

EFFECTIVENESS OF DAILY VS WEEKLY IRON THERAPY IN PREGNANT WOMEN – A COMPARATIVE STUDY

Gynaecology

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ABSTRACT

Background: Iron deficiency anaemia (IDA) is a major dietary deficiency in developing countries including India. Iron consumption has less compliance due to various side effects, mainly gastritis. Various regimens are being evaluated for iron supplementation for preventing IDA.

Method: This prospective interventional study was carried out in Dhiraj Hospital, a tertiary care hospital in Vadodara. 110 pregnant women in the study criteria were divided into 2 groups. Group 1 received daily and Group 2 received weekly iron supplementation.

Results: Final average haemoglobin at 12th week was 11.82 gm/dl in Group 1 and 12.43 gm/dl in Group 2 ($p < 0.05$). There were significant more side effects in women who received daily iron ($p < 0.05$).

Conclusion: Weekly iron supplementation is effective in preventing iron deficiency in pregnancy. It has better compliance and fewer side effects.

KEYWORDS

Iron Deficiency Anaemia (IDA), Iron Supplementation, Pregnant women, Weekly Regimen.

INTRODUCTION

Iron deficiency has been a serious health issue especially in pregnancy. Iron deficiency anaemia (IDA) is a major dietary deficiency in developing countries including India. Iron requirements increase during pregnancy.^(1,2) This may lead to anaemia in pregnant women.^(3,4) Iron consumption by pregnant women is undesirable, because of its side effects like gastrointestinal intolerance. The probable cause is the effect of oxidative stress of high doses of Iron, which leads to gastrointestinal intolerance.⁽⁵⁾ As gut mucosal turnover rates is about three days, administering iron during these days may lead to lower iron absorption. Periodic iron supplementation may let the mucosa to heal and gets better iron absorption.⁽⁶⁻⁷⁾ On an average 56% of pregnant women in developing countries while 18% of women from industrialized countries are anaemic.⁽⁸⁾

Periodic iron supplementation may let the mucosa heal and hence leads to better iron absorption.

This study was done so that efficacy and acceptability of daily and weekly iron supplementation could be found out and appropriate method can be applied in daily practice.

AIM

To compare the effectiveness of daily vs weekly iron therapy in pregnant women and evaluate which method is superior.

METHOD

This prospective interventional study was carried out in the antenatal clinic of Dhiraj Hospital, Vadodara.

110 pregnant women who had completed their 1st trimester and had hemoglobin level between 9 and 11 gm % and who fit in the study criteria were selected and randomly assigned using chit method into two groups.

Inclusion criteria

- Singleton pregnancy
- More than 12 weeks of gestational age
- No prior intake of iron in current pregnancy with anaemia

Exclusion criteria

- Haemoglobinopathies or Haemolytic disorders
- Chronic diseases of liver
- Cardiovascular system and kidney Disorder
- Medical disorders like tuberculosis, Diabetes mellitus, etc.

- Multiple pregnancy
- Past history of any threatened abortion
- Intolerance to oral iron in previous pregnancies
- Non-Compliant patients

Follow up was taken at every 4th week and haematological parameters as well as iron tolerance and side effects were noted. Data was analysed at the end of 12th week.

Patients in Group 1 (n=55) received 200 mg ferrous sulphate daily (60 mg elemental iron)

Patients in Group 2 (n=55) received 200 mg ferrous sulphate weekly (60 mg elemental iron)

All the patients received 500 mg elemental calcium (1250 mg calcium carbonate) once daily + Cap MVBC (Multivitamin including Folic Acid and Zinc) + Vitamin C 500 mg once daily.

RESULTS

The 110 women in the study were divided into 2 groups randomly of 55 each. 13 women in Group 1 and 9 in Group 2 were lost to follow-up or were taken out due to other reasons. 42 women in Group 1 and 46 in Group 2 successfully completed the study.

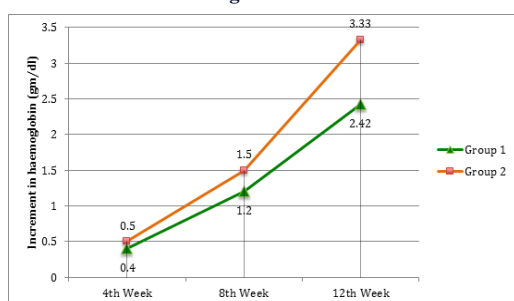
Efficacy of both regimens

The average baseline hemoglobin was 9.4 gm/dl in Group 1 and 9.38 gm/dl in Group 2. (p value > 0.05)

The increment at 4th week, 8th week and 12th week was 0.4 gm/dl, 1.2 gm/dl and 2.42 gm/dl respectively in Group 1 and 0.5 gm/dl, 1.5 gm/dl and 3.33 gm/dl respectively in Group 2. Final average hemoglobin at 12th week was 11.82 gm/dl in Group 1 and 12.43 gm/dl in Group 2. ($p < 0.05$)

Table – 1 Comparison of hemoglobin level in both groups at each visit during the study

Time of assessment	Group 1 (daily) Hb (gm/dl)	Group 2 (weekly) Hb (gm/dl)	P - value
Baseline	9.4	9.38	> 0.05
Increment at 4 th week	0.4	0.5	> 0.05
Increment at 8 th week	1.2	1.5	> 0.05
Increment at 12 th week	2.42	3.33	< 0.05
Final Hb at 12 th week	11.82	12.43	< 0.05

Figure – 1 Increment in hemoglobin level at each visit

On comparing other hematological parameters, we found a significant increase in all parameters (reticulocyte %, RBC count, MCH, MCV and MCHC) with the weekly regimen as shown in Table – 2.

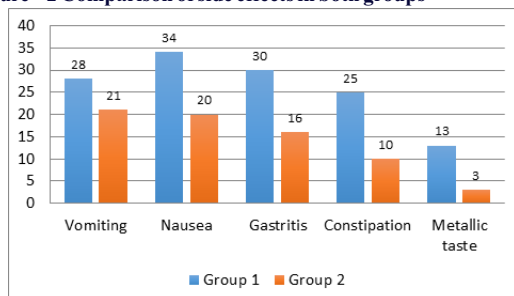
Table – 2 Comparison of hematological parameters before and after treatment in both groups

Hematological Parameters	Group 1 (n=42)		Group 2 (n=46)	
	Before Treatment	After Treatment	Before Treatment	After Treatment
Reticulocyte %	1.54	3.05	1.43	3.84
<i>p value <0.05</i>				
RBC Count (million / μ L)	3.71	4.11	3.65	4.20
<i>p value <0.05</i>				
MCH (PG)	24.8	29	25.69	29.52
<i>p value <0.05</i>				
MCV (FL)	83.7	92.26	84.8	91.88
<i>p value <0.05</i>				
MCHC (g/dL)	29.6	31.65	30.25	32.2
<i>p value <0.05</i>				

• Side effects in both regimens

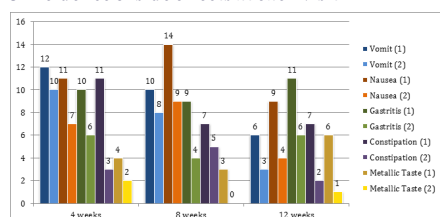
The side effects that were commonly observed were vomiting, nausea, gastritis, constipation and metallic taste.

28 women in Group 1 and 21 in Group 2 had vomiting.
 34 women in Group 1 and 20 in Group 2 had nausea.
 30 women in Group 1 and 16 in Group 2 had gastritis.
 25 women in Group 1 and 10 in Group 2 had constipation.
 13 women in Group 1 and 3 in Group 2 had metallic taste.

Figure – 2 Comparison of side effects in both groups

There were significant more incidences of side effects in women who received daily iron as compared to those receiving weekly iron (p -value < 0.05).

The incidence of side effects at every visit in both the groups are as shown in figure – 3.

Figure – 3 Incidence of side effects at each visit

DISCUSSION

Iron deficiency accounts a major nutritional problem in world and particularly in developing countries. Chances of developing IDA are much increased in pregnancy. This is due to increased iron requirement for developing fetus and haematological changes in mother.

In the present study, physical parameters of women were same in both the group. All of these women belonged to low economy group, with same dietary habits.

In this study more women in daily group dropped out as compared to weekly group, the main reason was intolerance to the side effects.

When final Haemoglobin value, RBC Count and Reticulocyte count of Group 1 compared with Group 2, a significant increase was observed with weekly group.

This clearly indicates that even though both the treatment regimens were effective in treatment of IDA but weekly iron supplement therapy was more effective. Patient compliance was better in weekly group as compared to daily iron group as there were significant less side effects with the weekly regimen.

A study done by A Mukhopadhyay et al in New Delhi showed that there was no significant difference in the rise in hemoglobin with daily or weekly iron supplementation, but there were significant more side effects observed with the daily group. ($p < 0.001$) Also, the patient compliance was more with patients receiving weekly iron supplementation.⁽⁹⁾

In a study done by Z Mumtaz et al, daily iron therapy showed better result in terms of rise in hemoglobin level as compared to weekly or twice weekly regimens.⁽¹⁰⁾

In a study done by M W Young et al, weekly iron therapy in pregnant women was recommended as compared to daily administration of iron. Weekly therapy had reduced side effects (6% vs 17%) and better patient compliance as compared to daily therapy.⁽¹¹⁾

Many studies are constantly being carried out for better or alternate regimens. Different studies which have been done show different results. So, the decision for daily, weekly or other alternate regimens should be based on the effect on the women in that demographic area after proper testing.

In our study, weekly iron supplementation showed superior results.

Also, the patients in our study came from low socio-economic class. So, decreasing the cost by weekly supplementation can reduce the burden on those families.

CONCLUSION

Observations from this study favour weekly iron supplementation as an effective mode of treatment for preventing iron deficiency in pregnancy as compared to daily iron therapy. Weekly iron therapy has significant lesser side effects and significantly better compliance. This method can also reduce the cost burden on the poor families.

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