic Acid (IFA) Tablet:

In general during the pregnancy nutritional deficiency occurs due nutrient requirement for fetal growth. Iron deficiency anemia is the most common micronutrient deficiency in the world. All pregnant women must take supplementary iron in form of IFA tablet daily for 100 days during pregnancy. IFA tablets are distributed free of cost by the ANM/Nurse during antenatal checkup. Table-2 shows per cent of women who

received IFA tablets or syrup during pregnancy. Eighty two per cent women received IFA tablets but, only 74.9% women consumed themonly.

Table 2: Consumption of Iron Folic tablets during pregnancy

(n=244)	
IFA tablets taken	Consumed
196 (80.3%)	182 (74.6%)

Tetanus Toxic Immunization:

All pregnant women need to undergo 2 essential Tetanus Toxoid immunizations at the interval of at least one month. Table-3 shows the tetanus toxic injections among women/ mothers during pregnancy. It was observed that 86.5% of women were immunized by tetanus toxic injection. Of them it was found 62.7% were fully immunized while 37.3% partially i.e with one dose only due to lack of awareness.

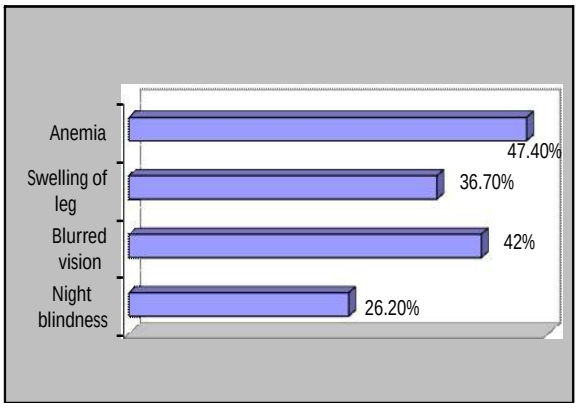
Table 3: Immunization of T.T vaccination during pregnancy

Distribution of T.T immunization (n=244)		
T.T immunization First dose only	T.T immunization Two dose	Total
91(37.3%)	153(62.7%)	211(86.5%)

Complication during Pregnancy:

The pregnant women must visit the sub center or any other health center at least three times during this period. Figure-1 shows the complications related to pregnancy as narrated/reported by women. Among these women reported anemia as a major ailment (47.4%) followed by night blindness (26.2%), blurred vision (42.0%) and swelling of leg 36.7%.

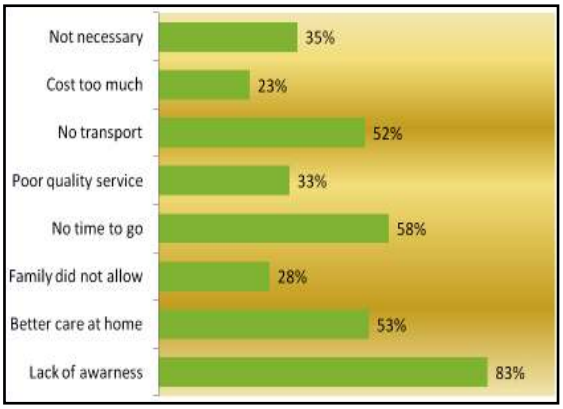
Figure-2: Complications during pregnancy



Reasons for not receiving Antenatal Check up:

The various reasons for not utilizing the services are shown in Fig-3. It was observed that 35% mothers reported that it was not necessary to go for ANC checkup, 8% indicated high cost y and about 9% reported non availability of transport facility in the area. Interestingly, for 13% women indicated that they were not allowed by their families,, while others replied that better care at home (5%) and 19% women reported lack of awareness.

Figure-3: Reasons for no ANC checkup



DISCUSSION

Antenatal care is one of the four most important pillars of safe motherhood along with family planning, safe delivery and essential obstetric care.[12] Utilization of antenatal care services among tribal women were found to be underutilized due to poor knowledge on maternal and child health care issues. Only 53.4% women received ANC services from Government health facilty. While 68.1% women received check-up from ANM/Nurse. Utilization of antenatal care service was significantly associated with prime reproductive age group 20-34 years. Women's education was also found to be significant associated with the use of health care services. The strong influence of mother's education on the use of health care services is consistent with the findings from other studies.[13,14,15,16] As regards utilization of maternal medical services, it is well-recognized that women's age plays an important role.[14,17] During pregnancy nutritional deficiency is often observed and Government facilitaties provide support to each pregnant women by providing Iron folic Acid (IFA) tablets. However, only 74.9% tribal women consumed them. It was found that 62.7% received two dose of T.T immunization while 37.3% women received only a single dose. For safe motherhood two dose of T.T immunization and consumption of IFA tablets are essential but among tribal population this practice was poor. So for fifty percent women reported problem of anemia and about one-fourth of women reported night blindness. A review of literature across the globe suggests that these factors can be identified as due to cultural beliefs, socio-demographic status, women's autonomy, economic conditions, physical and financial accessibility and health services issue[18]. However, uptake of maternal health care services is far from universal even in settings where they are extensively available. Women's perception regarding the maternal and child health care services and utility were observed as careless due to poverty, lack of awareness and illiteracy.

CONCLUSION

The findings of this study indicate that use of antenatal care services among tribal women was poor. Maternal age and education was significantly associated with use of ANC services during pregnancy. Use of ANC services occurs mostly in the second trimester. The reasons behind these lacunas were lack of awareness, poor transport facilities. . Motivation by health workers emerged as an important contributing factor for better utilization. Use of antenatal care services is of vital importance as it affects the well-being of the mother as well as her children. Thus government and other concerned agencies should make efforts to develop better general community based education program so that women can have better awareness and utility of maternity health care services.

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Back Cover : A Baiga girl collecting forest produces.



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