A Study on Growth Pattern in Tribal Childrens (0-3.5years) of Dharamjaigarh Block of District Raigarh (C.G.) India

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ABSTRACT *Introduction-*   One of the major issues the world is facing today is malnutrition. This problem is especially acute as well as chronic in children of the developing countries. Children below the age of five years constitute nearly 15% of the total population of country and from the nutritional standpoint constitute a vulnerable segment and suffer the highest rate of morbidity and mortality. Birhor" tribal community of Dharamjaigarh block, Raigarh district has long remained a separate entity in terms of the demographic, health and socioeconomic characteristics. Present study has been attempted to provide an insight into the present scenario of nutritional status in these untouched and remote tribe.

Material & method- The present cross sectional study was carried out in Dharamjaigarh block of Raigarh district. The study was conducted from January 2013 to June 2014. 63 children of 0-3.5 year's age group from 148 families of 15 villages of Primitive Birhor Tribe were randomly selected where the population of Birhor tribe is more as shown in map. Pretested structured questionnaire was used to gather data from parent/head of family by door to door visit of every household Nutritional assessment was done by clinical examination and anthropometric measurement using standard equipment and procedures. District & Block head were contacted and informed before purpose of study; parental consent was obtained for collecting the tribal children information. Clinical examination of every child was done. Data was compiled in MS-Excel and checked for its completeness and correctness. Then it was analyzed.

Result- Out of 63 children studied 31 (49.2%) were female and 32 (50.8%) were male. Most of the children studied belong to the age group of 13-36 months, which constitute 71% female & 60.3% male children. The mean children size of family is 3.12 & means family size 5.41.Respiratory infection is most common cause of morbidity in Birhor children had 9(14.3%), followed by URI 7(11.1%), Diarrhoea 5(7.9%), worm infestation 2(3.2%) and Malaria 1(1.6%). Out of 63 children studied commonly the Mean height of boys was on higher side in most age groups except 0-3 months & 37-48 months by 1.5 cm & 0.8 cm respectively. 30.2% children found moderately malnourished, 11.1% severely malnourished, 60.3% found stunted and wasting found in 15.9% children.

Conclusion- Present study demonstrates that children in this tribe are at very high risk because of poor nutrition, nutritional deficiency and poor immunization coverage. The literacy level and poverty, social & cultural practises are added factors which aggravate existing condition.

INTRODUCTION

One of the major issues the world is facing today is malnutrition. This problem is especially acute as well as chronic in children of the developing countries. Children below the age of five years constitute nearly 15% of the total population and from the nutritional standpoint constitute a vulnerable segment and suffers the highest rate of morbidity and mortality (ICMR Report, 1986; Gupta and Shukla, 1992)[1] for almost a decade evidence that more children die from malnutrition and it is doe's serious damage to the physical growth and intellectual performance in the later life (Lloyd and Lederman, 2002)[2.]

So nutritional status of preschool children is of paramount importance, since the foundation of lifetime health, strength and intellectual vitality is laid during that period and their nutritional status is a sensitive indicator of community health and nutrition[3].

About half of the World's total population of indigenous people, often referred as tribal's, are living in India. The tribal population in Indian language known as "Adibasi"

stands for original inhabitants of India. Tribal communities are isolated from general population and are socially and economically disadvantaged[456]. Government of India identified a total of 72 such tribal communities, as "primitive tribes" on the basis of low growth rate, pre agricultural level of technology and extremely low level of literacy[7]. Tribal population of the country, as per the 2011 census, is 10.42 crore, constituting 8.6% of the total population with 90.1% of them living in rural areas and 10.0% in urban areas. The population of tribes had grown at the growth rate of 23.7% during 2001-2011. A great majority of them inhabitant in the Central India[8].

Chhattisgarh, the 26th State of India is situated between 17 to 23.7 degrees north latitude and 8.40 to 83.38 east longitude abounds in hilly regions and plains. The tribal regions of the state adjoin the tribal region of bordering States like Madhya Pradesh, Andhra Pradesh, and Maharashtra. Orissa, Jharkhand, Bihar. The scheduled tribes, with a population of over seventy eight lakh, constitute 31.82 per cent of the State's population as per the 2011 census. Almost 92.4per cent of this population lives in the

rural areas and only 7.6per cent in urban Chhattisgarh[9].

There are 42 schedule tribe communities in C.G. out of 74 primitive tribes of India, 5 primitive tribe live in C.G. these are Abujhmaria, Baiga, Birhor, Kamar, Pahari korwa[7]. In the period of the fifth planning commission five most backward tribes were identified as the Primitive tribe groups in the undivided Madhya Pradesh. . After formation of Chhattisgarh as a 26th state of India in the year of 2000; 1st November; the "Birhors" were also listed among the five Primitive tribe groups of Chhattisgarh in the Seventh five year planning commission period. Many of the anthropologists believe that birhors are basically belonging to the "Proto Australide" group. They are inhabited in Raigarh, Jashpur, Sarguja, Bilaspur and Korba districts of present Chhattisgarh. They speak Mundari language of Austro – Asiatic family[10]. Their population is 1,145 and literacy rate is 11.54%[11]

"Birhor" tribal community of Dharamjaigarh block, Raigarh district has long remained a separate entity in terms of the demographic, health and socioeconomic characteristics.

All most all "Birhor" tribal community of Dharamjaigarh block, Raigarh district are victim of viscous cycle of poverty, ill health and lack of education. The impact of various national welfare and health programs in these tribal out of reach areas in far from satisfactory.

With the above background, the present study was conducted to see the Growth pattern in Birhor tribe's children (0-3.5years) of Dharamjaigarh block Distt. Raigarh."C.G. Present study has been attempted to provide an insight into the present scenario of nutritional status in these untouched and remote tribe.

MATERIAL & MATHOD
The present cross sectional study was carried out in Dharamjaigarh block of Raigarh district. The study was conducted from January 2013 to June 2014. 63 children of 0-3.5 year's age group from 148 families of 15 villages of Primitive Birhor Tribe were randomly selected where the population of Birhor tribe is more as shown in map. Pretested structured questionnaire was used to gather data from parent/head of family by door to door visit of every household Nutritional assessment was done by clinical examination and anthropometric measurement using standard equipment and procedures.

Inclusion criteria: All under 3.5 year children including neonates.

Exclusion criteria: Pre - term newborn, congenital anomalous child severely   ill child

Ethical clearance:
Taken from ethics committee, Pt. J. N. M. Medical College & associated Dr. B. R. Ambedkar Hospital Raipur. District & Block head were contacted and informed before purpose of study; parental consent was obtained for collecting the tribal children information.

Method of Approach:
Dharamjaigarh block is 80 Kms. from Raigarh district. In this block there are 8 primary health center and 61 subcentres. Most of the villages are in hilly areas widely scattered from primary health centre and they become non-approachable during rainy season. Under the guidance of medical officers of Dharamjaigarh block, villages were randomly selected where population of Birhor is more.

On reaching the village either anganwadi worker or health worker or some local person was used to guide. A cross sectional survey was done by door to door visit.

As per Pretested structured proforma general information of every child regarding age, sex, address, caste, date of birth was noted. Age was confirmed either by calendar of local events or from registers of aganwadi worker and recorded in complete month. Family size, birth order and total number of children were also noted. Age, literacy status, addiction occupation, monthly income was recorded. Detailed history regarding ANC registration, no of visit done TT& IFA taken by mother any medical illness during trimester was asked. Place of delivery of child whether at home or hospital was asked. If at home whether it was conducted by trained or untrained Dai was also noted, along with any special event at birth. Time of first feeding after birth and type of first feeding was recorded. Time of weaning and duration of breast feeding was asked from the mother. Type of weaning food in respect of energy density, amount, consistency, frequency &hygiene was asked using 24 hrs   dietary recall method (Thimmayama 1987)[26]. Immunization status was also taken. Neonatal morbidity morbidity during 0-6month, 6month-1yrs, 1yrs-3.5yrs &during last 15 days was asked in term of no of respiratory infection, diarrhoeal episode worm infestation &dental carries. Other relevant information was also recorded. Clinical examination of every child was done.

Sample size calculation
Taking   ~ 50 % prevalence of malnutrition among the Birhor community.

Applying formula $4pq/L^2$
Where
p=prevalence
q= (1-p)
L= Level of error (25%)
Confidence level =95%
Considering $p<0.05$ as significance level.
The calculated sample size is 62.

Data was compiled in MS-Excel and checked for its completeness and correctness. Then it was analyzed.

OBSERVATIONS

Age groups (months)	Female	Female %	Male	Male %	Total children	Total %
0-3	4	12.9	1	3.1	5	7.9
4—6	2	6.5	2	6.3	4	6.3
7—9	0	0.0	1	3.1	1	1.6
10—12	1	3.2	5	15.6	6	9.5
13-24	8	25.8	10	31.3	18	28.6
25-36	14	45.2	6	18.8	20	31.7
36-48	2	6.5	7	21.9	9	14.3
Total	31	100.0	32	100.0	63	100.0

TABLE NO. 1
Distribution of Birhor children according to age and sex.

Table –1 Show that out of 63 children studied 31 (49.2%) were female and 32 (50.8%) were male. Most of the children studied belong to the age group of 13-36 months, which constitute 71% female & 60.3% male children.

TABLE NO. 2
Distribution of Birhor families according to number of Children.

No of children	No of families	% of families
One	7	11.1
Two	18	28.6
Three	14	22.2
Four	9	14.3
Five	14	22.2
Six	1	1.6
Total	63	100.0

Table 2 shows that of 63 families studied, 18 (28.6%) families had two children, 14 (22.2%) families had 3 & 5 children, 9(14.3%) families had 4 children, and 7 (11.1%) families had one child while only one (1.6%) family had more than 5 children.

The mean children size of family is 3.12 & means family size 5.41.

TABLE NO. 3
Distribution of Birhor children according to literacy status of parents.

Literacy Levels	Father's Literacy status	%	Mother's Literacy status	%
H.S.	1	1.6	0	0.0
ILLITERATE	17	27.0	35	55.6
MIDDLE SCHOOL	19	30.2	10	15.9
PRI SCHOOL	26	41.3	18	28.6
Total	63	100.0	63	100.0

Table –3 Shows that out of 63 children studied, 17 (27%) children belongs to illiterate fathers & 35 (55.6%) children belongs to illiterate mothers, while only26 (41.3%) fathers & 18 (28.6%) mothers were educated up to primary school and 10 (15.9%) mothers & 20 (31.8%) fathers were educated up to middle school or more.

TABLE NO. 4
Distribution of Birhor families according to Addiction of parents.

Addiction	father	mother
Nil	2	15
ALCOHOL	57	31
TOBACCO	56	25
GUDHAKU	58	45
SMOKING	13	0

Table 4 shows that out of 63 families studied mostly the parents had some sort of addiction, in which 57(90%) father & 31(49.2%) mother had addiction of alcohol, 56 (88.88%) father & (39.68%) mother addicted with Tobacco, 58 (92%) father & 45 (71.42%) mother had addiction of gudhaku, 13 (20.63%) father & none of mother had addiction of Smoking while only 2 (0.03%) father & 15 (23.80%) mother had no addiction.

TABLE NO. 5
Distribution of Birhor children according to socioeconomic status.

Socioeconomic class	Number in SEC	% in SEC
IV	8	12.7
V	55	87.3
Total	63	100.0

Table –5 Shows that out of 63 children studied 55 (87.3%) belongs to group V and 8 (12.7%) belongs to group IV while none of them belongs III, II, I socioeconomic status group.

TABLE NO.6
Distribution of Birhor children according to ANC Visit of mother in different trimester

Trimester of ANC Visits	No of women for ANC visits	% of women for ANC visits
I	11	17.5
II	16	25.4
III	27	42.9
NIL	9	14.3
Total	63	100.0

Table –6 Shows that out of 63 children studied 27 (42.9%) mothers visited ANC in third trimester, 16 (25.4%) in second and 11 (17.5%) in first trimester while 9 (14.3%) had not visited their ANC.

TABLE NO. 7
Distribution of Birhor children according to TT Immunization of mothers:

No of TT doses in pregnancy	No of ANC	% of ANC
I	1	1.6
II	53	84.1
NIL	9	14.3
Total	63	100.0

Table –7 Shows that out of 63 children studied 53 (84.1%) mothers received two dose of TT and 1 (1.6%) mothers received only 1 dose of TT while 9 (14.3%) had not received TT immunization.

TABLE NO.8
Distribution of Birhor children according to place of delivery.

Sex	No of HOME Delivery	%	No of HOSPITAL Delivery	%	Total	%
Female	21	33.3	10	15.9	31	49.2
Male	21	33.3	11	17.5	32	50.8
Total	42	66.7	21	33.3	63	100.0

Table 8 shows that out of 63 children studied 42 (66.7%) delivered at home, while 21 (33.3%) delivered in hospital.

Table also shows that out of 31 female children studied 21 (67.7%) delivered at home, while only 10 (32.3%) delivered in hospital as compared to male children that is almost same , no sex variation found in place of delivery.

TABLE NO. 9

Distribution of Birhor children according to duration of breast feeding.

Duration of breast feeding (years)	No of children	% of children
0.5	10	15.9
1	10	15.9
1.5	17	27.0
2	18	28.6
2.5	6	9.5
3	2	3.2
Total	63	100.0

Table –9 Shows that out of 63 children studied 35 (55.6%) children continue breast feeding up to 2 years and 8 (12.7%) children beyond 2 years while 20 (31.8%) children taken breast feeding less than 1 year.

TABLE NO. 10

Distribution of Birhor children according to age at weaning.

Age at weaning (months)	No of children	% of children
< 6 months	2	3.2
6-9 months	23	36.5
10-12months	25	39.7
>12 months	2	3.2
No weaning	11	17.5
Total	63	100.0

Table 10 Shows that out of 63 children studied 48 (75.2%) children were weaned between 6 to 12 months of age and while 2 (3.2%) were weaned below 6 months and more than 12 months while 11 (17.5%) children have not weaned up to the age of 3.5 years of age.

TABLE NO. 11

Distribution of Birhor children according to Immunization status.

Full vaccination	No of Children	Percent
NO	16	25.4
YES	47	74.6
Total	63	100.0

Table 11 shows that out of 63 children, 47 (74.6%) children were fully immunized as per UIP Schedule while 16(25.4%) children were not immunized.

TABLE NO.12

Distribution of Birhor children according to Nutritional deficiency.

Morbidities	No of children	%
Anaemia	45	71.4
Conjuntival xerosis	34	54.0
Angular stomatitis	9	14.3
Caries teeth	21	33.3
Skin infestation	23	36.5

Table 12 shows that out of 63 children studied overall prevalence of Anaemia is 45(71.4%), Conjuctival Xerosis 34(54.0%), Skin Infestation 23 (36.5%), Dental Caries 21 (33.3%) and Angular Stomatitis is 9(14.3%).

TABLE NO. 13

Distribution of Birhor children according to morbidity status.

Nil	36	57.1
DIARRHOEA	5	7.9
MALARIA	1	1.6
RESP. INFECTION	9	14.3
URI-	7	11.1
WORM	2	3.2
Total	63	100

Table 13 shows that out of 63 children studied Respiratory infection is most common cause of morbidity in Birhor children had 9(14.3%), followed by URI 7(11.1%), Diarrhoea 5(7.9%), worm infestation 2(3.2%) and Malaria 1(1.6%).

TABLE NO. 14

Distribution of Birhor children according to Mean weight.

Age (months)	Girls		Boys	
	Mean	± SD	Boys	± Sd
0--3 M	3.5	0.96	3.8	0.74
4--6 M	4.8	0.42	6.8	0.00
7--9 M	8.5	1.20	7.8	0.30
10--12 M	8.0	1.60	7.8	1.15
13-24 M	8.4	1.57	10.0	1.74
25-36 M	11.5	1.77	12.3	1.96
37-48 M	14.8	3.51	14.5	1.32

Table 14 shows that out of 63 children studied Mean weight of boys was on higher side in most age groups except 7-12 months by 0.2-0.7 kg. w hen compared to WHO standred all comes below median for age.

TABLE NO. 15

Distribution of Birhor children according to Mean height.

Age (months)	Girls		Boys	
	Mean	± Sd	Mean	± Sd
0--3 M	51.5	5.26	50.0	2.87
4--6 M	55.5	3.54	61.0	4.24
7--9 M	61.9	2.40	66.0	3.43
10--12 M	68.0	3.70	71.6	3.51
13-24 M	72.6	4.90	77.6	6.06
25-36 M	86.9	7.98	89.5	5.86
37-48 M	96.5	0.71	95.7	3.51

Table 15 shows that out of 63 children studied commonly the Mean height of boys was on higher side in most age groups except 0-3 months & 37-48 months by 1.5 cm & 0.8 cm respectively. When compared to WHO standard all comes below median for age.

TABLE NO. 16

Growth Disorders in Birhor children:

Growth Disorders	%
Moderate Malnutrition	30.2
Severe Malnutrition	11.1
Stunting	60.3
Wasting	15.9

Table No 16 Shows that out of 63 children studied over-all (age - sex combined) 30.2% children found moderately malnourished, 11.1% severely malnourished, 60.3% found stunted and wasting found in 15.9% children .

Discussion

Present study is similar in terms of number of children in family to study by R. Parimalavalli[12] (2007-08) reported nearly 3/4th tribal family had small size family with 2-4 members.

Out of 148 families studied mostly the parents had some sort of addiction, in which 57(90%) father & 31(49.2%) mother had addiction of alcohol, 56 (88.88%) father & (39.68%) mother addicted with Tobacco, 58 (92%) father & 45 (71.42%) mother had addiction of gudhaku, 13 (20.63%) father.

Similar results were seen by S.Krishnamurthy et al (1997)[13] in Tamilnaidu, Gujarat, Bangalore and Karnataka, who reported more than one addict person each family addicted to either smoking or alcohol.

In present study it was observed that out of 63 children 27 (42.9%) mothers visited ANC in third trimester, 16 (25.4%) in second and 11 (17.5%) in first trimester while 9 (14.3%) had not visited their ANC.

Present study is found similar to the NFHS-3 (National Family Health Survey-2005-06)[14] reported in India and Chhattisgarh 42.8% and 49.2% rural mother had complete ANC care respectively.

In present study ANC coverage was found better than study done by S. S. Mohpatra et al (1982)[15] in tribals of Orissa, no mothers received antenatal check-up, P. Khapekar (1996)[16] in Kamars of Gariaband, found 85.46% mothers had not received any antenatal checkup, S. Azad (2003)[17] in Gonds found that 80.1% mothers had not received any antenatal care.

Out of 63 children studied 53(84.1%) mothers received two dose of TT and 1(1.6%) mothers received only 1 dose of TT while 9(14.3%) had not received TT immunization.

Present study is similar to study by Kumar et al (1997)[18] observed that antenatal tetanus toxoid coverage of 76.2%.

While present was found better in terms of TT coverage in pregnant mother as compare to study by B. Bhandari et al (1987)[15] 49.53% mother received single dose of TT_1 and 42.85% two dose of TT_2 & P. Khapekar[16] (1996) found that 6.16% mothers received single dose of TT and 55.50% mother two dose of TT.

In present study out of 63 children 35 (55.6%) children continue breast feeding up to 2 years and 8 (12.7%) children beyond 2 years while 20 (31.8%) children taken breast feeding less than 1 year.

Present study exclusive breast feeding found much lower than NFHS-3 (National Family Health Survey-2005-06)[14] reported in Chhattisgarh 23.8% children started breast feeding within one hour of birth with 84.3% being exclusively breast feeded and 52.1% timely weaned respectively in rural areas.

In the present study it was observed that only 47(74.6%) children were completely immunized, while 16(25.4%) children were not immunized at all.

Overall coverage of immunization was higher in present study than what observed by NFHS-3 (2005-06)[14] & P. Singh and R. J. Yadav (2000)[19], in their study of immunization status of children of India while almost similar to study by M. Mehra et al (1990)[20] & Kumar et al[18](1999) in their study of immunization coverage of rural children.

Present study is found lower than study done by Tamoghna Biswas et al[21] (2011) & A. Laxmaiah et al[22] (2007).

Better immunization coverage in this rural community in children is reflexion of pulse polio Immunization Supplementary Immunization Programme (Shishu shanraskhan) along with the routine immunization schedule under UIP. One of the reliable methods for assessing immunization coverage is by seeing BCG scar.

In majority of children in this study group mean weight was below median as compared to WHO Standard in all age group and both sexes.

Mean weight of boys was on higher side than girls in most age groups except 7-12 months by 0.6 kg.

In majority of children in this study group Mean height was below median as compared to WHO Standard in all age group and both sexes.

Mean height of boys was on higher side in most age groups except 0-3 months & 37-48 months by 1.5 cm & 0.8 cm respectively.

This shows inadequacy of supplementary nutrition and these children started Showing wasting and stunting.

Similar study found by Dr. Leena Sunil Kandalkar (2011)[23] reported that the mean body weight & height of male and female children at all ages was lower than of ICMR average. Except Comparison of body weight status between boys and girls showed that in general girls faired better than boys.

Present study was similar to R. Parimalavalli[12] (2007-08) & S. K. Behra et al[24] (1982).

Both boys and girls where having weight and height deficit. Since brain development also taking place in 1st year of life. This may have long term effect on learning and intellectual capacity.

This observation of weight and height shows that right from birth these children were having lower velocity of growth and apart from genetic potential environmental factor and nutrition play a major part in the growth retardation.

Observation of (WHO Classification) shows that out of 63 children studied Over all 16(51.6 %) of female children were malnourished when compare to 10 (31.3%) of male children. However this difference was not significant (p=0.1007, Chi square=2.689). Out of total malnourished children 19 (30.2%) found moderately malnourished and 7 (11.1%) severely malnourished. Most of the moderately malnourished children 15 (78.9%), while severely malnourished 19 (73%) were belongs 10 – 36 months age group.

High incidence of underweight children suggest poor nutritional intake with interaction of infection.

These values were similar as compared to study done by Kumar et al[25] (2006) in aganwadi Children of Allahabad on 217 pre-school children observed.

Similar result found in NFHS-3 (2005-06)[14] with under nutrition among the rural children but stunting was found higher in present study and wasting was on lower side.

In present study higher percentage of stunting and lower percentage of wasting may be due to their racial short stature.

Prevalence of PEM was lower in present study, while similar for severe malnutrition. This tribal is in general healthier than the other primitive tribes.

Present study revealed that difference in prevalence of PEM for both sexes were statistically not significant. Similarly trend was observed by D.Chirumulay et al (1990)[26] and P.khapekar (1996)[16].

Conclusion

Current study demonstrates that children in this tribe are at very high risk because of poor nutrition, nutritional deficiency and poor immunization coverage. The literacy level and poverty, social & cultural practises are added factors which aggravate existing condition.

Multiple risk factors for childhood malnutrition, encompassing sectors other than health alone, including social and economic sectors, requiring action at all levels and a multi-pronged and multi-sectoral approach in the fight against the silent killer of childhood malnutrition in these neglected & out reached tribe .

Acknowledgement

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