

**Iron Supplementation Outcome on Recurrent
Upper Respiratory Tract Infections in 6-15
Years Old Egyptian Children
A 1 Year Prospective Study**

Thesis

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By

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Abstract

Background: Iron therapy could reduce the prevalence of upper respiratory infections. **Aim:** To assess the incidence and type of recurrent URTIs in Egyptian school children, assessing the prevalence of iron deficiency anemia and the effect of iron supplementation on the incidence and severity of URTIs among them. **Patients and Methods:** 1000 Children (6–15 years) were recruited for a prospective interventional study from two schools in Shobra, Cairo, Egypt, enrollment was done in early autumn and after a three months follow up, students whom diagnosed to have recurrent URTIs were screened by Hemocue; if anemic (Hb < 11.5gm/dL): CBC and iron profile were done, they enrolled into 3 groups: (A) had iron deficiency anemia and received oral iron fumerate therapy (6mg/kg/d) for 3 months then maintained on oral iron (1mg/kg/d) for one year, and (B) non anemic randomly assigned in 1:1 ratio into: group (B1) received maintenance iron therapy for one year and group (B2) did not receive iron. Frequency and severity of URTIs using (CARIFS score) throughout the study period were recorded. **Results:** Tow-hundred and forty (24.5%) of the children were suffering from recurrent URTIS during autumn, 135 of them (55%) was anemic. The frequency of iron deficiency anemia among children who experienced recurrent URTIS was 42.8%. The most prevalent upper respiratory tract infection was common cold (60%) followed by acute tonsillitis (29%). A maintenance dose of iron decreased the frequency and severity of URTIS. **Conclusion:** Iron deficiency anemia caused a higher number of URTIs and correcting it improved the number of illness.

Key words: Iron, URTIs, CARIFS.

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List of Abbreviations

Abb.	Mean
AOM	Acute otitis media
BMI	Body mass index
C3	Complement 3
C4	Complement 4
CARIFS	Canadian acute respiratory illness and flu scale
CBC	Complete blood count
CRP	C-reactive protein
CSOM	Chronic suppurative otitis media
ELISA	Enzyme linked immuno assay
ENT	Ear-nose-throat
ESR	Erythrocyte sedimentation rate
Hb	Hemoglobin
HFE	High iron fe
ID	Iron deficiency
IDA	Iron deficiency anemia
IDDM	Insulin dependent diabetes mellitus
Ig	Immunoglobulin
IL	Interleukin
INF	Interferon
IREG-1	The iron regulated transporter-1
IRP/IRE	The iron regulatory protein/the iron responsive element
MCH	Mean corpuscular hemoglobin
MCV	Mean corpuscular volume
NA² EDTA	Disodium ethylenediamine tetraacetic acid
NADH	Nicotinamide adenine dinucleotide
NK	Natural killer

Abb.	Mean
OME	Otitis media with effusion
PCR	Polymerase chain reaction
RBCs	Red blood cells
RRIs	Recurrent respiratory infections
RRIs	Recurrent respiratory infections
RURTIs	Recurrent upper respiratory tract infections
SF	Serum ferritin
TIBC	Total iron binding capacity
TNF	Tumor necrosis factor
UK	United kingdom
URTIs	Upper respiratory tract infections
WBCs	White blood cells
WHO	World health orginaization

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Abstract

Background: Recurrent upper respiratory infections (RURTI) are common in school age children. An adequate iron status might reduce their prevalence. **Aim:** To assess the percentage and type of RURTI in Egyptian school children, assessing the percentage of iron deficiency anemia (IDA) and the outcome of iron supplementation on the recurrence and severity of URTIs among them. **Patients and Methods:** One thousand Children (6–15 years) were recruited from two schools in Shobra, Cairo; enrollment was done in early autumn for three months; students whom defined to have RURTI were screened by Hemocue; if anemic (Hb < 11.5gm/dL): CBC and iron profile were done, they were enrolled into 2 groups: (A) Had IDA and received oral iron fumerate therapy (6mg/kg/d) for 3 months, then maintained on oral iron (1mg/kg/d) for 9 months, and (B) Non anemic; were randomly assigned in 1:1 ratio into: group (B1) Received maintenance iron therapy same dose for 12 months and group (B2) Did not receive iron. Recurrence and severity of URTIs using (CARIFS score) throughout the study period were recorded. **Results:** Two-hundred and forty-five (24.5%) of the children were suffering from recurrent URTIs during autumn, 135 of them (55%) were anemic. The percentage of iron deficiency anemia among children who experienced recurrent URTIs was 42.8%. The most prevalent upper respiratory tract infection was common cold (60%) followed by acute tonsillitis (29%). A maintenance dosage of iron decreased the recurrence and severity of URTIs. **Conclusion:** Recurrent URTIs were common in 6-15 years old Egyptian students, iron deficiency anemia was prevalent among them. Iron therapy was advantageous to lower the occurrence of URTIs of the studied population during the follow-up.

Key words: Iron, RURTI, CARIFS.