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A RESEARCH STUDY TO ASSESS THE EFFECTIVENESS OF ORAL AND INTRAVENOUS MANAGEMENT OF IRON AMONG PATIENTS WITH POSTPARTUM ANEMIA

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Abstract:
Objective: *The intravenous and oral iron treatment effectiveness comparison in postpartum anaemia is the objective of the research.*
Material and Method: *This Randomized Control Trial was carried out at UHS, Lahore from July 2018 to February 2019. The numbers of postpartum anaemia patients enrolled for research were eighty-two, having age twenty to thirty-five.*
Results: *The average age of the females in category "A" & "B" was (26.36 ± 4.30) & (26.31 ± 4.69) respectively. Most of the female patients, forty-one (50%) having age between twenty to twenty-five years. The numbers of patients identified with increased Hb level >3.5g/dl in oral iron and the intravenous iron category was twenty-seven and twenty-six respectively after six weeks of treatment duration. Resultantly effectiveness was (87.80%) in the intravenous iron category (Group A) and (65.85%) in the oral iron category (Group B) along with 0.18 of P-value.*
Conclusion: *The researcher determined that higher effectiveness level (increased in Hb) was recorded in intravenous iron treatment with respect to the treatment of oral iron in managing postpartum anaemia patients.*
Keywords: *Post-Partum Anemia (PPA), Hb (haemoglobin) and Intravenous Iron.*

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INTRODUCTION:

If the Hb (haemoglobin) level is below 11gm/dl and haematocrit is less than thirty-three percent then it is said to be anaemia [1]. Meanwhile, gestation anaemia is a dominant medical complication as well as the cause of forty to sixty percent of mother casualties in developing states [2]. Those females who had been anaemic while gestation having a huge rate of postpartum anaemia as well as among black females (forty-three percent in general including forty-eight percent of those females who were thirteen to fourteen weeks postpartum). By comparability, twenty-four percent of the females not having experience of parental anaemia and percentage of post-delivery anaemia in white females is twenty-one percent [3]. Some year earlier, a number of formal procedures such as intravascular and intramuscular iron treatment, transfusion of blood in oral iron treatment were utilized to controlled anemia while gestation as well as post delivery period [4]. The oral iron substitution treatment is the first option in the therapy of iron deficiency anemia for most of the patients because of its availability at entire health centers [5]. Ferrous sulfate is mostly utilized among different iron salts [6]. The state of oral iron treatment failure is in large requirement in spite of routine oral iron treatment frequency required parental treatment in anemic gravid females [4, 7]. 6mg of iron could be consumed by the body from the gastrointestinal track on a daily basis. In multiple of the cases, the iron deficiency has been noticed up to 1000mg in females which definitely needed various months to replace [8]. Consequently, the population is much interested in the treatment of parental iron, which is a great source of providing iron as compared to supplementation of oral iron [8].

So currently nil research was approachable on that specific problem so research was carried out to correlate the effectiveness of intravenous iron against oral iron treatment in after delivery anaemia in the native population, so our people could achieve maximum advantageous from it. Additionally, the outcomes of this specific research would give us extra effectual treatment among two for controlling anaemia after delivery as well as assist to constitute practical instruction to minimize mother's malaise after delivery.

METHOD AND MATERIAL:

This Randomized Control Trial was carried out at UHS, Lahore from July 2018 to February 2019. The numbers of postpartum anaemia patients enrolled for research were eighty-two, having age twenty to thirty-five. The entire pregnant women suffering from anaemia after delivery and having age twenty to thirty-five years with parity one to five were enrolled for research. Researcher excluded all those women from the research having an allergic record or iron discrimination, blood transfusion symptoms, patients having a deficiency of folic acid and thalassemia patients, unwilling women, patients with persistent diseases such as chronic renal collapse, chronic hypertension and liver disease and patients with parental iron hypersensitivity.

If the haemoglobin level is less than 10g/dl and the level of serum ferritin is less than 15mg/ml within initial forty-eight hours of post-delivery than it is said to be positive after delivery anaemia. The efficacy is calculated as an increase of Hb level after a time duration of six weeks. Effectiveness was assumed as positive if the increase of Hb level is greater than 3.5g/dl after treatment of six weeks.

Efficacy was assumed as negative if the increase in Hb level is less than 3.5g/dl after a time duration of six weeks. The recommendation was taken from the local ethical board. The entire eighty-two patients were hospitalized in the department of obstetrics and gynaecology tehsil headquarter Jampur. The entire patients full fill the required prerequisites of the research were enrolled. After an explanation of research purpose, methodology, advantageous, probable risks written approval was taken from the entire participant. Entire participants were explained that their participation in the research should be based upon willingness otherwise they can withdraw at any time. While the research after getting approval from entire participants of the research, entire were irregularly distributed into two categories (Group "A" & "B").

Most basic evaluations such as CBC (complete blood count), a complete analysis of urine, random blood sugar, RFT (renal function test) and ECG (on demand) were conducted in each patient on hospitalization.

Category "A" was given intravenous iron (less than or equal to 1000mg over fifteen minutes recurring for one week in 100ml of 0.9%) usual sline) over ½ hour. Whereas category "B" was provided with ferrous sulfate tablets of oral iron. This dose was given (325mg) to group "B" three times a day up to six weeks. The entire cases were subsequently monitored for six weeks and effectiveness was positive (assumed as positive if Hb level increase to 3.5g/dl after treatment of six weeks) was recorded. The special Performa was made for data recording containing two parts. Data was noted on the

Performa. The 1st part of the Performa containing personal information (biodata) of the patients, and the 2nd part containing the research variables. The researcher carried out a statistical assessment of the data by utilizing SPSS software. SD and mean was measured for quantitative variants such as Hb level and age percentage repetition was measured for qualitative variants such as effectiveness (positive/negative) and parity. By utilizing the chi-square test, the effectiveness of both the categories was correlated for variation and P-value is≤ 0.05 was assumed as important. Effect changes such as parity, Hb level and age initially managed via stratification and post-stratification. To find out the effects on results chi-square test was utilized and P-value ≤ 0.05 was assumed as important.

RESULTS:

In our research age limit was between twenty to thirty-five years with (26.23 ± 4.40) of average age. The average age of the females in category "A" & "B" was (26.36 ± 4.30) & (26.31 ± 4.69) respectively. The numbers of patients identified with increased Hb level (<3.5g/dl) in oral iron and the intravenous iron category was twenty-seven and thirty-six respectively. Effectiveness variation was substantially huge (P=0.68) in the intravenous group with respect to the oral iron group.

Researcher divides the patients into three age categories which are twenty to twenty-five years, twenty-six to thirty years, thirty-one to thirty-five years. In twenty to twenty-five-year age category, treatment effectiveness was recorded in eighteen (90%) and thirteen (61.90%) patients respectively. The effectiveness rate variation in both the categories was statistically important with 0.036 of P-value. In twenty-six to thirty years age category, treatment effectiveness was recorded in eleven (84.62%) cases of category "A" and seven (63.66%) of category "B" respectively. However, the difference was unimportant with P-value = 0.237. in thirty to thirty-five-year age category, treatment effectiveness was recorded in seven (87.50%) of category "A" and seven (77.78%) cases of category "B" respectively. However, the differences in effectiveness were statistically unimportant with (P = 0.600).

Entire research patients were divided into two categories with respect to haemoglobin level. The category "A" containing those patients having haemoglobin level less than 7g/dl and category "B" containing those patients having haemoglobin level greater than 7 to less than 10g/dl. In category "A" in which Hb is <7g/dl, effectiveness was recorded in eighteen (81,82%) patients of intravenous category and ten (55.56%) cases in oral iron category. However, the effectiveness differences in both categories were statistically unimportant (P = 0.071). in category "B" patients, which have haemoglobin level greater than seven to less than ten, treatment effectiveness was recorded in eighteen (94.74%) cases of intravenous iron category and seventeen (73.91%) patients of oral iron category, however, the differences were statistically unimportant with P-value =0.071.

Table – I: Group-wise comparison of efficacy

Efficacy	Yes		No		P-Value
	Number	Percentage	Number	Percentage	
Group - A (Intravenous Iron)	36	87.8	5	12.2	0.018
Group - B (Oral Iron)	27	65.85	1	34.15	

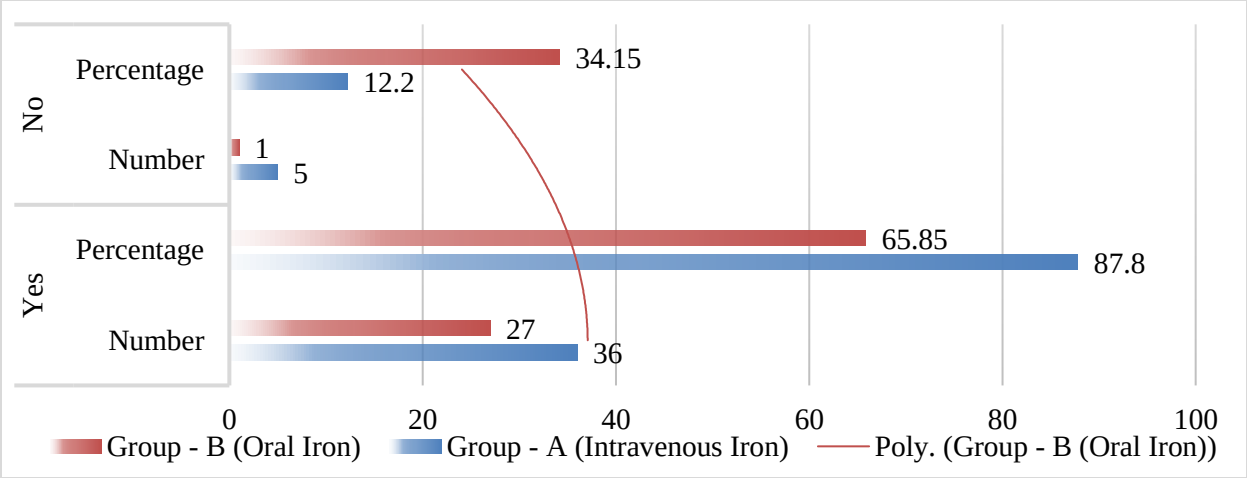
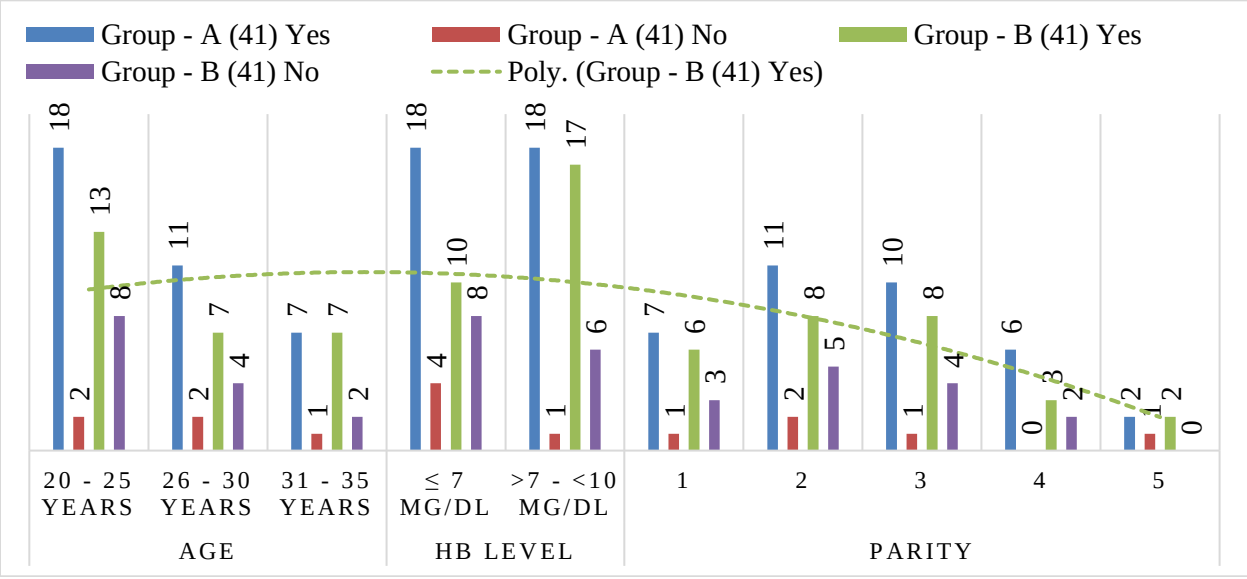


Table – II: Comparison of efficacy with respect to age, Hb level and parity

Efficacy		Group - A (41)		Group - B (41)		P-Value
		Yes	No	Yes	No	
Age	20 - 25 Years	18	2	13	8	0.036
	26 - 30 Years	11	2	7	4	0.237
	31 - 35 Years	7	1	7	2	0.6
HB Level	≤ 7 mg/dl	18	4	10	8	0.071
	>7 - <10 mg/dl	18	1	17	6	0.071
Parity	1	7	1	6	3	0.312
	2	11	2	8	5	0.185
	3	10	1	8	4	0.159
	4	6	0	3	2	0.087
	5	2	1	2	0	0.361



DISCUSSION:

The intravenous and oral iron treatment effectiveness comparison in postpartum anaemia is the objective of the research. The average age of the females in category "A" & "B" was (26.36 ± 4.30) & (26.31 ± 4.69) respectively. Most of the female patients, forty-one (50%) having age between twenty to twenty-five years. these findings were too similar to Breymann C and Aggarwal RS et al research, who presented an average age of twenty-seven and twenty-eight years respectively [9]. A little bit higher average age of twenty-nine years was presented by Bhandal N et al in his research [10]. Moreover, Halimi S et al presented a little bit lower average age of twenty-four years with respect to our research. The numbers of patients identified with increased Hb level >3.5g/dl in oral iron and the intravenous iron category was twenty-seven and twenty-six respectively after six weeks of treatment duration. Resultantly effectiveness was (87.80%) in the intravenous iron category (Group A) and (65.85%) in the oral iron category (Group B). However, Breymann c et al presented unimportant affectivity difference between iv iron category and oral iron category post-delivery after treatment interval of six weeks [8].

In one additional research conducted by Aggarwal RS et al presented intravenous iron therapy affectivity in acquiring targeted Hb in eighty percent of the patients with respect to forty percent patient in oral iron category. Substantial betterment was recorded in several haematological parameters in category "A" (intravenous group) with respect to category "B" (oral iron group).

The comparison of intravenous iron sucrose against oral route was conducted by Bayomeu F et al in his research and presented rise in Hb from (9.6 ± 0.7) g/dl to (11.11 ± 1.3) g/dl after therapy interval of four weeks (P<0.001) [11]. Efficacy was presented in intravenous iron as (90.5%) and (68.6%) in oral iron in after delivery anaemia by Van Wyck DB et al in his research [12]. The research conducted by Halimi S et al presented efficacy (increased in Hb) from (9.35 ± 1.62) to (11.20 ± 0.28) gm/dl in the oral iron category as well as (9.20 ± 1.69) to (12.65 ± 1.06) gm/dl in intravenous category after one month. He determines that improvement in iron deficiency anaemia could positively achieve with intravenous iron treatment with respect to oral iron treatment.

If intravenous iron was provided timely, this will assist to minimize the chances of blood transfusion while post-delivery interval. A research conducted by Bhandal N et al also presented a substantial variation of efficacy in the category of oral iron and IV iron category for post-delivery anaemia treatment [10]. A research carried out by Breymann C et al also determined the secure and potential treatment option is an intravenous treatment for after delivery iron deficiency anaemia cases as compared to the treatment of oral iron, comprising small therapy duration, emanate compliance, nil gastrointestinal drawbacks as well as iron stores renewal [8]. Uniformly Dede A et al carried-out comparison of oral iron versus ferrous sulfate, iron sources complex versus IV iron treatment and a substantial increase in the level of serum ferritin level in shorter duration with minimum drawbacks with the therapy of intravenous iron with respect to oral iron therapy in females iron deficiency anemic females after delivery. The research conducted by Westad S et al recorded ninety-five percent of compliance along with oral IV iron sucrose [14]. The conformation was fifty percent with oral therapy. A research performed by Hashmi Z et al determines that intravenous sucrose iron is compulsory for the achievement of targeted hemoglobin level of 11 Hg/dl in eighty percent of patients [15]. In one additional research performed by Raja KS et al Rawalpindi presented 7.5 to 11 gm/dl. Rise of hemoglobin in gravid females with iron deficiency anemia by application of intravenous iron treatment [16].

RCT conducted by Seid M et al assist the safeness, effectiveness as well as tolerance of IV ferric carboxy maltose with respect to the oral ferrous sulfate. The feedback was increased in haemoglobin level up to 12g/dl at the conclusion of the research was expressively huge in intravenous category (91.4%) with respect to oral iron category (66.7%) with P-value is less than 0.0001 [17]. The research on supplementation of iron in anaemia while gestation and displayed that treatment of intravenous iron is secured alternative for anaemia therapy [18]. Finally, it is determined that for the treatment of iron deficiency in gravid females could be controlled by Appling intravenous iron treatment and it is much effective with reference to an increase in Hb level.

CONCLUSION:

So, we approved that the intravenous iron treatment must be in practice as an initial treatment for controlling after delivery anaemia with the objective of minimizing after delivery bitterness and mother casualties.

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