Study of health status and morbidity pattern in 5-18 years Birhor children: A primitive tribe of Chhattisgarh

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ABSTRACT

Background: A 5-18 years children constitute about 31.6% of the Indian population. This age group, particularly children of underprivileged class are at higher risk to suffer from malnutrition and health-related condition and needs to be developed and cultivate for the country to progress. **Objectives:** To study the health status and morbidity pattern in Birhor children (5-18 years) of Dharamjaigarh Block Raigarh, Chhattisgarh. **Materials and Methods:** This cross-sectional study was conducted among 50 Birhor children (boys and girls of 5-18 years age). Anthropometric indices were used to determine the health status and variants, i.e., socioeconomic condition, cultural feeding practices, and family literacy were studied which could have an influence on the health status. Morbidity pattern was also studied by assessing the current illness by clinical examination and history of past illnesses. **Results:** The prevalence of underweight was 32.5%, while stunting was found in 22% and thinness in 24% children. Prevalence of common morbidities was as follows: Pallor (66%), conjunctival xerosis (38%), caries teeth (32%), skin infections (24%), and lymphadenopathy (22%). History of acute febrile illness (non-malaria) was present in 46% cases, malaria in 16%, jaundice in 16%, envenomation/intoxication/animal bites in 16%, and history of hospitalization was present in 12% cases, and trauma/accidents was there in 12% cases in the past. **Conclusion:** In this study, we found a high prevalence of morbidities in Birhor tribal; though, the health status of these children when compared with other tribes of different states was not critical.

Key words: *Austroasiatic family, Birhor tribes, Primitive tribes, Proto australoid*

A 5-18 years children constitutes about 31.6% of the Indian population [1]. An appropriate growth of these children is of vital importance since growth during this age is key to his own physical, psychological and intellectual development, as well as important to his contribution toward a healthy society and nation. Despite rapid economic development along with an increase in the food production and several nutritional intervention programs in operation since the past three decades, childhood undernutrition remains an important public health problem in India. The burden of undernutrition appears particularly high among rural and Indigenous tribal populations. By studying the health status and common morbidities in these children, we can identify deviation from the optimum growth as well as the factors responsible for this deviation. Therefore, we can try to intervene at appropriate levels to combat this condition and can reduce the burden caused by this.

Primitive tribes [2] can be defined as their: Pre-agricultural level of technology, low level of literacy and stagnant or diminishing population. Birhors are among five primitive tribes of Chhattisgarh which are Abujhmaria, Birhor, Baiga, Kamar, and Hill Korba. Birhors literally means Dwellers of the forest "(Bir-Forest, hor-dwellers)." They belong to proto australoide groups as believed by anthropologists. Their language is Mundari

which belongs to Austroasiatic family [3]. In Chhattisgarh, they are distributed mainly in Raigarh and Sarguja districts in Lailunga, Dharamjaigarh, Tamnar, Pathalgaon, Bagicha, Kasabel and Kunkuri blocks. Birhor population in Dharamjaigarh block which is an area of current study; around 148 families spread in 15 villages are there, and the total population is 573 [4]. Their population is 1,145 and literacy rate is 11.54% in Chhattisgarh [5].

Till date, there is no published study in Birhor tribal children regarding health status and morbidity pattern in Chhattisgarh. Hence, this study was conducted to help policy makers to know this status of health and to make further policies for these children.

MATERIALS AND METHODS

A cross-sectional analytical study was conducted among Birhor tribal children of 5-18 years age group from January 2013 to June 2014 in Dharamjaigarh block of Raigarh district, Chhattisgarh. Ethical clearance was taken from the ethics committee of Pt. JNM Medical College, Raipur. District and block head were contacted and informed about the purpose of the study, and parental consent was obtained for collecting the tribal children information. All Birhor children between 5 and18 years were included in the study except for the severely ill children. Pretested structured

questionnaire was used to gather data from the parent/head of the family by a door-to-door visit to every household. Help of the local health workers was taken to motivate and participate people in the study.

All children underwent anthropocentric measurements weight, height, body mass index (BMI) using the standard technique [6,7], along with the detail history of the previous illnesses and thorough clinical examination. Anthropocentric indices were used to assess the current health status among these children while observations were interpreted as per WHO multicentric growth references study charts (2007) [8]. The collected data were put in the Master Chart. They were grouped and tabulated according to the various criteria. The data were entered in MS Excel and then analyzed using statistical software. The statistical software used for data analysis is SPSS-IBM (version 20). The test of significance used was chi-square test at appropriate places. Considering 95% as confidence limit and p value.

RESULTS

In our study, out of 50 children studied, 16 (32%) were female, and 34 (68%) were male, and most (20, 40%) of the children were aged 5-7 years (Table 1). According to WHO classification of malnutrition, underweight (weight for age) was found in 32.5% children and out of them, 22.5% had moderate malnutrition, and 10% had severe malnutrition. Stunting was found in 22% children while thinness was found in 24% (10% children thin and 14% children severely thin) as showed in Table 2. Thinness was calculated as per new WHO reference tables for BMI (age 5-19) and defined as thin if BMI for age and sex was <−2 standard deviationSD, while classified as having severe thinness if BMI for age and sex was <−3 SD. Thinness in male was slightly more than in females (p=0.81), and it increased as the age advanced, except in >13-year-old children where it decreased (n=4).

We found that malnutrition was slightly more prevalent in boys (33.33%) than the girls (31.3%), but this difference was not statistically significant (p=0.83). Table 3 show that malnutrition was distributed across all the income groups (p=0.501). Severe malnutrition decreased with increase in income, while moderate malnutrition did not follow this trend. Children who were breastfed for longer duration were less malnourished 56% for 1 year, 33.35% for 1.5 years, 24 % for 2 years, 40% for 3 years, and none for 4 years but this was not statistically significant (p=0.32). Nutritional status was optimum in the group of children where complementary feeding was started around 6-8 months while earlier or later introduction resulted in more chances of malnutrition (6 months - 38%, 7 months - 44%, 8 months - 22.2%, and 10 months - 50%); however, this was not significant statistically (p=0.501).

We observed that stunting was distributed in all the age groups and it was least in 8-10 years and more prevalent in boys than girls (23.5% and 18.8%, respectively). Table 4 shows the distribution of the past morbid conditions and acute febrile illness (non-malaria) was the most frequent (46% children) condition,

Table 1: Demographic profile

Age in years	Female (%)	Male (%)	Total
5-7	4 (20.0)	16 (80.0)	20
8-10	11 (57.9)	8 (42.1)	19
11-13	0 (0.0)	7 (100.0)	7
>13	1 (25.0)	3 (75.0)	4
Total	16 (32.0)	34 (68.0)	50

Table 2: Distribution of thinness as per age groups and sex

Distribution of thinness as per age groups				
Age in years	Normal BMI (%)	Thin (%)	Severe thin (%)	Total
5-7	19 (95.0)	1 (5.0)	0 (0.0)	20
8-10	11 (57.9)	4 (21.1)	4 (21.1)	19
11-13	4 (57.1)	0 (0.0)	3 (42.9)	7
>13	4 (100.0)	0 (0.0)	0 (0.0)	4
Total	38 (76.0)	5 (10.0)	7 (14.0)	50
Distribution of thinness as per sex				
Sex	Normal BMI (%)	Thin (%)	Severe thin (%)	Total
Female	13 (81.3)	1 (6.3)	2 (12.5)	16
Male	25 (73.5)	4 (11.8)	5 (14.7)	34
Total	38 (76.0)	5 (10.0)	7 (14.0)	50

BMI: Body mass index

Table 3a: Relation of thinness with per capita income of family

Per month income	Normal BMI (%)	2 Thin (%)	Severe thin (%)	Total
<100	2 (66.7)	0 (0.0)	1 (33.3)	3
100-500	19 (73.1)	4 (15.4)	3 (11.5)	26
500-1000	15 (83.3)	1 (5.6)	2 (11.1)	18
>1000	2 (66.7)	0 (0.0)	1 (33.3)	3
Total	38 (76.0)	5 (10.0)	7 (14.0)	50

BMI: Body mass index

followed by a history of malaria in 16%, envenomation/animal bite in 16%, and jaundice in 16% children. Table 5 shows the morbidity pattern seen in Birhor children. Anemia was found to be the most common morbidity (66.0%), followed by conjunctival xerosis (38.0%), caries teeth (32%), skin infections (24%), lymphadenopathy (22%), and depigmented hairs (20%). Anemia and conjunctival xerosis were prevalent in all age groups while the hair depigmentation and caries teeth became less prevalent as the age advanced. Lymphadenopathy was more prevalent in the younger children while skin infections were less common in the middle age group (8-13 years). All morbidities were more prevalent in female children, except skin infections, which were more common in boys (Table 6).

DISCUSSION

As per the survey conducted by State Tribal Board, Birhor mainly lives in Dharamjaigarh, Lailunga, and Tamnar and Gharghoda block of district Raigarh. Their total population in Raigarh district is 819,

Table 3: Comparison of nutritional status with other tribes in various states

Place of study	Age group	Malnutrition, %	Author
Bankura, West Bengal	6-14	23.1	Bose et al. 2008
Purulia, West Bengal	7-18	41.3	Das and Bose, 2011
Darjeeling, West Bengal	10-17	42.4	Mondal et al. 2010
Darjeeling, West Bengal	11-19	44.0	Dey et al. 2007
P. Medinipur and Purulia, West Bengal	10-15	44.5	Bose and Bisai, 2008
Orrisa	1-5	48.0	Mishra and Mishra, 2007
Dibrugargh, Assam	10-18	50.2	Medhi et al. 2006
Dibrugarh, Assam	6-14	53.9	Medhi et al. 2006
Madhya Pradesh	7-15	50-75	Manis et al. 2007
Paschim Mednipur, West Bengal	2-13	67.2	Bisai et al. 2010
Purulia, West Bengal	2-18	75.0	Das et al., 2012
Dharamjaigarh, Chattisgarh	5-18	24.0	Present study

Table 4: Morbidity pattern in different age group and sex

Age in years	Hair changes	Anemia	Conjunctival xerosis	Caries teeth	Lymphadenopathy	Skin infection	Total
Morbidity pattern in different age group							
5-7	5	15	7	9	6	7	20
8-10	4	12	8	6	3	1	19
11-13	1	3	2	0	2	2	7
>13	0	3	2	1	0	2	4
Total	10	33	19	15	11	12	50
Morbidity pattern according to sex							
Female	4	10	7	5	5	2	16
Male	6	23	12	11	6	10	34
Total	10	33	19	16	11	12	50

Table 5: Distribution according to morbidity pattern

Morbidity	Number of cases (%)
Dry/depigmented hair	10 (20.00)
Anemia	33 (66.00)
Conjunction xerosis	19 (38.00)
Angular stomatits	0 (0.00)
Caries teeth	16 (32.00)
Lymphadenopathy	11 (22.00)
Skin Infections	12 (24.00)
Morbidity pattern as per past history	
H/O VPD	2 (4.0)
Jaundice	8 (16.0)
Acute febrile illness	23 (46.0)
Diarrhea (recurrent)	3 (6.0)
ARI (recurrent)	5 (10.0)
Malaria history	8 (16.0)
H/O hospitalization	6 (12.0)
H/O blood transfusion	4 (8.0)
H/O envenomation/intoxication/animal bites	8 (16.0)
H/O trauma/injury/accidents	6 (12.0)

ARI: Acute respiratory illness, VPD: Vaccine preventable disease

and a total number of the family is 212 while in Dharamjaigarh Block total family is 148, total population 573 in 15 villages. When compared with other studies in different tribes of different states, very few studies had a lesser prevalence of malnutrition than this study in this age group of children (Table 3). However, high morbidities in the study population were comparable with results of other studies (Table 6). The high percentage of anemia and conjunctival xerosis reflects the poor nutritional status of children, while high percentage dental caries and skin infections reflect poor personal hygiene and overcrowding.

In a study, Susmitha et al. [9] found pediculosis (83.2%), anemia (41%), dysmenorrhea (43.6%), dental caries (28%), skin diseases (26.4%), and vitamin deficiency (21.5%) as the leading causes of morbidity. Srinivasan and Prabhu [10] showed that the common morbid conditions, in children aged 6-17 years old in Tirupati, were skin disorders (25.7%), dental caries (21.5%), worms passage in stool (21.6%), and vitamin B deficiency (3.2%). Chakma et al. [2] found high (7.1%) incidence of scabies in the tribal children of Jabalpur. Interestingly, sickle cell disease, which is a very common hemoglobinopathy in Chhatishgarh, was not detected in this (Birhor) tribe. However, β-thalassemia was found in 2.2% of the children in this tribe.

Table 6: Morbidity prevalence in different tribes in different studies

Morbidity study	Pallor %	Pediculosis %	Dental caries %	Skin diseases %	Vitamin deficiencies %	Hair changes %
Sushmitha et al. 2012, Nellore	41	83.2	28	26.4	21.5	-
Srinivasan et al. (2000), Tirupati	-	-	21.5	25.7	3.2	-
Chakma et al. (2006), Jabalpur	-	-	-	7.1	-	-
Divakar et al. (2012), Mysore	-	-	10.98	12.78	14.68	-
Singh et al. (2006), Lucknow	-	39.2	-	16.2	-	-
Current study Dharamjaigargh, Chattisgarh	66	-	32	24	38	20

Divakar et al. [11] in 2012 found that major sicknesses among tribal population were nutritional deficiencies (14.68%), skin infections (12.78%), diarrheal disorders (12.25%), and dental disorders (10.98%). Singh et al. [12] found that the various morbidities were poor oral hygiene (55.4%), pediculosis (39.2%), cold and cough (25.8%), lymphadenopathy (22.2%), scabies (16.2%), inflamed tonsils (7.8%), and ear discharge in (7%) girls. Behera et al. [13], in a study conducted in tribal children of Orissa of age up to 15 years, found fever (24.4%), acute respiratory infection (ARI) (35.4%), goiter (14.4%), and diarrhea (5%) as the common morbidities. Susmitha et al. [9] conducted a study in 2012 in scheduled tribe girls in Nellore district of Andhra Pradesh and found the history of pyrexia in 42% cases, scabies in 16.7%, diarrhea in 11.07%, and ARI in 6.64% cases. Divakar et al. found that about 47.52% of the tribal population in Mysore district suffered from one or other type of illness once and 27.24% had suffered from more than one illness during past 12 months.

In this study, it was observed that the quality of life of these tribal children is compromised, which contributes to the high burden of morbidity. There is an urgent need to provide adequate infrastructure to alleviate poverty and illiteracy, which will ultimately improve the health status of tribal children. This study has small sample size, and to get more convincing results, the larger sample size would be appropriate. Due to lack of the time and resources, we conducted only cross-sectional study whereas a longitudinal study would better display their health problems. Finally, laboratory parameters could not be used to evaluate the morbidity status in our study.

CONCLUSION

We found the high prevalence of morbidities including nutritional deficiency and infectious diseases in Birhor tribal children aged 5-18 years. However, the anthropometric indices of these children were not critical in comparison to other tribes of different states. However, further efforts are needed to improve their health status by increasing the availability of the quality health care.

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