

Summer Training at UNICEF RAJASTHAN
1ST April - 31st May

IRON SUCROSE INTRAVENOUS THERAPY AND ITS SIGNIFICANCE AMONG ANAEMIC PREGNANT WOMEN

By:
M MADHUKARA MADHAVARAO

Under the Guidance of
Dr. ARINDAMDAS

MBA in Health & Hospital Management
2014-2016



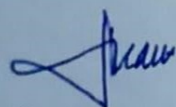
2015

Certificate

This is to certify that **Mr. Madhukara Madhav Rao Majji** student of Institute of Health Management and Research, Jaipur, Rajasthan, has done his summer training on the topic "**Iron Sucrose Intra Venous Therapy and its significance among pregnant women**" at Ahore Block in Jalore district of Rajasthan under UNICEF (United Nations Children's Fund) Jaipur from 1st April 2015 to 31st May 2015. He has carried out the activities related to his summer training alone and his approach to study has been sincere, scientific and analytical.

This summer training project is in partial fulfillment of course requirements.

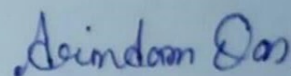
I wish his success in all his future endeavors.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affairs)

IIHMR University, Jaipur



Dr. Arindam Das

Associate Professor

IIHMR, Jaipur

Dated : 30 June 2015 :

To Whom so Ever It May Concern

This is to certify that Mr.Mdhukara Madhava rao M S/O Mr.Narasimhulu student of IIHMR University, Jaipur, Rajasthan has successfully completed 2 Months (1 April – 31 March, 2015) summer training at UNICEF Rajasthan. During his summer training he has worked on Health situation of Jalore. Titled **“IRON SUCROSE INTRAVENOUS THERAPY AND IT'S SIGNIFICNCE AMONG PREGNENT WOMEN “**. He has successfully completed the project assigned to him during summer training and his contribution to the study has been sincere, scientific and analytical.

He was also engaged in Assisting Training of **E-jan Swasthaya** Program for ANMs.

I wish his success in all his future endeavours.

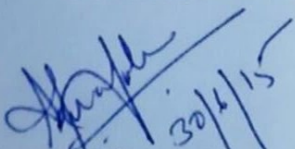

Dr Apurva Chaturvedi
Health Officer
UNICEF, Rajasthan

TABLE OF CONTENTS

S.No	Contents	Page No.
1	Acknowledgement	4
2	Abbreviations	5
3	About the Organisation	6-9
4	Topic of Research	10
5	Executive Summary	11
6	Introduction	12-13
7	Objectives	14
8	Methodology	14
	1.study design	14
	2.study area	14
	3.study population	14
	4.study period	14
	5.sampling design	14
	6.data collection	14
	7.data preparation	14
	8.data analysis	14
9	Results	15-16
10	Discussion	17
11	Conclusion	17
12	Limitation	18
13	Recommendations	18
14	Photos	19-20
15	References	21

ACKNOWLEDGEMENT

The success of any task would incomplete without the expression of gratitude to the people who made it possible. I express sincere gratitude towards everyone who helped directly or indirectly in completion of my Summer Training from UNICEF Rajasthan.

At the onset of my report, I would like to acknowledge my sincere thanks to our University, Institute of Health Management and Research University, Jaipur for providing us platform to gain enough knowledge and skills in different aspects of health management.

I express my gratitude and regards to my mentor Dr. Arindam Das for his able guidance and useful suggestions which helped me in completing the project work.

Special thanks to our project coordinator Dr. Anil Agrawal, Dr. Apurva Chaturvedi, and Dr. Kapil Agarwal for the faith shown upon me and guidance given without which the assignment would not have been possible.

I would like to thank Mr. Inderpal Arora (FDC-JALORE) and staff of District Hospital, Jalore for their help at various stages of my project.

I would also like to thank my faculty members without whom this project would have been a distant reality. My seniors and colleagues also hold a special mention here for believing in me and supporting me throughout the summer training.

Finally, and most importantly, I would like to thank God for allowing me to complete my project, my beloved parents for their blessings and my friends for their help and wishes for the successful completion of this training.

M.Madhukara Madhavarao,

IIHMR University,

Jaipur

ABBREVIATIONS:

S.NO	ACRONYM	FULL FORM
1	C4D	COMMUNICATION FOR DEVELOPMENT
2	ECE	EARLY CHILD EDUCATION
3	Hb	HEAMO GLOBIN
4	ICPS	INTEGRATEDCHILD PROTECTION SCHEME
5	IDA	IRON DEFICIANCY ANAEMIA
6	IFA	IRON FOLIC ACID
7	IV	INTRA VENOUS
8	NRHM	NATIONAL RURAL HEALTH MISSION
9	UN	UNITED NATIONS
10	UNICEF	UNITED NATIONS CHILDREN'S FUND
11	WASH	WATER SANITATION AND HYGIENE
12	WHO	WORLD HEALTH ORGANIZATION

ABOUT THE ORAGANISATION

UNICEF (UNITED NATIONS CHILDREN'S FUND):

- **UNICEF has been working in India since 1949. The largest UN organization in the country,** UNICEF is fully committed to working with the Government of India to ensure that each child born in this vast and complex country gets the best start in life, thrives and develops to his or her full potential.
- The challenge is enormous but UNICEF is well placed to meet it. The organization uses quality research and data to understand issues, implements new and innovative interventions that address the situation of children, and works with partners to bring those innovations to fruition.
- UNICEF uses its community-level knowledge to develop innovative interventions to ensure that women and children are able to access basic services such as clean water, health visitors and educational facilities, and that these services are of high quality. At the same time, UNICEF reaches out directly to families to help them to understand what they must do to ensure their children thrive.
- UNICEF also wants them to feel a sense of ownership of these services. That same knowledge and interface with communities enables the organization to tackle issues that would otherwise be difficult to address: the complex factors that result in children working, or the growing threat that HIV/AIDS poses to children.

What makes UNICEF unique in India

- Is its network of 13 state offices. These enable the organization to focus attention on the poorest and most disadvantaged communities, alongside its work at the national level.
- UNICEF knows that key to addressing these challenges are its partnerships with sister UN agencies, voluntary organizations active at the community level, women's groups and donors.

- The organization also works with an array of celebrities, including members of the Indian cricket team and leading actors from the Indian film industry, as well as hundreds of thousands of unnamed volunteers who tirelessly give their time and influence to ensure that, together, they are able to help every child realize his or her full potential.

UNICEF in Rajasthan

As a partner of choice for the Government of Rajasthan, UNICEF is working on a set of models and pilot interventions, particularly in tribal areas in the districts of Udaipur, Dungarpur, Barmer and Baran. The intent is to ensure the survival, growth and development particularly of children belonging to marginalized communities .

Child Survival

- Setting up and scaling up Special Newborn Care Units, with a focus on real time monitoring and quality of services.
- Supporting improvements in the care of women and their babies during childbirth through increasing the quality of services.
- Health system strengthening through supportive supervision and capacity-building.
- Demonstrating a mechanism to improve the quality of services in the most deprived blocks to address the issue of inequity.
- Innovations for real-time monitoring of survival and development outcomes.

Nutrition

- Offering a facility and community-based support and tracking mechanism to improve breastfeeding and complementary feeding. The special HajuSuru (healthy well-nourished child) strategy in the tribal districts of Banswada and Dungarpur promotes family empowerment in feeding through community monitoring and tracking.
- Supporting a high rate of dose for vitamin A supplementation, with two doses every six months.
- Working with the government towards universal salt iodization and tracking access and use of iodized salt at the family level.
- Improving care and treatment for children with severe acute malnutrition (SAM) and providing facility and community-based strategies to help support children with SAM.

Education

- Enhancing learning outcomes of children through transforming the teaching learning process, making it more student-centric, activity-based, learning-focused and equity-oriented.

- Introducing a continuous comprehensive assessment as part of the pedagogy in all schools by 2018. In 2014, 22,000 schools will implement Continuous and Comprehensive Evaluation (CCE) as their assessment system.
- Providing technical support to monitor learning outcomes in real time.
- Offering a school leadership programme to complement the quality improvement initiative in schools.
- Lending technical support to create an enabling environment for early childhood education (ECE); putting in place a curriculum, syllabus and a state policy for ECE and facilitating coordination with the state Education Department for capacity development of Anganwadi workers and their continuous support on ECE.
- Supporting capacity enhancement of School Management Committees.
- Supporting capacity-enhancement of academic institutes, the State Institute for Education, Research and Training (SIERT) and District Institute for Education Training (DIET), to ensure all interventions to improve education standards can be realized.

Child Protection

- UNICEF in Rajasthan is working to strengthen systems for Child Protection by ensuring quality education to all children with a special focus on out-of-school, never-enrolled and drop-out children.
- It is building the capacities of and mobilizing families and the community to take collective action to protect their children and help them develop.
- To increase families' adult incomes and prevent child labour, UNICEF is enhancing access to service providers and social protection schemes for vulnerable families and children such as the widow pension, old age pension, AapkiBetiYojana, Palanhar and MukhyaMantriHunarVikashYojana.
- UNICEF is also helping to improve the state policy framework and delivery systems related to Child Protection; improve access to and the quality of social protection schemes and the Integrated Child Protection Scheme (ICPS); and assessing various Acts, policies and programmes related to Child Protection.
- It is strengthening and supporting the capacity of the ICPS to promote and deliver the best services to the most vulnerable children in the state.
- Designing interventions to reduce child marriage, child labour, out-of-school children and corporal punishment in schools.

Water, Sanitation and Hygiene

- UNICEF is building the capacity for the government and communities to eliminate open defecation by supporting the development and implementation of effective behaviour change strategies at the state level.
- Supporting the state to improve the quality of health care in health institutions by improving Water, Sanitation and Hygiene (WASH) facilities and practices through capacity-building of National Rural Health Mission (NRHM) stakeholders.

- Developing monitoring systems and providing access to evidence-based tools and guidelines and promoting key hygiene practices in schools through sustainable, simple and scalable models of WASH.
- Sharing scalable WASH approaches that address priority gaps and bottlenecks in delivering and promoting sanitation facilities and hygiene promotion.
- Supporting rural WASH sector development through improved management information systems (MIS) for WASH access and use, including identification and corrective action for the state's most marginalized areas.
- Creating an enabling environment for improved WASH facilities and practices in health centres through a convergence of Health and WASH programmes in 100 centres in four priority districts.
- Creating an enabling environment to adopt key WASH practices in schools, through innovative technologies and child-centred approaches in the tribal districts of Udaipur and Durgapur.
- Supporting the state's institutionalization of the WASH validation system to monitor WASH outcomes on a regular basis.

Disaster Risk Reduction

- Working with the State Disaster Management Authority to pilot risk-informed planning systems to improve disaster preparedness and response.

Communication for Development

- Developing strategic approaches to communication through the development of evidence-based and theory-driven communication strategies in the areas of the WASH (SHACS strategy), Health (RMNCH+A and RI), Child Protection (addressing social norms on the Prevention of Child Marriage and Child Labour), Education (community mobilization for the promotion of girls' education). These have been developed with the state government and UNICEF frameworks adopted by national flagships and have been customized for rollout across state.
- Building the capacities of frontline service-providers from government flagship programmes so they can effectively engage with families and communities to promote social and behaviour change in relation to key child survival and development issues.
- Using new technologies for Communication for Development (C4D): The potential of technologies such as the internet, digital tools, mobile phones and the like will be harnessed to communicate with families and frontline functionaries in a changing social and cultural context.

RESERCH TOPIC

IRON SUCROSE INTRAVENOUS
THERAPY AND ITS SIGNIFICANCE
AMONG ANAEMIC PREGNANT
WOMEN

Executive Summary:

Iron Sucrose IV therapy is one of the essential treatments for immediate rise of Hemoglobin level in anaemic pregnant women. Antenatal anaemia is one of the cause which leads to high mortality of antenatal women ^[1]. Summer training provided an opportunity to learn conditions of anaemia in pregnant women and various methods of treatment for different Hb levels.

Data collected from maternity ward, community health center, Ahore to find out the significance of Iron Sucrose intravenous therapy in pregnant women. All collected Hb estimation data was cross checked with the pathology data of the same hospital.

Findings:

From august 2014 to April 2015 there were 118 people who started treatment among them 52 people were severe anaemic and remaining 66 were moderately anaemic. In 118 pregnant women only 33 people have completed their whole treatment, remaining 85 people stopped their treatment at different stages. In these 85 pregnant women 37 people after first dose, 18 people after second dose, 14 after third dose, and 16 after fourth dose stopped their treatment.

Complete procedure includes first time Hb estimation, depends on the Hb level four doses of Iron Sucrose IV injections followed by second time Hb estimation. Those people who completed this whole procedure were shown rise in Hb levels. In 33 pregnant women 11 people got Hb increment more than 2g, 9 people got increment between 1g and 2g and remaining 13 people got increment less than 1g. Average increment of Hb is 1.40g only.

Based on these findings following are some recommendations. With proper follow up and awareness among the community situation can be improved.

INTRODUCTION:

Anaemia is a condition in which the number of red blood cells (RBCs), and consequently their oxygen-carrying capacity, is insufficient to meet the body's physiological needs. The function of the RBCs is to deliver oxygen from the lungs to the tissues and carbon dioxide from the tissues to the lungs. This is accomplished by using haemoglobin (Hb), a tetramer protein composed of haem and globin. Anaemia impairs the body's ability for gas exchange by decreasing the number of RBCs transporting oxygen and carbon dioxide. Anaemia results from one or more of the following process: defective red cell production, increased red cell destruction or blood loss. Iron is necessary for synthesis of haemoglobin.

Anaemia is estimated to contribute 20 percent of all maternal deaths and nine times higher risk of perinatal mortality [2]. The odds for low birth weight are tripled, while those for preterm delivery more than doubled in association with IDA [3]. Anaemia and iron deficiency in pregnancy are associated with large placental weight and a high ratio of placental weight to birth weight (placental ratio), both of which are predictors of adult hypertension [4]. Poor mental and motor performance improves with iron therapy in iron-deficient infants at 12-18 month of age [5]. While nutritional factors may be contributory, it seems more than likely that IDA in infancy and early childhood is largely secondary to maternal iron deficiency during pregnancy. There is also evidence that infants born to women taking iron have more than double the iron reserves at 2 months of age and beyond when compared with the offspring of un-supplemented mothers. Thus to address the problem of iron deficiency in infancy and early childhood is to close the proverbial stable door after the horse has bolted. The definitive solution is to eradicate iron deficiency during pregnancy.

Haemoglobin levels to diagnose anaemia (g/dl)

Age groups	No Anaemia	Mild	Moderate	Severe
Children 6–59 months	≥11	10–10.9	7–9.9	<7
Children 5–11 years	≥11.5	11–11.4	8–10.9	<8
Children 12–14 years	≥12	11–11.9	8–10.9	<8
Non-pregnant women (15 years of age and above)	≥12	11–11.9	8–10.9	<8
Pregnant women	≥11	10–10.9	7–9.9	<7
Men	≥13	11–12.9	8–10.9	<8

*Source: Haemoglobin concentration for the diagnosis of anaemia and assessment of severity.
WHO*

WHO defines anaemia as hemoglobin level <11gm% and hematocrit <33% in pregnancy. According to National Family Health Survey-3(2005-2006), the prevalence of anaemia in pregnancy is 57.9% [7]. There is an increased iron requirement of 1240mg during pregnancy (230mg obligate loss, 450mg for expanded RBC volume, 270mg for fetus, 90mg in placental tissue and 200mg lost at delivery). Woman saves 150mg due to amenorrhea and that leaves around 1000mg of iron to be supplemented.

The Iron-Folic Acid (IFA) program was to provide free iron and folate to pregnant women to reduce IDA. The reasons for failure of IFA program often cited are partial coverage of the population, inadequate dosing of the iron supplement, defective absorption due to intestinal infestations, diets containing high levels of iron chelators, poor compliance, short supplies at the beneficiary level, and lack of effective health education [2]. Iron sucrose has minimal side-effects, and because it is administered intravenously (IV), it overcomes the problems with oral iron supplementation, including problems of compliance. Unlike intravenous dextran iron, anaphylactic reactions are very rare with iron sucrose. Blood transfusion is limited to those cases with severe anaemia at term, established or incipient cardiac failure or infections. It carries the risk of transmission of blood borne infections, besides mismatched transfusion reactions.

Indications of Iron Sucrose therapy

Intolerance to oral iron

Poor responders to oral iron

Presence of concurrent diseases like CRF

Calculated dose is $(2.4 \times W \times D + 500\text{mg})$, for storage iron where W= weight in kg,

$$D = (\text{target Hb in gm\%} - \text{actual Hb in gm \%})$$

Total iron is given in divided doses. 200mg iron sucrose in at least 250ml NS is given over a period of 2hrs on alternate days. Oral iron is to be stopped before 24hrs. Patient is to be supplemented with protein and multivitamins after parenteral therapy and oral iron should not be given [7]

OBJECTIVES:

- To assess the significance of Iron Sucrose IV therapy for Anaemic Antenatal mothers by finding out the incremental rate of Hemoglobin after therapy.
- To find out how many people have completed their full course of treatment

METHODOLOGY:

Study Design: Descriptive study.

Study area: Community Health Centre, Ahore block, Jalore District of Rajasthan.

Study Population: 118 (Number of pregnant women who took treatment for Anaemia at least one dose)

Study Period: Study was carried for 2 months from April 2015 to May 2015

Sampling design: Non probability sampling because- all pregnant women who took Iron Sucrose therapy for anaemia at CHC Ahore were considered as a sample.

Data collection: Secondary data was collected from maternity ward regarding Iron Sucrose therapy for anaemic pregnant women, first time hemoglobin estimation, number of people completed their full course treatment, hemoglobin estimation after completion of the treatment.

Data Analysis:

Percentages of different parameters of Iron Sucrose therapy were found using MS excel.

Graphical representation was done by using MS excel.

RESULTS:

Figure 1 Percent Distribution of Anemic women according to severity

Figure 2: Status of process completion

Figure 3: Percent Distribution of dropouts after different doses

Figure 4: Status of increment in Hb

DISCUSSION:

This study highlights the significance of Iron Sucrose IV therapy in anaemic condition of pregnant women. Numbers in the study shows that the average increment of heamoglobin after completion of four doses of treatment is 1.40mg/dl. This value observed in 33 people among the 118. Remaining 85 people either not completed their full course of treatment or not get done their heamoglobin estimation after completion of their treatment.

From August 2014 to April 2015 in the period of 9 months Iron Sucrose IV therapy started only for 118 people. More than 50% of these 118 are severe anaemic that is their Hb levels were less than 7 mg/dl. Remaining people were in range of moderate to mild anaemic condition. According to protocols these severe anaemic condition people have to give Iron

Sucrose intravenously along IFA supplementation. The whole procedure was not happening properly because of lack of awareness in community and no proper monitoring.

There were no special arrangements for antenatal care in CHC Ahore and the whole treatment procedure was carried out in maternal ward only so there is always a chance for infections being spread.

LIMITATIONS:

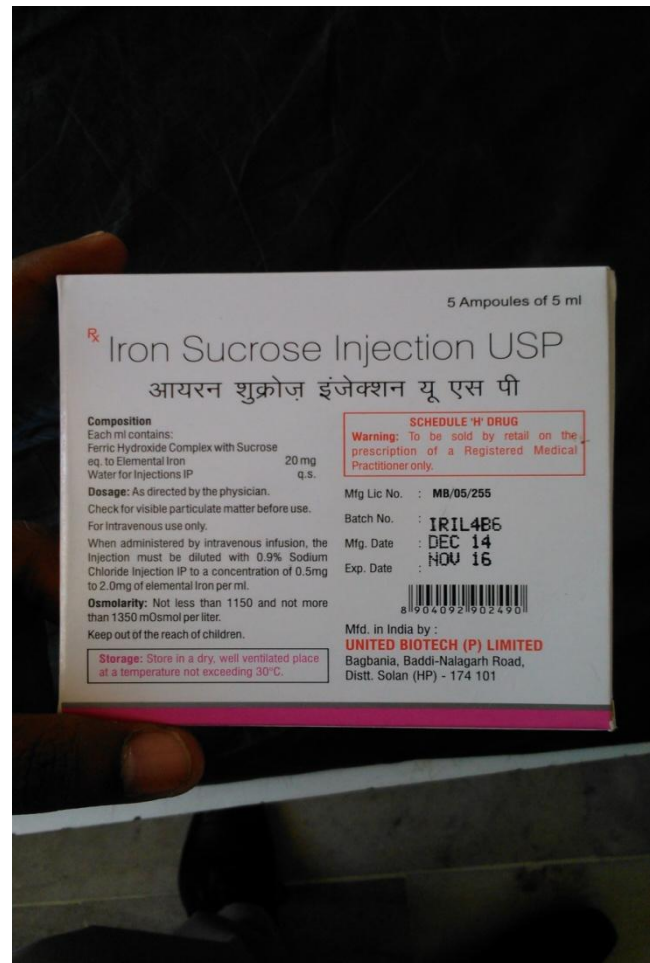
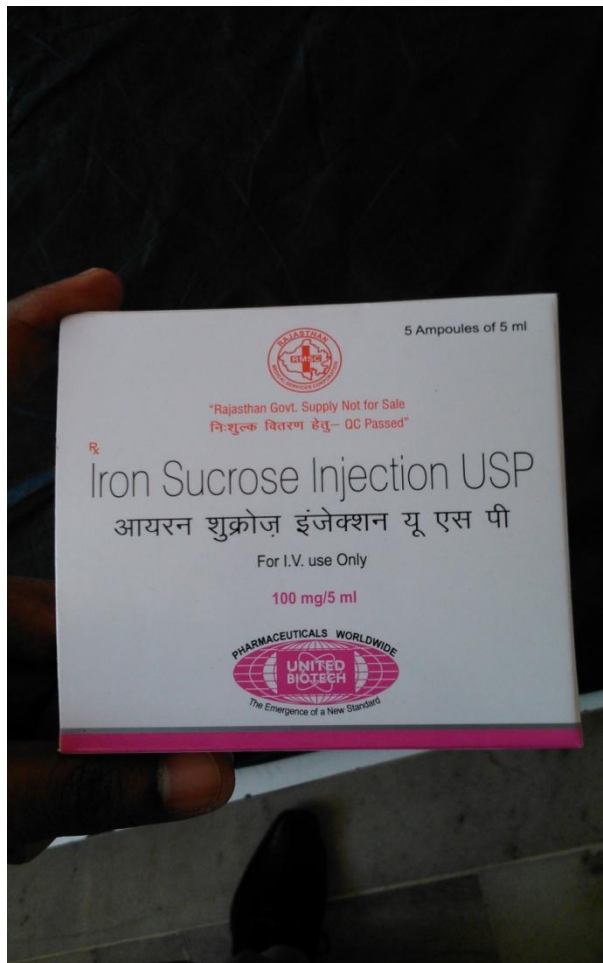
No proper documentation. The Iron Sucrose register barely incompleting, because of this poor documentation follow up was an issue. Interacting with the people in their local language was one more issue. No regular staff for monitoring the treatment and register.

CONCLUSION:

The study provides a view on Iron Sucrose intravenous treatment for severe anaemic pregnant women at CHC Ahore level. The average immediate rise in haemoglobin 1.40mg/dl was a good result of treatment. But dropouts in between the treatment period were an issue to be focused.

RECOMMENDATIONS:

- Proper documentation also plays good role in the success of the project; it will be easy to follow up them if we have phone numbers.
- Human Rescores: appointing of person for monitoring the whole treatment process.
- Separate unit for antenatal care is required.



Photos1&2: Iron Sucrose injection supplied by government Rajasthan





Photos 3, 4&5: Iron sucrose injection infusion in maternity ward

REFERENCES:

1. Ministry of Health & Family Welfare, Government of India: Guidelines for control of Iron deficiency anaemia, 2013, New Delhi.

2. MOHFW: Ministry of Health and Family Welfare. National Consultation on Control of Anemia in India. 1617 October, Nirman Bhavan, New Delhi (1998)
3. Scholl TO, Hediger ML, Fischer RL, Shearer JW. Anaemia vs. iron deficiency: increased risk of preterm delivery in a prospective study. *Am J Clin Nutr*, 1992; **55**: 985-988
4. Barker DJP, Bull AR, Osmond C, Simmonds SJ. Fetal and placental size and risk of hypertension in adult life. *Br Med J* 1990 ;**301**: 259-262.
5. Oski, FA. Iron deficiency - facts and fallacies. *Paediatr Clin North Am*, 1985;**32**: 493-497.
6. Health and family welfare department, Standard Treatment Guideline & Essential Medicine List (For Pregnant Women): Government of Odisha.
7. National Family Health Survey (NFHS-III), **2005-2006**
<http://www.nfhsindia.org/pdf/India.pdf>.
8. Kalaivani K. Prevalence & consequences of anaemia in pregnancy. *Indian J Med Res* 2009; 130 : 627-33.
9. Divakar H, Consultant Obstetrician, Nandakumar BS, Public Health Consultant, Manyonda IT , Consultant Obstetrician, Iron deficiency anaemia in pregnancy is intravenous sucrose an alternative to the oral iron folate supplementation program in India?, *Indian J Med Res* 2012.
10. kawaljit kaur, Anaemia' a silent killer 'among women in India :present scenario, *Indian J Med Res* 2012.