

Impact of Environmental Factors on Prevalence of Anaemia Disease in the Village Khajuri - A Study of Geography of Health

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The symptoms of anaemia are enlargement of the spleen, liver, or lymphnodes and unexplained haemorrhage sepsis and purpura or icterus. The colour of the skin and nails become pale and the patient feels much weakness. In short, the major factors of environmental impact on evolution of anaemia disease are explored here as under:

1. *Geographical Location:* The village Khajuri is located in Ambah tahsil (district Morena, Madhya Pradesh). Spatially, it falls in the Lower Chambal-Kunwari doab. Geometrically, it is situated at 26°4' North latitude and 78°14' East longitude. Regionally, it is a part of semi-arid tropical zone of central India. Thus, the location of the village, being semi-dry tropical and continental in natural, is not favourable for production of varied foodstuffs for human diet which partially causes deficiency of iron and evolution of anaemia disease.

2. *Climate:* As it is previously stated that the climate of the village is tropical and semi-dry deciduous. The seasonal changes of weather and climate of the area are very extreme which are not favourable for human health. The extreme of summer hot weather are very injurious for the functions of human body. The heavy sweat loss in hot and rainy weather of the village is partially responsible for the evolution of the disease. This concept is also established by British Medical Geographer as he says:

"The earliest of these papers stressed a possible climatic effect, through heavy sweat loss in hot humid areas..... but in the latest they consider that the loss of iron through desquamation of skin may be an important contributory factor (Learmonth, 1965)."

3. *Deficiency of Iron:* The main cause of prevalence of anaemia disease in the area is the deficiency of iron. It is due to the too much dependency on cereals or malnutrition. Most of the food of the villagers depend on sorghum (Jowar). It severely lacks protein, vitamins and minerals.

Thus, there is an acute deficiency of Iron, protein and various other food nutrients in the village (Table 1) which cause to initiate the evolution of anaemia in the village. Not only so, it is also caused due to successive cycles of pregnancies, lactation and menstruation of most of the females in the village.

Besides iron deficiency, the protein malnutrition is also responsible for evolution of anaemia disease in the village. The concept of protein malnutrition and emergency of anaemia disease is also established by Learmonth as he states: "The Goulstonian lectures of 1954 contain a valuable viewpoint on the natural history of anaemia associated with protein malnutrition (Woodruff, 1955)..... protein malnutrition being regarded as a direct or indirect contributory factor rather than a primary cause..... but in others, a medical reviewer suggests..... lack of protein may be the causal factor." (Learmonth, 1965).

4. *Non Availability of Mixed Diet:* The village is located in the under developed area. There is not any innovation in the cultural environment and specially in the field of agriculture and human food and nutrition. This type of non-awareness causes malnutrition in the human diet. It is also responsible to emerge anaemia disease in the village. The importance of mixed diet is revealed here in this statement: "The fundamental factor in its causation is the ingestion of a diet the iron content of which is insufficient to meet the demands of menstruation and pregnancy..... for several reasons the incidence and severity of this form of anaemia have increased..... The diet taken by villagers are very unsatisfactory and living conditions are very low..... The most important drawback is unimprovement in financial state and greater non-awareness of the value of a mixed diet. The availability of the most important sources of dietary iron flesh food, eggs, peas, beans and green vegetables is not possible in present conditions

Table 1: Average consumption of food nutrients per head per day in the village Khajuri (1996)

Food Nutrients	Consumption	Standard in Indian condition
Carbohydrate (g)	450	440
Protein (g)	60	80
Calcium (Mg)	470	1400
Iron (Mg)	18	22.50
Vitamin A (i.μ.)	1500	3500
Vitamin B ² complex (Mg)	15	19
Vitamin C (Mg)	31	50
Vitamin D (i.μ.)	300	1000

of the area. (Dunlop et al., 1958) (Table 1).

5. *Living Conditions*: The living conditions of the people are very low. The social groups represent almost a standard of living conditions and variation in the prevalence of anaemia disease in the village (Table 2). The houses are made of very rough building materials. The design of houses is very traditional and the provision of ventilation is very rare. Thus, in the summer season the compact stony ill ventilated houses become very hot. Thus, the houses of the villagers are not worth living specially from the viewpoint of human health. The housing effect through heavy sweat loss in hot and humid weather caused to loss of iron through desquamation skin may be an important contributory factor for evolution of anaemia in the population (Table 2).

Table 2: Social groupwise percentage of prevalence of anaemia in the village Khajuri (1996)

Social groups	Total Population	Total anaemic people	Percentage of anaemic people
Scheduled caste	474	119	25
Backward class	291	58	20
General class	760	114	15
Total	1525	291	60

6. *Poverty*: Most of the people in the village are very poor. Their purchasing power is very low. Hence they are unable to arrange for a good diet for their families. It is noted in the village that most of the foodstuffs of the villagers consist of sorghum which is deficient in minerals, proteins and vitamins (Table 1). Such type of diet is not sufficient specially for the women who are pregnant. It causes to initiate the evolution of anaemia specially in women in the village. This concept is also supported by the British Medical

Geographer. His words are: "It was suspected that total incidence might be twice as much (Raja Suriya et al., 1962) among poorer groups, the cause was regarded as almost wholly nutritional mainly iron, folic acid and possibly vitamin B12 protein malnutrition in the lowest three socio-economic groups, over half the women were anaemic and more severely than in the two more prosperous groups" (Learmonth, 1965).

7. *Load of Cycles of Pregnancy and Menstruation*: As it is previously stated that the load of cycles of pregnancy and menstruation is very high among women. It is the main cause of more incidences of anaemia disease in the women than the men of the village (Table 3). The concept is also supported by Learmonth. His statement is worth recalling..... indicating factors in iron absorption and in iron loss including loss in faeces, urine, sweat in pregnancy, menorrhagia and lactation, by hookworm infestation particularly by *Ankylostoma duodenale*..... These anemias are particularly common during pregnancy particularly in very young mothers..... pregnancies in very young girls may cause anaemia through competition between a still growing mother and a growing foetus..... the wife of a beggar was wealthier in haemoglobin atleast than wife of a craftsman in regular employment, because of more frequent child births in the more settled groups. (Learmonth, 1965) (Table 3).

8. *Load of Infection*: In the village the pressure of load of infection is also very high. Thus the village reveals a double challenge of i.e. the challenge of infectious diseases and nutritional deficiency diseases. These diseases create a deficiency in the haemoglobin contents in the body of most of the villagers. This concept is also stated by the British and American medical Geographers respectively. Their statements are: "By hookworm infestation particularly by *Ankylostoma duodenale*..... aggravated by all

Table 3: Sexwise prevalence of the anaemia people (1996)

Sex	Total population	Total anaemic people	Percentage
Males	791	81	10.30
Females	734	210	28.70
Total	1525	291	39.00

but universal hookworms and some times by haemorrhoids..... Malaria and hook-worms were not regarded as important factors. Malaria was thought a likely additional factor" (Learmonth, 1965).

Nonetheless poor countries and the underclass every where bear a disproportionate share of the burden of ill health. many countries now face a double challenge, with infectious and parasitic disease, still the leading causes of death, but also with increasing rates of non communicable diseases (Nancy, 1992).

9. *Geophagy*: Geophagy is also a common phenomena among women of the village. Generally some of the village women consume appreciable quantity of soil. It creates malnutrition and iron deficiency which also partly causes to initiate anaemia disease among the women. The confirmation of influence of Geophagy on evolution of anaemia disease is also stated here as under:

Mokhobo (1986) interviewed ten females who had iron deficiency anaemia..... The patients consumed appreciable quantities of soil (upto several handfuls per day), and the study suggested that the geophagy preceded or was the cause of the anamia (Mokhobo, 1986).

CONCLUSION

It is concluded that the main remedy for the ills, of an under developed or backward area (Like the lower chambal Basin Area) lies in the kind of general socio-economic and cultural development. In village development, priority must be given to development of food crop varieties, nutrition and mixed diet, living conditions and general awareness of the people. The high rate of

pregnancy and birth rate and diffusion of infectious diseases must be checked.

Finally, it is concluded that the more we know about the improvement of the social environment and specially the improvement of human diet, hygiene and health facilities the more rational will our prevention likely to be and we shall be more skillful in protecting the people against the emergence of anaemia disease.

KEY WORDS Iron Absorption. Menorrhagia. Haemoglobin. Acclimatisation. Phenomenon.

ABSTRACT The present paper is based upon a medical geographic survey which was conducted in the year 1996 in Khajuri Village (Tahsil Ambah). In the prevalence of the anaemia disease, emphasis is given on the impact of environmental factors of the village in the form of geographical location, semi-arid tropical climate, altitude, diet, living conditions, pregnancy, menstruation etc. The social environment perhaps is responsible for enhancing the rate of anaemia morbidity in the village. The most important factor is the poor diet of the villagers. The low quality food is due to the unimprovement in financial state and a greater non-awareness of the value of a variety of food crops production and a mixed diet. It is concluded that the more we know about the improvement of the socio-economic environment and specially the improvement of human diet, the more rational, will our prevention likely to be and we shall be more skillful in protecting the people against the emergence of anaemia disease.

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