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### The effect of Natural Diet on Hb level of children age Group 2-6 years: positively link to global warming

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#### ABSTRACT

UNICEF UK reported found that global warming is already reducing the quality of the world's most vulnerable life of children. As you "go away from Nature, Nature go away from you." This phrase is exactly applicable to today's generation.

The purpose of the study was to research some of the effect of Modern Life Style of toxins on children health, specifically to recommended wholesome life style & inherently includes nutritious diet & minimum exposure to toxins. This type of life style will help develop and maintain strong, health, mind, bodies & immune system.

This paper addresses the decline of some aspects of general health in metropolises city due to poor life style & diet. It presents some of the proposed causes & resultant diseases associated with decline Hb level & it endeavors to give broader perspective on human health & its holistic nature. Also included in this paper are recommendations for future research on the naturopathic application on Routine life of children their holistic health approach.

Children suffering from low Hb i.e.

- feeling tired and weak
- decreased work and school performance
- slow cognitive and social development during childhood
- difficulty maintaining body temperature
- decreased immune function, which increases susceptibility to infection
- glossitis (an inflamed tongue)

For the present study Researcher has choose 30 children, age group 2-6 years & recommended Diet Plan, Yogic Excise & given parental counseling at the interval of 7 days. Case Study Procedure will be used as research method for present study and instructions of conduction of experiment/observational case study report will be prepared.

Out come was assessed after with every week for 40 days. Results of the study would be presented.

**Key words:** Hemoglobin, Anemia, Iron Deficiency, natural diet, Children, life style

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## INTRODUCTION

Nutritional or vitamin deficiency anemia refers to a reduced red blood cell count due to a poor diet which is deficient in Iron, Folate vitamin A, B2, B-6, B12, C and folic and along with protein all of which can cause anemia. Deficiency of above mentioned nutrients can affect the number of red blood cells produced. It can also reduce the life expectancy of red cells. Anemia is a wide spread public health problem associated with an increased risk of morbidity and mortality, especially in pregnant women & young children. The developing child in the womb needs additional blood cells for healthy growth. The mother may not be able to produce enough red blood cells for herself and the growing baby, which can result in anemia. Perhaps this baby would be born with low birth weight and low immunity. Iron is an important dietary mineral that is involved in various bodily functions, including the transport of oxygen in the blood. This is essential in providing energy for daily life. Iron is also vital for brain development. Babies, toddlers, preschoolers and teenagers are at higher risk of iron deficiency, mainly because their increased needs for iron may not be met by their diets. Without intervention, a child whose diet does not provide them with enough iron will eventually develop iron deficiency anemia.

Pollutant, drugs, food preservatives & additives, artificial sweeteners, colourants essences & hydrogenators, all assault the human body. This along with the processed & refined foods not only deprives us of the essential nutrients but also overload the body with toxins & Metabolic Wastes. This unhealthy diet Makes for a strong case in favour of “Natural Diet”. The Ancient sages of India stressed on the benefits of raw natural foods.

From the dawn of human creation, loving & caring parents have sought to give their children a good life style. This life should include, among other important things, wholesome nutrition's food & a fruits (defective genes) ultimately determine longevity and the quality of life. The thing we put into our bodies & the thing we do with our bodies largely determines our lifespan & state of health the Grand total of all the choice we make in these two area is known as life style.

Accordingly to the estimate of the world Health Organization (WHO) more than one third world's population is Anemic. Recent Estimates from India documented an anemia. Prevalence of 74% of children between 9 to 36 months of age. Amongst the various causes of anemia. Iron deficiency is believed to be of fore most importance observational studies in human have documented a relationship between iron deficiency anemia & impaired physical performance & affect the child's brain development & Psychological development.

Department of Pediatric, University of Sao Paulo's correspondent researcher Jose has concluded that iron fortification can be added at home for their home food cooking and is effective to increase blood hemoglobin & ferritin in adults & children. They found that it can be very effective & simple to supply iron to low. Socio-Economic families where the iron intake may be found to be low. Almost all (99%) oxygen (O<sub>2</sub>) transportation is accomplished by the oxygen binding on to the outside of haemoglobin which carries it around to the source of use,

the remaining 1% is dissolved in the blood plasma. Carbon dioxide (CO<sub>2</sub>) has a varied transportation process (venous blood), 7% is carried as gas, 23% is carried on the haemoglobin and 70% is dissolved in the plasma and transported as an ion called bicarbonate. The transition of these two substances results in an efficient gas exchange from the alveolus and maintenance of the bodily function. There are many reports of clinical impressions of anemic children being fearful. More systematic observations have been made comparing anemic with nonanemic children during testing with the Bayley Scales using the Bayley infant behavior ratings. These studies have found that anemic children tend to be more fearful.

According to Estimate, each 1% drop in hemoglobin results in 1.5 – 2 % decrease in work capacity & output. Below concentration of hemoglobin in the blood is characterized as Anemia. In iron deficiency anemia the red cells appear abnormal & are usually small and pale (hypochromic). The pillar of the red cells reflects their low hemoglobin content. Children with a poor diet we likely to suffer from one of the type of anemia caused by vitamin & mineral deficiency.

A common finding while CBC test of the Children are ;

**Anisocytosis:** This is a variation in size of RBCs; it may be an indication of anemia

**Macrocytosis:** Large RBCs that may be due to a vitamin B12 or folate deficiency. They are seen in pernicious anemia, chronic alcoholism, and megaloblastic anemia.

**Mircrocytosis:** This is the presence of small RBCs that may include several different abnormalities at the same time.

**Hypochramasia:** This may be seen in a variety of disorder including thalassemia and iron deficiency. The RBC is pale in color due to insufficient hemoglobin and contains a large, hollow middle (central pallor) of the cell.

**Hyperchromasia:** The RBC is darker in color that normal this may be due to dehydration.

**Polychromasia:** blue-staining RBCs, indicating that they are immature due to early release from the bone marrow.

Iron deficiency anemia's caused by a shortage of the mineral iron which is necessary to produce hemoglobin Researcher has made an experimental case study by selecting age group 2 to 6 yrs. As early childhood children body stimulate fresh cell after every 24 hours. As nature gives an everyday opportunity to undo this children degeneration of cells. Researcher has prescribed & educate parent about the Natural diet .

## MATERIALS AND METHODS



## Methodology

### Subject and Design

Researcher has made an experimental case study to by selecting randomly six sample, age group 2 to 6 yrs. Researcher has conducted study at Dr.khatau's MOTHER AND CHILD HOSPITAL AND RESEARCH CENTER ,borivali (W) ,Mumbai .400092 .As early childhood has an stimulate fresh cell after every 24 hours. As nature given an opportunity every day to undo this children degeneration of cells. Researcher has prescribed & educate and counsel parent about the Natural diet without presenting, ice-cream, chocolates & food other than Natural.

Prescribed systemic Natural diet Regularly for week, including food with a good source of iron will help prevent iron deficiency. Food rich in iron include group of :

- a) Cereals : soyaben, fenugreek seeds, wheat, Ranjgeera, Nachni.
- b) Vegetables : Palak, Beet, Red Cabbage, Broccoli Drumstick, lime, ginger.
- c) Herbs : Basil, Mint
- d) Fruits : Anjir, Black Graps, Strawberry, Chickoo, Apple.
- e) Dairy product : Butter, Cheeze, Cream of Milk, Cow Milk
- f) Dry Fruit : Apricort, Prunes, Raisin

### Proposed Natural Diet Prescribed to the Sample to follow:

- Eating Pattern** : Pro. Vit Baby Diet. Age group {2-6 yrs}
- Dietary Advice** : 40 days
- Water Intake** : 6 glass (small) water / 2 glass (warm)
- Advice** : Wheat 500gm, Soyabean 100gm, Methi 10 gm..
- Sheera** : 1 Spoon Wheat , 1 Spoon Nachni,
- Jaggeri** : 1 Spoon Ghee
- 1.) Morning** : hydrotherapy---1 gl w.w [200 ml]  
1 gl n.w
  - Water** : Tulsi + Ajvain + Mint [balance water-100 ml]
  - Raw Juice** : Carrot + Amla + fresh Turmeric [100 ml]  
1 Almond + ½ Walnut +flour of wheat,soya, nachni,rajgeera  
Sheera – 1 Spoon
  - Fruit** : 1 Anjir + Milk [50ml]
- 2.) Afternoon Lunch** : 1 Small Roti + Veg. + Dal + Rice + Salad (1 Tomato Slice)
- Water** : 1 Small glass + lemon (warm)
- Advice** : hydrotherapy ----1 gl w.w [200 ml]  
1 gl n.w
- Evening Snacks** : Rawa + Nachni - Upma
- Fruits** : 2 Strawberry + Milk



**Juice** : Apple Juice [100 ml]  
**Advice** : Hydrotherapy ----1 gl w.w [200 ml]  
 1 gl n.w

**3.) Night**

**Soup** : Drumstick + Raw Palak leaves  
 Tomato+ basil leaves  
**Dinner** : Veg. Khichdi + dal khichdi + mint leaves  
**Advice** : Balance Water  
**Herb** : Mint, basil, ajwain leaves (Balance Water)

**Table of Herbs / Vegetables / Fruits / Nuts & Seeds - Iron Content**

| List of Diet   | Content of Iron – Value Per 100 gm |
|--|------------------------------------|
| <b>Gain</b>  |                                    |
| Brown Rice 1 Cup cooked wheat germ, 2 tablespoon out meal, 1 cup cooked.<br>Total cerail (Khicdi) 1 ounce legume seals & say | 0.8 mg.                            |
| Soya Milk ½ Cup  | 1.4 mg.                            |
| Tofu firm ½ Cup  | 1.8 mg.                            |
| <b>Vegetable rich in iron</b>  |                                    |
| Broccoli   | 0.7 mg.                            |
| Spinach  | 10.9 mg.                           |
| Green beans ½ cup boiled   | 0.8 mg.                            |
| Beet 1 cup   | 1.8 mg.                            |
| Potato Baked / cook w/skin on  | 4.0 mg.                            |
| Green Leafy Vegetable  | 2.0 mg.                            |
| Watermelon   | 3.0 mg.                            |
| Drumstick  | 7.0 mg.                            |
| Carrot   | 2.2 mg.                            |
| Bitter Gourd   | 1.8 mg.                            |
| Beet Root  | 1.0 mg.                            |
| Lemon  | 2.3 mg                             |
| Banana   | 0.9 mg                             |
| Apple  | 1.0 mg                             |
| <b>Nuts &amp; Seeds</b>  |                                    |
| Raisins  | 7.7 mg.                            |
| Fig  | 0.6 mg.                            |
| Date   | 7.3 mg.                            |
| Fenugreek  | 16.5 mg.                           |
| Soyabin  | 11.5 mg.                           |
| Almond   | 4.5 mg.                            |
| <b>Herbs</b>   |                                    |
| Ginger (Roots)   | 2.6 mg.                            |
| Mint   | 15.6 mg.                           |
| <b>Grains – Pulses</b>   |                                    |
| Rice   | 3.2 mg.                            |
| Wheat  | 2.5 mg.                            |
| Bengal Gram  | 10.2 mg.                           |
| Black Gram   | 9.1 mg.                            |
| Green Gram   | 8.5 mg.                            |



**Intervention Design** : Herbs/ Vegetables/ cereals/ Fruits/ Nuts & Seeds – Iron Content.  
**Subject** : Children Age Group 2 to 6 yrs.  
**Sample Size** : n=10  
**Source of Subject** : Khatau's Mother & Child Hospital & Research Centre, Borivali (W) Mumbai – 400 092.

#### Ethical Consideration:

- The study protocol was explained to the parent & their signed consent was obtained.
- Parent were counsel about the CBC Report & their intervention.
- Prescribed & Explain Natural Diet Plan & their Benefits & Suggestion given in detail with the portion of food.
- Subject been intervain after every 7 days to measure wt. & counsel parents about the wellbeing of child.

**Method:** Pre-Post experimental method & Diet is intervention (Age Group 2 to 6 yrs.)

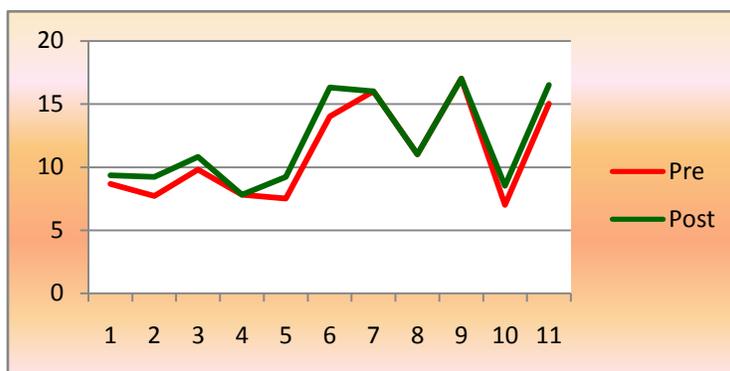
#### Pre-Post experimental method & Diet is intervention (Age Group 2 to 6 yrs.) Pre Test

| Sl.No. | Name               | Age (Yrs) | Wt. (Kg) | Hb (gm) | Effect on Mind & Body                           |
|--------|--------------------|-----------|----------|---------|---|
| 1      | Mahek Purohit      | 2         | 8.67     | 9.6     | Cough / Cold Frequent fever ,not plaful         |
| 2      | Vaishavi Hashwa    | 2         | 7.7      | 11.1    | Body Ache ,fever ,cough /cold                   |
| 3      | Rena Bocham        | 2         | 9.8      | 11      | Cough / Cold Frequent fever                     |
| 4      | Amrita Thakur      | 2         | 7.8      | 9.4     | Cough / Cold Frequent fever                     |
| 5      | Sara Siddique      | 2         | 7.5      | 9       | Cough / Cold Frequent fever                     |
| 6      | Tia Mistry         | 4         | 14       | 9.8     | Cough / Cold Frequent fever ,dry and pale skin, |
| 7      | Sayeeda Mohd.      | 6         | 16       | 10.9    | Cough / Cold Frequent fever                     |
| 8      | Sunil Jethia       | 2.5       | 11       | 10      | Cough / Cold Frequent fever,irritation          |
| 9      | Siddarth Shambhgan | 4         | 17       | 11.2    | Cough / Cold Frequent fever                     |
| 10     | Aaraw V. Shah      | 2         | 7        | -       | Cough / Cold Frequent fever                     |
| 11     | Bhavik V. Shah     | 5         | 15       | -       | Cough / Cold Frequent fever                     |

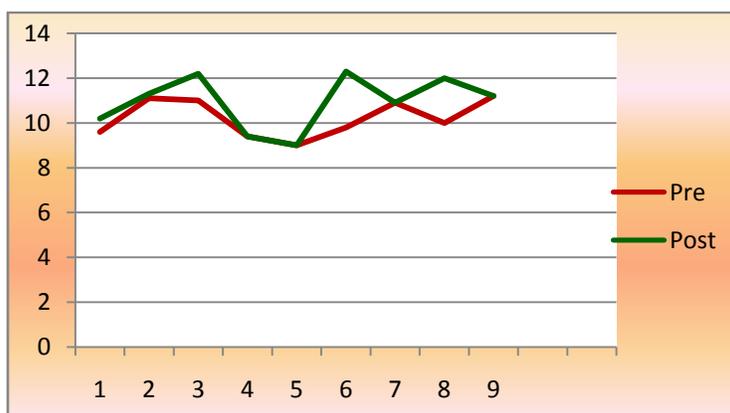
#### POST TEST

| Sl.No. | Name            | Age (Yrs) | Wt. (Kg) | Hb (gm) | Effect on Mind & Body  |
|--------|-----------------|-----------|----------|---------|--|
| 1      | Mahek Purohit   | 2         | 9.34     | 10.2    | Very Cheerful, No Cough - Cold   |
| 2      | Vaishavi Hashwa | 2         | 9.2      | 11.3    | Very Cheerful, No Cough - Cold   |
| 3      | Rena Bocham     | 2         | 10.8     | 12.2    | Apatite increased No Cough – Cold, Sleep has improved                            |
| 4      | Amrita Thakur   | 2         | -        | -       | -  |
| 5      | Sara Siddique   | 2         | 9.2      | -       | -  |
| 6      | Tia Mistry      | 4         | 16.3     | 12.3    | Apatite increased No Cough – Cold, Sleep has improved, Irritation gone, Cheerful |
| 7      | Sayeeda Mohd.   | 6         | 16       | -       | -  |
| 8      | Sunil Jethia    | 2.5       | 11       | 12      | No Cough – Cold, No fever  |

|    |                    |   |      |   |                   |
|----|--------------------|---|------|---|-------------------|
| 9  | Siddarth Shambhgan | 4 | 17   | - | Apatite increased |
| 10 | Aaraw V. Shah      | 2 | 8.5  | - | Apatite increased |
| 11 | Bhavik V. Shah     | 5 | 16.5 | - | No Cough – Cold   |



Assessment: 1) Increase in weight



Assessment: 2) Increase in Hb

**Findings of Pre & Post Test**

**Blood Cell Morphology finding in CBC**

| Morphology of Cell  | Symptoms   |   | Cause   |
|---|--|---|---|
|   | Physiological  | Psychological   |   |
| Normocytic<br>Normochromic<br>– No. of Red blood cell is low        | Loss of appetite,<br>Pale lips Brittle<br>nail, Sore Throat<br>Fatigue | Poor attention<br>span, easily<br>distracted                            | Fall in R.B.Cs is Chronic<br>diseases or drug therapy                         |
| Hypochromia or<br>Hypochromasia<br><br>The % of Hb in R.B.Cs is low | Loss of apatite  | Poor Sleep &<br>attention span,<br>Anger irritable<br>easily frustrated | Iron deficiency   |
| Microcytosis<br><br>Small R.B.Cs cell                               | Anemia<br>Thallasamia  | Mild speech<br>disturbances with<br>poor vocabulary                     | iron deficiency<br>microcytic hypochromic,<br>Anemia,<br>Iron Supplementation |
| Anisocytosis  | Fatigue,   | Isolated learning   | Deficiency of Iron, Vit A, B12  |

|   |   |   |                                    |
|---|---|---|------------------------------------|
| R.B.Cs cell are unequal in size                                       | Brittleness, Pale Skin, Rapid heart beat      | disabilities with full normal intelligence    |                                    |
| Poikilocytosis<br>Abnormal shape of R.B.Cs                            | Nutrient absorption problem asccliae diseases | Anger & Temper Tantrums                       | Deficiency of Folic acid & Vit B12 |
| Lymphocytosis<br>Elevated amount of lymphocytic it's a type of W.B.C. | Feature of infection in children              | Difficulty in sustaining attention, Irritable | Acute Viral Infection              |

Researcher has observed that selected children of age group 2-6 years has many common symptoms & cause, though they are from different family group selected sample were from middle class and vegetarian. Children were suffering from frequent cough, cold & fever in the interval of 15 days. We can see from table their Hb level was between 9 to 11 gm's %. Which has resulted into low immunity & affected child's vital capacity?

Iron deficient diet & lack of feeding good Balance diet both seem to trigger an anemic condition in the children monitored in this study, when put together that effect is amplified to have a greater impact on the body's response.

Even Researcher has found subject with low hemoglobin were deficient in Vit. B12, D & Folic acid.

### RESULTS

- It has observed from pre and post finding that they are quick to stimulate any kind of pattern it could be physiological or psychological. So preventive measure could be a great help to our generation.
- There is an association between anemia & Malnutrition with lower mean hemoglobin levels in the underweight & stunted children.
- It has observed that subject has shown consistent improvement in weight & the behavior patterns of the children were also very positive. Their apatite increase & children were quiet playful & in happy state of mind. Parent has to say that children were happily responded to natural diet.

### DISCUSSIONS

The circumstances and experiences of children today set the stage for human security in the future. Research findings increasingly point to the critical imprints that childhood health, nutrition and education leave on long-term adult mental and physical health and ability to contribute to a sustainable society.

Some of the factors found to be associated with both anemia and poor Cognitive Development including stimulation in the home, including lack of maternal warmth, Poor

Maternal Education, Low birth weight, under nutrition. It is highly unlikely that all of these factors are controlled for in one study. There are probably many other confounding factors in selected subject during Pre-Test.

Children with lower mean hemoglobin found to be more susceptible to acquire cough/cold and fever often are more at risk of getting respiratory diseases as hemoglobin is an important component for exchange of oxygen and carbon dioxide. Children whose parents have been educated and counsel about their child development and growth could follow natural diet very well. Community awareness programmes about NATURAL DIET and its effects have to be launched emphasizing on cause and strategy for prevention when environment is not friendly. {GLOBAL WARMING }

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