APPENDICES
# APPENDIX NO. I

## QUESTIONNAIRE CUM INTERVIEW SCHEDULE TO ASSESS THE DIETARY INTAKE AND NUTRITIONAL STATUS OF PREGNANT WOMEN

### GENERAL SCHEDULE

<table>
<thead>
<tr>
<th>Identification Particular</th>
<th>Serial No.</th>
<th>Card Code No.</th>
<th>Hospital</th>
</tr>
</thead>
</table>

1. Name of the Investigator : 
2. Name of the Interviewee : 
3. Name and address of the head-of the family : 
4. Type of Family:  
   1) Joint 
   2) Nuclear  
5. Religion:  
   1) Hindu 
   2) Muslim 
   3) Christian 
   4) Others 
6. Types of Food consumed:  
   1) Vegetarian 
   2) Non Vegetarian  
7. Family details:  
   1. No. of adults (> 18 Yrs) 
   2. No. of adolescents (11-17 Yrs) 
   3. No. of children between (6-10 Yrs)  
      a. Males 
      b. Females 
   4. No. of children between (4-5 Yrs)  
      a. Males 
      b. Females
5. No. of children between (3-4 Yrs)
   a. Males
   b. Females

6. No. of children between (1-2 Yrs)
   a. Males
   b. Females

8. Occupational status:
   No. of earning members in the family
   1. One
   2. Two
   3. Three
   4. Four
   5. Five

9. Total family income in Rupees/month

10. Other sources of income if any
    Yes
    No

11. If any:

   1. Business
   2. Income from investments
   3. Receipts from properties
      (land, building)
   4. Any other sources
   5. Total income from these sources
      in Rs./month

12. Educational status:
    Father:
    1. Illiterate
    2. Primary
3. Middle School
4. High School
5. College
6. Professional
7. Any other

13. Mother:
1. Illiterate
2. Primary
3. Middle School
4. High School
5. College
6. Professional
7. Any other

14. Details of to be mother's pregnancies:

Order of Pregnancy:
1. One
2. Two
3. Three
4. Four

15. Present stage of pregnancy:
1. 1\textsuperscript{st} Trimester (1-3 months)
2. 2\textsuperscript{nd} Trimester (3-6 months)
3. 3\textsuperscript{rd} Trimester (6-9 months)

16. Type of last delivery if any:
1. Normal
2. Caesarian

17. Age of first delivery:
18. Present age:
   1. 20 - 25 Yrs
   2. 25 - 30 Yrs
   3. 30 - 35 Yrs

19. Total No. of Pregnancies:

20. Complication if any: (Previous Pregnancy)
   1. Abortion
   2. Miscarriage
   3. Still Birth

21. Disorders during pregnancy:
   1. Bleeding
   2. Varicose Vein
   3. Tedema
   4. Blood Pressure
   5. Diabetes Mellitus
   6. Anaemia
   7. Any Other

22. Dietary history of the pregnant woman:

   Do you take any special items/foods during pregnancy?

   Yes / No

   If yes, list out the special items you have taken:

   1.
   2.
   3.
   4.
   5.
23. Give reasons for including the above items:

1. Good for the baby's growth
2. For normal delivery
3. Advised by the doctor
4. Advised by elders
5. Any other

24. Do you think pregnant women should avoid any special foods?

Yes / No

25. If yes, what type of foods?

1. Papaya
2. Gingelly
3. Milk
4. Any other

26. Reasons:

1. Induces abortion
2. Causes indigestion
3. Child becomes heavier
4. Any other

27. Medical supplementation taken:

1.
2.
3.
4.

II INDIVIDUAL SCHEDULE

28. Weight at pregnancy

a. 1st Trimester
b. 2nd Trimester
c. 3rd Trimester
29. Weight before pregnancy:  

30. Birth weight of the new born baby (wt. in Kg.):  

31. Length of the baby at birth:  

32. Did you feed colostrum to the baby?  
   - Yes  
   - No  

33. Reasons:  
   1.  
   2.  
   3.  

34. Weight of baby before and after breast feeding:  
   - Before breast feeding  
   - After breast feeding  

35. Monthly expenditure pattern of the family:  

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<th>35.</th>
<th>Total Income</th>
<th>Expenditure</th>
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<td>35.2</td>
<td>Clothing</td>
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<td>35.3</td>
<td>Housing</td>
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<td>35.4</td>
<td>Education</td>
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<td>35.5</td>
<td>Medicine</td>
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<td>35.7</td>
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<td>35.8</td>
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6. Food expenditure pattern of the family:

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<th>Produced Purchased</th>
<th>Frequency of use Day – Week</th>
<th>Qty. Purchased</th>
<th>Remarks</th>
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<tbody>
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<td>2. Pulses</td>
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<tr>
<td>3. Vegetables – Leafy</td>
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<tr>
<td>4. Other Vegetables</td>
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<tr>
<td>5. Roots and Tubers</td>
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<tr>
<td>6. Fruits</td>
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37. Dietary History

Twenty four hours recall method

<table>
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<th>Days</th>
<th>Meal</th>
<th>Menu</th>
<th>Wt. of raw ingredients</th>
<th>Weight of Cooked items</th>
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<td>1st day</td>
<td>Early Morning</td>
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<td></td>
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<td>Midtime</td>
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<tr>
<td></td>
<td>Lunch</td>
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<tr>
<td></td>
<td>Midtime</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tea</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Dinner</td>
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</table>
### 7th Day

<table>
<thead>
<tr>
<th>Calculated nutritive value</th>
<th>Energy kcals</th>
<th>Protein gm.</th>
<th>Iron mgms.</th>
<th>Calcium mg.</th>
<th>Vitamin A mg.</th>
<th>Vitamin C mg.</th>
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</tbody>
</table>
# QUESTIONNAIRE FOR WEIGHT METHOD OF SUBSAMPLE

Name of the pregnant women  
Code No.

<table>
<thead>
<tr>
<th>Name of the meal</th>
<th>Menu</th>
<th>Weight of the total raw ingredients used by the family (Kg)</th>
<th>Weight of the cooked food consumed by the family (Kg)</th>
<th>Amount of cooked food consumed by the individual</th>
<th>Raw equipments used by the individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
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<tr>
<td>Mid time</td>
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<tr>
<td>Lunch</td>
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<tr>
<td>Tea</td>
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<td>Dinner</td>
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<tr>
<td>Bed time</td>
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<tr>
<td>Any other</td>
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</table>
## Schedule to test the awareness of anaemic pregnant women regarding nutrition and anaemia

<table>
<thead>
<tr>
<th>Statements</th>
<th>SA</th>
<th>A</th>
<th>SD</th>
<th>D</th>
<th>UDC</th>
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</thead>
<tbody>
<tr>
<td>1. Amla and guava equally good as apple and orange.</td>
<td>+2</td>
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</tr>
<tr>
<td>2. Leafy vegetables are one of the important constituent of balanced diet.</td>
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<tr>
<td>3. We should eat well balanced nutritious food during pregnancy</td>
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<tr>
<td>4. The red colour of beetroot does not held in the production</td>
<td>+2</td>
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</tr>
<tr>
<td>5. The amount of food provided to the pregnant woman will be more to that of normal woman.</td>
<td>+2</td>
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<tr>
<td>6. Liver is a good source of iron</td>
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<tr>
<td>7. Nutritional Anaemia is not due to hereditary factor</td>
<td>+2</td>
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<td></td>
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<tr>
<td>8. Anaemia is due to nutrient deficiency</td>
<td>+2</td>
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<tr>
<td>9. Washing vegetables before cutting instead of washing after cutting guarantee better nutritional quality.</td>
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<tr>
<td>10. Citrus fruits help in absorption of iron from diet.</td>
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<tr>
<td>11. Milk inhibits absorption iron.</td>
<td>+2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>12. Papaya can be used during pregnancy and lactation.</td>
<td>+2</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13. Birth weight of the baby depends on mothers Nutritional status.</td>
<td>+2</td>
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</tr>
<tr>
<td>14. Average weight gain of kg to 12 kg is required for a healthly baby.</td>
<td>+2</td>
<td></td>
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<tr>
<td>15. Anaemia cab be controlled by good diet rich in bioavailable iron.</td>
<td>+2</td>
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</table>
APPENDIX - III

HAEMOGLOBIN – CYANMETHAHEMOGLOBIN METHOD

Principal: Haemoglobin is converted into cyanmethaemoglobin by the addition of potassium cyanide and ferricyanide. The colour of cyanmethaemoglobin is read in a photo electric color meter at 540°mm against a standard solution. Since cyanide has the maximum affinity for haemoglobin, this method estimate the total haemoglobin.

Reagent: Drabkins solutions: Dissolve 0.05g of potassium cyanide. 0.2g of Potassium Ferricyanide and 1 g of Sodium bicarbonate in one litre distilled water.

Procedure: 20 μl of blood are measured accurately from a haemoglobin pippete and delivered in to a whatman No.1 filler paper disc. The filler is air dried, labled and can be stored upto one week. The portion of filler paper containing the blood is cut and dipped in 5ml Drabkin’s solutions taken in a test tube. Wait for 50 minutes and mix the contents in a vertex mixture and take the readings.

Construction of Standard Curve:

If the blood drawn from the subject contains haemoglobin 15 g/dl after estimation then prepare there reference standards as follows:
1. Reference Standard A:
   4 ml blood in 1000 ml Drabkin’s reagent contains haemoglobin 15 g/dl.

2. Reference Standard B:
   300ml of reference standard + 200ml Drabkin’s reagent contain haemoglobin concentration of 10g/dl.
3. Reference Standard C:

200ml of reference standard and 300ml Drabkin’s reagent contains a haemoglobin concentration of 7.5 g/dl.

Thus we have three reference standard at three levels of haemoglobin concentration. Use 5ml from each standard whenever haemoglobin estimation are done.

**Calculation of the Hb in g/dl by using the following formula**

\[
Hb \text{ g/dl} = \frac{\text{Absorbance of test sample} \times \text{Conc. of std. g/dl}}{\text{Absorbance of standard} \times 1000} \times \text{dilution factor}
\]
APPENDIX - IV

CELLOPHANE - COVERED THICK SMEAR TECHNIQUE
(KATO'S THICK SMEAR TECHNIQUE)

A glass cover slip and a piece of cellphone is used in this technique. A higher recovery of helminth eggs is achieved by this technique is recommendable for mass examination of many fecal specimens because of rapid and simple preparation of fecal films and the small expense incurred. But the characteristic morphology of helminth eggs in apt to become unclear for microscopic observation during the process of examination. Relatively well-trained personnel will be needed when precise results are expected.

Preparation:

1) Cellophane cover slips, 20-23 μ in thickness and 26x28mm in size.

2) Cellophane Staining medium containing 100 parts of distilled water (or 6% phenol), 100 parts of glycerin and one part of 3% malachite green solution.

3) Soak the cover slips individually in the medium for more than 24 hours.

Smear Technique Procedure:

1) Place 60-70 mg (as much as a red bean) of fecal sample on slide.

2) cover it with the cellophane cover ship after removing the excess of the medium by shaking

3) Press the cover slip by means of rubber stopper to spread fecal material evenly to the edge of the slip examine it microscopically.
## APPENDIX NO. V

### RELIABILITY AND ITEM ANALYSIS OF ATTITUDE SCALE

#### RELIABILITY ANALYSIS
Summary for scale: Mean = 111.268 Std. Dv. = 11.3850 Valid N: 250
Cronbach alpha: .797641 Standardized alpha: .799846
Average inter-item co·r.: .082073

#### ITEM ANALYSIS

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<tr>
<th>Qn.</th>
<th>Mean if deleted</th>
<th>Var. if deleted</th>
<th>St Dv. if deleted</th>
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<th>Alpha if deleted</th>
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APPENDIX NO. VI
STATISTICAL TESTS COMPUTED FOR THE STUDY

Paired 't' tests

\[ t = \frac{|d|}{\frac{d}{\sqrt{n}}} \]

where \( d \) = Mean of difference
\( d \) = S. D. of difference
\( n \) = Sample size

't' test (Students 't' test)

\[ t = \frac{|\bar{x}_1 - \bar{x}_2|}{\sqrt{\frac{s^2_1}{n_1} + \frac{s^2_2}{n_2}}} \]

If sample size is equal

where \( \bar{x}_1 \) = Mean of sample 1
\( \bar{x}_2 \) = Mean of sample 2
\( s^2_1 \) = S. D. of sample 1
\( s^2_2 \) = S. D. of sample 2
\( n \) = Sample size

\( \chi^2 \) (Chi-square) test

\[ \chi^2 = \frac{(0-E)^2}{E} \]

where \( E \) = Expected frequency
\( O \) = Observed frequency

\( \chi^2 \) with Yate's correlation

\[ \chi^2 = \sum \frac{\left| O - E \right| - 0.5}{E}^2 \]
# APPENDIX NO. VII

## Lesson Plan

<table>
<thead>
<tr>
<th>Topic</th>
<th>&quot;Nutrition for Anaemic Pregnant Women&quot;</th>
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<tbody>
<tr>
<td>Method</td>
<td>Lecture cum Demonstration</td>
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<tr>
<td>Duration</td>
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### Objectives

1. To make the pregnant women aware of the importance of nutrition in combating anaemia.
2. To empower the participants with knowledge of balanced diet for pregnancy.
3. To enable them to select iron rich sources in daily diet.
4. To make them aware of ways to increase bioavailability of iron in diet.
5. To demonstrate an iron rich recipe.

### Activities

1. List five iron rich sources.
2. Prepare a days diet for pregnant women.

### Materials

- Content sheet
- Chart
- Black board
- Pictures on food group
- Informational booklet

### Communication strategy

- Dialogue and group discussion
- Use of audio visual aids
COMBATING NUTRITIONAL ANAEMIA IN PREGNANCY
Pregnancy is a happy event in the life of a woman. A normal pregnancy lasts about 9 months or 270 days. During this period the baby grows from the size of pinhead to a weight of 3 kg. The foetus is nourished directly by the mother through a spongy structure called the “placenta”. As the baby depends totally upon the mother for nourishment, it is vital to provide a pregnant woman with well balanced diet.

Changes in maternal tissues during pregnancy:

The uterus expands to support the growing baby. Placenta is formed. Her blood volume increases (almost doubles) so that she can nourish the growing baby. Her breast grows in size in preparation for lactation. Fat stored in the mother's body to be utilised for energy during lactation. As a result the average weight gain ranges between 7 kg to 10 kg. During the first 3 months of pregnancy it will be 1 kg to 2 kg. The maximum gain in weight occurs during the last trimester.

In 6 to 10 months under weight mothers should be encouraged to gain more weight while those gaining excessive weight must be cautioned to restrict their weight.

How important is nutrition during pregnancy?

The demands for building materials for the formation of new tissues are increased during second and third trimester of pregnancy. Growth is most rapid in the last three months and the need for most of the nutrients is especially increased at this time.

Energy: Energy requirement is increased because there is a marked increase in the Basal Metabolic rate (BMR) in pregnancy. An additional intake of 30 gms cereal will provide average of 1200 kcals.

Proteins: Additional protein is required for foetal growth and for the formation of maternal tissues. About 910 gms of protein are deposited in the foetus and maternal tissue during the entire period of pregnancy. This protein has to be synthesized by the mother from protein foods in her diet. About 20 gms of meat products and 30 gms of pulse product will give an average of 20 gms of protein.

Minerals: the need for minerals especially that of calcium, iron and iodine increases during pregnancy.

About 30 gms of calcium is deposited in the foetus during pregnancy. Adequate supply of vitamin D is important to ensure the efficient absorption and utilization of dietary calcium. If the calcium is not available in sufficient amounts, the baby’s needs are met by withdrawing calcium from the bones of the mother.

What is anaemia?

Anaemia means:

• you have less red blood cells than normal, or
• you have less haemoglobin than normal in each red blood cell.

In either case, a reduced amount of oxygen is carried around in the bloodstream.

What are the symptoms of anaemia?

• Common symptoms are due to the reduced amount of oxygen in the body. These include: tiredness, lethargy, and feeling faint, becoming easily breathless.
• Less common symptoms include: headaches, palpitations, altered taste, and ringing in the ears (tinnitus).
• You may look pale.
• Various other symptoms may develop, depending on the underlying cause of the anaemia.

What are the causes of anaemia?

Lack of iron is the most common cause of anaemia. If you eat a normal diet, it usually contains enough iron. The following are some reasons that may cause lack of iron.

Pregnancy or childhood growth spurts are times when you need more iron than usual. The amount of iron that you eat during these times may not be enough.
Heavy menstrual periods. The amount of iron that you eat may not be enough to replace the amount that you lose with the bleeding each month.

Poor absorption of iron may occur with some gut diseases. For example, coeliac disease and Crohn's disease.

Bleeding from the guts (intestines). Some conditions of the guts can bleed enough to cause anaemia. You may not be aware of losing blood this way. The bleeding may be slow or intermittent, and you can pass blood out with your stools (faeces) without noticing.

If you eat a poor diet, it may not contain enough iron.

There are many other causes of anaemia. These include the following.

Lack of certain vitamins, such as folic acid and vitamin B12.

Red blood cell problems, such as thalassaemia, sickle cell anaemia, and the haemolytic anaemias. In these conditions the red cells are 'fragile' and break easily in the bloodstream.

Bone marrow problems and leukaemia are uncommon, but cause anaemia.

Other conditions such as rheumatoid arthritis and kidney failure can cause anaemia.

Finding the cause of, and treating anaemia

A simple blood test can measure the amount of haemoglobin, and count the number of red blood cells per ml. This test can confirm that you are anaemic, but do not identify the cause of the anaemia. Sometimes the underlying cause is obvious. For example, anaemia is common in pregnancy, and in women who have heavy menstrual periods. In these situations, no further tests may be needed, and treatment with iron tablets may be advised. However, the cause of the anaemia may not be clear, and further tests may be advised.

Some causes of anaemia are more serious than others, and it is important to find the reason for anaemia. The treatment of anaemia depends on the underlying cause. For many people this may be simply supplementing iron tablets. For others it may be a course of vitamins, or other more complex treatments.

Guidelines to Prevent & Manage Anaemia

Eat Fresh Fruit Or Drink Juice Everyday

The ideal is to have a small glass of juice or a fruit shake before or after every meal, as this will help the absorption of iron by the body. Freshly squeezed fruit and vegetable juices contain large amounts of vitamin C and other natural nutrients, but some carton juices can also have high vitamin C content: cranberry juice has one of the highest.

If you feel that citrus fruits are a little acidic, have another fruit, such as Indian gooseberry, after your meal as a dessert.

Keep your vitamin C topped up by including some dark green leafy vegetables with each of your main meals. This could be a salad with freshly chopped root ginger.

Eat One Of The Rich Sources Of Iron Two Or Three Times A Week

If you eat meat this could be lean red meat, game or offal such as liver or kidney.

Remember that the body absorbs 20-40% of the iron available in meat sources, but only 5-20% of the iron from vegetable sources and eggs.
If you eat a mixed diet including fruit, vegetables, meat and fish you are thought to absorb approximately 15-20% of the iron in the food.

**Rich sources of iron:**

*Cereals:* Bajara and, ragi,

*Pulses:* Bengal gram, cowpea, lentil, soyabean.

*Green leafy vegetables*

*Vegetable:* cauliflower greens mayalu, mustard leaves, radish leaves.

*Dry fruits:* Apricots, black currants, dried dates and raisins.

*Meat products:* Red meat and liver.

**Eat Plenty of Non-Haem Sources Of Iron Most Days**

This means eggs, green leafy vegetables such as spinach, cabbage, curly kale, watercress, broccoli, baked beans Soya-beans and other pulses, nuts and dried fruits (especially apricots). Vegetarians and vegans, who eat very few or no animal products, should include a rich source of non-haem iron everyday.

It is especially important for vegetarians and vegans to have a glass of freshly squeezed fruit juice with each meal, as you really need the vitamin C to help your body absorb the iron. Some vegetarians may need to take an iron supplement if they cannot get enough iron from the diet.

**Avoid Having Excessive Amounts of Foods And Drinks That Inhibit Iron Absorption**

Coffee, tea and cola-based drinks will prevent the body from absorbing iron effectively because they contain tannins and caffeine. You should keep your tea and coffee intake down to a maximum of two to three cups a day and allow at least one hour between drinking tea or coffee before or after a meal, to give your gut a chance to absorb the iron from the food.
Avoid Excessive Bran

While you are trying to boost your iron and vitamin C intakes, try to keep the amount of cereal fibre such as wholegrain cereals and wholegrain bread low. High-fibre food contains 'salts' (oxalates and phytates) that inhibit the absorption.

Anaemia is a global problem and unless dealt with effectively it may prove to be the most hazardous deficiency. We may end up losing many to this disease unless we start fighting it NOW!!!

Healthy Recipes

Fruit Sweet: (This recipe is rich in iron, folic acid and vit. B12)

Ingredients: Mango pulp - 100 g., apricots - 4-5 in no, Dry dates 4-5 in no, Raisins 6-7 in no, fresh milk - 100 ml., Honey - 1 teaspoon.

Method

- Whip fresh cream/milk, mango pulp and sugar together.
- Cut the dry fruits length-wise and add to the mango pulp.
- Serve this dessert chilled.

Ragi Crunchies: (This recipe is rich in iron)

Ingredients: Ragi Flour - 25 g. Chilli powder - 1/2 tsp, turmeric – 1/4 tsp. salt to taste oil for frying.

Method:

- Combine all ingredients to the flour and knead into a dough using water.
- Divide into 4-5 balls and roll.
- Prick using fork.

Sample menu for pregnant women

<table>
<thead>
<tr>
<th>Time</th>
<th>Meal</th>
<th>Description</th>
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<tbody>
<tr>
<td>Breakfast</td>
<td>1 cup milk (225 ml), 2 Dosas with green chutney (without coconut).</td>
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<tr>
<td>Mid Morning</td>
<td>1 cup milk (150 ml) + 1 biscuits.</td>
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<tr>
<td>Lunch</td>
<td>1 Katori rice, 3 Soyabean chapatis, 2 katori dal, Palak fish. (3 slices), French beans saute, Tossed salad.</td>
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<tr>
<td>Mid Afternoon</td>
<td>1 glass lemon juice and 3 dates.</td>
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<tr>
<td>Teatime</td>
<td>1 cup tea with 1/2 cup skim milk (75 ml), 1 katori poha with peas.</td>
<td></td>
</tr>
<tr>
<td>Mid Evening</td>
<td>1 cup skim milk + 1 guava.</td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td>Mixed vegetable curry, khichadi 2 katoris, kadhi 1/2 katori, Potato cowgram saute 1 katori, pumpkin raita</td>
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<tr>
<td>Bed time</td>
<td>1 cup milk (225 ml) &amp; papaya (2 slices)</td>
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Nutritional Evaluation of the Menu

Total Calories ---- 2406 kcal.

Carbohydrate ---- 371 gms.

Protein---- 102 gms.

Iron----30 gms-

Fat----51 gms.