WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 5, 1698-1717. Review Article ISSN 2277–7105

EFFICACY, SAFETY & COMPLIANCE OF IRON SUPPLEMENTS IN IRON DEFICIENCY ANEMIA DURING PREGNANCY-A COMPARATIVE PERSPECTIVE

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Article Received on
28 January 2025,

Revised on 17 Feb. 2025,
Accepted on 09 March 2025

DOI: 10.20959/wjpr20255-38322

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ABSTRACT

Anemia affects a third of the world's population and contributes to increased morbidity and mortality, decreased work productivity, and impaired neurological development. Understanding anemia's varied and complex etiology is crucial for developing effective interventions that address the context-specific causes of anemia and for monitoring anemia control programs. Recent work has furthered our understanding of anemia's complex etiology, including the proportion of anemia caused by iron deficiency (ID) and the role of inflammation and infection. Accumulating evidence indicates that the proportion of anemia due to ID differs by population group, geographical setting, infectious disease burden, and the prevalence of other anemia causes. Further research is needed to explore the role of additional nutritional deficiencies, the contribution of infectious and chronic disease, as well as the importance of genetic hemoglobin disorders in certain populations. The present study was conducted at Govt. Nizamia General Hospital for the period of 2yrs from 2016-2018 in ANC unit of Govt. Nizamia General Hospital. Present study also proves the efficacy of Unani medicine for improvement in Hb level.

KEYWORDS: anemia, iron deficiency anemia, nutritional anemias, anemia of

inflammation.

I. INTRODUCTION OF ANEMIA

Anaemia is defined as Haemoglobin concentration less than 12g/dl in non-pregnant women and less than 10g/dl during pregnancy or puerperium. It is the most common type of anaemia in pregnancy. Women with normal Haemoglobin levels but poor iron stores manifest as over "Iron Deficiency Anameia During Pregnancy". The centers for disease control and prevention (1990) defined Anaemia as less than 11g/dl in the first and third trimester and less than 10.5g/dl in the second trimester. 25-65% incidence of anaemia in developing countries and 10-20% incidence in developed countries with the age of 20-45 years Females. Bodnar and associates (2001) studied a cohort of 59,248 pregnancies and found a prevalence of 27%for postpartum anaemia. Although this was strongly correlated with prenatal anaemia, it was found 21% of women with normal prenatal haemoglobin levels.

The tittle **"**Clinical Comparative Study of Unani Formulation with Ferrous Fumarate (Ferrous Fumarate (Tablet Livogen)) In Iron Deficiency Anaemia in Pregnancy [Dauran-E-Hamal]" has selected to compare the efficacy of unani medicine with ferrous fumarate (livogen tablet) for treatment of anaemia in pregnanc. The present study is first of its kind to scientifically evaluate the efficacy of selected unani drugs for the treatment and improvement of anaemia in pregnancy.

Randomized single blind comparative trials has designed into two groups, group "A" (in this group patients treated by unani medicines) and group "B" (patients treated by ferrous fumarate tablet livogen)) with the sample size of 60 patients, 30 in each group. This study has proved the efficacy of selected unani medicines for the management of anaemia in pregnancy with good response and improvement in haemoglobin levels as compare to livogen tablet.

The modest fall in haemoglobin levels during pregnancy is caused by a relatively greater expansion of plasma volume compared with the increase in red cell volume. The specific cause of anaemia is important when evaluating effects on pregnancy outcome that is iron deficiency anaemia most studies of the effects of anaemia on pregnancy, describe large population. The risk periods when the patient may even die at about 30-32 weeks of pregnancy, during labour, immediately following delivery, anytime in puerperium specially 7-10 days following deliveries due to pulmonary embolism. This likely deal with nutritional

anaemia and specifically those due to iron deficiency. Klebbanoff and co-workers (1991) studied nearly 27,000 women and found a slightly increased risk of preterm birth with midtrimester anaemia, low birth weight babies with its incidental hazards, intrauterine death due to severe maternal anoxaemia. Lieberman and colleagues (1987) found an association with low hematocrit and preterm birth in black women. According to world health organization, anaemia contributes to 40% of maternal deaths in third world countries (viteri 1994).

In the present scenario anaemia is the most common problem among the women during pregnancy as a result in the deficiency of iron and nutrition disorder.

Scanlon and associates (2000) studied the relationship between maternal haemoglobin**.** Levels and preterm or growth-restricted infants in 173,031 pregnancies. Women whose haemoglobin concentration was three standard deviations below the mean at 12 weeks had a 1.7-fold risk of preterm birth.

II. AIMS AND OBJECTIVES OF THE STUDY

Aim of the study is prevention of Anaemia during pregnancy.

- To show the Efficacy of Unani medicine with compare of T. Livogen.
- To avoid significant maternal and pre-natal mortality and morbidity.
- To avoid complication of growing fetus.
- To find out the response of selected drugs in treating iron Deficiency Anaemia in pregnancy.
- To correct cold in temperament and weakness of liver and stomach.
- To increase bio-viability and to enhance better absorption of iron, medicine rich in vitamin-c were used.
- To check whether the iron that is present in used durgs can be utilizes to treat anaemia or not.

III. Historical Aspects & Unani Concept of Anaemia (Fiqr-Ud-Dam) During pregnancy

Hakeem Buqrath (Hippocrates) 357-460 B.C “the father of medicine” and “founder of humoral theory” in book shareh asbab according to him diseases is caused by de arrangement in quality and quantity of any humour. Iron has been used as empiric remedy for human illness. In Unani system of medicine, the concept of anaemia and its treatment is excellent and efficient. The classical sign and symptoms of anaemia described by unani physician are

same as compare to the modern system. In Unani literature various Synonyms of anaemia are termed as Faqr-ud-dam, Soo-ul-qinya, Qillat-ud-dam, Kami- e-khoon, Fasad-e-dam. According to Akseer-e-azam, Faqr-ud-dam is an Arabic word Which means shortage of blood. Sool-ul-qinya means alteration or deficiency in storage attributed to the iron deficiency in anaemia. In Shareh asbaab some of unani physician describe sool-ul-qinya as zof-e-jigar (weakness of liver) with the description of soo-e- mizaj (alteration in the temperament of individual). In Al-khanoon, Ibn-e-sina explained that alteration in the temperament of liver causes its weakness which leads to soo-ul- qinya this results in the formation of impure blood. Thus, the impure blood comes into circulation specially serum accumulates in the body tissues and organs resulting in puffiness of face, odema on lower and upper extremities, body becomes pale/yellowish. “This whole episode is known as soo-ul-qinya”.

According to unani concepts the functional disturbance of liver following a change in its mizaj (temperament), affects the production of blood as such and alters its normal composition and the quality. The proper functioning of spleen which is necessary to maintain the physiology of blood is also modified. If spleen fails to clean the blood having undesirable barid yabis(cold and dry) substances then mizaj of liver becomes abnormal drifting to barudat (coldness) and yabusat(dryness).

According to ismail jurjani khun-e-safra (billous sanguine) is less viscous, strong in odour, frothy, hotter, takes much time to coagulate and is relatively bitter in taste. Khun-e-balgami (phlegmatic sanguine) when exposed outsidethe body it is soggy but very soon it becomes viscous, coagulates in a very short time and has mild odour, bit if infected it causes to emit bad odour and when kept for an hour it releases fluid. Whereas khun-e-sawdavi (melancholic sanguine) is black, viscous and has bad odour. It does not take much time to coagulate. If a little water is added to it and shaken, it scatters and takes the shape of fibers andliberates bluish watery fluid.

IV. MATERIAL AND METHODS

Hundred cases were recorded in the premises of the Government Nizamia General Hospital, Charminar ANC Ward No:2 with clinical features of anaemia were registered for the screening for iron deficiency anaemia in pregnancy during the period of 2017 – 2018. According to criteria of selection (inclusion and exclusion criteria) and also lab investigation. Out of 100 cases, 60 cases were screened and selected for clinical trials, who had given their

consent. Comparative study in between two groups Group A and Group B.

Group 'A' 25 patients treated with selected Unani medicines and group 'B' 25 patients are treated with tablet livogen. All the patients are selected on the basis of detailed history, clinical examination (general, systemtic and obstetrics), the details were recorded in the proforma.

Study Design: A study will be standard randomized single blind control study.

Study Plan: Two groups are planned for the study group A and group B.

Sample Size: Total 60 patients, 30 in each group.

Parameters Studied

a) Subjective Parameters: History of giddiness, palpitation, weakness, fatique, oedema on face and limbs, Anorexia, Pallor conjuctiva, sclera, tongue and skin, Angular stomatitis, koilonychia

b) Objective parameters: Assessment by Clinical examination and by investigation.

V. Criteria For Selection of Patients

a) Inclusion criteria

- All the ante natal patients who are having anemia
- Hb% (10gm or less than 10gm more than 7gm)
- All age group both primi and multigravida
- Gestational age between 20-34 wks.

b) Exclusion Criteria

- Patients who are having other associated diseases with Anemia
- Patients with severe oligohydramnios
- Un-cooperative patients

VI. Method of Selection of Drugs

According to ancient physician the anemia (faqr-ud-dam). Caused by weakness of liver (due to cold in temperament) and stomach. Due to this the liver unable to produce healthy blood and it gets altered its five powers.

- Quwat-e-hazima (digestive power).

- Quwat-e-jaziba (attractive power).
- Quwat-e-dafiya (deficative and expulsive power).
- Quwat-e-masika (retensive power).
- Quwat-e-mumaiyyaza (identical power).

The litrary survey and the clinical study of iron deficiency anaemia with special references to positive factors and its management were carried out the drugs were selected according to su-e-mizaj, impaired humours, zof-e-meda-o-jigar and drugs were selected on the basis of mode of action of the drugs which are more effective in Hb% evaluation and RBCs formation. Overall nutritious, digestive, contains vitamin-c and iron drugs were selected for better absorption.

VII. Method of Preparation of Drugs and Administration

The drugs for clinical and therapeutical trial were selected on the basis of Unani medicine and allopathic medicine. All the Unani drugs were cleaned with all its impurities and grinded to fine powder and make a rubb and qiwam.

The drug and dosage

Group A

1) Group A will be treated for Iron Deficiency Anemia in pregnancy by Unani formulation in the form of Majoon.
2) Orally

NUSQAE MAJOON (1 kg)

1) AMLA (Emblica Officinalis)-100gms
2) PAMBA DANA (Gossypium)-100gms
3) ELACHI KHURD (Ele haria cardamomum)-50gms
4) RUB-E-ANAR (Punica granatum linn)-50gms
5) RUB-E-TAMATAR (Lycopersium esculentum)-50gms
6) KHAND-E-SIYA (Caryota urens, jaggery)-double of all ingredients

METHOD

Fine powder of all 1,2,3 and make the qiwam from khand-e-siya and add the powder and RUBS in the qiwam and mix them well.

DOSAGE: 5 gm. B D (after meals)

Group B

- Tab. Livogen (Ferrous fumarate 152mg+Folic acid 1500 mcg)
- 2 Tablets bice (bd) daily

Source of Data

- OP & IP units of Government Nizamia Tibbi College & General Hospital, Charminar, Hyderabad, Telangana.

Place of study: Department of Qabalath-O-Amraaz-e-Niswan, OP & IP units of Government Nizamia Tibbi College & General Hospital, Charminar, Hyderabad, Telangana.

Duration of the Study: 18 months.

Duration of Treatment

- 3 cycles with each an interval of a month in Group A patients
- The period of treatment will be 10 days in each cycle

VIII. Pharmacognosy of Drugs.

Name of Pharmacognosy Drugs	Chemical constituents	Therapeutic action and uses
Aamla[Fruit] **Botanical Name:** Emblica officinalis Family: Euphorbiaceae	calories, vit C, iron, tannin, galic acid, glucose etc.	Qabiz, habis, musakin-e-hararath, mufareh, mushtahi, muqawwi-e-Aaza-e-Raisa, muqawwi-e-meda, muqawwi-e-chasham, muqawwi-e-shaar, mana-e-tabqeer, mudir-e-baul, muqawwi-e-aasab
Anar(fruit) Botanical name: Punica Granatum Linn Family [punicaceae]	Chemical constituents: Glucose,Sugar, Calcium, Phosphorous, Iron etc	Rind of fruit: Astringent Fruit: Laxative, used in inflammation of stomach and heart. Seeds: Stomachic
Jaggery (Khand-e-siyah) Botanical Name: Caryota urens	**Chemical constituents:** 50 % Sucrose, 20 % Invert sugar, 20 % moisture, Iron and some insoluable matter such as wood ash, protein, bagasse fibres	Appetizer, anti-inflammatory, drug purifier, laxative, digestive, and used in preparation of majoon & jawarish.
Ilaychi-e-khurd Botanical Name: Elettaria Cardamomum linn **Family:** Tamaraceae	Glycosides, steroids, tannin, flavonoids, sodium, potassium	Headache, bad humours of the liver, bitter, Fruit-agent, perfumery, carminative, aromatic, stimulant & diuretic
Pambadana Botanical name: Gossypium herbaceum linn Family: Malvaceae	Organic: Glycosides, steroids, resins, saponius, carbohydrates, proteins & phenolic compounds /tannins. Inorganic: Sodium, Potassium, Iron & Calcium	It is used for sual [cough], zeequnnafas [asthama] & Zof-e-bah [sexual weakness]
Tomato Botanical name:	Water – 95 %, Carbohydrates – 4 %, Fat & protein 1 %, Iron	Appetizer, Relaxant, Correct Anemia

Solanum Lcopersicum Family: Solanaceae	27mg /100 gms (4%), Vit A - 42µg, B1 Thiamine 0.037 mg (3%) B3 Niacin - 0.594 Mg (4 %) B6 - 0.08 mg (6%) Vit C - 14 mg (17%	

Medicine Prescribed for Clinical Trials Drugs Given for Both 'A' and 'B' Group Patients:

Drugs given for group 'A' patients

1) AMLA (Emblica Officinalis)
2) PAMBA DANA (Gossypium)
3) ELACHI KHURD (Ele hariacardamomum)
4) RUB-E-ANAR (Punica granatum linn)
5) RUB-E-TAMATAR (Lycopersium esculentum)
6) KHAND-E-SIYA (Caryota urens, jaggery)

Drugs given for group 'B' patients

Tab. LIVOGEN (Ferrous fumarate)

Ferrous Fumarate

It is a type of iron also known as iron fumarate. It is the iron salt of fumaric acid occurring as a reddish orange powder.

Other name: Feostat, iron fumarate Colour: Reddish orange Odour: Odorless

Density: 2.435g/cm^3 (20C^0) Solubility: Slightly soluable Chemical formula: $C_4 H_2 Fe O_4$

Uses: To treat iron deficiency anaemia (a lack of red blood cells caused by having too little iron in the body)

Indication: Correction of anaemia

Contra indication: Iron overload syndrome Thalassemia: Hyperemesis gravidarum

Side effects: Allergic reaction like swelling on face, lips, tongue and throat Difficulty in breathing, chest pain, constipation, diarrhea, nausea, vomiting, heart burn, loss of appitite, black and dark coloured stool.

Dosage: 600 mg/day (200 mg/day elemental iron) divided by 1 – 3 times per day.

Table 01: showing Distribution of the Patients according to Aetiological factors.

No.	Etiological factor	Group A	Group B	Total	Percentage

1	Amoebic Dysentery	5	6	11	18.33%
2	Abortion	9	9	18	30%
3	Antipartum Haemorrage	3	2	5	8.33%
4	Bleeding piles	7	4	11	18.33%
5	Injury	1	7	8	13.33%
6	Bleeding Gum	4	2	6	10%
7	Epistaxis	1	---	1	1.67%
	Total	30	30	60	100%

This table shows

- The high incidence of aetiological factor in the patient with 30% of abortion.
- The aetiological factor is equal in amoebic dysentery and bleeding piles with 18.33%.
- The incidence of 13.33% by the injury.
- 10% aetiological factor are present with bleeding gums.
- Very less, common aetiological factor is epistaxis with 1.67%.

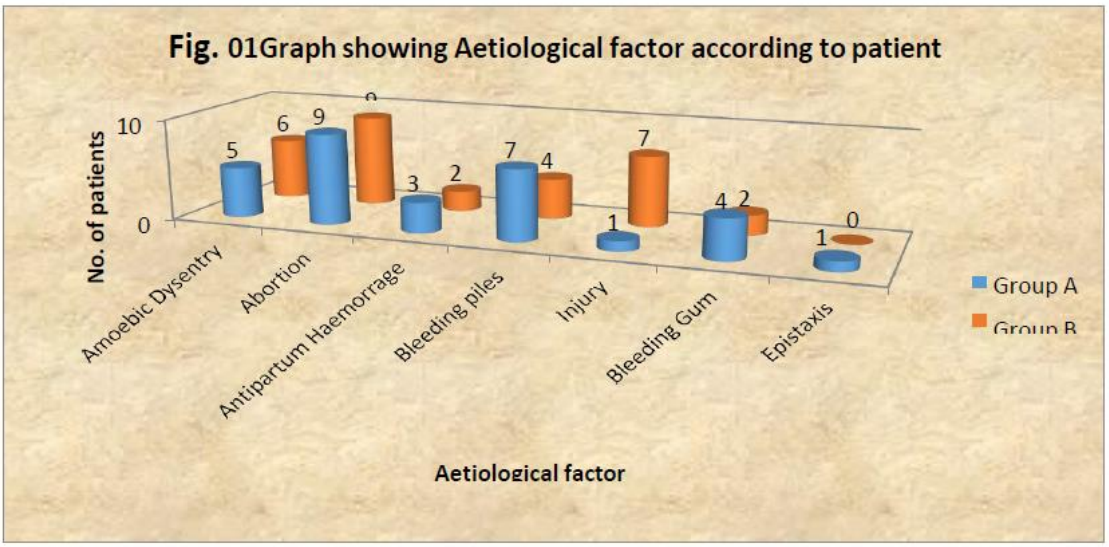


Table 02: showing Distribution of the Patients according to Chronicity.

No.	Duration of illness	Group A	Group B	Total	Percentage
1	1 – 3 days	10	8	18	30%
2	4 – 6 days	2	3	5	8.33%
3	7 – 10 days	17	16	33	55%
4	10 – 20 days	1	1	2	3.33%
5	20 days – 1 Month	---	2	2	3.33%
	Total	30	30	60	100%

This table shows

- More number of patients 55% shows chronicity of 10 days, then 30% shows 3 days and 8.33% shows 6 days.
- Equally 3.33% are 20 days – 1 month.

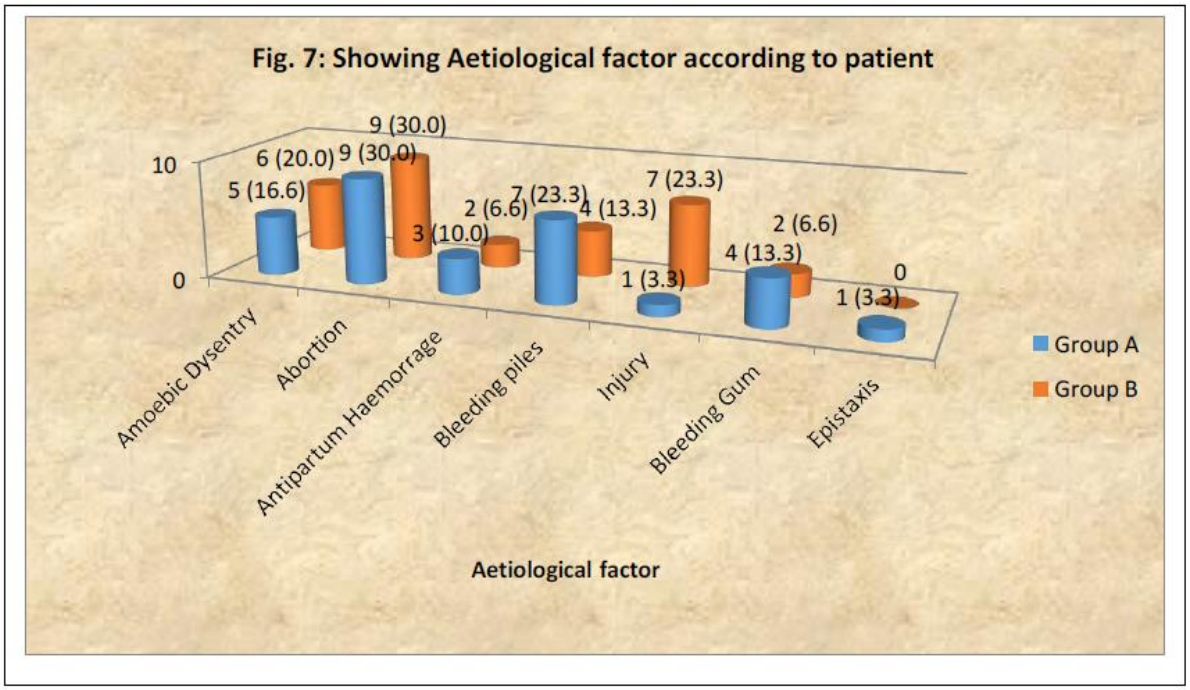
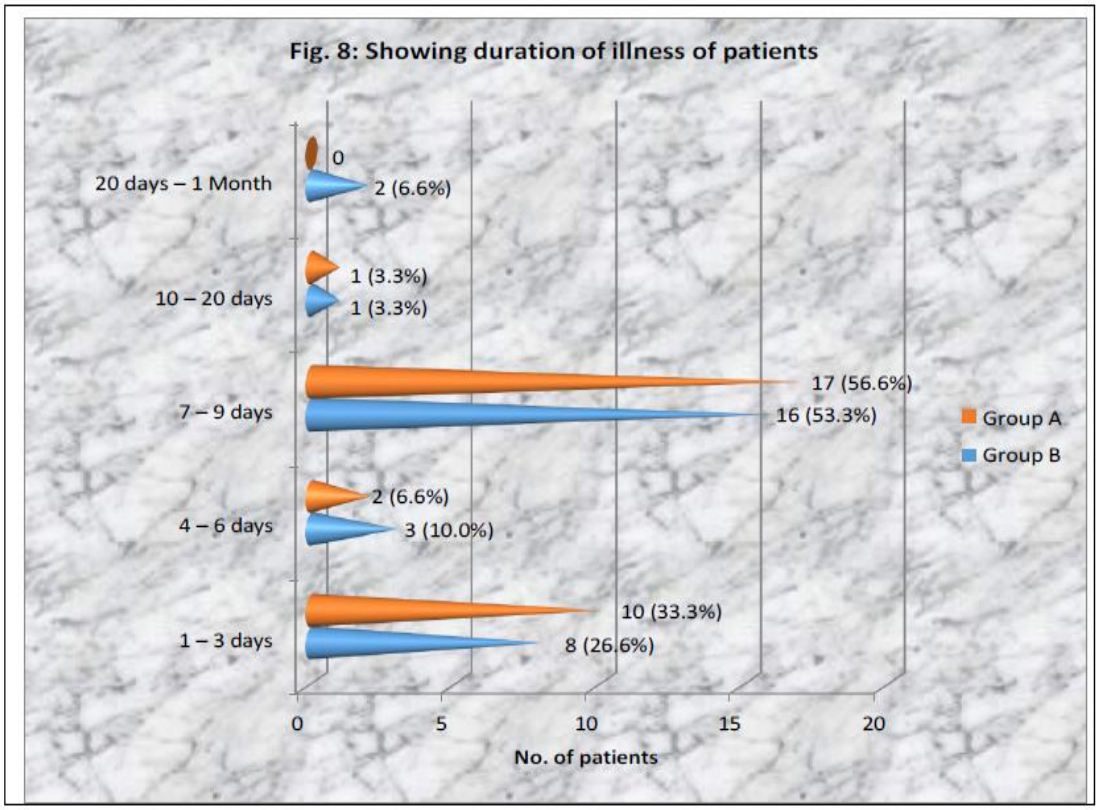


Table 03: showing according to sign and symptoms presenting before treatment along with subside of sign and symptoms after treatment in group B patients.

No:	Sign and Symptoms	B.T.	A.T. (Not Subside)	A.T. (total subside)	%
1	Pallor	30	10	20	66.67%
2	Puffiness of face	27	1	26	96.30%
3	Palpitation	27	8	19	70.40%%
4	Anorexia	24	8	16	66.67%
5	Stomatitis	21	---	21	100%
6	Pedal odema	17	2	15	88.24%
7	Glossitis	15	2	13	86.67%
8	Fatigue	18	1	17	94.44%
9	Dyspnoea	19	2	17	89.47%
10	Koilonychia	1	---	1	100%
11	Numbness	3	1	2	66.67%
12	Irritability	---	---	---	---
13	Weakness	10	1	9	90%



This table shows

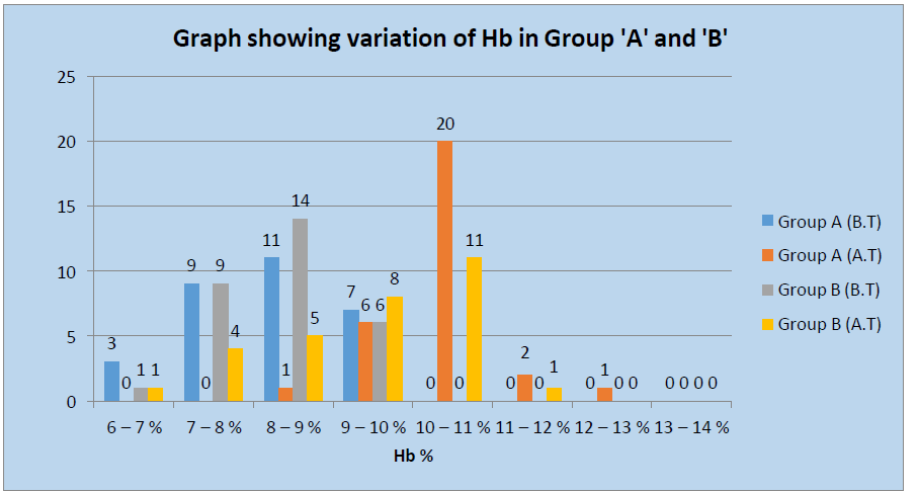
- Most of the patient with the complaints of pallor, with the number of 30 and subside 20 cases (66.67%).
- Whereas the cases of anorexia are 27 and subsided by 26 (96.30%).
- 27 palpitation cases are present where 19 (70.40%) are subsided.
- 27 cases of puffiness of face subside 26 (96.30%) and stomatitis are seen where 21 are subsided (100%).
- Dyspnoea 19 cases subside 17 (89.47%).
- Fatigue 18 cases subside 17 cases (94.44%).
- Peadal odema 17 cases subsided 15 (88.24%).
- Weakness 10 patients subside 9 (90%).
- Glossitis 15 cases subside 13 (86.67%).
- Only 1 case of koilonychia and subside (100%).

Table 04: showing incidence variation of haemoglobin percentage of iron deficiency anaemia.

No:	Hb %	Group A		Group B		Total	Percentage
		B.T.	A.T.	B.T.	A.T.		
1	6 – 7 %	3	---	1	1	5	4.17%
2	7 – 8 %	9	---	9	4	22	18.33%
3	8 – 9 %	11	1	14	5	31	25.83%
4	9 – 10 %	7	6	6	8	27	22.5%
5	10 – 11 %	---	20	---	11	31	25.83%
6	11 – 12 %	---	2	---	1	3	2.5%
7	12 – 13 %	---	1	---	---	1	0.83%
8	13 – 14 %	---	---	---	---	---	---
	Total	30	30	30	30	120	100%

This table shows

- High incidence of 11 cases by Hb% 8 – 9 gm% in group ‘A’ are seen whereas the 14 cases are seen in group ‘B’ (before treatment).
- 9 cases with 7 – 8 gm% of Hb in group ‘A’ and ‘B’.
- 7 cases with 9 – 10 gm% of Hb in group ‘A’ and 6 cases in group ‘B’.
- 3 cases with 6 – 7 gm% of Hb in group ‘A’ and only 1 case in group ‘B’.



No:	PCV	Group – A				Group – B			
		Before treatment		After treatment		Before treatment		After treatment	
		No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
1	< 20	---	---	---	---	---	---	---	---
2	20-25	4	13.33	---	---	8	26.67	6	20
3	26-30	22	73.33	7	23.33	17	56.67	8	26.67
4	31-35	4	13.33	22	73.33	5	16.67	16	53.33
5	36-40	---	---	1	3.33	---	--	---	---

This table shows

- High incidence of 26 – 30 PCV are seen in 22 cases in group ‘A’ and 17 cases in group ‘B’.
- 20 – 25 and 30 – 35 PCV are seen in 4 cases in group ‘A’ and 8, 5 cases in group ‘B’.

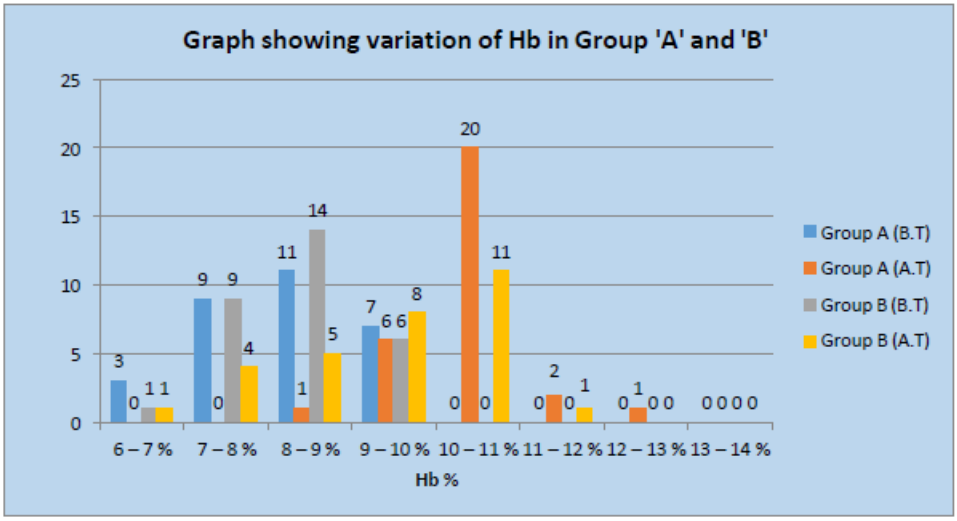
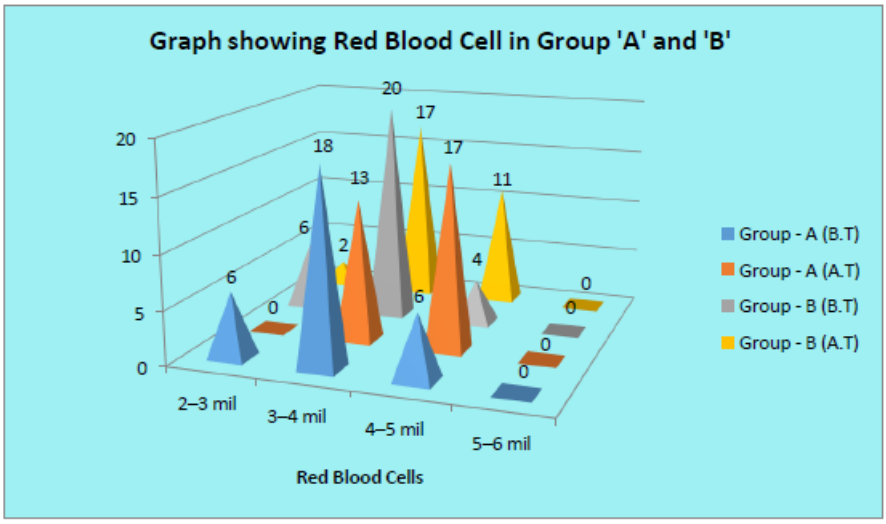


Table 06: showing RBC before and after treatment.

No.	RBC	Group A				Group B			
		Before treatment		After treatment		Before treatment		After treatment	
		No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
1	2–3 mil	6	20	---	---	6	20	2	6.67
2	3–4 mil	18	60	13	43.33	20	66.67	17	56.67
3	4–5 mil	6	20	17	56.67	4	13.33	11	36.67
4	5–6 mil	---	---	---	---	---	---	---	---

This table shows

- High incidence of 3 – 4 mil RBC are seen in 18 cases of group ‘A’ and 20 cases of group ‘B’.
- 2 – 3 mil and 4 – 5 mil RBCs are seen in 6 cases of group ‘A’ and 6, 4 cases of group ‘B’.



CONCLUSION

With reference to table no.01

Aetiological factor/ Etiological factor: (group 'A' and 'B')

- The high incidence of a etiological factor, the patient with group 'A' and 'B' (9 cases) with 30% of abortion.
- A etiological factor in group 'A' 5 (16.6%) cases and in group 'B' 6 (20%) cases are equal in amoebic dysentery and bleeding piles in group 'A' 7 (23.3%) cases and in group 'B' 4 (13.3%) cases are seen.
- The incidence of 3.33% by the injury in group 'A' only 1 case and in group 'B' 7 (23.3%) cases are seen.
- In group 'A' patients 7 (23.3%) cases and in group 'B' patients 4 (13.3%) cases with a etiological factor of bleeding gums present.
- Very less, common a etiological factor is epistaxis with 3.3% in group 'A' only 1 case is seen. As cited in table no.1.

With reference to table no.2

Duration of illness: (group 'A' and 'B')

- The mean duration is 1 day to 1 month in each group of study.
- More number of patients in group 'A' patients 17 (56.6%) cases and in group 'B' patients 16 (53.3%) cases show the duration of illness of 10 days, then duration of illness shows 3 days in group 'A' patients 10 (33.3%) cases and in group 'B' patients 8 (26.6%) cases.
- In group 'A' 2 (6.6%) cases and group 'B' patients 3 (10%) cases are shown 6 days of duration of illness.

- In group ‘A’ only 1 (3.3%) case and in group ‘B’ 1 (3.3%) case with equally seen in 20 days of duration of illness.
- 2 (6.6%) cases are seen in Group ‘B’ patients by duration of 1 month of chronicity.The conducted study shows the duration of illness is almost in between 7 — 9 days in all groups. As cited in table no.2.

With reference to table no.3 (A and B)

Sign and symptoms: (group ‘A’ ands group ‘B’)

- Most of the patient with the complaints of pallor, with the number of 30 and subside 28 cases (93.3%) and not subside 2 cases in group ‘A’. Where as in group ‘B’ with the number of 30 and subside 20 cases (66.7%) and not subside
  10 cases. (2 cases v/s 10 cases in group ‘A’ and ‘B’) 8 cases in sign and symptoms are more improved by group ‘A’ medicine than group ‘B’ medicine.
- The cases of anorexia are 27 and subside by 26 (96.3%) and not subside only 1 case in group ‘A’. Where as in group ‘B’ the cases of anorexia are 24 and subside by 16 (66.7%) and not subside only 1 case. These cases are equally subsided.
- In group ‘A’ 26 palpitation cases are present where 22 (84.6%) are subside and not subside are 4 cases and in group ‘B’ 27 palpitation cases are present where 19 (70.40%) are subside and not subside are 8 cases. (4 v/s 8 cases in group ‘A’ and ‘B’) 4 cases of palpitation are more improved by group ‘A’ medicine.
- 23 cases of puffiness of face and stomatitis are seen, where 22 (95.7%) are subside and 1 case is not subside in group ‘A’. Where in group ‘B’ 27 cases of puffiness of face and stomatitis are seen where 26 (96.30%) are subside and 1 case is not subsided, in group ‘A’ and ‘B’ equally improvement is seen.
- In group ‘A’ Dyspnoea 21 cases, subside 19 (90.5%) and not subside by 2 cases. Where as in group ‘B’ Dyspnoea cases are 19, subside 17 (89.5%) and not subside by 2 cases. (equally improvement is seen in group ‘A’ and ‘B’).
- Fatigue 14 cases, subside 13 cases (92.9%) and not subside by only 1 case in group ‘A’ and Fatigue 18 cases, subside 17 cases (94.4%) and not subside by only 1 case in group ‘B’. (Equally improvement is seen in group ‘A’ and ‘B’).
- Peadal odema 12 cases, subside all cases (100%) in group ‘A’ wheres. Peadal odema 17 cases subsided 15 (88.2%) and not subside 2 cases in group ‘B’ (0 v/s 2 cases in group ‘A’ and ‘B’) group ‘A’ medicine are more effective than group ‘B’.
- In group ‘A’ Weakness 11 cases, subside 10 (90.90%) and not subside only 1 case.

Whereas 10 cases of weakness, subside 9 (90%) and not subside 1 case. (equally improvement is seen).

- This conducted study shows high incidence of complaint of pallor and anorexia in iron deficiency anaemia in pregnancy and sign and symptoms are cured after treatment in group 'A' and 'B' patients with high significant value p<0.0001. As cited in table no.3 (A and B).

With reference to table no.04

Variation of haemoglobin %:(group 'A' and 'B')

- High incidence of 11 cases by Hb% 8 — 9 gm% in group 'A' are seen whereas the 14 cases are seen in group 'B' (before treatment).
- 9 cases with 7 — 8 gm% of Hb in group 'A' and 'B'.
- 7 cases with 9 – 10 gm% of Hb in group 'A' and 6 cases in group 'B'.
- 3 cases with 6 – 7 gm% of Hb in group 'A' and only 1 case in group 'B'.
- In all cases of group 'A' and 'B' haemoglobin percentage after treatment are seen in 20 cases in group 'A' by 10 — 11 gm% and in group 'B'only 11 cases are seen. (20 v/s 11 cases)

This study shows the afficacy of Unani medicine in group 'A' which help to increase the iron absorption and formation of pure blood than group 'B'. As cited in table no.04

With reference to table no.05

Maternal and fetal complications during anaemia treatment: (group 'A' and 'B')

Maternal and fetal complications like pre-eclampsia, preterm labour and IUD (Intra uterine death) are not observed in both groups. All though Intercurrent infection are seen in 2 cases as 6.67% in group 'A' where as 5 cases as 16.67% in group 'B'. IUGR observed only 1 (3.33%) case in group 'A' and 6 cases (20%) in group 'B'.

Thus, maternal satisfaction is much better when using the Unani medicine as compare to group 'B' medicine. The main indication for go through orofer infusion and blood transfusion to minimize the maternal and fetal complication during the treatment of anaemia. . As cited in table no.05.

With reference to table no.06 (A and B)

Therapeutic response: (group 'A' and 'B')

- The therapeutic response of group 'A' patients, the results of study group 'A' with Unani medicines, were very encouraging and the results of study group 'B' with ferrous fumarate (tablet livogen) tablet.
- In group 'A' among the 30 patients, 26 (86.7%) patients had shown 100% cured rate and 4 (13.3%) patients had relieved in clinical features and shows improvement in haemoglobin percentage. Where as in group 'B' among the 30 patients, 16 (53.3%) patients had shown 100% cured rate, 9 (30.3%) patients had relieved in clinical features and shows improvement in Hb% and 5 (16.7%) patients had not cured, not showing any response in the sign symptoms and management of anaemia in pregnancy.
- In group 'A' 26 patients are cured and in group 'B' 16 patients are cured with 100%.
- Therefore, the Unani drugs are best for anaemia cost effective and free from side effects. As cited in table no.06(A and B)

SUMMARY AND CONCLUSION

- Present dissertation "clinical comparative study of unani formulation with ferrous fumarate (tab. Livogen) in iron deficiency anaemia in pregnancy [dauran-e-hamal]" proves Unani medicine is effective for anaemia in pregnancy.
- The present study was conducted at Govt. Nizamia General Hospital for the period of 2yrs from 2016 –2018 in ANC unit of Govt. Nizamia General Hospital.
- Present study also proves the efficacyof Unani medicine for improvement in Hb level
- Sample size of 60 women, where maximum number of cases, the age group of 18 – 40 yrs and with high incidence of iron deficiency anaemia approximate 26 — 28 weeks of gestation and common in multiparous women with low and middle socio- economic group.
- 30 womens are treated with Group — A medicine (coded Unani medicine) and 30 womens are treated with Group – B medicine (Ferrous fumarate (tablet livogen)).
- Causes of iron deficiency anaemia: the patients were study history of Amoebic Dysentery, Abortion, Antipartum Haemorrage, Bleeding piles, Injury, Bleeding Gum, Epistaxis.
- Most of the patients are studied with complaints of pallor, pedal oedema, anorexia, palpitation and dyspnoea.
- Most of the patient are considered anaemic with balghami and saudavi mizaj. In this study

most of the patients are belongs to slum area.

- The duration of illness is noted mostly by 7-10 days with complaints and sign and symptoms.
- During the study most of the patients were recorded Hb% between 8-9 gm% haemoglobin.
- Most of the patients having 26-30 volume PCV and 3-4 mil RBC during treatment of anaemia.
- The duration of treatment was 3 months with chronicity of 1 month with 10 days admission. All patients among 60 are showed good response to group A and group B.
- In Group – A cure rate/ response is high than Group – B.
- In Group – A cure rate is 86.67% where as in Group – B cure rate is 53.33%.
- The study showed improvement in mean (± S.D) Hb% is high in group 'A' medicine than group 'B' medicine.
- The study showed improvement in mean (± S.D) RBC is high in group 'A' medicine than group 'B' medicine.
- The study showed improvement in mean (± S.D) PCV is high in group 'A' medicine than group 'B' medicine.
- The comparative study of management between group 'A' and 'B' is present with good response in group 'A' management than group 'B'.
- Improvement in Hb% is high in treating group 'A' than group 'B'.
- Most of the cases are cured in duration of 30 – 40 days of treatment in group 'A' and 'B'
- Most of the cases showing good result with Unani medicine in group 'A' with short duration treatment.
- Very least 1% cases were gone for roofer and blood transfusion in group 'B' patients.
- After deep clinical study of anemia during pregnancy we come to the conclusion that iron deficiency anemia in pregnancy is more common among the low social economic group with multiparity of women's can be treated successfully by Unani medicines which are cheap, low cost, more effective without side effect and affordable range. It has no adverse effect like allopathic medicines.
- Unani medicines give strength to liver, stomach and increased the rate of absorption and improved/ produced good blood formation.
- Both groups medicine contain iron in its composition which is easily digestible hepatoprotective, hepatotonic and hematenic action with rich of Vitamin C, calcium, B_6

and B12.

- Group 'A' medicines found to be beneficial and proved harmless through the course of treatment. Continuous use is also harmless to the patient during the treatment and also can be used in all age groups and in all seasons.
- Keep the organs healthy and maintain the body temperament and mizaj.
- The result of group 'A' medicine is more effective and shows the average response of 86.67% where as in group 'B' response of 53.33%.
- At the end the clinical work were proved that the both groups are showed good/ excellent results.
- Group 'A' showed good/ excellent result than group 'B'
- Finally, the patients were satisfied with group 'A' medicines than group 'B' medicines.
- The comparative study of group 'A' is better than group 'B'.

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