

**A-05: Impact of nutrition education and iron supplementation on the iron and vitamin A status of adolescent school girls of low socio-economic status**

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Iron deficiency anaemia and vitamin A deficiency are major health problems in developing countries. A high prevalence of anaemia has been noted among

pregnant women in Sri Lanka, but studies on adolescent girls are limited. Vitamin A status of adolescent girls has not previously been assessed in Sri Lanka. This study aims to assess the prevalence of iron and vitamin A deficiency among adolescent school girls from low socio-economic groups and to evaluate the effectiveness of nutrition and health education alone, or together with iron supplementation, on the status of these nutrients.

Three hundred and sixty seven girls from low socio-economic groups attending 8 schools in Colombo were selected. Their mean age was 15.3 (S.D=1.1) years. Postintervention assessment was carried out on 313 subjects as 54 subjects were lost to follow-up. Their generalised nutritional status was assessed and a venous blood sample was collected from each subject. The haemoglobin concentration was measured and the iron status was assessed by determining the erythrocyte protoporphyrin, serum transferrin saturation and ferritin concentration. Serum vitamin A levels were estimated and conjunctival impression cytology was carried out to assess vitamin A status. Stools were tested for egg counts. Pre-tested questionnaires were administered to assess knowledge attitudes and practices on nutrition. All subjects were given nutrition and health education in the form of lecture discussions and interactive group discussions. Subjects were assigned to 2 groups matched for initial haemoglobin. The education and supplementation group was given ferrous sulphate tablets containing 60 mg elemental iron and requested to take it once daily for a period of 10 weeks. The other group was given a placebo to be taken in the same manner. The subjects were reassessed after the 10 weeks period of intervention.

The prevalence of anaemia (haemoglobin <20g/l) was 19.3% Hookworm infection was present in 8.1% of the subjects. Depleted iron stores (serum ferritin levels < 12 µg/l) were noted in 27.0% of the subjects, while 33.3% had deficient stores (serum ferritin 12-20 µg/l). Serum vitamin A levels were determined and conjunctival impression cytology was carried out on 88 subjects. The mean serum vitamin A concentration was 23.5 (S.D.=9.5) µg/dl and abnormal conjunctival impressions were noted in 10.2% subjects.

There was a significant ( $p < 0.001$ ) improvement in knowledge on nutrition after educational intervention. Further, there was a desirable change in food habits. Only 8.1% of subjects in the iron-supplemented group and 7.7% in the placebo group took less than 20 out of the 75 tablets given.

The haemoglobin concentration increased significantly, both, in the group given education only ( $p < 0.02$ ) and in the group given education and supplementation ( $p < 0.001$ ). A significant ( $p < 0.001$ ) increase in serum ferritin was noted in both groups following intervention. Although the change in serum vitamin A concentration after intervention was not statistically significant, there were no subjects with very low serum vitamin A levels ( $< 10 \mu\text{g/dl}$ ) at post-intervention assessment.

A high prevalence of iron and vitamin A deficiency was noted in this population. Education alone, was effective in reducing the prevalence of anaemia and in improving the iron status, but was more effective together with supplementation. Education is a feasible method of intervention and it can be delivered through schools. Supplementation for short periods is also feasible as compliance was high. Education was also effective in preventing severe vitamin A deficiency.

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