

Research Paper :

Effect of dose related iron supplementation on the anthropometry and haemoglobin level of the coal mine workers of Assam

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ABSTRACT

The present study was undertaken to find out the effect of dose related iron supplementation on the anthropometry and haemoglobin level. Appropriate methodologies were applied. 300 samples were screened for the study and the samples were pair matched for weight and haemoglobin, dewormed and then three groups *viz.*, Placebo, Group I and Group II were formed consisting of 100 samples in each group. Data on haemoglobin and weight was collected at baseline (0 days), mid (90 days), final (180 days) and post final (270 days). Results revealed that prevalence of anaemia was universal. In Group I and Group II receiving 60 mg and 120 mg of iron supplementation, haemoglobin level increased from a baseline value of 9.42 g/dl to 12.24 g/dl and 12.58 g/dl at final intervention, respectively. Weight also increased from a baseline value of 55 kg to 58.5 kg in Group I and to 58.9 kg in Group II. In the Placebo group the mean haemoglobin level and weight at final intervention was 9.99 g/dl and 55.6 kg. Thus, it can be concluded that both the dose level had a positive and beneficial impact on the haemoglobin status and weight of the coalmine workers but the compliance was poor with 120 mg iron supplementation.

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Iron deficiency anaemia is a major health problem in developing countries. It reduces haemoglobin concentration in the blood which in turn reduces oxygen carrying capacity to the blood and tissues thus impairing work capacity (Seshadri, 1988). The only proven way it can be alleviated is to increase iron intake either by providing medicinal iron (supplementation) or by adding iron to the diet (Bothwell *et al.*, 1979). Iron supplementation has the advantage of producing rapid changes in iron status and of directing iron to those segments of a population in greatest need (Cook and Reddy, 1993). Hence, the present study was undertaken with the following objective : to assess the iron nutrition status of the coalmine workers and to study the dose related effect of iron supplementation on haemoglobin and weight.

METHODOLOGY

Subject and study design:

Three hundred samples were screened for the study and haemoglobin levels were estimated on all the samples. Then the samples were pair matched for haemoglobin level and weight and were dewormed using single dose of Albendazole tablets prior to one week of supplementation to avoid errors in haemoglobin status by mainly preventing parasitic infection. Pairs were randomly assigned as Placebo group, Experimental Group I and

Experimental Group II comprising of one hundred samples in each group. Supplementation of 60 mg and 120 mg of elemental iron (ferrous sulphate) was given to Group I and Group II at a stretch for 180 days. The Placebo group received sugar coated tablets. Data on haemoglobin and weight were collected at baseline (0 days), mid intervention (90 days), final intervention (180 days) and post final intervention at 270 days following the withdrawal of supplements.

Experimental procedure :

Haemoglobin was estimated by the cyanmethemoglobin method (Oser, 1971). Weights and heights were recorded using standard procedure (Jelliffe, 1996). Body Mass Index was recorded using Garrow's Classification (1987). All measurements were made in duplicates.

Statistical analysis :

Means and standard errors were calculated for all parameters. Percentage prevalence was calculated for qualitative parameters. Paired 't' test was applied to compare the impact of specific treatment on the sample individual. Analysis of variance in terms of ratio between group variability to within group variability (F test) was used in order to test the equality of different treatments of the respondents.