

ARE BLOOD HEMOGLOBIN LEVELS OF SRI LANKAN RURAL BUDDHIST MONKS IN REFERENCE RANGE?

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Introduction

Blood hemoglobin (Hb) level which is mainly determined by some one's body iron level plays a major role in tissue perfusion (oxygenation). Hemoglobin is a quaternary protein which has four subunits, each bound with heme unit. A heme unit which comprises of protoporphyrin ring and a ferrous ion plays a major role in carrying oxygen toward tissues. When some one's blood hemoglobin level becomes lower than the reference range (adult male 13g/l, adult female 12g/l) (WHO 2014), the situation may cause for anemia which ultimately ends up with fatigue, weakness, dizziness and drowsiness which affects individual's productivity. One major cause for the reduction of hemoglobin is declining of blood iron which is a component of Hb. Blood iron level mainly depends on type of food intake. Iron found in food could be classified in to two types such as heme and non heme iron. Heme iron is available only in animal food and abundant in red meat. There is separate, quick transport method in duodenal and upper jejunal mucosal layer to absorb heme readily. Non heme iron found mainly in plant foods and they mostly appear as a complex by joining to organic materials (protein) or as free inorganic iron. Regarding non heme iron absorption, first the iron should be released from its complex in the gut and converted into ferrous (Fe^{+2}) form by gastric acid or specific enzyme found in brush border. Later ferrous is absorbed via a divalent metal transporter in mucosal cells. How ever this absorption of non heme iron could either be enhanced or diminished by certain components found in the same food. While Vitamin C, tartaric acid, amino acid, saccharide elevate the absorption compound such as certain minerals (calcium, zinc, copper, magnesium.), high fiber, phytate (grains), phosphate, oxalate (tomatoes, spinach), tannic acid, polyphenol (tea, coffee),

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soya foods diminish it (G. Dewar (2009). How ever the absorption of non heme iron is around three times lesser than that of heme (G. Dewar 2009). This could be a massive problem for the hemoglobin level of rural Buddhist monks who depend only on vegetarian alms.

Methods and methodology

In this review article the possible factors which could reduce the Hb level of rural Buddhist monks were gathered from my personal experiences and via a high literature survey.

Results

The possible ways that could cause low Hb in rural Buddhist monks are

- (1) Vegetarian diet pattern
- (2) Quality of alms
- (3) Certain behaviors
- (4) Joss stick smoke
- (5) Infestations

Discussion and conclusion

It's true that the absorption of iron found in plant products (non heme) is less. But the condition can be defeated by ingestion of iron absorption facilitating foods together at the same time as explained above. This has been proved in a Korean study (n=116) which was carried out among vegans and non vegans monks (Y. Lee, D. O. Troph, M. Krawinkel 2011). When scrutinizing the reason for this outcome, researchers found that vegans who had same blood hemoglobin level to that of non vegans had used to consume a lot of vitamin C rich fruits. How ever it's unreasonable to apply the out come of Korean study in Sri Lanka as there are several differences such as cultural, behavioral, demographic as well as qualitative. The quality of alms in rural area may be poor due to existing poverty in the areas and alms they give may contain few ingredients not to nourish but

quench the hunger. Further grains, cereals offered as alms may contain phytate which retards iron absorption. Moreover high fiber content in certain foods (alms of chena cultivators) may also retard the absorption of iron. Certain high load of minerals found in certain vegetable also competitively blocks the absorption of iron in gut. Thus monks have to depend on limited iron diets. Further certain monks (especially older ones) have used to have a tea or coffee just after a meal which retards further the absorption of iron in gut.

The other possible factor that could diminish some one's hemoglobin level is, worm infestation. As the hygiene, medical attention and health knowledge of certain monks found in rural area are not up to the satisfactory level, they may be more prone to get parasitic infestations which ultimately leave them with low blood hemoglobin level.

The sulfogaamoglobin which is made in blood due to prolong exposure to sulphur compounds may replace the functional hemoglobin. Monks are more prone to inspire joss stick smoke and thus to make sulfogaamoglobin in their blood. A study carried out in Thailand with 30 male monks who had 12 years of average exposure to joss stick smoke found to have seven times higher blood sulfhemoglobin than that of control ones (V. Wiwanitkit, J. Suwansaksri, S. Soogarun 2008). This also could be a possible reason for possessing a low level of hemoglobin in rural monks.

Once as a teacher and once as a guider who direct laymen toward load Buddha's noble pathway, a Buddhist monk should be wealthy and healthy in every aspect to achieve the particular objectives. When an individual is suffering from low hemoglobin level, his productivity becomes slow down. This is true even for clergy. Thus as followers of noble lord Buddha all our Buddhist monks should be well fit and free from condition such as anemia. As the article views only the theoretical aspect of possibility of being anemia of rural Buddhist monks, it should be confirmed practically as well. The prevention is better than cure. Thus it's essential to acknowledge laymen as well as Buddhist monks regarding the topic and details on iron metabolism to enhance the Buddhism in Sri Lanka via

maintaining the productivity of our Buddhist monks. It may be true that activities such as yoga mediation (C. Woodyard 2011) in which certain Buddhist monks engage in, may elevate blood Hb level but its better to prove the situation practically as well before justifying the title.

Keywords: hemoglobin in Buddhist monks, anemia in Buddhist monks, productivity in Buddhist monks

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