

## **Iron and Blood Improvement**

[Nagoya J Med Sci](#). 2009 Feb;71(1-2):39-49.

### **Iron and iodine deficiencies among under-2 children, adolescent girls, and pregnant women of Bangladesh: association with common diseases.**

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We examined the frequency of iron and iodine deficiencies and associations of iron and iodine deficiencies with common diseases among under-2 children, adolescent girls, and pregnant women of Bangladesh. We assayed the blood hemoglobin concentration in 395 under-2 children, 355 adolescent girls, and 263 pregnant women, the urinary iodine concentration of those adolescent girls and pregnant women, and the iodine level of all household salt specimens. The history of common diseases within their previous 2 weeks were also obtained from recall to explore the associations of iron and iodine deficiencies with common diseases. Anemia was found in 49.1% of children, 24.8% of adolescent girls, and 44.4% of pregnant women using defined cut-off values (Hb < 11.0 g/dL for under-2 children and pregnant women; <12.0 g/dL for adolescent girls). Prevalence of iodine deficiencies (urinary iodine <100 microg/L) was 38.4% in adolescent girls and 39.4% in pregnant women, and 39.4% of salt specimens had inadequate iodine (<15 ppm). The relative risk (RR) and 95% confidence intervals (CI) were estimated and adjusted for age, sex, and gestational age to explore the associations of iron and iodine deficiencies with common diseases. The RR of anemia was increased for fever (RR = 1.7, 95% CI = 1.3-2.3), ear infection (RR = 3.4, 95% CI = 1.3-8.5), skin disease (RR = 1.4, 95% CI = 0.9-2.2), and pneumonia (RR = 3.7, 95% CI = 0.7-19.5). The RR of iodine deficiency was elevated for diarrhea/dysentery (RR = 2.2, 95% CI = 1.11-4.4) and eye infection (RR = 2.1, 95% CI = 0.5-9.4). We concluded that iron and iodine deficiencies are quite high among the Bangladeshi population. Observed associations of iron and iodine deficiencies with common diseases indicated the necessity of eliminating iron and iodine deficiencies from this vulnerable population through strengthening of iron and iodine supplementation, in order to prevent diseases and promote health conditions.

PMID: 19358474 [PubMed - indexed for MEDLINE]

[Free Radic Res.](#) 2008 Sep;42(9):824-9.

**Iron-deficiency anaemia enhances red blood cell oxidative stress.**

**[Nagababu E](#), [Gulyani S](#), [Earley CJ](#), [Cutler RG](#), [Mattson MP](#), [Rifkind JM](#).**

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Oxidative stress associated with iron deficiency anaemia in a murine model was studied feeding an iron-deficient diet. Anaemia was monitored by a decrease in hematocrit and haemoglobin. For the 9 week study an increase in total iron binding capacity was also demonstrated. Anaemia resulted in an increase in red blood cells (RBC) oxidative stress as indicated by increased levels of fluorescent heme degradation products (1.24-fold after 5 weeks; 2.1-fold after 9 weeks). The increase in oxidative stress was further confirmed by elevated levels of methemoglobin for mice fed an iron-deficient diet. Increased haemoglobin autoxidation and subsequent generation of ROS can account for the shorter RBC lifespan and other pathological changes associated with iron-deficiency anaemia.

PMID: 19051108 [PubMed - indexed for MEDLINE]

[Zhonghua Yu Fang Yi Xue Za Zhi](#). 2008 Jun;42(6):437-41.

**[Effect of NaFeEDTA on serum ferritin level in iron deficient epidemic population: a systematic review]**

[Article in Chinese]

[Wang B](#), [Zhan SY](#), [Xia YY](#), [Li LM](#).

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**OBJECTIVE:** To evaluate effect of NaFeEDTA on serum ferritin level in iron deficient epidemic population. **METHODS:** A comprehensive literature retrieval was performed via searching electronic databases, hand searching bibliographies of books and relevant journals, collecting grey literatures, looking into conference abstracts, contacting fields experts and reviewing references and citations. Criteria from Cochrane EPOC review group were used to assess the quality of the included studies. Generic inverse variance method was used to undertake Meta-analysis. **RESULTS:** The pooled estimate for serum ferritin level (weighted mean difference) was 1.58 microg/L (95% CI 1.20-2.09;  $P < 0.001$ ). **CONCLUSION:** This systematic review indicates that NaFeEDTA might improve serum ferritin concentration significantly in iron deficient epidemic population.

Publication Types:

- [English Abstract](#)
- [Meta-Analysis](#)
- [Review](#)

PMID: 19035048 [PubMed - indexed for MEDLINE]

[Am J Med.](#) 2008 Nov;121(11):943-8.

## **Individualized treatment for iron-deficiency anemia in adults.**

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Iron deficiency is one of the most common disorders affecting humans, and iron-deficiency anemia continues to represent a major public health problem worldwide. It is especially common among women of childbearing age because of pregnancy and menstrual blood loss. Additional patient groups include those with other sources of blood loss, malnutrition, or gut malabsorption. Iron-deficiency anemia remains prevalent despite the widespread ability to diagnose the disease and availability of medicinal iron preparations. Therefore, new approaches are needed to effectively manage these patient populations. In this review, the diagnosis and treatment of iron-deficiency anemia are discussed with emphasis placed on consideration of patient-specific features. It is proposed that all patients participate in their own care by helping their physician to identify a tolerable daily iron dose, formulation, and schedule. Dosing cycles are recommended for iron replacement based on the tolerated daily dose and the total iron deficit. Each cycle consists of 5000 mg of oral elemental iron ingested over at least 1 month with appropriate follow-up. This approach should assist physicians and their patients with the implementation of individualized treatment strategies for patients with iron-deficiency anemia.

Publication Types:

- [Research Support, N.I.H., Intramural](#)
- [Review](#)

PMID: 18954837 [PubMed - indexed for MEDLINE]

PMCID: PMC2582401 [Available on 2009/11/01]

**Weekly iron and folic acid supplementation with counseling reduces anemia in adolescent girls: a large-scale effectiveness study in Uttar Pradesh, India.**

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**BACKGROUND:** Weekly iron-folic acid supplementation in small-scale research trials and as administered in institutions has been demonstrated to be effective in reducing anemia in adolescent girls. **OBJECTIVE:** To assess the effectiveness of weekly iron-folic acid supplementation in a large-scale project in reducing the prevalence of anemia in adolescent girls. **METHODS:** The project provided weekly iron-folic acid tablets, family life education, and deworming tablets every 6 months to 150,700 adolescent school girls and non-schoolgirls of a total district population of 3,647,834. Consumption of the iron-folic acid tablets was supervised for schoolgirls but not for non-schoolgirls. Hemoglobin levels were assessed in a random sample of non-schoolgirls at 6 and 12 months and schoolgirls at 6 months. The effect of supplementation on the prevalence of anemia and the compliance rate were assessed over a 4-year period. **RESULTS:** In 4 years, the overall prevalence of anemia was reduced from 73.3% to 25.4%. Hemoglobin levels and anemia prevalence were influenced significantly at 6 months. No difference in the impact on hemoglobin or anemia prevalence was observed between supervised and unsupervised girls. Counseling on the positive effects of regular weekly iron-folic acid intake contributed to a high compliance rate of over 85%. The cost of implementation was US\$0.36 per beneficiary per year. **CONCLUSIONS:** Weekly iron-folic acid supplementation combined with monthly education sessions and deworming every 6 months is cost-effective in reducing the prevalence of anemia in adolescent girls. Appropriate counseling, irrespective of supervision, is critical for achieving positive outcomes.

PMID: 18947031 [PubMed - indexed for MEDLINE]

[Nutrition](#). 2008 Nov-Dec;24(11-12):1116-22. Epub 2008 Aug 9.

**Anemia, nutritional status, and inflammation in hospitalized elderly.**

**[Ramel A](#), [Jonsson PV](#), [Bjornsson S](#), [Thorsdottir I](#).**

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**OBJECTIVE:** Anemia (hemoglobin <120 g/L) in elderly patients is a health problem. The aim of this study was to investigate the prevalence of anemia and associations of anemia with nutritional status and inflammation in hospitalized elderly. **METHODS:** Sixty patients from the Department of Geriatrics were randomly assigned to participate. Blood samples were drawn and analyzed at the laboratory of the University Hospital in Reykjavik. Nutritional status was assessed using anthropometric and hematologic parameters. **RESULTS:** The prevalence of anemia was 36.7%. Female participants were more frequently anemic than male participants (47.4% versus 18.2%,  $P = 0.024$ ). Anemic patients had a lower albumin level (31.3 versus 33.4 g/L,  $P = 0.019$ ) and a higher erythrocyte sedimentation rate (29.6 versus 16.0 mm/h,  $P = 0.005$ ) and were more often malnourished (81.8% versus 44.7%,  $P = 0.005$ ) than non-anemic patients. Hemoglobin correlated with prealbumin ( $\rho = 0.338$ ,  $P = 0.008$ ) and albumin ( $\rho = 0.250$ ,  $P = 0.054$ ) levels, but negatively with age ( $\rho = -0.310$ ,  $P = 0.016$ ) and erythrocyte sedimentation rate ( $\rho = -0.412$ ,  $P < 0.001$ ). In the multivariate analysis, erythrocyte sedimentation rate and nutritional status were significant predictors of hemoglobin ( $R^2 = 34.0\%$ ). **CONCLUSION:** This cross-sectional analysis provides evidence of anemia in 36.7% of patients hospitalized at the Landspítali-University Hospital in Reykjavik and shows an association among anemia, deteriorated nutritional status, and inflammation. Future prospective studies are needed to assess the efficacy of adjuvant nutritional support to stabilize or improve nutritional status including anemia in hospitalized elderly.

PMID: 18692363 [PubMed - indexed for MEDLINE]

[Nutr Cancer](#). 2008;60(4):474-82.

**Blood iron, glutathione, and micronutrient levels and the risk of oral cancer.**

[Richie JP Jr](#), [Kleinman W](#), [Marina P](#), [Abraham P](#), [Wynder EL](#), [Muscat JE](#).

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The risk of oral cavity cancer was determined in relation to serological levels of iron; vitamins A, B2, C, E; zinc; thiamin; and glutathione (GSH). The study included 65 hospitalized patients with oral cancer and 85 matched controls. In comparing the highest to the lowest tertiles, the risk was odds ratio (OR) = 0.3 [95% confidence interval (CI) = 0.1-0.6] for iron; 3.2 (95% CI = 1.3-8.1) for total iron binding capacity (TIBC), which measures the concentration of the iron delivery protein transferrin; and 0.4 (95% CI = 0.2-0.9) for transferrin saturation (iron/TIBC x 100). These associations were stronger in never smokers than in ever smokers. The risk associated with the iron storage protein ferritin was significantly elevated, but this association could reflect disease-related inflammation or comorbidity. The OR for GSH was 0.4 (95% CI = 0.1-0.9), and the OR for GSH reductase activity coefficient (indicative of riboflavin deficiency) was 1.6 (95% CI = 1.3-3.7). These findings suggest that mild iron deficiency and low GSH levels, which are associated with increased oxidative stress, increase the risk of oral cavity cancer.

Publication Types:

- [Research Support, N.I.H., Extramural](#)

PMID: 18584481 [PubMed - indexed for MEDLINE]

[Eur J Clin Nutr.](#) 2008 Aug;62(8):946-52. Epub 2007 May 23.

## **Prenatal iron supplementation in rural Vietnam.**

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**OBJECTIVE:** To assess the potential impact of a national iron supplementation programme in rural Vietnam. **METHODS:** The study included questionnaires, focus group discussions of pregnant women and key informant interviews, together with measurements of haemoglobin (Hb) and a stool examination for soil-transmitted helminths. **RESULTS:** Iron supplementation significantly increased Hb concentration among participants in the second and third trimesters by 0.4 and 0.7 g/dl, respectively ( $P=0.017$  and  $P<0.001$ ). The risk of anaemia (Hb  $<10.0$  g/dl) was increased significantly by hookworm infestation ( $P=0.041$ ) and in summer season ( $P=0.001$ ) and was decreased significantly by taking iron tablets ( $P=0.041$ ). **CONCLUSIONS:** The results of this study show that an iron supplementation programme is beneficial as a part of a comprehensive anaemia programme for pregnant women in these communities. These results will be useful for developing improved iron-deficiency anaemia control programs for pregnant women.

Publication Types:

- [Research Support, Non-U.S. Gov't](#)

PMID: 17522600 [PubMed - indexed for MEDLINE]

[J Pediatr \(Rio J\)](#). 2007 Mar-Apr;83(2):149-56.

**Risk factors for anemia in infants assisted by public health services: the importance of feeding practices and iron supplementation.**

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**OBJECTIVE:** To investigate risk factors for anemia in infants assisted by public health services. **METHODS:** In a cross-sectional study carried out in Viçosa, state of Minas Gerais, Brazil, 205 children from 6 to 12 months were evaluated. Socioeconomic, environmental and biological data were collected, as well as information on child's birth, nutritional status, maternal data, child health care practices, feeding practices, and iron supplementation. Diagnosis of anemia was based on hemoglobin levels under 11 g/dL, using a portable Hemocue photometer. To analyze variables associated with anemia, a hierarchical logistic regression model was used. **RESULTS:** The prevalence of anemia was 57.6%. Family income per capita less than 0.5 minimum wage, frequency of fruit intake less than daily and lack of iron supplementation increased the chance of anemia among infants. **CONCLUSION:** Adequate health and nutrition support to low income families, promotion of healthy nutritional habits and prescription of iron supplements are of great importance to prevent and manage anemia in infants assisted by public health services.

Publication Types:

- [Research Support, Non-U.S. Gov't](#)

PMID: 17426870 [PubMed - indexed for MEDLINE]

**Iron supplement prevents lead-induced disruption of the blood-brain barrier during rat development.**

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Children are known to be vulnerable to lead (Pb) toxicity. The blood-brain barrier (BBB) in immature brain is particularly vulnerable to Pb insults. This study was designed to test the hypothesis that Pb exposure damaged the integrity of the BBB in young animals and iron (Fe) supplement may prevent against Pb-induced BBB disruption. Male weanling Sprague-Dawley rats were divided into four groups. Three groups of rats were exposed to Pb in drinking water containing 342 microg Pb/mL as Pb acetate, among which two groups were concurrently administered by oral gavage once every other day with 7 mg Fe/kg and 14 mg Fe/kg as FeSO(4) solution as the low and high Fe treatment group, respectively, for 6 weeks. The control group received sodium acetate in drinking water. Pb exposure significantly increased Pb concentrations in blood by 6.6-folds ( $p < 0.05$ ) and brain tissues by 1.5-2.0-folds ( $p < 0.05$ ) as compared to controls. Under the electron microscope, Pb exposure in young animals caused an extensive extravascular staining of lanthanum nitrate in brain parenchyma, suggesting a leakage of cerebral vasculature. Western blot showed that Pb treatment led to 29-68% reduction ( $p < 0.05$ ) in the expression of occludin as compared to the controls. Fe supplement among Pb-exposed rats maintained the normal ultra-structure of the BBB and restored the expression of occludin to normal levels. Moreover, the low dose Fe supplement significantly reduced Pb levels in blood and brain tissues. These data suggest that Pb exposure disrupts the structure of the BBB in young animals. The increased BBB permeability may facilitate the accumulation of Pb. Fe supplement appears to protect the integrity of the BBB against Pb insults, a beneficial effect that may have significant clinical implications.

Publication Types:

- [Research Support, N.I.H., Extramural](#)
- [Research Support, Non-U.S. Gov't](#)

PMID: 17234227 [PubMed - indexed for MEDLINE]

## **Effect of iron repletion and correction of iron deficiency on thyroid function in iron-deficient Iranian adolescent girls.**

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The aim of this study was to determine whether iron supplementation in iron-deficient adolescent girls would improve thyroid function. A double-blind clinical trial was performed in a region in southern I.R. Iran. A total of 103 iron deficient participants were chosen. In all, 94 participants successfully completed this study. Participants were randomly assigned to one of two groups and treated with a 300 mg ferrous sulfate 5 times/week (n = 47) and placebo 5 times/week (n = 47) for 12 weeks. Blood samples were collected and assayed for hemoglobin, hematocrit, serum ferritin, iron, total iron binding capacity (TIBC), Thyroid stimulating hormone (TSH), total thyroxine (TT4), total triiodothyronine (TT3), free thyroid hormones (FT4 and FT3), triiodothyronine resin uptake (T3RU), reverse triiodothyronine (rT3), selenium and albumin concentrations. Statistical analysis was performed with parametric and non-parametric methods as appropriate. Data analysis revealed a significant increase in TT4, TT3, T3RU and a significant decrease in rT3 concentration in comparison to initial values in iron treated group (12%, p<0.001; 3.5%, p<0.001; 16%, p<0.05 and 47%, p<0.001, respectively). At 12 week there were significant differences between control and placebo in TT4, TT3, T3RU and rT3 concentrations (9.9 vs 8.4 microg dL(-1), 145.2 vs 130.4 microg dL(-1), 32.5 vs 28.4% and 23 vs 41 microg dL(-1), respectively, all p<0.001). Alterations in FT3 and TSH concentration were not significant, but concentration of FT4 revealed a significant difference between the beginning and the end of the study in iron treated group (10.3 vs 11.4, p<0.001). Iron supplementation improves some indices of thyroid function in iron-deficient adolescent girls.

Publication Types:

- [Clinical Trial](#)
- [Comparative Study](#)
- [Randomized Controlled Trial](#)
- [Research Support, Non-U.S. Gov't](#)

PMID: 19070025 [PubMed - indexed for MEDLINE]

[Tex Heart Inst J](#). 2006;33(3):340-4.

## **The cardiomyopathy of iron deficiency.**

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Iron-deficiency anemia can have deleterious effects on the heart. Herein, we describe the effects of iron deficiency on the heart as corroborated with electrocardiography, radiology, echocardiography, and cardiac catheterization. We review the pathophysiology, clinical features, and management of iron-deficiency-induced cardiomyopathy.

Publication Types:

- [Case Reports](#)

PMID: 17041692 [PubMed - indexed for MEDLINE]

PMCID: PMC1592266

[Hypertension](#). 2008 Jan;51(1):154-9. Epub 2007 Oct 29.

## **Long-term circulatory consequences of perinatal iron deficiency in male Wistar rats.**

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Perinatal iron deficiency (PID) has been reported to induce developmental abnormalities, including cardiovascular complications in rats. These complications are believed to be "programmed" by an aberrant perinatal environment because the changes persist long after the insult is corrected (ie, despite subsequent iron replenishment). Little is known about the mechanisms by which PID affects blood pressure in the offspring, although the kidney is likely to play a central role. The objective of this study was to investigate the circulatory complications of PID and the putative role of the kidney involved therein. Before and throughout gestation, female Wistar rats were fed either a low-iron diet (3 ppm/10 ppm Fe) or an iron-enriched diet (225 ppm Fe). After giving birth, all of the dams were placed on a standard grain-based diet. At 24 hours postpartum, hematocrits and hemoglobin levels from offspring of iron-deficient mothers were 60% and 59% of control values, respectively. Adult PID animals had greater mean arterial pressures (110 versus 106 mm Hg) and systolic blood pressures (129 versus 124 mm Hg) than controls, as assessed by radiotelemetry. The relationship between renal arterial pressure and renal interstitial hydrostatic pressure, assessed in anesthetized rats, was blunted by 41% in the PID group compared with controls. In addition, arterial pressure changes were significantly greater in response to altered sodium in the PID animals compared with controls. These data confirm that PID adversely affects blood pressure control, which seems to be mediated, at least in part, by altered intrarenal hemodynamic properties.

PMID: 17967999 [PubMed - indexed for MEDLINE]

**Adaptive response of the heart to long-term anemia induced by iron deficiency.**

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Anemia is common in patients with chronic heart failure and an independent predictor of poor prognosis. Chronic anemia leads to left ventricular (LV) hypertrophy and heart failure, but its molecular mechanisms remain largely unknown. We investigated the mechanisms, including the molecular signaling pathway, of cardiac remodeling induced by iron deficiency anemia (IDA). Weanling Sprague-Dawley rats were fed an iron-deficient diet for 20 wk to induce IDA, and the molecular mechanisms of cardiac remodeling were evaluated. The iron-deficient diet initially induced severe anemia, which resulted in LV hypertrophy and dilation with preserved systolic function associated with increased serum erythropoietin (Epo) concentration. Cardiac STAT3 phosphorylation and VEGF gene expression increased by 12 wk of IDA, causing angiogenesis in the heart. Thereafter, sustained IDA induced upregulation of cardiac hypoxia inducible factor-1alpha gene expression and maintained upregulation of cardiac VEGF gene expression and cardiac angiogenesis; however, sustained IDA promoted cardiac fibrosis and lung congestion, with decreased serum Epo concentration and cardiac STAT3 phosphorylation after 20 wk of IDA compared with 12 wk. Upregulation of serum Epo concentration and cardiac STAT3 phosphorylation is associated with a beneficial adaptive mechanism of anemia-induced cardiac hypertrophy, and later decreased levels of these molecules may be critical for the transition from adaptive cardiac hypertrophy to cardiac dysfunction in long-term anemia. Understanding the mechanism of cardiac maladaptation to anemia may lead to a new strategy for treatment of chronic heart failure with anemia.

## **Iron trafficking inside the brain.**

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Iron, an essential element for all cells of the body, including those of the brain, is transported bound to transferrin in the blood and the general extracellular fluid of the body. The demonstration of transferrin receptors on brain capillary endothelial cells (BCECs) more than 20 years ago provided the evidence for the now accepted view that the first step in blood to brain transport of iron is receptor-mediated endocytosis of transferrin. Subsequent steps are less clear. However, recent investigations which form the basis of this review have shed some light on them and also indicate possible fruitful avenues for future research. They provide new evidence on how iron is released from transferrin on the abluminal surface of BCECs, including the role of astrocytes in this process, how iron is transported in brain extracellular fluid, and how iron is taken up by neurons and glial cells. We propose that the divalent metal transporter 1 is not involved in iron transport through the BCECs. Instead, iron is probably released from transferrin on the abluminal surface of these cells by the action of citrate and ATP that are released by astrocytes, which form a very close relationship with BCECs. Complexes of iron with citrate and ATP can then circulate in brain extracellular fluid and may be taken up in these low-molecular weight forms by all types of brain cells or be bound by transferrin and taken up by cells which express transferrin receptors. Some iron most likely also circulates bound to transferrin, as neurons contain both transferrin receptors and divalent metal transporter 1 and can take up transferrin-bound iron. The most likely source for transferrin in the brain interstitium derives from diffusion from the ventricles. Neurons express the iron exporting carrier, ferroportin, which probably allows them to excrete unneeded iron. Astrocytes lack transferrin receptors. Their source of iron is probably that released from transferrin on the abluminal surface of BCECs. They probably to export iron by a mechanism involving a membrane-bound form of the ferroxidase, ceruloplasmin. Oligodendrocytes also lack transferrin receptors. They probably take up non-transferrin bound iron that gets incorporated in newly synthesized transferrin, which may play an important role for intracellular iron transport.

PMID: 17953660 [PubMed - indexed for MEDLINE]

[Int J Obes \(Lond\)](#). 2008 Sep;32(9):1441-4. Epub 2008 Jul 8.

**Sedentariness and increased visceral adiposity in adult perinatally iron-deficient rats.**

[Komolova M](#), [Bourque SL](#), [Nakatsu K](#), [Adams MA](#).

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**BACKGROUND:** Perinatal iron deficiency (PID) adversely programs offspring resulting in alterations in adult cardiometabolic function. Increased visceral adiposity is the proposed culprit for these sequelae, and may be potentiated by decreased physical activity. Herein, we determined (i) the effect of PID on visceral adipose tissue (VAT) and locomotor activity, and (ii) whether increased VAT is associated with blood pressure responsiveness to increased dietary sodium. **METHODS AND RESULTS:** Dams were fed a low iron diet (<10 mg/kg Fe) prior to and throughout gestation. From 12 to 35 weeks of age, locomotor activity (assessed by radiotelemetry) in PID offspring was 25% lower compared with control offspring ( $P<0.001$ ). At 36 weeks of age, PID offspring had 15% more VAT than controls ( $P<0.05$ ). Furthermore, the elevation of mean arterial pressure (by radiotelemetry) in response to increased sodium intake was approximately twofold greater in the PID offspring ( $P<0.05$ ). **CONCLUSIONS:** PID results in increased visceral adiposity, which was associated with enhanced blood pressure responsiveness to dietary salt, perhaps due to programmed sedentary behavior.

Publication Types:

- [Research Support, Non-U.S. Gov't](#)

PMID: 18607379 [PubMed - indexed for MEDLINE]

## **Do cerebral blood flow velocities change in iron deficiency anemia?**

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Infants with iron deficiency had lower scores when tested for mental and motor development than their peers with better iron status. The aim of this study was to examine cerebral blood flow velocity in infants with iron deficiency anemia. Thirty-six infants (27 male, 9 female) with iron deficiency anemia, aged 6 to 36 months were divided into 2 groups according to the hemoglobin (Hb) values [group 1 (n=23) Hb<10 g/dL and group 2 (n=13) 11 >Hb> or =10 g/dL]. In anterior and middle cerebral arteries only end-diastolic velocity (EDV) was increased in group 1 as compared with group 2 (P=0.05 and P=0.016, respectively), whereas in posterior cerebral artery both EDV and peak-systolic velocity were different between the groups (P=0.024 and P=0.004). Both peak-systolic velocity and EDV showed significant correlation with Hb level in the posterior cerebral artery (r=-0.38, P=0.023 and r=-0.35, P=0.037) but not in the anterior and middle cerebral arteries. Increased cerebral blood flow velocities in children with lower Hb values may be due to increased cardiac output, decreased vascular resistivity caused by anemia.

PMID: 17984692 [PubMed - indexed for MEDLINE]