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Nutritional Status among Dhurwa Tribal Pre-school Children Based on Clinical Assessment in Bastar District of Chhattisgarh, India

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Abstract

One way to diagnose different diseases or ascertain nutritional status is through a clinical examination. This method is very important feature from the view point of nutritional survey. It is the most practical and simple way to assess a group of children's nutritional status or diagnose illnesses. By using this technique, one can quickly and simply determine a children's physical or nutritional status through close observation and focused attention. It makes extensive use of both specific and general physical indicators and symptoms that are known to be connected to nutritional deficiencies, malnutrition, and both communicable and non-communicable diseases. Data from 129 Dhurwa tribal pre-school going children, ages 1 to 5, were gathered during post-covid-19 for this study using a pretested questionnaire in a community based cross sectional study. Data is gathered using a multistage cluster sampling approach using door-to-door surveys. The parent's consent is required before any of their information is gathered, and the primary health center's card or birth certificate is used to verify their age. Clinical indicators for various diseases caused by nutritional deficiencies as well as different infectious and non-communicable illnesses were noted. The prevalence of diseases affecting the mouth, eyes, skin, hair, oedema, bones, and overall appearance is higher. Based on the findings, it can be concluded that the children's health is extremely poor and that they frequently experience the signs and symptoms of a variety of clinical conditions.

Keywords: Clinical examination, Nutritional status, Nutrient deficiency, Multi stage cluster sampling, Clinical condition.

INTRODUCTION

Malnutrition is a major public health problem leading to child morbidity and an underlying cause for more than half of child deaths worldwide, particularly in low socioeconomic communities in developing countries (Schroeder DG, Brown KH, 1994; Pelletier DL, Frongillo EA, Schroeder DG, Habicht JP,1994). "Health is a state of complete

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physical, mental and social well-being and not merely the absence of disease or infirmity," according to the World Health Organisation 1948 definition of health (World Health Organisation, 1973). Malnutrition commonly has long lasting effects among children and adversely influences their adult logical and work capacity (Abuya BA, Ciera JM, Kimani-Murage E, 2012). To ascertain a person's nutritional status or physical situation, we apply a variety of techniques, including anthropometric measurement, biochemical assessment, clinical examination, diet survey and so on. A clinical examination is important for any nutritional assessment. This is the most easy and scientific method and useful way to assess a group of children's nutritional status (Edward Saltzman, Kris M. Mogensen, 2013; Asfaw M, Wondaferash M, Taha M, Dube L, 2015). By using this technique, one can quickly and simply determine a children's physical or nutritional status through close observation and focused attention. It makes extensive use of both specific and general physical indicators and symptoms that are known to be connected to nutritional deficiencies, malnutrition and both communicable and non-communicable illness. A general clinical examination is performed, paying particular attention to organs such as the tongue, gums, muscles, skin, eyes, and hair. This method's primary benefits are that it is quick, simple, low-cost, and non-invasive; its primary drawbacks are that it requires specialized personnel and does not identify cases in their early stages. Establishing the nutritional diagnosis is aided by the detection of pertinent signs. To address the aforementioned issues, however, the Central and the state governments have collaborated on a number of projects at different phases in time.

In West Bengal, clinical examination data on tribal children are hardly ever available. According to Bhattacharyya K and Sarkar TK (2010), of the 188 tribal children in the Chanchal II block of Malda district under the age of five, 45.74% have anemia, 19.12% have angular stomatitis, 7.98% have glossitis, 2.13% have conjunctivitis xerosis, 0.53% have bitot's spots, and 0.53% have spongy bleeding gum. According to a second study based on data from the clinical examination of the West Bengali district of Bankura, there is a high prevalence of xerosis, cheilosis, dental caries, spongy germs, sparse hair, flag sign, easy pluck ability, and moon face (Mondal M, Nandi DK, 2018). Based on data gathered from Belda Primary Health Center and Makrampur Sub-center, Tilak Bagchi (2019) work that the children in Lodha, Munda, Mahali, Kora and Santal have elevated rate of hookworms, tapeworms, diarrhea, dysentery, protozoa and skin diseases. These conditions also include skin and hair loss, discoloration and thin hair, Vitamin A, D, C and B1 deficiency disease, bleeding fu and anemia. With regard to 705 tribals groups and subgroup, including 75 especially vulnerable tribal groups (PVTGs), India is second only to Africa. They constitute 8.6% of India's total population (Census of India, 2011). In West Bengal, tribals constitute 5.8% of the total population, and the majority of them reside in the eastern part of the "Chhotanagpur" plateau, also referred to as the "Jungle Mahal" (Censusof India, 2001). A sizable portion of the districts of Paschim Medinipur, Jhargram, Bankura, and Purulia, as well as a few part of Paschim Burdwan and Birbhum,constitute the Paschimanchal region. The Santal, Oraon, Munda, Bhumij, Kora, Lodha, Mahali, Savar, Birhor, and other major tribal communities are located in this region. Notified as Particularly Vulnerable Tribal Groups (PVTG) are Lodha and Birhor. In addition to the vast majority of tribal groups who live in rural areas, many of them were illiterate and extremely low-wage unskilled labourer. It is believed that the tribal people living in this area are unstable both financially and socially (Bisai S, Mallick C, 2011; Chakrabarty S, Bharati P, 2010; Mahapatra B, Dey J, 2019). Their eating habits and lifestyle are different from those of their neighbors (Puttaswamy M., Divakar SV, Balaji PA, Poornima S, Varne SR, Ali SS, 2013). Their distinct way of life is based entirely on settled agriculture, the harvesting of forest products, hunting, fishing, and a very few of business and government service.

There is hardly any information about tribal peoples in clinical examination. Nonetheless, data from the Raj Gond tribe in the state of Madhya Pradesh, central India, indicates that the overall prevalence of sparse hair was found to be 18.7%, along with hair dispigmentation (12.2%), oedema (9.8%), and easy pluckability (4.9%). Outside of this investigation, conjunctival xerosis, or vitamin A deficiency, was reported to be 18.7% of the population; bitot's spots and night blindness were absent. In addition, compared to other nutritional deficiency symptoms, vitamin B complex deficiency was more common in boys than in girls, with angular stomatitis and cheillosis accounting for the majority of cases (32.5% of angular stomatitis and 20.3% of cheillosis). Children with dental cavities accounted for 17.1% of cases, but very few had bleeding and spongy gums (Sharma B, Mitra M, Chakrabarty S, Bharati P., 2006). Pre-school children's from the Gond and Kawar tribal groups in Chhattisgarh have a high prevalence of all clinical signs and

symptoms, including lack of lusture, sparse hairs, dispigmentation of hair, flag signs, easy pluckability, paleness of eye, angular stomatities, oedema, dental carries, and bleeding gums (Mitra M, Sahu PK, Chakrabarty S, Bharati S, Bharati P., 2007). Another study of Bihar's tribal pre-school children found that of them, 5% had oedema and wasted, and 14.5% had clinical signs of oedema (Jayashree Dr., 2014). Anemia, vitamin A and iodine deficiencies, and dental caries were found in high prevalence among the Jenu Kuruba tribal children (2–15 years old) in the Mysore district of Karnataka. Additionally, 68.5% of the children had dental caries. Skin infections were very common; of these, 33.8% had hypodermal lesions and 19.8% had scabies (D Narayanappa, HS Rajani, K Jagadish Kumar, VG. Manjunath, 2015). According to a different clinical examination study conducted in the Tamil Nadu district of Coimbatore, 69 percent of tribal children had worm infection, 28 percent complained of tooth decay and 14 percent had dry skin and hair (Kirubadevi.R, Sridevi Sivakami.P.L., 2015). Clinical indications of different nutritional deficiencies were also noted in the Bhumija Munda tribe in the Mayurbhanj district of Odisha's Shamakhunta block. Children in this region were found for certain deficiency diseases' clinical symptoms. Children exhibited signs of vitamin A deficiency, including bitot's spots, night blindness (in 4.65% of cases), and pale conjunctiva (in 39.5% of cases). Pale conjunctiva in the population under study may also be a sign of iron deficiency. Skin pallor (16.28%) and pigmentation (11.63%) were found to be indicative of possible skin infections. A vitamin B complex deficiency was also noted in a subset of children, exhibiting symptoms such as pale (16.28%), magenta (2.33%), and red raw (2.33%) tongue. The children's overall oral hygiene was lacking. 18.6% of the teeth had decayed, missing, or filled teeth (DMF), and 11.63% had dental mottling (Joshi K, Moharana G, Jeeva JC, 2016). Sinha R, Sharma B, (2013) Bhandari S, Ghosh M, Bose K, (2019) all things considered, tribal populations in India are perceived as oppressed.

METHODOLOGY

Study Setting and Design

This cross-sectional study was conducted in the villages of Kandulguda and Chitapadar in the Bastar district of Chhattisgarh between April and May of 2021. A small village or hamlet called Kandulguda and Chitapadar is located in Jagdalpur Tehsil in the Bastar District of Chattisgarh, India. It falls under Billori Panchayath. It is 22 KM south of Jagdalpur, the district headquarters. 288 KM from the state capital Raipur. Tokapal Tehsil lies to the west of Kandulguda and Chitapadar; Bakawand Tehsil lies to the north; Bastar Tehsil lies to the west; and Darbha Tehsil lies to the west. Nearby Cities like Jagdalpur, Nabarangapur, Jeypur, Umarkote, Kandulguda and Chitapadar.

The subjects for this cross-sectional study were gathered from the villages of Chitapadar and Kandulguda in the Billori Panchayat of Bastar district (*Table 1.1*). In order to evaluate nutritional status, 129 Dhurwa tribal children between the ages of 1 to 5 years were measured in this study. The great majority of the adult population of the household under study were unskilled manual labor, leaf collection, wood cutting, and cultivation. Therefore they belong to lower socio-economic groups. In this study data collection data has been collected from the Dhurwa tribal community's. A pre-tested questionnaire was used to collect the information on age, sex, sibling, family members, and family type through one-by-one interview conducted during household visits.

The birth certificate was used to determine the age of the children. Parents were call to provide written consent. Before started the study, as per as possible the protocol was maintained.

Sampling

Using multi-stage cluster sampling, the Dhurwa tribal children were chosen at randomly from Kandulguda and Chitapadar village under the Billori Gram Panchayat. We were assisted by a Government level officer for choose the tribal villages of Billori Gram Panchayat, where they were reside. Using the standard sample, the minimum estimated sample size of 129 was determined (Cochran, 1963). Based on the 32.5% prevalence of angular stomatitis in the Raj Gond tribe in the central Indian in the state of Madhya Pradesh (Sharma B, Mitra M, Chakrabarty S, Bharati P, 2006), the minimum sample size was calculated with the desired precision. A total of 129 children's between the ages of 1 to 5 were measured (66 boys and 63 girls respectively).

Table 1: Village wise Studies Sample among Dhurwa Tribal Pre-school Going Children

State	District	Block	Gram Panchayat	Studied Village	Sample Size
Chhattisgarh	Bastar	Bastar	Billori	Kandulguda	72
				Chitapadar	57
		Total			129

Outcome of the Study

The examine done through clinical assessment of nutritional status. We develop a questionnaire for the clinical examination based on recommendations from the doctor and a variety of earlier studies. Similarly, we develop an survey questionnaire including symptoms photographs that comes in handy when conducted the survey. General appearance, skin, hair, eyes, teeth, tongue, oedema, digestive tract, mucosa, and other factors were included in the survey questionnaire implants, which revealed a variety of nutritional deficiencies, diseases, and communicable and non-communicable illnesses affecting tribal pre-school going children's in Kandulguda and Chitapadar villages of Bastar district, Chhattisgarh. Based on the score of the gathered data, nutritional status or physical condition is categorized into four groups: low risk, needs monitoring, moderate risk and high risk respectively in a systematic manner.

RESULT AND DISCUSSION

Result

Clinical sign and symptoms for various diseases caused by nutritional deficiencies as well as different infectious and non-communicable diseases were noted. Pre-school going Dhurwa children were examine for communicable and non-communicable diseases as well as for clinical sign and symptoms of certain deficiency diseases. From the external morphological features, it is evident that the child has a variety of clinical sign and symptoms or is in poor physical condition; the percentage of these children was 82.17%, with boys constitute 77.78% and girls constitute 85.71%. Numerous eye problems have been observed, including conjunctiva pigmentation, conjunctiva xerosis, conjunctiva discharge, cornea xerosis and night blindness. Conjunctiva pigmentation (17.05%) and conjunctiva xerosis (8.53%) are the most common eye problems, according to survey data. These percentages are significantly higher than those of conjunctiva discharge (3.10%), cornea xerosis (2.33%), angular conjunctivitis (0.78%), and night blindness (0.78%). Boys are more likely than girls to suffer from eye disease.

Both the two villages of Bastar district, Chhattisgarh, pre-school going children had generally poor oral hygiene. Numerous oral diseases have been reported in both boys and girls of Dhurwa tribal pre-school children in our study villages. These include angular stomatitis (5.43%), pale, red, and raw tongue (8.53%), cheilosis (4.65%), flurosis of teeth (12.40%), caries of teeth (13.18%), gum and buccal mucosa diseases, etc. The overall prevalence of clinical sing hair condition was found to be 33.33%, with boys pre-school Dhurwa children having a higher prevalence (36.36%) and girls having a lower prevalence (30.16%), respectively. Skin is another vital organ for clinical sign and symptoms. The questions pertaining to skin included general appearance, skin elasticity, trunk region, and adipose tissue on skin. Of the cases, 34.88% had clinical signs of skin disease and 26.36% had decreased skin elasticity. Furthermore, regional trunk have present in 10.85% of pre-school going children and low subcutaneous fat have present in 53.49% of them. Oedema is a crucial sign and symptoms of malnutrition since it shows a low in blood protein levels in the body. According to our survey results, 17.05% of children had bone disease and 10.08% of children had oedema. In our study area, 3.88% of children had diarrhea and 15.50% of children had anorexia.

Table 2: Appearance of Clinical Sign and Symptoms among Dhurwa Tribal Pre-school Going Children

Appearance of Clinical Sign and Symptoms	Boys (n=66)		Girls (n=63)		Total (n=129)	
	Number	%	Number	%	Number	%
General Appearance	52	77.78	54	85.71	106	82.17
Conjunctiva pigmentation	14	21.21	8	12.70	22	17.05

Appearance of Clinical Sign and Symptoms	Boys (n=66)		Girls (n=63)		Total (n=129)	
	Number	%	Number	%	Number	%
Conjunctiva xerosis	7	10.61	4	6.35	11	8.53
Conjunctiva discharge	2	3.03	2	3.17	4	3.10
Angular conjunctivitis	1	1.52	0	0.00	1	0.78
Cornea xerosis	2	3.03	1	1.59	3	2.33
Night blindness	1	1.52	0	0.00	1	0.78
Angular stomatitis	5	7.58	2	3.17	7	5.43
Tongue is pale, red and raw	6	9.09	5	7.94	11	8.53
Cheilosis	4	6.06	2	3.17	6	4.65
Gums	1	1.52	1	1.59	2	1.55
Buccal mucosa	3	4.55	1	1.59	4	3.10
Teeth caries	10	15.15	7	11.11	17	13.18
Teeth flurosis	8	12.12	8	12.70	16	12.40
Hair condition	24	36.36	19	30.16	43	33.33
Skin elasticity diminished	17	25.76	17	26.98	34	26.36
Skin	21	31.82	24	38.10	45	34.88
Regional trunk	7	10.61	7	11.11	14	10.85
Face	5	7.58	7	11.11	12	9.30
Losses in adipose tissue	37	56.06	32	50.79	69	53.49
Oedema	8	12.12	5	7.94	13	10.08
Bone	12	18.18	10	15.87	22	17.05
Alimentary system, appetite	11	16.67	9	14.29	20	15.50
Stool with diarrhea	3	4.55	2	3.17	5	3.88

DISCUSSION

In terms of the number of indigenous people living worldwide, India is ranked second only to Africa. Numerous studies (Mitra M, Sahu PK, Chakrabarty S, Bharati S, Bharati P, 2007, Jayashree Dr., 2014, Kirubadevi.R, Sridevi Sivakami P.L., 2015, Joshi K, Moharana G, Jeeva JC, 2016, Rao DH, Rao KM, Radhaiah G, Rao NP, 1994) have demonstrated the extremely poor nutritional status or health status of tribal pre-school children in India. The diet of the group in question is characterized by a high content of carbohydrates, as found in rice, wheat, puffed rice and potatoes. Conversely, the diet is low in protein, vitamins and minerals as found in meat, fish, milk, and oil (Kirubadevi R, Sridevi Sivakami P. L., 2015; Joshi K, Moharana G, Jeeva JC, 2016; Rao DH, Rao KM, Radhaiah G, Rao NP, 1994). Nevertheless, based on their overall look, it was found that approximately 80.62% of them had various clinical sign and symptoms, indicating the poor condition of their health. Conjunctiva pigmentation symptoms affect 17.05% of children, and conjunctiva xerosis symptoms affect 8.13% of children in this region, and there are few symptoms of other eye diseases. This is significantly higher than the pre-school different tribal children in Madhya Pradesh (Rao DH, Rao KM, Radhaiah G, Rao NP, 1994) and significantly less than the children in the Mayurbhanj district of Orissa state (Joshi K, Moharana G, Jeeva JC, 2016), Jenukuruba tribal children in Mysore district (D Narayanappa, HS Rajani, K Jagadish Kumar, VG. Manjunath, 2015), and Birhor children in Raigarh district in Chattrishgarh (Somawar BNR and Phuljhale S,

2015). However, a different study of tribal pre-school childrens in the Bankura district found that the prevalence of various eye diseases was significantly higher (Mondal M, Nandi DK, 2018) than that of tribal pre-school in the Maldah district (Bhattacharyya K, Sarkar TK, 2010). Most often, vitamin A deficiency is the cause of eye disorders.

Due to lack of vitamin B complex deficiency results in angular stomatitis and cheilosis. Our study's findings indicated that 5.43% of Dhurwa tribal children's had angular stomatitis, 8.53% had pale, red, and raw tongues and 4.65% had cheilosis. Though boys experience these symptoms more frequently than girls. Research conducted in other states, such as Madhya Pradesh (Sharma B, Mitra M, Chakrabarty S, Bharati P, 2006), Chhattrishgarh (Mitra M, Sahu PK, Chakrabarty S, Bharati S, Bharati P, 2014; Somawar BNR and Phuljhale S, 2015), Orissa (Joshi K, Moharana G, Jeeva JC, 2016), West Bengal of Maldah (Bhattacharya K, Sarkar TK, 2010), Bankura (Mondal M, Nandi DK, 2019), and Jhargram (Bagchi T, 2019) indicate a higher prevalence of vitamin B complex deficiency in pre-school childrens than in our study. Too much sugar consumption, dental infections, and fluoride in drinking water are the main causes of tooth flurosis and caries. Our study's rates of dental caries and flurosis are 13.18% and 12.40%, respectively. These are higher than those of the Bhumija and Munda tribe in Mayurbhanj (Joshi K, Moharana G, Jeeva JC, 2016), Birhor children in Chattrishgarh (Somawar BNR and Phuljhale S, 2015), Jenukuruba tribal children in Mysore district (D Narayanappa, HS Rajani, K Jagadish Kumar, VG. Manjunath, 2015), Raj Gond pre-school children in Madhya Pradesh (Sharma B, Mitra M, Chakrabarty S, Bharati P, 2006), and tribal preschool children in Bankura district (Mondal M, Nandi DK, 2019). Other significant organs include the skin and hair, where symptoms of many diseases are observed. In our study, 33.33% of the children's hair and 34.88% of the children's skin symptoms were multiple. The hair condition of the Jenukuruba tribal children in the Mysore district of Karnataka (D Narayanappa, HS Rajani, K Jagadish Kumar, VG. Manjunath, 2015) is far worse than it was in our study and the Raj Gond tribal children in Madhya Pradesh (Sharma B, Mitra M, Chakrabarty S, Bharati P, 2006) and Bankura district of West Bengal (Mondal M, Nandi DK, 2019) exhibit comparable or less severe symptoms. However, it can be stated that the skin condition of Jenukuruba tribal children in the Mysore district of Karnataka (D Narayanappa, HS Rajani, K Jagadish Kumar, VG. Manjunath, 2015) is far worse than that of Birhor children in Chhattrishgarh (Somawar BNR and Phuljhale S, 2015). However, an obvious limitation is this study was not powered for many of the comparison made and it was only powered to estimate an overall prevalence for all children 1 to 5 years old.

SUGGESTION

In our study selected tribal villages, malnutrition was found to be observed. Multi-sectoral approaches are strongly advised in light of the children's poor nutritional status in these tribal areas. The mothers of the malnourished children's families will receive behavior modification interventions focused on balanced diets, safe cooking, and nutritious diet. In case of cultivable families should be motivated for the benefit from interventions like nutrition gardens. The ecosystem of low-cost, locally accessible indigenous food products will be mapped, and tribal women will be educated about the nutritional value of these products. Although the coverage of ICDS services has increased over the years. The effective execution of a multisectoral approach towards preventing childhood malnutrition will require not only a financial investment but also the collective efforts from different ministries of the Central and State governments agencies and non-governmental organisations.

CONCLUSION

We can draw the conclusion that providing sufficient care for expectant mothers, newborns and infants, as well as exclusive breastfeeding, and complementary feeding, healthy eating habits, hygienic practices involving hand washing, proper sanitation and other basic behavioural changes. Comprehensive child immunizations, and preventing recurrent infections, will help to minimize the issue of under nutrition in this community. In addition, future detailed studies are required to determine factors affecting the nutritional status of children in this study area.

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