

Innovation in Field of Health

Anemia – A simple community based diagnostic tool

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Anemia is the most common morbidity worldwide. World Health Organization has defined anemia as “a condition in which the hemoglobin content of blood is lower than normal as a result of deficiency of one or more essential nutrients regardless of the cause of such deficiency”. Hemoglobin is necessary for transporting oxygen from the lungs to other tissues and organs of the body.

WHO has also given guidelines for diagnosis of anemia. It is said that if hemoglobin level is less than define level as per age and sex, it is diagnosed as Anemia. (table-1)

Table – 1 Cut off levels of hemoglobin for diagnosis of Anemia

Age/Sex	Hb Gram/dl (venous blood)
Adult male	13
Adult female	12
Adult female pregnant	11
Children 6 months to 6 years	11
Children 6 to 14 years	12

There are many causes of anemia. One of the most common causes is the nutritional deficiency of mineral iron and vitamin folate or vitamin B12. This nutritional anemia is worldwide prevalent and more seen in developing countries. It is estimated that worldwide more than two billion people are anemic. In India, the incidence of anemia is highest among women and children, varying between 60-70 percent.

Effect of Anemia

Anemia has detrimental effects on the health of women and children. It is an underlying cause of maternal mortality and perinatal mortality among women. In India, the maternal mortality rate is still very high. In India 20-40% of maternal deaths were found due to anemia. Conditions like abortion, premature births, post-partum hemorrhage and low birth weight baby are specially associated with low hemoglobin during pregnancy.

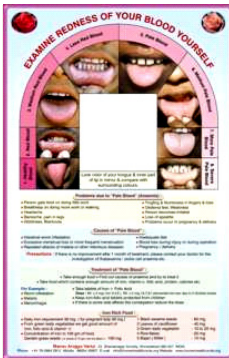
Anemia also impairs the immune response and function of body. Thus such individual is susceptible to infection. Not only they get frequent infection but the severity of infection is also high in anemic cases compare to non-anemic.

From the economic point of view, anemia is also an affection where the work capacity of individual is impaired. It is said that anemia (even mild anemia) causes significant impairment of maximum work capacity. The more severe the anemia, the greater reduction in work performance of individual and thereby productivity. This has significant impact on economic output of the Country.

Diagnosis of Anemia

The most popular diagnostic tool for anemia is blood hemoglobin level as depicted in the table. This is most commonly used in community where prevalence of anemia high. There are many other specific blood examination tests available for diagnosis. But in all such tests, one has to take blood and check for same.

Every time to take blood for anemia is not feasible, particularly in case of children and pregnant women. There are also disadvantages of blood taking from technique to waste disposal. To minimize all such disadvantages and errors Dr. Rajesh Mehta has developed tool “MUKTA” (Freedom from Anemia). He has developed this tool since quite some time and many people are using it in field.



MUKTA looks as shown in figure. It is a simple hardboard mount Poster. The center of poster has mirror and surrounding to mirror there are photographs of tongue and inner side of lip. These photographs showing severe anemia to normal person's tongue and lip. The person himself/herself look in mirror and diagnose his/her condition. Other use, instead of mirror, worker can use instruments and put out tongue of the patient and diagnose the type of anemia. The lower part of poster contains the remedial measures against anemia. The foods which contain higher iron are also mentioned.

In the words of Dr. Rajesh Mehta, MUKTA means **M**ultipurpose, **U**niversal applicable, **K**nowledge sharing instrument, **T**reatment tackler and **A**ffordable by all. MUKTA in Gujarati means “freedom”.

Advantages & uses of the instrument:

1. Detection of anemia by self examination.
2. Low cost.
3. Avoids repeated pricks & thereby reducing chances of HIV/hepatitis etc.
4. Progress of anemia status can be measured regularly.
5. Easy to carry in field.
6. Good instrument to start talk in groups even in unknown field practice area.
7. Inter-observer bias, time bias, instrument bias etc. can be avoided.
8. Person can use it for personal use - as mirror
 - Detection of caries
 - Watching progress for jaundice
 - To teach self examination of personal hygiene.

9. Small scale research on various interventions for anemia.
10. Anemia control - as it gives details of symptoms & causes of anemia as well as hints on treatment of anemia along with list of food articles which are rich in iron.
11. In dessert it is useful for sending signals/messages. (Common use of mirror)
12. It prevents mal practices of certain doctors whose develop link with pathological laboratries.

Looking at the large number of uses and advantages of this simple instrument, this is the best appropriate technology for field situations in developing countries and difficult areas like tribal and hilly areas. One of the principles of primary health care is appropriate technology. The primary health care document defines the appropriate technology is “the technology that is scientifically sound, adaptable to local needs and acceptable to those who apply it and those from whom it is used and that can be maintained by the people themselves in keeping with the principle of self reliance with the resources the community and country can afford”.

Scope of the instrument:

This simple tool for anemia detection can be kept at places like schools, colleges, Anganwadis, Primary health centers, Dispensaries, clinics, Railway stations, Bus-stops, waiting places etc. As our last National Family Health survey reported that more than 50% of our country women are anemic at any time, there is need to change behavior of community as just imparting knowledge is not enough. India has completed three National Family health surveys and all of them showed that the country has not improved as far anemia situation is concerned in last two decades. Hence, a simple but effective tool for diagnosis and prognosis of anemia will be a big boon.

Obituary

The fraternity of Community Medicine in Gujarat would like to pay its tribute to

**DR CHITRA SOMASUNDARAM,
PROFESSOR OF P & SM
WHO LEFT FOR HER HEAVANLY ABODE
ON 8 AUGUST 2010 AT 8:30 AM**



She served the State of Gujarat as a sincere, knowledgeable and ever friendly teacher, guide and friend for nearly 30 years. She has left behind a bereaved husband and two children. The pleasant face of Chitraben can never be forgotten and she has a special place in the heart of every one with whom she had acquaintance, professionally or personally.

LET US ALL JOIN TOGETHER IN PRAYING FOR ETERNAL PEACE FOR HER SOUL