EFFECT OF YASHTIMADHU, VIDARI SIDDHA KSHEERABASTI ON PREGNANCY

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Abstract: Becoming a mother is a beautiful dream of every woman, but both pregnancy and child birth, to a certain extent, are unpredictable processes. Hence the care of a pregnant woman presents a unique challenge. It is common for a pregnant woman to experience unpleasant symptoms during pregnancy often caused by normal physiological changes the body of an expectant mother. Any abnormality in response to maternal nutrient deficiencies leads to complications like low birth weight, IUGR, preterm delivery etc.
A good antenatal care can make a significant contribution in minimising the physiological discomforts and also help to maintain an uncomplicated pregnancy.
Ayurveda has given prime importance to antenatal care. Wellbeing of Garbha can be achieved only through the wellness of the Garbhini. The Garbhini paricharya in Ayurveda directs its efforts towards forming a dietary regimen providing the garbhini with adequate amount of essential nutrition to fulfil the dietary demands as well as to prevent the discomforts or other related symptoms as far as possible, besides the normal, healthy and timely growth of the foetus.

1. INTRODUCTION:

Becoming a mother is a beautiful dream of every woman, but both pregnancy and child birth, to a certain extent, are unpredictable processes. Hence the care of a pregnant woman presents a unique challenge. It is common for a pregnant woman to experience unpleasant symptoms during pregnancy often caused by normal physiological changes the body of an expectant mother. During the entire developmental stages, the foetus is exclusively dependent on the mother for nutrient supply to fulfil developmental necessities. Any abnormality in response to maternal nutrient deficiencies leads to complications like low birth weight, IUGR, preterm delivery etc.

A good antenatal care can make a significant contribution in minimising the physiological discomforts and also help to maintain an uncomplicated pregnancy.

Ayurveda has given prime importance to antenatal care. Wellbeing of *Garbha* can be achieved only through the wellness of the *Garbhini*. The *Garbhini paricharya* in Ayurveda directs its efforts towards forming a dietary regimen providing the *garbhini* with adequate amount of essential nutrition to fulfil the dietary demands as well as to prevent the discomforts or other related symptoms as far as possible, besides the normal, healthy and timely growth of the foetus.

According to all *Acharyas* the commonly used drugs during *Garbhini paricharya* are *Brinhana, Madhura* and *Snigdha* in nature, as they are considered to increase the quality of nutrition, protect and nourish the mother and foetus. In Ayurveda, *Ksheer* is also considered as very important during pregnancy as it has important property of *garbhposhana* and *garbhadhana.* It is indicated in conditions like *garbhasrava* and *garbhshosha*. It is having the properties like *Rasayana, vrishya, Balya, Jivaniya, Stanyakara, Shramhara* etc. According to WHO, the Calcium supplement is found in milk may reduce the risk factors in pregnancy by about 24%.

Similarly, in Ayurveda *Basti* is the best therapy to regulate the *vata dosha*, which is chief governing factor behind all the physiological and pathological processes both in body and the mind.

The mucosal surface of Gastro-Intestinal Track (GIT) is composed of a remarkably dynamic population of epithelial cells that are highly developed with capacity of transmembrane absorption and secretion. Water moves in both directions across the mucous membrane of both small and large intestine until the osmotic pressure of the intestinal contents equal to that of plasma. The absorptive capacity of the colon makes rectal instillation a practical route for drug instillation. The drugs introduced by this route also have systemic effects as well as local effects. This advantage of the colon has been adopted for drug administration in this study.

Yashtimadhu and *Vidari* are *madhur rasa dravyas*, indicated in *garbhini paricharya. Yashtimadhu, Vidari siddha ksheera* is also indicated in *upavishtaka chikitsha* in *Ashtang Sangraha*.

In *garbhini lakshanas*, *Garbhini* experiences "*balavarna hani* and *adhika shrama*" during 6th month as foetus gains more *bala, varna* & *ojas*. In the 7th month *garbhini* feels "*sarvakare klantatama*. Thus this period of pregnancy is appropriate to give proper nutritional support to meet the nutritional demand for foetal growth and also to relieve the various adverse symptoms seen in *garbhini* as pregnancy progresses.

Hence this study was planned to administer *Yashtimadhu, Vidari siddha ksheerbasti* in 6th and 7th month of pregnancy with a view to determine its effect on various symptoms of mother, foetal growth and baby weight.

2. MATERIALS AND METHODS:

This clinical study titled **"Effect of Yashtimadhu,Vidari Siddha Ksheerbasti on Pregnancy"** aimed to evaluate the relative effects of three independent treatments.

Method

To supplicate this study, three group experimental method of clinical trial was adopted to administer the three treatments on pregnant women.

Population and Sample

The **population** for this study constituted of all those pregnant women who came for their check-up/treatment in the OPD Clinic of Department of Prasuti Tantra, Institute of Medical Sciences, Banaras Hindu University during the period April 2015 to January 2016 at their own will.

A **sample** of 90 pregnant women from the above population, who were diagnosed to have completed their 5th month of their pregnancy, was selected to serve as subjects for the experimental clinical trial. In selecting these patients the following **selection criteria** were additionally applied.

Inclusion criteria:

Only those women were included to serve as subjects of this study who met the following criteria for inclusion:

- That all subjects were regularly taking following medicines orally since 4th month of their pregnancy:
  - **(i)** Iron supplement (100mg. Ferrous Ascorbate 1 OD)
  - **(ii)** Calcium 500 mg. 1 OD
  - **(iii)** Folic Acid 5 mg. 1 OD
- Uncomplicated cases of pregnancy between 20-22 wks.
- Both primi and multigravida.
- Age between 18-40 yrs.
- Single intrauterine gestation.

Exclusion criteria:

Those subjects were not selected for this study who reported or were diagnosed with any of the following condition:

- If there was any history of medical disorders during pregnancy such as: Pulmonary diseases, renal diseases, Psychiatric disorders, Cardiac diseases, Epilepsy etc.
- If Pregnancy is complicated with jaundice, eclampsia, preeclampsia, twin pregnancy, PIH etc.
- If Systemic pathology such as: tuberculosis, D.M., HIV, HBsAg etc. is found.

The Experimental Design for Clinical Trial

In order to carry out the experimental trial the total sample of 90, women selected as subjects for this study, was divided **randomly** into three Groups of 30 pregnant women each to serve as trial groups. The random placement of subjects in to three groups ensures the assumed statistical equivalence of the three groups.

These three groups were given the three distinctly different treatments during the 6th and 7th month of their pregnancy. Before administering the treatments, the groups were **pre-tested** (assessed) on the criterion variables selected for the evaluation of the efficacy of the three treatment modalities in this study. After the administration of the treatments, the groups were **post-tested** on the same assessment variables to compare the relative effect of the treatments. In this way a **three group pre-test post- test experimental design** was adopted to supplicate the experimental trial in this study.

The Treatments

The three groups of subjects were given following specifically different treatments:

Group A - 30 pregnant subjects were treated with a combination of following medicines

- *Dhatri lauha* 250 mg. BD - orally with water
- *Yashyimadhu, Vidari siddha ksheerabasti* – 60 ml.
- Calcium 500 mg. 1 OD - orally
- Folic Acid 5 mg. 1 OD - orally

Group B – 30 pregnant subjects were treated with a combination of following medicines:

- *Yashyimadhu, Vidari siddha ksheerabasti* – 60 ml.
- Iron supplement (100mg. Ferrous Ascorbate 1 OD) – orally
- Calcium 500 mg. 1 OD - orally
- Folic Acid 5 mg. 1 OD - orally

Group C – 30 pregnant subjects were treated as control group, they were regularly taking following medicines since 4th month of pregnancy:

- Iron supplement (100mg. Ferrous Ascorbate 1 OD) – orally
- Calcium 500 mg. 1 OD - orally
- Folic Acid 5 mg. 1 OD –orally

Assessment Criteria

Like most clinical trial studies, evaluation of the efficacy of treatments was based upon the assessment of improvements in signs and symptoms related to the overall health of women during pregnancy. Specifically, in this study, both subjective and objective assessment criteria (criterion variables) were adopted as described hereunder.

Subjective criteria

The following subjective assessments of each subject were done before and after the administration of the treatments:

- Pedal oedema;
- Heart burn (Epigastric pain);
- Low back ache;
- Constipation;
- Calf muscle cramps; and
- General weakness.

Objective criteria

The following objective assessments of each subject were done before and after the administration of the treatments:

- Pallor (Hb%);
- Symphysis pubic- Fundal height;
- Abdominal girth;
- Maternal weight;
- USG findings: Femur length, Abdominal Circumference, Head Circumference; and
- Baby weight after delivery.

Baseline screening

It is important to mention that a baseline screening of all the 90 subjects selected for this study was done on the basis of following clinical tests to ensure that complications related to abnormalities as revealed by them do not contaminate the results of this study:

- HIV
- VDRL
- HBsAg
- CBC
- Blood sugar
- Urine R/M
- Blood group with Rh factor
- Blood urea
- USG

Grading of subjective criteria

Following system was adopted for grading/quantification of the subjective assessment criteria:

- **Swelling:**
  0 – Absent
  I – mild, subsides at rest
  II – severe, present even after taking rest
- **Heart burn:**
  0 – No heart burn
  I – 1-2 episodes, mild
  II - >3 episodes, moderate
- **Backache:**
  0 – No backache
  I – mild, subsides after taking rest
  II – moderate, needs medication
- **Constipation:**
  0 – Normal soft bowels
  I – occasional constipation
  II – motion once in 2 days or no motion from 2 days
  III – daily and needs treatment
- **Muscle cramps:**
  0 – No
  I – mild
  II – moderate
- **Fatigue:**
  0 – No
  I – fatigue on doing slight work
  II – even at rest

Assessment of objective criteria:

Following system was adopted for grading/quantification of the objective assessment criteria:

Grade	SFH diff. in cm.	AG diff. in cm.	Maternal wt. gain in kg.	Hb% at FT	Baby wt. in kg.
0	< 8	< 10	3 – 5	< 7	< 2
I	8 – 12	10 – 14	5 – 7	7 – 9	2 - 2.5
II	12 – 16	14 – 20	7 – 9	9 – 12	2.5 – 3
III	16 – 22	20 – 25	9 – 12	> 12	> 3

Assessment of USG findings:

Grade	AC diff. in mm.	HC diff. in mm.	FL diff. in mm.	AFI diff.
0	< 120	< 100	< 25	No
I	120 – 140	100 – 120	25 – 30	Mild
II	140 – 160	120 – 140	30 – 35	Moderate
III	>160	>140	>35	Huge

3. OBSERVATIONS, ANALYSIS AND RESULTS:

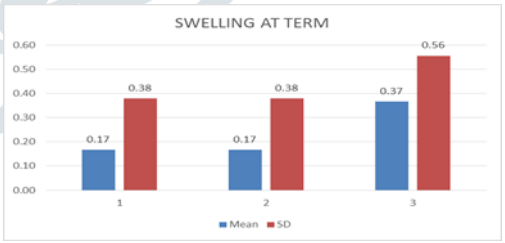
In this section the results of the clinical trials are presented to reveal the effect of the three treatment regimens in terms of the selected criteria related to pregnant women and their baby's health.

Effect on Pedal Oedema

Whether the three treatments have an association with the degree of pedal oedema as reported and assessed in this study of the patients? The answer to this research question was obtained by applying the χ^2 test. The results of this analysis are presented in Table1.

Table no. 1. Association of different treatment regimens on pedal oedema

Pedal Oedema	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	0	0.17	0	0.17	0	0.37
χ^2	5.455		5.455		12	
p-value	0.06		0.06		0.002	



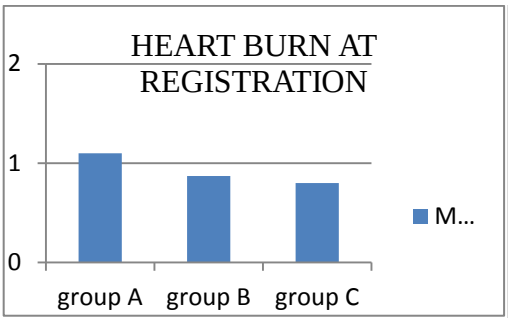
This analysis shows that, as compared to drugs of group C, the drugs of group A and B reduce the incidence of pedal oedema at term.

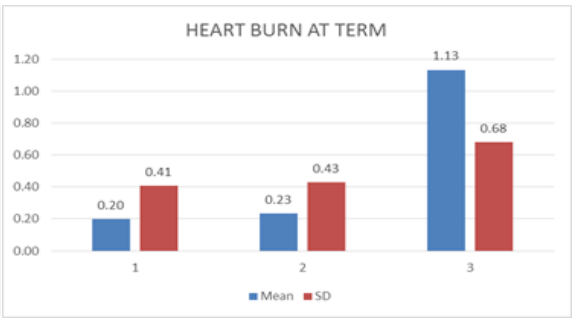
Effect on Heart burn

The χ^2 analysis results in Table 2 regarding the association of different treatment regimens on incidence of heart burn in patients reveal significant χ^2 values.

Table no. 2. Association of different treatment regimens on incidence of heart burn (oesophageal reflux):

Oesophageal reflux	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	1.1	0.2	0.87	0.23	0.8	1.13
χ^2	20.4		11.98		3.45	
p-value	0.00003		0.002		0.177	



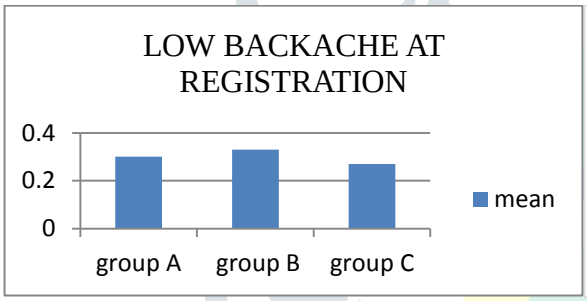


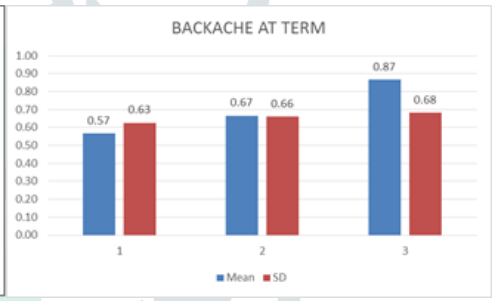
All the three treatments are significantly associated with heart burn in patients of the three group. Since the mean values of the heart burn at term are less than that at the time of registration, it is clear that group A and group B treatments significantly reduce the rate of heart burn in patients.

Effect on Low Backache

Table no. 3. Association of different treatment regimens on incidence of low Backache:

Low backache	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	0.3	0.57	0.33	0.67	0.27	0.87
χ^2	3.45		5.714		13.337	
p-value	0.177		0.05		0.00127	



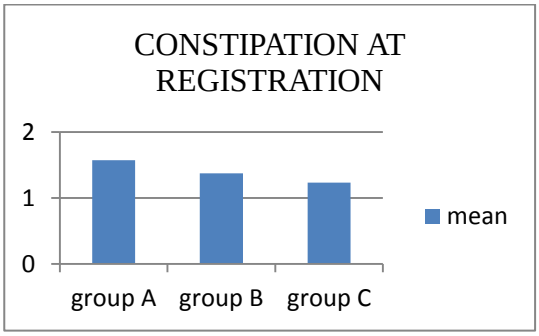


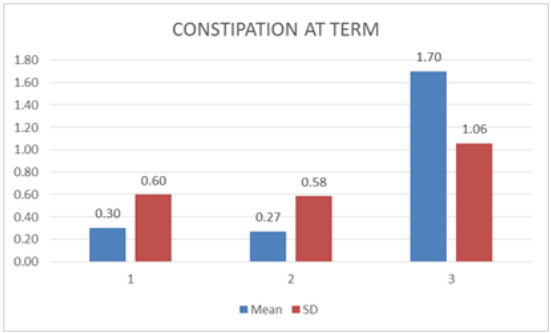
Careful observation of the mean values at the time of registration and at term shows that there is slight increase in the experience of low backache in all the three groups. This is natural due to increase in the girth of abdomen. However, as compared to group C the treatments of group A and B better control backache.

Effect on Constipation

Table no. 4. Association of different treatment regimens on incidence of constipation:

Constipation	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	1.57	0.3	1.37	0.27	1.23	1.7
χ^2	22.11		18.788		2.948	
p-value	0.00006		0.0003		0.3997	



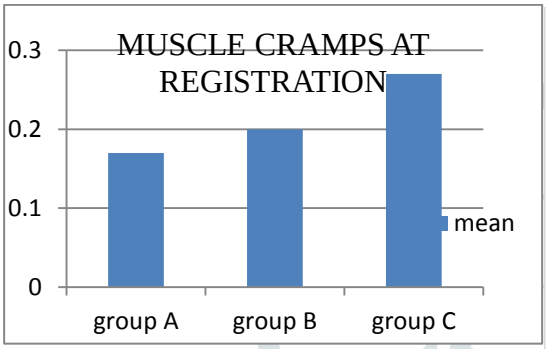


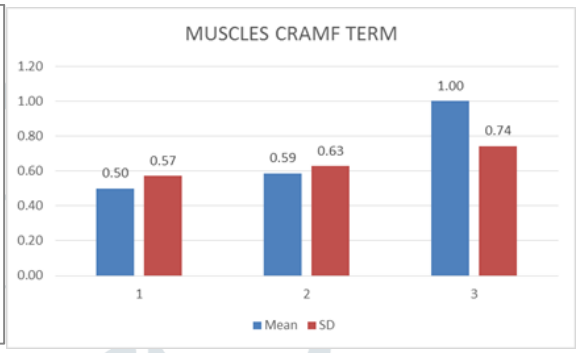
Careful observation of the mean values at the time of registration and at term shows that there is a decrease in the incidence of constipation in patients undergoing treatment A and B but an increase in the case of patients undergoing treatment C. Thus it can be safely inferred that, as compared to group C, the treatments of group A and B are better as they cause less constipation.

Effect on Calf-muscle Cramps:

Table no. 5. Association of different treatment regimens on incidence of calf-muscle cramps:

Calf-muscle cramps	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	0.17	0.5	0.2	0.6	0.27	1
χ^2	8.631		8.991		17.15	
p-value	0.013		0.011		0.0001	



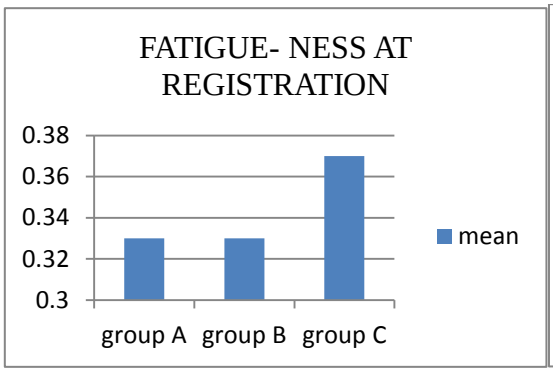


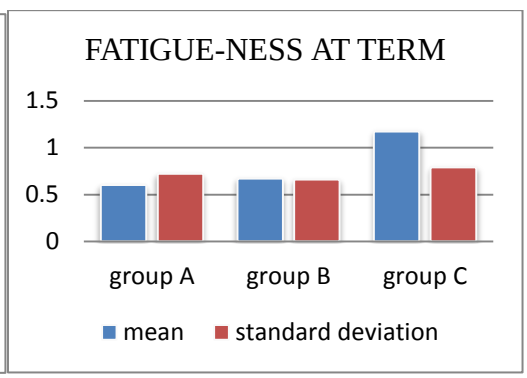
However, careful observation of the mean values at the time of registration and at term shows that there is an increase in the incidence of calf-muscle cramps in patients undergoing the three treatments. But it appears that, there is no significant effect on calf-muscle cramps in all three treatments.

Effect on General Fatigue-ness

Table no. 6. Association of different treatment regimens on incidence of general fatigue-ness:

General fatiguen ess	Group A		Group B		Group C	
	At reg.	At term	At reg.	At term	At reg.	At term
Mean	0.33	0.6	0.33	0.63	0.37	1.17
χ^2	2.614		3.59		15.03	
p-value	0.24		0.166		0.0005	





Observation of the mean values at the time of registration and at term shows that there is an increase in the incidence of fatigue-ness in patients undergoing the treatment C. Hence, it is clear that treatments A and B are significantly better than treatment C as far as incidence of increase in fatigue-ness is reported by the patients.

Effect on haemoglobin percentage:

Percentage of haemoglobin in blood is one of the most important factors for the health of both the mother and the child. In this section, an analysis of the results of this clinical experimental study with regard to increase in percentage of haemoglobin blood as a result of the three treatment regimens is presented.

Table no. 7. Data analysis of Hb% at registration (Hb_1):

Groups	Mean	Std. deviation
Group A	11.10	1.20
Group B	10.96	1.35
Group C	10.93	1.01

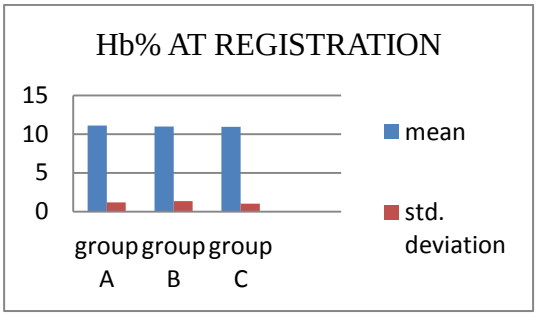


Table no. 8. ANOVA test for Hb% at registration and at term:

Hb_1	Sum of squares	df	Mean square	F	Sig.	Hb_2	Sum of squares	df	Mean square	F	Sig.
Between groups	0.515	2	0.257	0.181	0.835	**Between groups**	45.241	2	22.620	24.988	0.000
Within groups	123.972	87	1.425			**Within groups**	78.755	87	0.905		
Total	124.487	89				**Total**	123.996	89			

There is no significant difference in Hb% at registration among these three groups. But at the term, there is significant difference in Hb% among these three groups.

This called for further analysis to find out as to in which group the difference was significant? For this t-test comparison was done between the three group means. These results are presented here under.

Table no. 9. t-test for group comparisons of Hb% at term:

Groups	t value	df	p value
Group A Group B	5.457	58	<0.00001
Group A Group C	7.051	58	<0.00001
Group B Group C	0.206	58	0.61

The above comparison clearly reveals that at term the percentage of haemoglobin was significantly higher in group A and B than Group C. In order to answer this question the gain in percentage of Hb from registration to term time was compared for the three groups as under.

Table no. 10. Analysis of response of different treatment regimens on haemoglobin percentage:

Group pair	t- value	df	p- value
Hb_{1A}-Hb_{2A}	-8.131	29	0.000
Hb_{1B}-Hb_{2B}	0.336	29	0.739
Hb_{1C}-Hb_{2C}	1.412	29	0.001

This analysis shows that the drugs administered upon group A, though fail to sustain the increased level of Hb% from registration to tern, yet they are the best combination for maintaining the increase in Hb% in pregnant women throughout the pregnancy period.

Analysis of weight gain in mother:

Table no. 11. Data analysis of weight gain in mother:

Groups	Mean	Std. Deviation
Group A	9.7633	1.36621
Group B	9.8333	1.26691
Group C	7.1900	1.59425

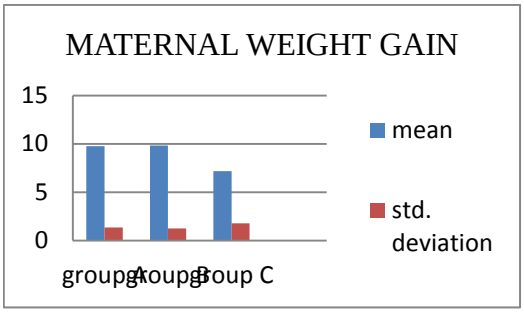


Table no. 12. ANOVA test for maternal weight gain:

Maternal weight gain	Sum of squares	df	Mean square	F	Sig.
Between groups	136.142	2	68.071	33.961	0.000
Within groups	174.383	87	2.004		
Total	310.525	89			

Here p- value is <0.05, which is significant. It means there is significant difference in maternal weight gain among these three groups.

Table no. 13. Post Hoc test for multiple group comparisons for maternal weight gain:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-0.07000	0.3655	0.849
	Group C	2.5733	0.3655	0.000
Group B	Group A	0.07000	0.3655	0.849
	Group C	2.6433	0.3655	0.000
Group C	Group A	-2.5733	0.3655	0.000
	Group B	-2.6433	0.3655	0.000

This interpretation shows that, drugs of group A and group B are equally effective and more effective then drugs of group C to increase mother's weight in pregnancy.

Analysis of gain in Symphysis-pubic fundal height:

In order to compare the Symphysis-pubic fundal height the ANOVA test was applied to compare it in the women of the three groups. The results of this analysis are presented and interpreted here in this section.

Table no. 14. Data analysis of symphysis-pubic fundal height:

Groups	Mean	Std. Deviation
Group A	16.633	3.157
Group B	17.267	2.69
Group C	11.466	3.513

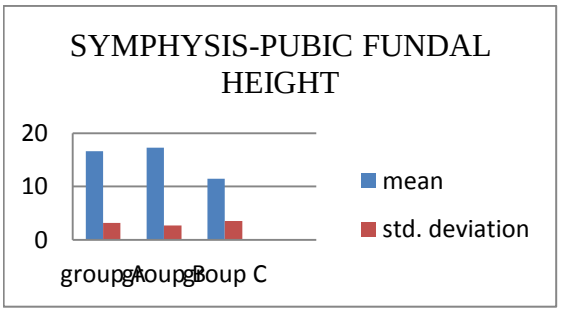


Table no. 15. ANOVA test for gain in symphysis-pubic fundal height:

Gain in symphysis pubic fundal ht.	Sum of squares	df	Mean square	F	Sig.
Between groups	594.089	2	297.044	30.257	0.000
Within groups	844.299	87	9.817		
Total	1438.388	89			

Here p-value is <0.05, which is significant. It means there is significant difference in symphysis-pubic fundal height among these three groups.

Table no. 16. Post Hoc tests for multiple group comparison of symphysis- pubic fundal ht.

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-0.63333	0.80901	0.436
	Group C	5.16782	0.80901	0.000
Group B	Group A	0.6333	0.80901	0.436
	Group C	5.80115	0.80901	0.000
Group C	Group A	-5.16782	0.80901	0.000
	Group B	-5.80115	0.80901	0.000

This analysis shows that, patients of Group-A and the patients of Group-B gained similar Symphysis-pubic fundle height, as they did not show significant difference in this regard at the time of delivery. But they gained significantly more SFH than patients of Group-C.

Analysis of gain in abdominal girth:

The comparison of the abdominal girth of subjects has been presented in this section.

Table no. 17. Data analysis of gain in abdominal girth:

Groups	Mean	Std. Deviation
Group A	19.433	3.507
Group B	19.967	2.888
Group C	14.10	4.146

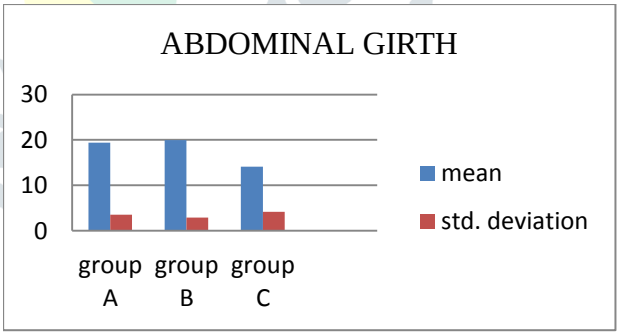


Table no. 18. ANOVA test for gain in abdominal girth:

Gain in abdominal girth	Sum of squares	df	Mean square	F	Sig.
Between groups	631.467	2	315.733	25.028	0.000
Within groups	1097.533	87	12.615		
Total	1729.000	89			

Here p-value is <0.05, which is significant. It means there is significant difference in abdominal girth among these three groups.

Table no. 19. Post-Hoc test for multiple group comparison of abdominal girth:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-0.53333	0.91707	0.562
	Group C	5.33333	0.91707	0.000
Group B	Group A	0.5333	0.91707	0.562
	Group C	5.86667	0.91707	0.000
Group C	Group A	-5.3333	0.91707	0.000
	Group B	-5.86667	0.91707	0.000

This analysis shows that, patients of Group-A and the patients of Group-B gained similar Abdominal Girth, as they did not show significat difference in this regard at the time of delivery. But they gained significantly more Abdominal Girth than patients of Group-C.

Analysis of femur length of foetus according to USG findings:

The data pertaining to increase in femur length of baby of mothers undergoing the three treatments were analysed by applying ANOVA and its results are presented here in this section.

Table no. 20. Data analysis of increase in femur length (as USG):

Groups	Mean	Std. Deviation
Group A	34.527	4.056
Group B	35.501	3.200
Group C	30.727	4.095

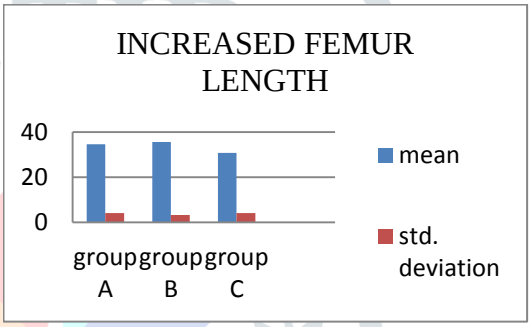


Table no. 21. ANOVA test for femur length:

increased femur length	Sum of squares	df	Mean square	F	Sig.
Between groups	381.740	2	190.870	13.170	0.000
Within groups	1260.827	87	14.492		
Total	1642.567	89			

Here p-value is <0.05, which is significant. It shows that there is significant difference in femur length among the three study groups.

Table no. 22. Post- hoc tests for multiple group comparison of increased femur length:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-0.97400	0.98293	0.324
	Group C	3.79967	0.98293	0.000
Group B	Group A	0.97400	0.98293	0.324
	Group C	4.77367	0.98293	0.000
Group C	Group A	-3.79967	0.98293	0.000
	Group B	-4.77367	0.98293	0.000

This analysis shows that, the USG measurements of Femur length revealed a similar gain in FL of fetus of mothers group A and mothers of Group-B, as they did not show significant difference. But their fetuses gain in FL was significantly more than mothers of Group-C.

Analysis of gain in abdominal circumference of foetus according to USG findings:

Data analysis of gain in abdominal circumference of foetus as per Ultra Sonography (USG) recordings was done applying ANOVA for comparing the abdominal circumference of the foetus as under.

Table no. 23. Means of abdominal circumference of foetus (as per USG):

Groups	Mean	Std. Deviation
Group A	161.650	17.295
Group B	164.458	14.363
Group C	139.424	16.815

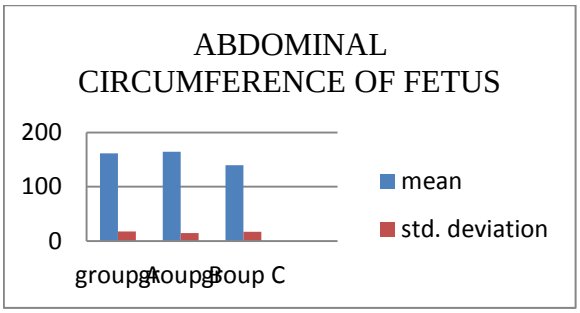


Table no. 24. ANOVA test for abdominal circumference of foetus:

Gain in abdominal circumference	Sum of squares	df	Mean square	F	Sig.
Between groups	11285.940	2	5640.970	21.479	0.000
Within groups	22856.894	87	262.723		
Total	34142.934	89			

Results in Table 24 indicate that p-value is <0.05, which is significant. It means there is significant difference in abdominal circumference of foetus among these three study groups.

Table no. 25. Post- hoc tests for multiple group comparison of abdominal circumference of foetus:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-2.80767	4.18508	0.504
	Group C	22.22633	4.18508	0.000
Group B	Group A	2.80767	4.18508	0.504
	Group C	25.03400	4.18508	0.000
Group C	Group A	-22.22633	4.18508	0.000
	Group B	-25.03400	4.18508	0.000

This analysis shows that, the USG measurements of Abdominal Circumference (AC) revealed a similar gain in AC of fetuses of mothers group A and mothers of Group-B, as they did not show significant difference. But their fetuses gain in Abdominal Circumference was significantly more than mothers of Group-C.

Analysis of gain in head circumference of foetus according to USG findings:

The head circumference of the foetus of three groups was measured taking USG measurements and was compared by applying ANOVA. The obtained results are presented and interpreted hereunder.

Table no. 26. Data analysis of head circumference of foetus (as per USG):

Groups	Mean	Std. Deviation
Group A	135.979	16.587
Group B	137.913	8.949
Group C	119.011	16.357

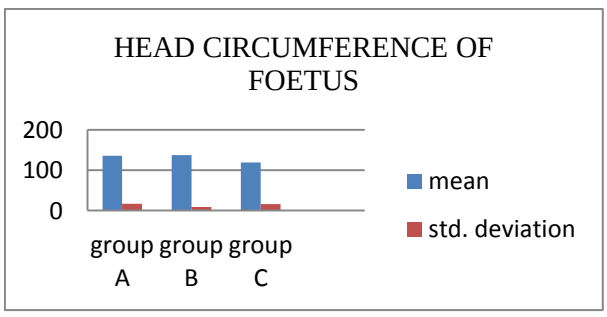


Table no. 27. ANOVA test for head circumference of foetus:

Gain in head circumference	Sum of squares	df	Mean square	F	Sig.
Between groups	6489.629	2	3244.814	15.630	0.000
Within groups	18061.054	87	207.598		
Total	24550.683	89			

Results in above table reveal that p-value is <0.05, which is significant. It shows that there is significant difference in head circumference of foetus among these three study groups. To compare specific group differences Post-hoc analysis was done and the results are presented below.

Table no. 28. Post-hoc tests for multiple group comparison of head circumference of foetus:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-1.93400	3.72020	0.604
	Group C	16.96833	3.72020	0.000
Group B	Group A	1.93400	3.72020	0.604
	Group C	18.90233	3.72020	0.000
Group C	Group A	-16.98633	3.72020	0.000
	Group B	-18.90233	3.72020	0.000

This analysis shows that, the USG measurements of Head Circumference (HC) revealed a similar gain in HC of fetuses of mothers group A and mothers of Group-B, as they did not show significant difference. But their fetuses gain in HC was significantly more than mothers of Group-C.

Analysis of baby weight at birth:

The mean baby weight of mothers undergoing the three different treatments was compared by applying ANOVA as under.

Table no. 29. Data analysis of baby weight:

Groups	Mean	Std. Deviation
Group A	3081.17	321.418
Group B	3126.33	363.458
Group C	2596.70	342.866

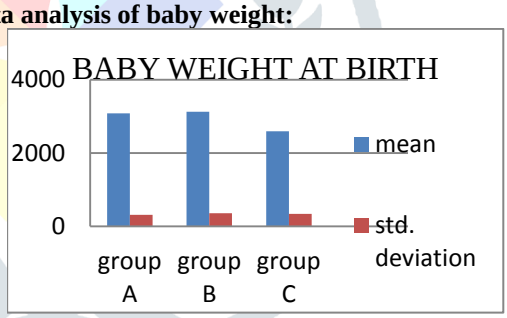


Table no. 30. ANOVA test for baby weight:

Baby weight at birth	Sum of squares	Df	Mean square	F	Sig.
Between groups	5172594.467	2	2586297.233	21.982	0.000
Within groups	10236077.133	87	117656.059		
Total	15408671.600	89			

Here p-value is <0.05, which is significant. It means there is significant difference in baby weight among these three study groups.

Table no. 31. Post-hoc tests for multiple group comparison of baby weight:

Experimental group(I)	Experimental group(J)	Mean difference(I-J)	Std. error	Sig.
Group A	Group B	-45.167	88.565	0.611
	Group C	484.467	88.565	0.000
Group B	Group A	45.167	88.565	0.611
	Group C	529.633	88.565	0.000
Group C	Group A	-484.467	88.565	0.000
	Group B	-529.633	88.565	0.000

This analysis shows that, the baby weight of Group-A mothers and mothers of Group-B were found to be similar, as they did not show significant difference in baby weights at birth. But their baby weight significantly more weight than mothers of Group-C.

4. CONCLUSIONS:

- As treatment modality *Yashtimadhu, Vidari siddha basti with Dhatrilauh* and *Yashtimadhu, Vidari siddha basti* with Iron are almost equally effective in terms of all criterion variables, except maintenance of Hemoglobin (Hb%) level where *Dhatrilauh* is found to be as effective as Iron.
- As treatment modality *Yashtimadhu, Vidari siddha basti with Dhatrilauh* and *Yashtimadhu, Vidari siddha basti* with Iron are significantly more effective than Modern Iron, folic acid and Calcium combination terms of all criterion variables, except to reduce some common ailments of pregnancy like: Pedal oedema., Low backache and Calf muscle cramps.
- Amongst the three treatment modalities, a combination of Yashtimadhu, Vidari siddha basti with Dhatrilauha is the best treatment modality during pregnancy for maintenance of good health of both baby and the mother.

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