

## ABSTRACT

Effect of prophylactic hematinic dosing with 60 mg elemental iron for 60 days at a stretch, twice in a school year on iron status, selected areas of Cognitive Function (CF), Physical Work Capacity (PWC) and growth in underprivileged school girls, 8-15 years of age was investigated.

Eighty three pairs of subjects matched for initial age, Hb, baseline CF test scores and body surface area were randomly assigned to either the experimental or the placebo group. The study was conducted over one calendar year. Data were collected every four months i.e. baseline, at the commencement of the study; mid evaluation, at the end of the first school term; final evaluation, at the end of the second school term; and post-final evaluation, following a withdrawal of supplements.

Results of the study indicated that the prevalence of anemia was near universal (90%) using the WHO norm of 12 g/dl and 70% by the Indian cut off point of 11 g/dl. No appreciable difference was observed between the younger (age < 11 yrs.) and older (age ≥ 11 yrs.) subjects. Anemia was primarily of the iron deficiency type indicated by the fact that nearly 90% subjects demonstrated an increment in Hb of greater than 1 g/dl at final evaluation in the experimental group. On intervention the mean Hb values increased from 10.28 g/dl at baseline to 11.61 g/dl at mid evaluation to 12.33 g/dl at final evaluation and dropped to

values at each evaluation, thereby, indicating substantial improvements in PWC. With a withdrawal of Fe supplementation, only the post exercise PR remained lower than that of the placebo group. A significant inverse relationship was observed between Hb, measures of iron status and both pre and post exercise BLA and PR values. ✓

✕ The BLA and PR values of anemics were significantly higher than those of the non-anemics at baseline and continued to remain so throughout the study. However, no difference between the younger and older subjects was observed in any of these parameters during the course of study. †

✓ The indices for growth status studied were height for age and weight for age. The data at baseline indicated no significant difference between the Fe treated and placebo groups for either index. No significant impact of supplementation was observed in the Fe treated group as compared to the placebo group, at final evaluation in the mean height or mean weight of the subjects. However, on comparing the mean increments in height from baseline to final evaluation, a significantly greater increase was observed in the Fe treated group. ✓

Thus, to conclude, iron deficiency anemia was highly prevalent in the study population and a prophylactic dose of 60 mg elemental Fe/day for 60 days, twice in a school year could bring down the prevalence of anemia dramatically. An impact of Fe supplementation on CF test scores, mainly in concentration, discrimination, perception

and visual-motor coordination could be observed only on continued Fe therapy. The beneficial effect of Fe supplementation on PWC, as measured by a decrease in the pre and post exercise BIA and PR values was observed.

No clear-cut benefit of Fe supplementation on growth could be observed in the study population. However, this aspect needs to be studied in greater depth.

Finally, the results of the present study indicate the need of continued Fe therapy, year after year to underprivileged school girls, 8 - 15 years of age, so as to obtain long term sustained benefits in those functional areas known to be affected by anemia.