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Prevalence of Anaemia among Antenatal Tharu tribal Women of Uttar Pradesh

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ABSTRACT
Anaemia is one of the most common nutritional deficiency disorder affecting women's in developing countries. Anaemia during pregnancy is commonly associated with poor pregnancy outcome and can result in complications that threaten the life of both mother and foetus. In the present study 90 antenatal Tharu tribal women were selected and information regarding age, educational status , monthly family income, family type and food habits was collected through self structured questionnaire. Anthropometric measurements of antenatal women were collected and body mass index (BMI) was calculated. Haemoglobin was estimated using shahil's haemoglobino metre method, food adequacy ratio and nutrient adequacy ratio of antenatal women was also calculated using standard methods. The result of the study shows that majority of antenatal tharu tribal women in the age group of 18 to 25 years and majority were illiterate (53.33%). the monthly family income of 44.4% women was between Rs. 40501 to 6000. Nuclear family system was prominent (67.%). And majority were non- vegetarian (63.33%). 82.21% antenatal women were found to be anaemic among these 63.51 were mild anaemic 25.06% moderately anaemic and 10.81 % were severely anaemic. Food adequacy ratio of cereals and millets , pulses, milk and milk products , green leafy vegetables, roots and tubers , other vegetables and fruits was 69.91, 58.33,41.30,79.72,72.22,47.72 and 62.83, respectively where as for sugar and jaggery and fats and oils it was 143.32 and 126.64. The nutrient adequacy ratio of all the nutrients like energy, protein, fat, fiber, calcium, iron, zinc, VitB12 and phosphorous was 49.61, 51.38, 60.16, 40.86, 30.37, 33.89, 55and 49.88, respectively .Therefore it can be concluded that the intake of all food. groups except sugar and jaggery and fats and oil was less then the suggested dietary intake. The intake of protein,iron and zinc and Vit B12 was much less then the recommended dietary allowances. By implementing such targeted interventions, it is possible to significantly reduce anaemia and improve the health and well-being of antenatal women among the Tharu tribe in Uttar Pradesh.

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1. INTRODUCTION:

Anemia is a condition in which the number and size of red blood cells, or the haemoglobin concentration, falls below an established cut-off value, consequently impairing the capacity of the blood to transport oxygen around the body. Anaemia is an indicator of both poor nutrition and poor health. Anaemia impairs health and well being in women and increases the risk of maternal and neonatal adverse outcomes. Anaemia affects half a billion women of reproductive age worldwide. In 2011 around 29% (496 million) of non- pregnant women and 38% (32.4 million) of pregnant women aged 15-49 year were anaemic. The prevalence of anaemia was highest in South Asia and central and West Africa[12].

Although the causes of anaemia are numerous but it is estimated that half of the cases are due to iron deficiency . In some settings considerable reduction in the prevalence of anaemia have been achieved. However overall, progress has been insufficient. Therefor, further actions are required to reach the World Health Assembly target of a 50% reduction of anaemia in women of reproductive age by 2025 [10,14].

India shares the largest number of anaemic patients and it is estimated that 57% of women of the reproductive age group in India are anaemic[7]. Socioeconomic status and its correlation with the prevalence of anaemia are well-established worldwide, but in India studies have shown that the prevalence of anaemia is high among all women cutting social class and location[2].The tribal population in India as per 2011 census is 8.6% and most of them are from lower Socio-economic groups. Tharu tribes are commonly found in the Terai region of the Indo- Nepal Border In the present study an effort has been made to find out the prevalence of anaemia among antenatal Tharu tribal women[4].In this study an attempt was made to find out the prevalence of anaemia among antenatal tribal women and to find out the related factors.

Methodology: Tharu tribal women were selected from four villages namely Chandan Chauki, Balera,Seabdeda,and Kajariya of Lakhimpur kheeri district of Uttar Pradesh, A total of 90 antenatal women were selected through purposive sampling techniques, ensuring inclusion of those who were willing to participate, had either recent blood report or consented for haemoglobin testing.

Haemoglobin levels were determined using two method to ensure reliability and accessibility of data. Firstly , on site estimations were carried out using Sahil's haemoglobino metre[13]. And secondly records of recent government health centers reports. Based on the reports the women were classified into four categories namely normal,mild, moderate and severe as per given by WHO[12].

The data regarding general information and Socio-economic status were collected through self structured questionnaire. The Anthropometric measurement were recorded using standard methods[14]**.** The information regarding dietary intake was collected through 24 hours dietary recall method[6]. and Food Adequacy Ratio was determined using following formula ICMR (2020).

FAR % = Food Intake/SDI X 100

The Nutrient intake of respondents was calculated using the information collected through 24 hour recall method and the data from Food Composition Table compiled by the National Institute of Nutrition Hyderabad[4].The nutrient adequacy ratio was determined using the following formula, ICMR (2020).

NAR = Nutrient intake/ RDA × 100

RESULT:

The data regarding general information and Socio-economic status of antenatal women given in Table(1) revealed that majority of antenatal tribal women were in the age group 18-25 years (47.7%) followed by 36.7%women in the age group of 33 years and 10% were of below 18 Years of age.The data (Table 1) shows that more than half (53.33%) of the Tharu tribal women were illiterate. Only 11.11,5.56,16.67 and 13.33 per cent women were, respectively , primary, middle, matric and higher secondary pass. The majority (44.4%) women were from families with monthly family income between Rs. 40501 to 6000 followed by 31.1% women with monthly family income Rs. 2001 to 4500. The nuclear family system is prominent even in tribal communities, presently with 67.8 % women from nuclear family. It shows that there is shifting trend in tribal communities from joint to nuclear families possibily due to migration, urbanization or changing socio- cultural norms. The food habits of antenatal women were studied and it was found that 63.33% were non vegetarian followed by 23.33%

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vegetarian and 13.34% eggetarian.

Table- (1) General information of selected antenatal Tharu Tribal women of U.P

Age	**n**	**%**
Below<18	09	10.0
18-25	43	47.7
26-35	33	36.7
36-45	5	5.6
Total(N)	90	100.0
Educational status	**n**	**%**
Illiterate	48	53.33
Primary	10	11.11
Middl	05	5.56
Matric	15	16.67
Higher Secondary	12	13.33
Graduate	00	00
Post Graduate	00	00
Total(N)	90	100.0
Monthly Family Income	**n**	**%**
Below<2000	5	5.6
2001To 4500	28	31.1
4501To 6000	40	44.4
6001 to above	17	18.9
Total(N)	90	100.0
Family Type	**n**	**%**
Joint	29	32.2
Nuclear	61	67.8
Total	90	100.0
Eating Habits	**n**	**%**
Vegetarian	21	23.33
Non-Vegetarian	57	63.33
Eggetarian	12	13.34
Total	90	100

As shown in figure1, The haemoglobin content of Tharu tribal women was determine and it was found that 17.78 % women were normal and 82.21% were found to be anaemic ie. there haemoglobin level is bellow 11g/dl .

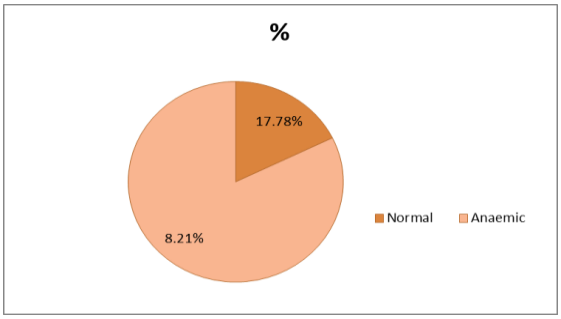

Figure (1): Prevalence of anaemia among antenatal Tharu Tribal women of U.P

The data presented in Figure 2, shows that 63.51 % women were mild anaemic, 25.68% were modratley anaemic and 10.81 % were severely anaemic. Singh et.al (2022) studied prevalence of anaemia among reproductive age females in Tharu tribe of Indo -Nepal border region. They found that 64.32% of Tharu women of reproductive age group were anaemic. According to NFHS-4 data , the prevalence of mild , moderate and severe anaemia in reproductive age schedule tribe females was 72.95% , 24.87% and 2.17%. Ponny et. al 2021 reported the prevalence of anaemia among tribal pregnant women attending primary health care in Trivendrum during 2021 was 53.33%. The prevalence of mild, moderate and severe anaemia was observed as 26.66%, 25% and 1.66% respectively.

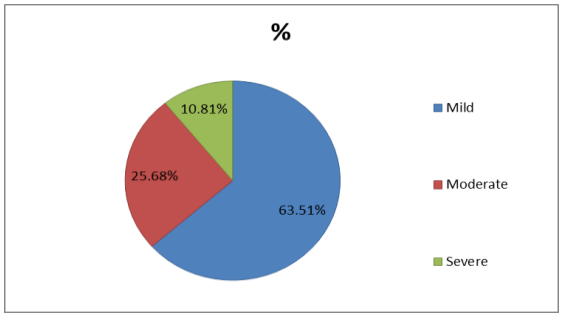

Figure (2): Type of anaemia among antenatal Tharu Tribal women of U.P

The data Table (2) shows that the prevalence of anaemia was highest in the age group of 26 to 35 year followed by 18 to 25 year. Ain et al. 2022 studied prevalence of anaemia in pregnant women of tribal community in Kashmir and reported that prevalence of anaemia was maximum in the age group 36 to 40 (48.6%) followed by 26 to 35 years (34.1%).

Table:(2) Prevalence of anaemia among Tharu tribal women of different age groups

Age group	**Normal**	**Mild**	**Moderate**	**Severe**
N=90(%)				
Below>18	00(00)	10(11.11)	2(2.22)	4(4.44)
18-25 Year	7(7.77)	16(17.77)	4(4.44)	4(4.44)
26-35 Year	4(4.44)	15(16.66)	10(11.11)	00(00)
36-45 Year	5(5.55)	6(6.66)	3(3.33)	00(00)

Data shown in Table (3) indicated that The height and weight of tribal Tharu women were measured and body mass index (BMI) was calculated. The average height of Tharu tribal women was 137.68±7.60cm while, weight was 49.81 ±6.66 kg and BMI (kg m^2) was 18.22 ±2.34. As per Garrow (1981) classification BMI<18.5 (kg $m^{2)}$ means they were underweight.

Table:(3) Mean Anthropometric measurements of antenatal Tharu tribal women living in U.P

Anthropometric parameters/ Indices	**Antenatal Tharu Tribal Women N=90 (Mean ± SD)**
Height (Cm)	137.68 ±7.60
Weight (kg)	49.81±6.66
Body Mass Index (Kg m^2)	18.22±2.34

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Data shown in Table (4), The actual dietary intake of cereals were 227.20±55.69 g while that of pulses was 52.5±12.7g The food adequacy ratio of cereals, pulses, milk and milk product green leafy vegetables roots & tubers other vegetables,fruit, sugar and jaggery and fats and oil seed were found to be 69.91g, 58.33g, 41.30g, 79.72g, 72.22g, 47.72g, 62.83g, 126.64g and 31.66g In other words it can be concluded that except sugar and jaggery and fats & oils the intake of all other food groups was much less than the suggested intake.

Table:(4) Mean Daily food intake and adequacy of food intake ratio of Tharu women of U.P

S.No	Food Stuffs	SDI(g)*	ADI**	Food Adequacy Ratio
1	Cereals and millets(g)	325	227.20±55.69	69.91
2	Pulses (g)	90	52.5±12.07	58.33
3	Milk and milk product	400	165.18±50.48	41.30
4	Green Leafy Vegetables(g)	100	79.72±45.56	79.72
5	Roots and tubers (g)	100	72.22±26.35	72.22
6	Other Vegetables(g)	200	95.43±35.92	47.72
7	Fruits(g)	150	94.25±76.11	62.83
8	Sugar and jaggery (g)	25	35.83±13.93	143.32
9	Fats and oil seeds(g)	25	31.66±66.45	126.64

SDI* Suggested Dietary Intake
ADI** Actual Dietary Intake

Table (5) shows that Nutrient Adequacy Ratio of the tribal women was also determined and it was found that Energy, protein, fat, fiber, calcium, iron, zinc, vitamin B12 and phosphorous nutrient adequacy ratio was found to be 49.61, 51.38, 201.13,60.16 40.86, 30.37, 33.89. 55.00 and 49.88.

Table:(5) Mean daily nutrient intake of Tribal antenatal Tharu women of UP.

Nutrient	RDA*	ENI**	NAR***
Energy(kcal)	2060	1022.0± 416.5	49.61
Protein(g)	71.7	36.84±34.0	51.38
Fat(g)	15	30.17±12.42	201.13
Fibre(g)	25	15.04±7.67	60.16
Calcium(mg)	980	400.45±165.53	40.86
Iron(mg)	27.2	8.26±7.92	30.37
Zinc(mg)	13.1	4.44±4.29	33.89
Vitamin B12(mg)	2.0	1.10±3.87	55.00
Phosphorous(mg)	1000	498.8±400.30	49.88

RDA*- Recommended dietary allowance
ENI Estimated nutrient intake**
NAR*Nutrient adequecy ratio**

CONCLUSION:

From the study, it was observed that 82.21% antenatal Tharu tribal women were anaemic which is much higher than the national average. The prevalence of anaemia ranging from mild (52.22%), moderate(21.11%) and severe(8.88%). The intake of all the food groups mainly responsible for blood formation like iron, zinc, VitB 12 and VitC was less than normal content which may be the main contributory factor for anaemia. To alleviate the high prevalence of anemia among Tharu women, multi-level solutions must be implemented. Nutritional interventions, such as promoting iron-rich locally accessible foods (e.g., green leafy vegetables, jaggery, pulses), as well as community-based cooking demonstrations, can help people alter their eating habits. Strengthening the delivery and monitoring of iron-folic acid pills via ASHAs, as well as behavior change communication in local languages, can improve compliance. Capacity building for front-line health professionals and awareness campaigns customized to the Tharu population are also essential. Regular deworming, infection control, and providing access to maternity care in distant locations via mobile health units are all critical tasks. Policies must be modified to accommodate tribe-specific tactics into national programs to guarantee that tribal people' particular demands are satisfied.

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CONFLICT OF INTEREST:

The authors declared no conflict of interest in the cause of research.

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