Nutritional Problems of Anaemia Disorders Among the Tea Plantation Labourers in Nilgiris District – A Geo Medical Study

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ABSTRACT

Health and nutritional practices are developed by people's tendency to settle into fixed habits. The practices of any community are influenced by socio-economic and political factors. These factors have also had considerable influence not only on the development of medical technology. This nutrition is one of the most important factors responsible for proper growth in infancy and childhood, (Sunita Mishra & Braja Kishori Mishra, 2002). Good nutrition is a fundamental requirement for positive health, functional efficiency and productivity. Good nutrition is determined by the consumption of an adequate diet, as also person's ability to resist disease and infections that interfuse with the digestive and absorption processes of the biological system where on the one hand good nutrition enables us to lead a socially and economically active life. Nutritional anaemia is a disease syndrome caused by malnutrition in its widest sense. It has been defined by WHO as "a condition in which the hemoglobin content of blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause of such deficiency". The present administrative district, the Nilgiris, is a plateau of lofty mountains, roughly 55 kms long, 32 kms in width (exactly 2549.38 sq. kms) and 6,500 ft above the sea level. On the globe, the hills lie between 11° 8'and 11° 37' North latitudes, and 76° 27' and 77° 4' East longitudes. The district has a geographical area of 2,543 sq. kms, constituting above 1.95 per cent of the area of the State of Tamil Nadu. The Nilgiris district is a hilly region in the Western Ghats, depend on climate conditions, most suitable for tea cultivation in the district. The tea plantation workers affected nutritional defect on anaemia disease.

Keywords: Health, Nutritional disorders, Malnutrition, Non communicable disease

I. INTRODUCTION

Anaemia is a major public health problem affecting 1·62 billion people globally.[6] Although the prevalence of anaemia is estimated at 9% in countries with high development, in countries with low development the prevalence is 43%.1 Children and women of reproductive age are most at risk, with global anaemia prevalence estimates of 47% in children younger than 5 years, 42% in pregnant women, and 30% in non-pregnant women aged 15–49

years,1 and with Africa and Asia accounting for more than 85% of the absolute anaemia burden in highrisk groups. Anaemia is estimated to contribute to more than 115 000 maternal deaths and 591 000 perinatal deaths globally per year. [7] When anemia comes on slowly, the symptoms are often vague and may include feeling tired, weakness, shortness of breath or a poor ability to exercise.[2] Anemia that comes on quickly often has greater symptoms, which may include confusion, feeling like one is going to pass out, loss of consciousness, or increased thirst.[2] Anemia

must be significant before a person becomes noticeably pale.[2] Additional symptoms may occur depending on the underlying cause.[2] The three main types of anemia are due to blood loss, decreased red blood cell production, and increased red blood cell breakdown.[2].

II. STUDY AREA

The Nilgiris is situated in the North Western corner of Tamil Nadu in Southern India. They are bounded on the North by the State of Karnataka and in the West and South West of Kerala. The present administrative district, the Nilgiris, is a plateau of lofty mountains, roughly 55 kms long, 32 kms in width (exactly 2549.38 sq. kms) and 6,500 ft above the sea level. On the globe, the hills lie between 11° 8'and 11° 37' North latitudes, and 76° 27' and 77° 4' East longitudes. The district has a geographical area of 2,543 sq. kms, constituting above 1.95 per cent of the area of the State of Tamil Nadu. The abrupt rise of the Nilgiris from the surrounding areas is very striking. Doddabetta (2637 mts) is the second highest peak in India, South of Himalayas. Udhagamandalam (Ootacamund), the most popular hill station in Southern India, is situated in a broad undulating valley at the foot of Doddabetta. Figure 1
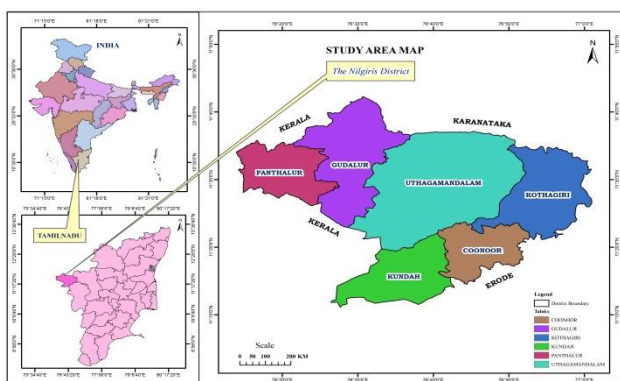
(Fig: 1) Study area Map

OBJECTIVES STUDY

➤ To analysis the spatial pattern of anaemia disorders among the tea plantation labourers in Nilgiris district.

RESEARCH METHODOLOGY: 'Z' SCORE VALUE

The Statistics is the branch of science that deals with collection, sorting and arrangement of data in such a way as to derive an influence regarding the subject of investigation. Various tools of mathematics are employed to from hypothesis from the collected data and desire conclusions from theses hypothesis. A Z-Score is a statistical measurement of a score's relationship to the mean in a group of scores. A Z-score of 0 means the score is the same as the mean. A Z-score can be positive or negative, indicating whether it is above or below the mean and by how many standard deviations.

A Z-scores (also called "standard scores") are raw scores that have been adjusted for the mean and standard deviation of the distribution from which the raw scores came. Z-scores are expressed in standard deviation units and represent the number of standard deviations above or below the mean that a given raw score is (e.g., a z-score of 1.0 is one standard deviation above the mean). We can also use our knowledge of the normal curve to assign a probability to the occurrence of any given z-score. Because z-scores use a standardized metric (i.e., standard deviation units), you can directly compare the magnitude and probability of z scores from different distributions of scores, even if those distributions have radically different means and standard deviations. A z-score is reflects how many standard deviations below or above the population mean a raw score is. In order to use a z-score, you need to know the mean μ (mu) and the population standard deviation σ. The z-score is calculated using the following formula.

$$z = \frac{x - \mu}{\sigma}$$ Formula:

Where:

X= Row score

μ= mean of the given workers sample

σ = standard deviation of given workers sample.

Standard score (Z-score) technique, one of the methods of scale transmission is used to synthesis the

relationship between the sets of variables and this enables to bring out the exposition of total conditions of selected environmental variables with the diseases incident rate. The 'Z' scores forms an important tool to identify that certain areas and people will exhibit health diseases and these must react to the responses of related environmental like social, physical, economical factors. In calculating the index, the raw data were standardized, so that positive values are designated as 'good' and negative values as 'bed' in relation to the environment health. Accordingly data used have been transformed into a single indicator.

COLLECTION OF DATA AND SAMPLE DESIGN

The following variables are identified for each division and used in the present study to establish the relationship between the variables. The variables are nutritional disorders on plantation labourers in Nilgiri district. The data have been collected form garden hospitals and government hospitals. The present study deals with the distribution of nutritional disorders among plantation workers in Nilgiris district. The data is based on stratified random sampling method. Understanding the spatial aspects of nutritional defect with help of map is used as a perquisite for analyzing the generalized distribution pattern and also to identify the nutritional problems. From the map is clearly understood that there were much differences in the distribution pattern of nutritional disorders among plantation workers in Nilgiri district.

III. RESULTS AND DISCUSSION

NUTRITIONAL PROBLEMS

Nutritional status is one of the indicators of the overall well being of population and human resources development. Nutritional is the cumulative effect of factors like poverty, inadequate access to food, illiteracy, large size families, and poor environmental sanitation, lack of basic minimal health care, lack of personal hygiene, lack of easy access to adequate safe

drinking water and lack of awareness. The manifestations of malnutrition could be seen in the prevalence of specific nutrient deficiency disorders such as protein-energy malnutrition, anaemia, night blindness, goitre, susceptibility to a number of infectious diseases, low birth weight of children, high IMR and MMR, lack of resistance to illnesses among mothers and children, growth retardation (both physical and mental) and stunting among toddlers. Infants, growing children, pregnant and lactating women are the most malnourished segments of society and they need adequate nutritional support.

ANAEMIA WITH DIFFERENT AGE GROUP

Anaemia in childhood is defined as a hemoglobin (Hb) concentration below established cut-off levels. These levels vary depending on the age of the child and on the laboratory in which the blood sample is tested. Reference ranges for specific laboratories and age groups should always be referred to. The World Health Organization (WHO) has suggested levels of Hb below which anaemia is said to be present. These levels are <11 g/dL in children aged 6-59 months, <11.5 g/dL in children aged 5-11 years and 12 g/dL in older children (aged 12-14) World Health Organization, 2011. Childhood anaemia poses a major public health issue leading to an increased risk of child mortality, as well as the negative consequences of iron-deficiency anaemia on cognitive and physical development, (WHO 2004).

The aim of this study is to demonstrate that anemia deficiency among Tea plantation workers in Nilgiris district. From the analysis we can found that the age group of females < 15 are highly vulnerable to the anaemia cases. The female children are highly affected with it. Gudalur taluk records high 'Z' Score value (1.56) with highest occurrence of anemia cases. Moderately level records at Panthalur Taluk (0.36) and Coonoor Taluk (0.38). Low level of occurrence of anemia is found in the taluks of Uthagamandalam (-1.07), Kotagiri (- 0.18) and Kundah Taluk (- 1.05). Table 1.
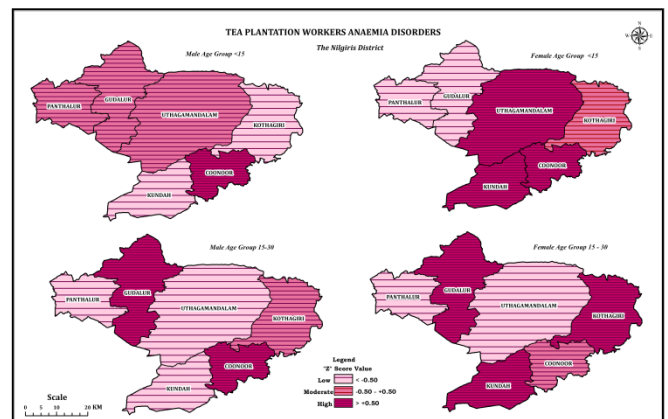
Table 1. Anemia Disorders Age Group

S. No	Taluk Name	"Z" score value			
		< 15 Age Groups		15-30 Age Group	
		Male	*Female*	*Male*	*Female*
1	Gudalur	-0.25	1.56	1.17	1.78
2	Panthalur	-0.09	0.36	-0.27	-0.93
3	Coonoor	1.93	0.38	1.34	-0.13
4	Uthagamandalam	-0.03	-1.07	-0.61	-0.95
5	Kotagiri	-0.79	-0.18	-0.97	0.23
6	Kundah	-0.77	-1.05	-0.65	0.00

Source: Compiled by the author

The male children highly affected with anemia is recorded at the Taluk of Coonoor which indicate positive "Z" score value of (1.93 %) and the moderately affected the anemia cases recorded at Panthalr (- 0.09), Gudalur (- 0.25), and Uthagamandalam Taluks (-0.03 %). When we come at low level anemia cases negatively affected among the Taluk of, Kotagiri (-1.07 %) and Kundah Taluk (-0.77).

While considering the female workers with the age group below 15-30 it can be found that highest numbers of Anemia cases were found in the Gudalur Taluk with the Z score value of (1.78 %). Followed by Kotagiri Taluk (0.23) and Kundah Taluk (0.00). Moderately affected anemia cases are found in the Coonoor Taluk with of score value (-0.13), and the low level of anemia cases recorded in the Taluk of Panthalur (-0.93) and Ooty Taluk (-0.95), show in the map (Fig No: 2). While considering the male workers with the age group between (15-30). The highly affected cases found in the Taluk Gudalur "Z" score value of (1.17) and Coonoor Taluk (1.34). Moderately affected anemia cases found in Kotagiri Taluk with score value (-0.97), and the low level of anemia cases

recorded among the Taluk of Panthalur (-0.27), Uthagamandalam (-0.61) and Kundah Taluk (- 0.65).

Figure 2. Tea plantation workers, Male and Female Workers (<15 and 15-30) Age Groups in anemia Disorders

Anemia disorders among the female workers with the age group of (30-45), al so identified (Tabl No 2). This age group has a highly affected anemia disorders in the Taluk of Gudalure (1.00), followed by Taluk of Coonoor (0.95) and Kotagiri Taluk (0.69) which are positively recorded, and moderately affected the anemia disorders found in the Taluk of Panthalur with a "Z" score value of (-0.52). The lower

occurrence of anemia cases registered in the Taluk of Ooty with score value of (-1.30) and Kundah Taluk (-0.82). While analyzing the anemia disorders among male workers in the age group of 30-45, it can be found that the anemia disorders are highly found in the Taluks of (1.07) Gudalur and Coonoor (1.45) and the moderate occurrence of cases found in the Taluk of Kundah with 'Z' Score value of (-0.99). The lowest case of anemia found in Uthagamandalam (- 0.46) and Kotagiri (- 0.57) and Panthalur Taluk (- 0.50) and is recorded in the map (Fig No: 3).

In the age group ranging between (45-60) are affected by anemia disorders in female workers has the highest concentration of positively recorded anemia cases from the Gudalur Taluk (1.45) and Coonoor taluk recorded anemia cases (0.94), the moderately affected anemia disorders in the Taluk of Kotagiri (-0.01). And the other Taluk of in the district anemia affected lowest recorded Taluk namely Panthalur (-0.59), Ooty Taluk (-107) and the Kundah "Z" score value of (-0.72).

Table 2. Anemia Disorders

S.No	Taluk Name	"Z" score value			
		30-45 Age Groups		45-60 Age Groups	
		Male	*Female*	*Male*	*Female*
1	Gudalur	1.07	1.00	0.99	1.45
2	Panthalur	-0.50	-0.52	-0.02	-0.59
3	Coonoor	1.45	0.95	1.37	0.94
4	Uthagamandalam	-0.46	-1.30	-1.14	-1.07
5	Kotagiri	-0.57	0.69	-0.37	-0.01
6	Kundah	-0.99	-0.82	-0.84	-0.72

Source: Compiled by the author

We considered the age group between (45-60) show them (Fig no:3.) are affected by anemia disorders in male workers has the highest concentration of positively recorded anemia cases from the Gudalur Taluk (0.99) and Coonoor Taluk recorded anemia cases (1.37),
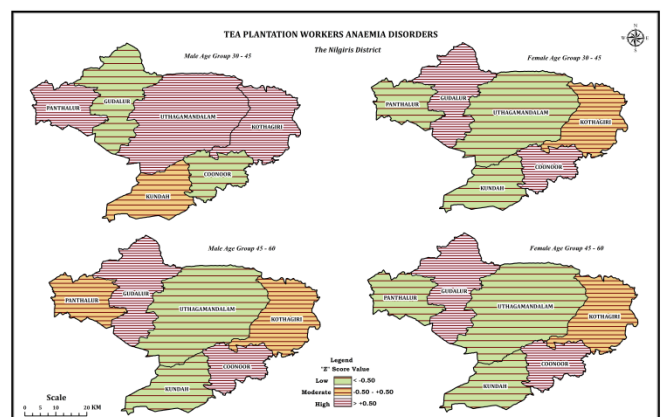
Figure 3. Tea plantation workers, Male and Female Workers (30-45 and 45-60) Age Groups in anemia Disorders

the moderately affected anemia disorders in the Taluk of Kotagiri (-0.37) and Panthalur (-0.02). The other

Taluk of in the district anemia affected lowest recorded Taluk namely Uthagamandalam Taluk (-1.14) and Kundah Taluk "Z" score value of (-0.84).

Table 3. Anemia Disorders for Tea plantation laborers (> 60) Age Group

| S. No	Taluk ame	"Z" score value	
		Male	Female
1	Gudalur	1.37	0.51
2	Panthalur	0.02	-1.44
3	Coonoor	1.01	0.05
4	Uthagamandalam	-0.59	-0.93
5	Kotagiri	-0.67	0.62
6	Kundah	-1.15	1.19

Source: Compiled by the author

The Nilgiris district has been analyzed anemia disorders in the age group of (> 60) female workers, due to the highly affected the Nutritional disorders based on the anemia case registered in the Taluk of Gudalure score value (0.51), followed by Kotagiri Taluk recorded (0.62) and Kundah Taluk (1.19). The moderately affected anemia disorders in the Taluk of Coonoor (0.05), and the low level of anemia cases registered "Z" score value in the Taluk Panthalur (-1.44) and Ooty Taluk (-0.93), indicate the Table 3.

Above the table analyzed anemia disorders in the age group of (> 60) male workers, due to the highly affected the Nutritional disorders based on the anemia case registered among the Taluk of Gudalur score value (1.37), Panthalur (0.02) and Coonoor Taluk (1.01). The moderately affected anemia disorders in the Taluk of Uthagamandalam (-0.59) and Kotagiri Taluk (-0.67) (Fig No:4). The low level of anemia cases registered "Z" score value in Kundah Taluk (-1.15).

IV. CONCLUSION

The findings in this paper indicate that through nutritional disorders among the tea plantation labourers. Global inequalities in anaemia reflect the stark differences between developing and developed countries and the differential exposure to the varied determinants of anaemia.
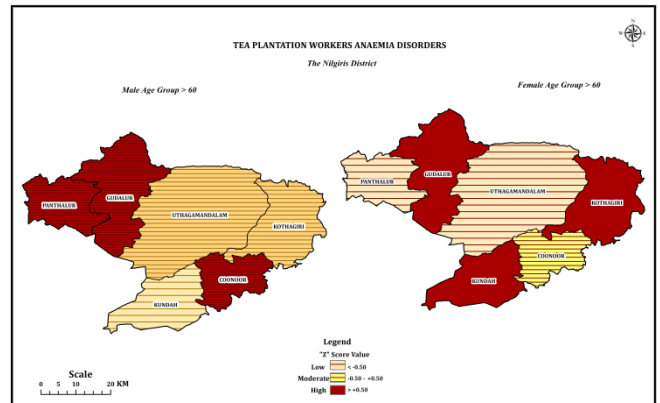
Figure 4. Tea plantation workers, Male and Female Workers (Above 60) Age Groups in anemia Disorders

The workers highly affected anaemia among the 15-35 age group, this age group of workers affected most reproductive age for female workers. Because of the reason for the workers affected anaemia intake of nutritional food and female workers properly intake of folic supplementation medicine and doctor advice is not properly followed. Major problems of anaemia affected of female age group because of excessive bleeding during menstruation time. The anaemia is characterized by reductions of hemoglobin count.

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