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CLINICAL STUDY ON PANDU ROGA WITH SPECIAL REFERENCE TO IRON DEFICIENCY ANEMIA AND ITS MANAGEMENT WITH LOHBHASM AND BALA-CHITRAK MOOL

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ABSTRACT
All diseases are caused by aggravation of these three dosha and Pandu is predominantly caused by Pitta. According to Charak the disease Pandu is Rasapradoshaj Vikara. The essence of rasa gets transformed into Rakta by virtue of color imparted by ushma of Pitta. Iron Deficiency Anemia is prevalent public health problem in most of developing countries because of malnutrition. Anemia reduces the capacity to do physical and mental work, reduces resistance to fight infection and causes increased mortality and morbidity. Prevalence of anemia in India is 75% out of these 48.4% of women in Maharashtra are anemic. Because of such a high prevalence, it was needed to take up National Anemia Prophylaxis Programme of iron folic acid supplementation in India. The margin between the amount of iron available for absorption and the requirement for iron ingrowing infants and the adult female is Narrow; this accounts for great prevalence of iron deficiency worldwide-currently estimated at one –half billion people.

KEYWORDS: According to Charak the disease Pandu is Rasapradoshaj Vikara.

INTRODUCTION
Ayurved is the flawless ancient science of life and it elucidates the well being of each individual to a healthy, physical, mental, social and spiritual life which is dependent on balance of Tridosha. All diseases are caused by aggravation of these three dosha and Pandu is predominantly caused by Pitta. According to Charak the disease Pandu is Rasapradoshaj Vikara. The essence of rasa gets transformed into Rakta by virtue of color imparted by ushma of Pitta. (ch.chi.15/28).

According to World Health Organisation, Anemia is defined as Haemoglobin level <130g/L (13g/dL) in Male and <120g/L (12g/dL) in adult women also can defined as, its a state in which Red Cell Mass is decreased. Iron Deficiency Anemia is prevalent public health problem in most of developing countries because of malnutrition. Anemia reduces the capacity to do physical and mental work, reduces resistance to fight infection and causes increased mortality and morbidity.

According to World health organization (W.H.O.), estimation of anemia prevalence in world population from 1993 to 2005 was 48.8% and half of these had iron deficiency. Prevalence of anemia in India is 75% out of these 48.4% of women in Maharashtra are anemic. Because of such a high prevalence, it was needed to take up National Anemia Prophylaxis Programme of iron folic acid supplementation in India. The margin between the amount of iron available for absorption and the requirement for iron ingrowing infants and the adult female is Narrow; this accounts for great prevalence of iron deficiency worldwide-currently estimated at one –half billion people.

The most important thing is that it is not a disease of modern era; it is mentioned in Charak Samhita in 1500 B.C. Hence, it is need of hour to find, the best drug for management of Pandu (Iron Deficiency Anemia).

AIM AND OBJECTIVES
AIM: To evaluate the effect of Lohbhasm and Bala-Chitrakmool in management of Pandu.

OBJECTIVES

To study the effect of Lohbhasm in the management of Pandu.

To study the effect of Bala-chitrak mool in the management of Pandu.

MATERIAL AND METHOD

The methodology adopted considering to main objectives

1. Previous research done on Pandu will be reviewed.
2. All texts related to Pandu and Iron Deficiency Anemia.
3. To evaluate the effect of Lohbhasm and Bala-Chitrakmool in management of Pandu.
4. To study the effect of Lohbhasm in the management of Pandu.
5. To study the effect of Bala-chitrak mool in the management of Pandu.

30 patients for each group were studied, categorized in groups randomly, with follow up of 15 days. After diagnosis, patients were advised to take drug for 4O days.

Study type- Prospective open ramdomised controlled study.

Selection of cases

Randomly cases of Pandu, specifically Iron deficiency anemia were selected. Follow- up assessment of patient was done by specially prepared case record forms, to meet all baseline requirements. At each follow up signs and symptoms were recorded.

INCLUSION CRITERIA

Case selection was done as follows-

1. Patientswith an age group of 18 to 60 years.
2. Patientshaving an Iron Deficiency Anemia.
3. Patients with symptoms of Pandu as mentioned in Ayurved text.

EXCLUSION CRITERIA

1. Patients having Anemia due to Auto immune disorder.
2. Patients having Anemia due to heamorrhage.
3. Patients having Anemia in pregnancy and Post natal care.
4. Patients having Anemia due to chronic disease like Rheumatoid arthritis.
5. Patients of age group below 18 and above 60 yrs. of both sexes.

Medium of thesis

English supplemented by Ayurvedic terminology whenever necessary, in Sanskrit.

Study center

O.P.D. and I.P.D. of kayachikitsa department.

Drug preparation

Group A

The drug 'Lohbhasma' was prepared as per reference of Charak samhita Chikitsasthan 16/69. The parameter Description, Identification, Loss on drying, loss on Ignition and Acid Insoluble Matter Assay For Iron was done Under Standardization in standard Pharmacy.

Dose: - 250mg per day.

Dose: - 6 gm per day in two divided doses. - Sushrut Uttartantra 44/26

Kala:- Madhyabhakta.

1	**Panduta (Palmer Creases)**	**Grade**
	Absent[Hb >8g/dl]	0
	Palmer Creases are lighter in colour than surroundingskin when hyperextended hand.	1
2	**Daurbalya**	
	Absent	0
	Feels tiredness during climbing up 10 steps.	1
	Feels tiredness during walking on plane ground.	2
	Can't do work at all.	3
3	**Hridspandan**	
	Absent	0
	After heavy work, relieved soon and tolerable.	1
	After heavy work, relieved soon and tolerable.	2
	At mild work/rest, intolerable.	3
4	**Bhrama**	
	Absent	0
	After heavy work, relieved soon and tolerable.	1
	After moderate work, relieved later and tolerable.	2
	Even in standing position.	3
5	**Shunkshikuta**	

	Absent	0
	Present	1
6	**Rukshta**	
	Absent	0
	Present	1
7	**Ayasen swas**	
	Absent	0
	On accustomed work	1
	Less than On accustomed work	2
	At minimal work like going to toilet, bath, etc.	3
8	**Pindakodwestanam**	
	Absent	0
	Present after work	1
	Present at rest.	2

Investigations

All Investigations were done at start of the study and at the end of study.

- Complete Blood Count With peripheral smear.
- Red cell count.
- Haemoglobin (Hb).
- Haematocrit.(PCV)
- Mean corpuscular volume.(MCV)
- Mean corpuscular Heamoglobin(MCH)
- Mean corpuscular haemoglobin concentration(MCHC)

Parameters of Assessment

1. Overall relief was checked on objective and subjective measures.
2. All sign and symptoms were assessed.

OBSERVATIONS

To Study entitled "Clinical study on Pandu roga with special reference to Iron deficiency anemia and its management with Lohabhasm and Bala-Chitrakmool" was planned to evaluate effect of Lohabhama and Bala-Chitrak mool in Pandu Roga. For that 30 patients were selected as per criteria of diagnosis in Group-A to whom Lohabhasma was given and 30 patients were selected as per criteria of diagnosis in Group B to whom Bala-Chitrakmool was given as per dose prescribed in material and method. Completion of duration 40 days, all the 30 patients of this series were explore for investigation, which were carried out before the start of treatment. The status of all the symptoms and signs were also noted down after completion of treatments. Thus the change in the status of symptoms, sign and investigations were recorded. The history recorded in this study on case record form, revealed the fact and finding which are presented here with in the tubular form. Some of them are highlighted with help of graphical presentation.

Demografic Analysis: Table – 1: Age wise distribution of 60 patients of Pandu

Age group in yrs		No. of cases		Total	%
		Group-A	Group-B		
<30		13	8	21	35
30	-	7	14	21	35
40	-	7	4	11	18.3
50	- 60	3	4	7	11.7
Total		30	30	60	100

Out of 60 patients in this study, the patients were in the age group of 18–60 years. Out of these, 35% was in the age group below 30 year. 35% were belonging to the age group of 31 – 40 years. 18.3% patients were in 41–50 years age group and 11.7% were belonging to 51–60 age.

Table 2: Sex wise distribution of 60 patients of Pandu

Gender	No. of cases		Total	%
	Group-A	Group-B		
Female	26	23	49	81.7
Male	4	7	11	18.3
Total	30	30	60	100

Out of 60 patients in this study, 81.7% patients were female and 18.3% were male.

Table 3: Religion wise distribution of 60 patients of Pandu

Religion	No. of cases		Total	%
	Group-A	Group-B		
Hindu	26	25	51	85.0
Buddha	3	5	8	13.3
Muslim	1	0	1	1.7
Total	30	30	60	100

Out of 60 patients in this study, 85% were Hindu, 13.3% were Buddhas, 1.7% were Muslims.

Table 4: Marital Status wise distribution of 60 patients of Pandu

Marital status	No. of cases		Total	%
	Group-A	Group-B		
Married	24	26	50	83.3
Unmarried	6	4	10	16.7
Total	30	30	60	100

Out of 60 patients in the present study, 83.3% were married and 16.7% were unmarried.

Table 5: Occupation wise distribution of 60 patients of Pandu

Occupation	No. of cases		Total	%
	Group-A	Group-B		
Business	2	1	3	5
HW	16	18	34	56.7
Service	6	6	12	20
Students	4	4	8	13.3
Laborer	2	1	3	5
Total	30	30	60	100

Out of 60 patients in this study, 56.7% were housewife, 20% were in Service, 13.3% were students, 5% were businessman and 5% Laborer.

Table 6: Socio-economic status wise distribution of 60 patients

SES	No. of cases		Total	%
	Group-A	Group-B		
Lower	10	9	19	31.7
Middle	18	19	37	61.6
Upper	2	2	4	6.7
Total	30	30	60	100

Out of 60 patients in this study, 61.6% belonged to middle class, 31.7% to lower class and 6.7% belonged to Upper class.

Table 7: Diet wise distribution of 60 patients of Pandu

Diet	No. of cases		Total	%
	Group-A	Group-B		
Mix	15	12	27	45
Veg	15	18	33	55
Total	30	30	60	100

Out of 60 patients in the present study, 55% patients were taking veg diet. While 45% of patients were taking mixed diet.

Table 8 Dominant rasa (in Ahara) wise distribution of 60 patients of Pandu:

Ati-Rasasevan		No. of cases		Total	%
		Group-A		Group-B	
Ati-Amla Rasa	No	18	15	33	55
	Yes	12	15	27	45
Ati-Lavan Rasa	No	17	16	33	55
	Yes	13	14	27	45
Ati-Katu Rasa	No	9	13	22	36.7
	Yes	21	17	38	63.3

In Ahara 45% patients were taking ati Amla sara, 45% were taking Ati lavan rasa 63.3% patients were taking ati katu rasa.

Table 9: Diet Habit wise distribution of 60 patients of Pandu: In 60% of patients were taking Vishmashana

	Adhyashana		Ajirnashana		Vishamashana		Viruddha Ahar		Vidahi Ahar	
	Present	Absent	Present	Absent	Present	Absent	Present	Absent	Present	Absent
Gr A	12	18	18	12	16	14	17	13	13	17
Gr B	4	26	17	13	20	10	15	15	13	17
Total	16	44	35	25	36	24	32	28	26	34
%	26.7	73.3	58.3	41.7	60	40	53.3	46.7	43.3	56.7

type. of diet, 58.3% of patients were taking Ajirnashana type of diet, also 53.3% patients were taking Viruddha type of diet, while 43.3% patients were taking Vidahi type of diet and 26.7% patients were taking Adhyashana type.

Table – 10: Sleeping Habit wise distribution of 60 patients of Pandu.

Nidra	No. of cases		Total	%
	Group-A	Group-B		
Alpa	1	0	1	1.7
Ati	15	15	30	50
Khandit	3	2	5	8.3
Prakrut	11	13	24	40
Total	30	30	60	100

Majority of the patients i.e. 50% were having Atinidra and 40% patients having Alpa nidra, 8.3% patients having Khandit nidra, while 1.7% taking Alpa nidra.

Table – 11: Divaswap (Sleep during day time) wise distribution of 60 patients of Pandu:

Divaswap	No. of cases		Total	%
	Group-A	Group-B		
Absent	11	13	24	40
Present	19	17	36	60
Total	30	30	60	100

Out of 60 patients 60% patients were taking divaswap (Table No. 11).

Table 12: Manas Bhava wise distribution of 60 patients of Pandu:

Manasa Bhava	No. of cases		Total	%
	Group-A	Group-B		
Prakruta	10	12	22	36.7
Chinta	12	9	21	35
Krodh	6	6	12	20
Bhaya	2	1	3	5
Shok	0	2	2	3.3
Total	30	30	60	100

Majority of patients i.e. 36.7% were Prakruta in nature, while 35% were having Chinta (anxiety) and 20% patients were having Krodha (Anger), 5% patients were having Bhaya (Fear) and 3.3% patients were Shoka (in sentimental in emotional make up).

Table 13: Prakruti wise distribution of 60 patients of Pandu

Prakruti	No. of cases		Total	%
	Group-A	Group-B		
Kapha-Pitta	1	3	4	6.7
Kapha-Vata	2	3	5	8.3
Pitta-Kapha	4	6	10	16.7
Pitta-Vata	1	5	6	10.0
Vata-Kapha	11	6	17	28.3
Vata-Pitta	11	7	18	30.0
Total	30	30	60	100

Majority of patients having Vata-pitta Prakruti 30%, while28.3 having vata kapha Prakruti, 16.7% having Pitta-Kapha Prakruti, 10% having Pitta-Vata Prakruti, 8.3% having Kapha-Vata prakruti and 6.7% having Kapha-pitta Prakruti.

Table 14: Sara wise distribution of 60 patients of Pandu

Sara	No.of Cases		Total	%
	Group-A	Group-B		
Avar	6	7	13	21.66
Madhyam	21	20	41	68.33
Pravar	3	3	6	10
Total	30	30	60	100

Majority of patients i.e. 68.33% were bearing Madhyam Sara, while 21.66% patients were bearing Avara Sara and 10% patients were bearing Pravara Sara.

Table 15: Samhanana wise distribution of 60 patients of Pandu

Samhanana	No. of cases		Total	%
	Group-A	Group-B		
Avar	2	0	2	3.3
Madhyam	24	29	53	88.4
Pravar	4	1	5	8.3
Total	30	30	60	100

Majority of patients i.e. 88.4% were bearing Madhyam Samhanana, while 8.3% patients were bearing Pravara Samhanana and 3.3% patients were bearing Avara Samhanana.

Table 16: Pramana wise distribution of 60 patients of Pandu:

Pramana	No. of cases		Total	%
	Group-A	Group-B		
Avar	3	1	4	6.7
Madhyam	26	29	55	91.6
Pravar	1	0	1	1.7
Total	30	30	60	100

Majority of patients i.e. 91.6% were having Madhyama Pramana while 6.7% of patients were having Avara pramana and 1.7% patients were having Pravara pramana

Table 17: Satmya wise distribution of 60 patients of Pandu

Satmya	No. of cases		Total	%
	Group-A	Group-B		
Avar	1	2	3	5
Madhyam	28	26	54	90
Pravar	1	2	3	5
Total	30	30	60	100

Majority of the patients i.e. 90% were having madhyama satmya followed by 5% were having avara satmya and 5% were having pravara satmya.

Table 18: Satva wise distribution of 60 patients of Pandu

Satva	No. of cases		Total	%
	Group-A	Group-B		
Avar	7	4	11	18.4
Madhyam	21	25	46	76.6
Pravar	2	1	3	5.0
Total	30	30	60	100

Majority i.e. 76.6% patients were of Madhyama Satva followed by 18.4 % were of AvaraSatva and 5% patients were Pravara Satva.

Table 19: Abhyavaran wise distribution of 60 patients of Pandu

Abhyavaran	No. of cases		Total	%
Shakti	Group-A	Group-B		
Avar	7	6	13	21.7
Madhyam	22	24	46	76.6
Pravar	1	0	1	1.7
Total	30	30	60	100

76.6% patients were having Madhyama Abhyavarana Shakti and 21.7% patients were having Avar Abhyavarana Shakti and 1.7% patients having Pravara Abhyavarana Shakti.

Table 20: Jaran Shakti wise distribution of 60 patients of Pandu

Jarana Shakti	No. of cases		Total	%
	Group-A	Group-B		
Avar	12	11	23	38.3
Madhyam	15	19	34	56.7
Pravar	3	0	3	5
Total	30	30	60	100

Majority i.e. 56.7% patients were having Madhyama Jarana Shakti, while 38.3% were having Avara Jarana Shakti and 5% were Pravara Jarana Shakti.

Table 21: Vyayam Shakti wise distribution of 60 patients of Pandu

Vyayama	No. of cases		Total	%
	Group-A	Group-B		
Avar	5	2	7	11.7
Madhyam	21	26	47	78.3
Pravar	4	2	6	10
Total	30	30	60	100

Majority of patients i.e. 78.3% were having Madhyama Vyayama Shakti while 11.7% of patients were having Avara Vyayama Shakti and 10% patients were having Pravara Vyayama Shakti

EFFECT OF THERAPY

Effect of therapy was observed in Group-A and Group-B on subjective and objective criteria.

Assessment of subjective criteria

Effect of therapy on symptoms of Panduta was evaluated with the help of score system, which has been mentioned in the criteria of assessment. Wilcoxon Signed Ranks Test was applied on subjective criteria.

Effect of treatment on Panduta

	BT		AT		% Relief	Wilcoxon Signed Ranks	P
Panduta	Mean score	Sd	Mean score	Sd		Test Z	
Group-A	.53	.50	.03	.18	94.33	3.873	<0.001 HS
Group-B	.47	.50	.07	.25	85.10	3.464	0.001 Sig

Group A

In group A, symptom of Panduta was reduced from 0.53 ± 0.50 to 0.03 ± 0.18. Percentage of relief in the symptom of Panduta on an average was 94.33%. This relief of symptom was found statistically highly significant as Z was 3.873, P<0.001.

Group B

In group B symptom of Panduta was reduced from 0.47± 0.50 to 0.7 ± 0.25. Percentage of relief in the symptom of Panduta on an average was 85.10%. This relief of symptom was found statistically significant as Z was 3.464, P was 0.001.

Comparison between two groups:

Panduta	Mean difference score	Sd	Mann- Whitney Z	P
Group-A	.5000	.50855	0.772	0.440 NS
Group-B	.4000	.49827		

Effect on Panduta in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 0.772 and P was 0.440. There was no difference found in two groups in relief of Panduta.

Effect of treatment on

	BT		AT			Wilcoxon	
					%	Signed	P
Daurabaly	Mean		Mean		Relief	Ranks	
a	score	Sd	score	Sd		Test Z	
Group-A	1.80	.71	.43	.50	76.11	4.862	<0.001
							HS
Group-B	1.93	.58	.37	.49	80.83	4.939	<0.001
							HS

Daurbalya

Group A

In group A, symptom of Daurbalya was reduced from 1.80± 0.71 to 0.43 ± 0.50. Percentage of relief in the symptom of Daurbalya on an average was 76.11%. This relief of symptom was found statistically highly significant as Z was 4.862, P<0.001.

Group B

In group B symptom of Daurbalya was reduced from 1.93± 0.58 to 0.37 ± 0.49. Percentage of relief in the symptom of Daurbalya on an average was 80.83%. This relief of symptom was found statistically highly significant as Z was 4.939, <P 0.001.

Comparison between two groups:

Daurabalya	Mean difference score	Sd	Mann-Whitney Z	P
Group-A	1.3667	.55605	1.380	0.168 NS
Group-B	1.5667	.50401		

Effect on Daurbalya in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 1.380 and P was 0.168. There was no difference found in two groups in relief of Daurbalya.

Effect of treatment on Hrudspandan

Group A

In group A, symptom of Hrudspandan was reduced from 1.53± 0.937 to 0.30 ± 0.46. Percentage of relief in the symptom of Hrudspandan on an average was 80.39%. This relief of symptom was found statistically highly significant as Z was 4.419, P<0.001.]

Group B

In group B symptom of Hrudspandan was reduced from 1.23± 0.67 to 0.37 ± 0.66. Percentage of relief in the symptom of Hrudspandan on an average was 69.91%. This relief of symptom was found statistically highly significant as Z was 4.245, <P 0.001.

Comparison between two groups:

Hrud-spandan	Mean difference score	Sd	Mann-Whitney Z	P
Group-A	1.2333	.77385	1.930	0.054 NS
Group-B	.8667	.68145		

Effect on Hrudspandan in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 1.930 and P was 0.054. There was no difference found in two groups in relief of Hrudspandan.

	BT		AT		%	Wilcoxon	P
Hrudspandan	Mean score	Sd	Mean score	Sd	Relief	Signed Ranks Test Z	
Group-A	1.53	.937	.30	.46	80.39	4.419	<0.001 HS
Group-B	1.23	.67	.37	.66	69.91	.245	<0.001 HS

Effect of treatment on Bhrama

Group A

In group A, symptom of Bhrama was reduced from 1.60 ± 1.03 to 0.53± 0.57. Percentage of relief in the symptom of Bhrama on an average was 66.87%. This relief of symptom was found statistically highly significant as Z was 4.234, P<0.001.

Group B

In group B symptom of Bhrama was reduced from 1.37± 0.96 to 0.33 ± 0.54. Percentage of relief in the symptom of Bhrama on an average was 75.91%. This relief of symptom was found statistically highly significant as Z was 4.414, <P 0.001.

	BT		AT		%	Wilcoxon	P
	Mean		Mean		Relief	Signed Ranks	
Bhrama	score	Sd	score	Sd		Test Z	
Group-A	1.60	1.03	.53	.57	66.87	4.234	<0.001 HS
Group-B	1.37	.96	.33	.54	75.91	4.414	<0.001 HS

Comparison between two groups:

Bhrama	Mean difference score	Sd	Mann- Whitney Z	P
Group-A	1.0667	.82768	0.268	0.792 NS
Group-B	1.0333	.80872		

Effect on Bhrama in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 0.268 and P was 0.792. There was no difference found in two groups in relief of Bhrama.

Effect of treatment on Shunakshikuta

	BT		AT		%	Wilcoxon	P
Shunaksh	Mean		Mean		Relief	Signed Ranks	
i-kuta	score	Sd	score	Sd		Test Z	
Group-A	.40	.49	.10	.30	75.0	3.0	0.003
							Sig
Group-B	.27	.45	.13	.34	51.85	2.0	0.046
							Sig

Group A

In group A, symptom of Shunakshikuta was reduced from 0.40 ± 0.49to 0.10±0.30. Percentage of relief in the symptom of Shunakshikuta on an average was 75%. This relief of symptom was found statistically significant as Z was3.0, P was 0.003.

Group B

In group B symptom of Shunakshikuta was reduced from 0.27± 0.45 to 0.13 ± 0.34. Percentage of relief in the symptom of Shunakshikuta on an average was 51.85%. This relief of symptom was found statistically significant as Z was2.0, P was 0.046.

Comparison between two groups:

Shunakshi	Mean difference	Sd	Mann-	P
kuta	score		Whitney Z	
Group-A	.3000	.46609	1.554	0.120
				NS
Group-B	.1333	.34575		

Effect on Shunakshikuta in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 1.554 and P was 0.120. There was no difference found in two groups in relief of Shunakshikuta.

Effect of treatment on Rukshta

	BT		AT			Wilcoxon	
					%	Signed	P
	Mean		Mean		Relief	Ranks	
Rukshta	score	Sd	score	Sd		Test Z	
Group-A	.90	.31	.41	.50	54.44	3.742	<0.001
							HS
Group-B	.87	.34	.47	.50	45.97	3.207	0.001
							Sig

Group A

In group A, symptom of Rukshta was reduced from 0.90± 0.31 to 0.41 ± 0.50. Percentage of relief in the symptom of Rukshta on an average was 54.44%. This relief of symptom was found statistically highly significant as Z was3.742, P<0.001.

Group B

In group B symptom of Rukshta was reduced from 0.87± 0.34 to 0.47 ± 0.50. Percentage of relief in the symptom of Rukshta on an average was 45.97%. This relief of symptom was found statistically significant as Z was3.207, P was 0.001.

Comparison between two groups:

Rukshta	Mean	Sd	Mann-	P
	difference		Whitney	
	score		Z	
Group-A	.4828	.50855	0.505	0.614 NS
Group-B	.4000	.56324		

Effect on Rukshta in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 0.505 and P was0.614. There was no difference found in two groups in relief of Rukshta.

Effect of treatment on Ayasenshwas

	BT		AT			Wilcoxon	
					%	Signed	P
Ayasensh	Mean		Mean		Relief	Ranks	
was	score	Sd	score	Sd		Test Z	
Group-A	1.80	.71	.73	.58	59.44	4.725	<0.001 HS
Group-B	1.47	.57	.47	.62	68.03	4.667	<0.001 HS

Group A

In group A, symptom of Ayasenshwas was reduced from 1.80± 0.71 to 0.73 ± 0.58. Percentage of relief in the symptom of Ayasenshwas on an average was 59.44%. This relief of symptom was found statistically highly significant as Z was 4.725, P<0.001.

Group B

In group B symptom of Ayasenshwas was reduced from 1.47 ± 0.57to 0.57 ± 0.47. Percentage of relief in the symptom of Ayasenshwas on an average was 68.03%. This relief of symptom was found statistically highly significant as Z was 4.667, <P 0.001.

Comparison between two groups:

Ayasenshwas	Mean	Sd	Mann-	P
	difference		Whitney Z	
	score			
Group-A	1.0667	.58329	0.444	0.657 NS
Group-B	1.0000	.58722		

Effect on Ayasenshwas in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 0.444 and P was 0.657.There was no difference found in two groups in relief of Ayasenshwas.

Effect of treatment on Pindikodweshtanam

	BT		AT			Wilcoxon	
					%	Signed	P
Pindikodwe	Mean		Mean		Relief	Ranks	
-shtanam	score	Sd	score	Sd		Test Z	
Group-A	1.23	.72	.33	.54	73.17	4.072	<0.001
							HS
Group-B	.97	.85	.33	.54	65.97	3.755	<0.001
							HS

Group A

In group A, symptom of Pindikodweshtanam was reduced from 1.23± 0.72 to 0.33 ± 0.54. Percentage of relief in the symptom of Pindikodweshtanam on an average was 73.17%. This relief of symptom was found statistically highly significant as Z was 4.072, P<0.001.

Group B

In group B symptom of Pindikodweshtanam was reduced from 0.97± 0.85 to 0.33 ± 0.54 Percentage of relief in the symptom of Pindikodweshtanam on an average was 65.97%. This relief of symptom was found statistically highly significant as Z was3.755, <P 0.001.

Comparison between two groups:

Pindikodwe-	Mean	Sd	Mann-	P
shtanam	difference		Whitney	
	score		Z	
Group-A	.9000	.75886	1.379	0.168 NS
Group-B	.6333	.66868		

Effect on Pindikodweshtanam in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 1.379 and P was 0.168. There was no difference found in two groups in relief of Pindikodweshtanam.

Assessment of objective criteria

Assessment of Objective criteria was done by paired t test. Comparison between two groups was done by unpaired t test.

1. Effect of treatment on CBC with Peripheral Smear

		BT		AT			Wilcoxon	
CBC	with					%	Signed	P
Peripheral		Mean		Mean		Relief	Ranks	
Smear		score	Sd	score	Sd		Test Z	
Group-A		2.466	0.628	1.40	0.674	43.22	4.463	<0.001 HS
Group-B		2.333	0.606	1.30	0.651	44.27	4.625	<0.001 HS

Group A

In group A, CBC with Peripheral Smear was reduced from 2.466± 0.628 to 1.40± 0.674. Percentage of relief in the CBC with Peripheral Smear on an average was 43.22%. This relief was found statistically highly significant as Z was4.463, P<0.001.

Group B

In group B CBC with Peripheral Smear was reduced from 2.333± 0.606 to1.30 ± 0.651. Percentage of relief in the CBC with Peripheral Smear on an average was 44.27%. This relief was found statistically highly significant as Z was4.625, <P 0.001.

Comparison between two groups:

CBC with Peripheral Smear	Mean difference score	Sd	Mann- Whitne y Z	P
Group-A	1.0667	.69149	0.217	0.828 NS
Group-B	1.0333	.61495		

Effect on CBC with Peripheral Smear in two groups was compared by Mann Whitney test. The value was statistically non significant as Z was 0.217and P was 0.828. There was no difference found in two groups in relief of CBC with Peripheral Smear.

2. Effect of treatment on Haemoglobin:

		BT		AT	%		
Haemo					Improve	Paired	P
globin	Mean	Sd	Mean	Sd	ment	t	
Group-A	8.19	1.06	10.28	1.29	25.50	14.68	<0.001 HS
Group-B	8.37	.919	10.47	1.25	25.10	16.63	<0.001 HS

Group A

In group A, Heamoglobin was improved from 8.1933± 1.0608 to 10.2872±0.1.2964. Percentage of improvement of Haemoglobin on an average was 16.20%. This improvement in Haemoglobin was statistically highly significant as t was 14.683 and P<0.001.

Group B

Haemoglobin was improved from 8.3733 ± .9195 to 10.4753 ± 1.2509 Percentage of improvement on an average was 25.10%. This improvement in Haemoglobin was statistically highly significant as t was 16.637 and P<0.001.

Comparison between two groups:

Haemoglobin	Mean difference	Sd	Unpaired t	P
Group-A	2.0893	.77938	0.067	0.947 NS
Group-B	2.1020	.69203		

Comparison in improvement of Heamoglobin between two groups was found statistically Non-significant as t was 0.067 and P was 0.947. Thus There was no difference found in two groups.

3. Effect of treatment on Red Cell count

Group A
In group A, Red Cell count was improved from 3.845 ± 0.3986 to 4.468±0.3474. Percentage of improvement of Red Cell count on an average was 16.20%. This improvement in Red Cell count was statistically highly significant as t was 8.922 and P<0.001.

Group B
In group B, Red Cell count was improved from 3.601± 0.4195 to 4.369 ± 0.3947 Percentage of improvement on an average was 21.32%. This improvement in Red Cell count was statistically highly significant as t was 15.994 and P<0.001.

Comparison between two groups:

Red Cell count	Mean difference	Sd	Unpairedt	P
Group-A	.6230	.38246	1.715	0.092 NS
Group-B	.7683	.26313		

Comparison in improvement of Red Cell count between two groups was found statistically Non-significant as t was 1.715 and P was 0.092.

Thus There was no difference found in two groups.

4. Effect of treatment on Haematocrit

	BT		AT		%		
Haemato					Improv	Paired	P
crit	Mean	Sd	Mean	Sd	ement	t	
Group-A	30.8213	1.1327	36.0913	7.5253	17.10	3.983	<0.001
							HS
Group-B	30.4070	.9774	37.1717	3.0102	22.24	4.166	<0.001
							HS

Group A
Haematocrit was improved from 30.8213 ± 1.1327 to 36.0913 ±7.5253. Percentage of improvement of on an average was 17.10%. This improvement in Haemotocrit was statistically highly significant as t was 3.983 and P<0.001.

Group B
In group B, Haematocrit was improved from 30.4070± 0.9774 to 37.1717± 3.0102 Percentage of improvement on an average was 22. 24%. This improvement in Haematocrit was statistically highly significant as t was 14.166 and P<0.001.

Comparison between two groups

Haematocrit	Mean difference	Sd	Unpaired t	P
Group-A	5.2700	7.24729	1.063	0.292 NS
Group-B	6.7647	2.61558		

Comparison in improvement of Haematocrit between two groups was found statistically Non-significant as t was 1.063 and P was 0.292. Thus There was no difference found in two groups.

5. Effect of treatment on Mean Corpuscular Valume

	BT		AT		%		
					Improve	Paired	P
MCV	Mean	Sd	Mean	Sd	ment	t	
Group-A	73.685	2.737	80.474	2.8798	9.21	14.947	<0.001
							HS
Group-B	73.3720	2.3329	79.8080	1.9875	8.77	16.803	<0.001
							HS

Group A
Mean Corpuscular Valume was improved from73.685 ± 2.737 to 80.474 ±2.8798. Percentage of improvement of on an average was 9.21%. This improvement in Mean Corpuscular Valume was statistically highly significant as t was 14.921 and P<0.001.

Group B
In group B, Mean Corpuscular Valume was improved from 73.3720± 2.3329 to 79.8080 ± 1.9875 Percentage of improvement on an average was 8. 77%. This improvement in Mean Corpuscular Valume was statistically highly significant as t was 16.803 and P<0.001.

Comparison between two groups:

MCV	Mean difference	Sd	Unpaired t	P
Group-A	6.7893	2.48798	0.595	0.554 NS
Group-B	6.4360	2.09795		

Comparison in improvement of Mean Corpuscular Valume between two groups was found statistically Non-significant as t was 0.595 and P was0.554. Thus There was no difference found in two groups.

6. Effect of treatment on Mean carpuscular Haemoglobin

MCH	BT		AT		% Improvement	Pairedt	P
	Mean	Sd	Mean	Sd			
Group-A	23.18	2.096	27.05	2.32	16.65	16.308	<0.001 HS
Group-B	24.19	1.735	26.9407	1.8409	11.35	11.720	<0.001 HS

Group A
Mean carpuscular Haemoglobin was improved from 23.189± 2.096 to27.05 ± 2.32 Percentage of improvement of on MCH an average was16.65%. This improvement in MCH was statistically highly significant as t was 16.308 and P<0.001.

Group B
In group B, MCH was improved from 24.193 ± 1.735 to 26.9407± 1.8409 Percentage of improvement on an average was. 11.35%. This improvement in MCH was statistically highly significant as t was 11.720and P<0.001.

Comparison between two groups

MCH	Mean difference	Sd	Unpairedt	P
Group-A	3.8587	1.29595	3.335	0.001 Sig
Group-B	2.7477	1.28414		

Comparison in improvement of MCH between two groups was found statistically significant as t was 3.335 and P was 0.001.

Thus, There was difference found in two groups.

7: Effect of treatment on Mean carpuscular Haemoglobin concentration:

MCHC	BT		AT		% Improv ement	Paired t	P
	Mean	Sd	Mean	Sd			
Group-A	27.14	2.35	31.093	1.708	14.56	10.484	<0.001 HS
Group-B	24.46	2.10	28.6007	1.4338	16.92	14.452	<0.001 HS

Group A
MCHC was improved from 27.14± 2.35 to31.093 ±1.708 Percentage of improvement of on MCHC an average was14.56%. This improvement in MCHC was statistically highly significant as t was 10.484 and P<0.001.

Group B
In group B, MCHC was improved from 24.46 ± 2.10 to 28.6007± 1.4338 Percentage of improvement on an average was. 16.92%. This improvement in MCHC was statistically highly significant as t was 14.452 and P<0.001.

Comparison between two groups.

MCHC	Mean difference	Sd	Unpaired t	P
Group-A	3.9567	2.06707	0.393	0.696 NS
Group-B	4.1430	1.57022		

Comparison in improvement of MCHC between two groups was found statistically non significant as t was 0.393 and P < 0.696. Thus There no was difference found in two groups.

DISCUSSION

The Study entitled'' Clinical study on Pandu roga with special reference to Iron deficiency anemia and its management with Lohabhasm and Bala- Chitrak mool" aimed at evaluating the efficacy of Loha Bhasma and Bala-Chitrak mool in Pandu specially for Iron Deficiency Anemia in 60 patients divided in 2 groups.

Group A- In this study group Patients were treated with Lohabhasma.

Group B- In this study group Patients were treated with Bala-Chitrak mool. The findings of clinical study are discussed critically as under,

- Discussion on demographic analysis.
- Discussion on clinical efficacy of therapy with symptoms.
- Discussion on clinical efficacy of therapy with Biochemical markers.
- Discussion on mechanism of action of drug.

Discussion on demografic analysis: 1.Age

It was found that maximum number of patients 35% were between the age group of 18-30 years and same i.e. 35% were between the age group of 31-40 years. 18.3% patients belonged to 41-50 years group and 11.7% patients of 51-60% years group (Table-1). 18-40 years of age is the time of maximum physiological growth so nutrient demands are high. Moreover for female this is child bearing period and also in this age may lose excessive blood and iron during menstruation. Besides this, it is the age of maximum mental stress regarding studies, job etc due to which proper nutritional diets may be ignored. In the present study the maximum numbers of the patients are female, and 41-50 years of age is the period of menopause in females.

2. Sex

As per sex distribution, 81.7% patients were female and 18.3% patients were male. (table-2) Thus we may say that this disease is more prevalent in female. Reason behind this may be firstly of dietetic, as ladies are mostly found inclined towards spicy, sour and bitter Ahara rather than a nutrition and diet. Secondly, regular loss of blood due to menstruation makes them more prone to develop Anemia. Thirdly, most of the female patients had the history of blood loss due to one or other reason during their delivery and may also be the reason of females beings more in numbers.

3. Religion

In Religion wise distribution, 85% were Hindu, 13.3% were Buddha and 1.7% were Muslim. (Table-3). As the sample size is very small it is very difficult to conclude any inference about religion wise distribution of the patients.

4. Marital status

As recorded during sample collection we found that 83.3% patients were married and16.7 % were unmarried (Table-4).

5. Occupational Status

In this study, 56.7% were housewife, 20% were in Service, 13.3% were students, 5% were businessman and 5% Laborer(Table-5). In this study maximum number of patients are house wife and we already discussed under sex heading, that females are more for Anemia.

6. Economic Status

As per economic status, 61.6% were from middle class, 31.7% were from lower class and 6.7% patients were from upper class(Table-6). The patients from lower class can t afford expensive food, vegetables as well as medicines for this chronic disease, Moreover, housewives of middle class due to poor pre-post natal care are more prone to this disease. As well as they are careless towards their own care and always worrying for the family responsibilities this leads to mental tensions.

7. Diet

As recorded during sample collection, 55% patients were taking veg. diet. While 45% of patients were taking mixed diet(Table-7).

8. Diet habit

In this study, 60% of patients were having Vishmashana type of diet, 58.3% of patients were taking Ajirnashana type of diet, also 53.3% patients were taking Viruddha type of diet, while 43.3% patients were taking Vidahi type of diet and 26.7% patients were taking Adhyashana type of diet(Table-8). Thus patients having, Vishmashana, Ajirnashana, Viruddha, Vidahi, Adhyashana type of diet habit causes Panduroga as it is responsible for agnimandya which is important factor of Panduroga.

9. Dominant rasa sevan(Ahara)

In Ahara 45% patients were taking ati Amla sara, 45% were taking Ati lavan sara 63.3% patients were taking ati katu rasa. (Table-9). Thus patients having, amla, lavan, katu rasa dominant diet have tendancy to vitiate pitta and kapha and cause rasa and rakt srotodushti and in turn cause Panduroga.

10. Sleep pattern

Majority of the patients were taking 60% divaswap,and 50% were having Atinidra and 40% patients having Alpa nidra, 8.3% patients having Khandit nidra, while 1.7% having Alpanidra(Table-10). Thus we may conclude that diwaswap is one of the hetu of Pandu roga it aggravates tridosha mainly kapha which causes agnimandya. Also maximum patient having atinidra which is one of symptom of the disease.

11. Manas bhav

In present study Manasa Bhava found predominantly 36.7% patients were Prakruta in nature while 35% were having Chinta and, 20% patients were having Krodha, 5% patients were having Bhaya and 3.3% patients were Shoka. (Table-12) They are considered as one of the chief aetiological factors. These factor aggravates the vayu and pitta leading to the disease Pandu.

12. Prakuti

No one person having singal doshaprakruti, in this study following 6 dosha prakruti has been considered. Vata-pitta Prakruti 30%, while 28.3 having vata kapha Prakruti, 16.7% having Pitta-Kapha Prakruti, 10% having Pitta-Vata Prakruti, 8.3%having Kapha-Vata prakruti and 6.7% having Kapha-pitta Prakruti (Table-13). In studied sample size the incidence of pandu is higher in patients having vata- pitta pradhan prakruti are more prone to pandu roga.

14. Sara and Samhanana satmya

Maximum number of patients were having madhyama sara (68.33%) (Table-14), Madhyama samhanana (88.4%) (Table-15). The disease being a dhatukshayatmaka process, pravara sara and samhanana cannot be found.

15. Satva

Table No.18 reveals that, 76.6% patients were having madhyama satva and 18.4% were having avar satva. Avar and Madhyama satva persons cannot handle the excessive mental burden and they strongly react upon it. Sometimes patients become victim of depression anxiety, stress etc. All these factors influence the general health of the patients which again make the body prone to this disease.

16. Satmya: In this study90% patients were having madhyama satmya, pravara satmya cannot be found.

17. Pramana

The data reveals that 91.6% of cases were having madhyama pramana followed by 6.7% patients having avara pramana and 1.7% patients having pravara pramana. Due to dhatukshya in the body degenerative effect on the body can be observed.

18. Abhyavaran shakti and Jaran Shakti

As recorded during sample collection 76.6% patients were having Madhyama Abhyavarana Shakti and 21.7% patients were having Avar Abhyavarana Shakti and 1.7% patients having Pravara Abhyavarana Shakti. Majority i.e. 56.7% patients were having Madhyama Jarana Shakti, while 38.3% were having Avara Jarana Shakti and 5% were Pravara Jarana Shakti (Table-20). For the agni pariksha we examine the patients Abhyavaran shakti and Jaran shakti. In this study we found maximaum patients of madhyam and avar which causes *Mandagni* and thereby consuming insufficient diet ultimately leading to malnutrition, the root cause of disease.

Discussion on clinical efficacy of therapy with symptoms. Panduta

The most important presenting sign of pandu roga is panduta. This sign is the most conclusive sign of the disease because whenever any patient comes across, the thing first observed is the appearance. Varna and prabha are the properties of Raktadhatu and pitta dosha, particularly the Bhrajaka and Ranjaka pitta. It is also the property of ojas as more and more ojakshaya, raktakshaya and pitta prakopa occurs the patient becomes hatprabha or panduta appears. Regarding the effect of therepy, By **Wilcoxon Signed rank test** highly significant and significant result were obtained at the end of clinical study in Group A and Group B respectively and comparison By **Mann Whitney test**, There is no significant difference found in relief of Panduta. The reason for good results in two groups may be due to increasing Hb levels due to Loha Bhasma in Group-A and in Group-B Chitrak which is responsible for Agnidipan and ultimately increase absorbtion of iron from diet and senesent cells of Reticuloendothelial system which recycled iron in circulation.

2. Daurbalya

This symptom was found in maximum number of patients. Hence it can be inferred that, this symptom is also most prominent in disease pandu. This is again due to rasa raktadi dhatukshaya, Ojakshaya, raktalpata etc. If we consider it from modern point of view the red cells in the blood are responsible for supplying oxygen to body tissues. The oxygen is very necessary for the normal metabolic activities. When there is decrease in number of red cells, metabolic activities are hastened and if this condition persists for a long period, debility appears.

The effect of therapy, In both groups, by **Wilcoxon Signed rank test** highly significant result were obtained at the end of clinical study And comparison By **Mann Whitney test**, There is no significant difference found in relief of Daurbalya. Reason for Good effect of therapy was In Group- A Lohabhasma having of oxygen carring capacity, property of Raktadhatuposhan and Rasayan. In Group- B due to drug Bala which having Balya property and Chitrak corrects function of Agni with its bala karma too.

3. Hridspandan

It is due to improper formation Rasa- Rakta in our body results in Decreases in Jivan-karma i.e less oxygen carrying capacity of blood to various organs, body tissues and especially heart, so heart has to pump quickly to provide rapid blood flow to the body organs. The effect of therepy, in both groups, by **Wilcoxon Signed rank test** highly significant result were obtained at the end of clinical study, and comparison By **Mann Whitney test**, There is no significant difference found in relief of Hrudspandan. The good results in two groups, due to drugs Loha Bhasma having Raktadhatupashan and Bala-Chitraks Rasa- Raktavardhan proprety.

4. Bhrama

Bhrama is commonly present in Pandu patients due to improper function of Pitta and lack of Rasa- Raktadi dhatus. The relief in both groups, by **Wilcoxon Signed rank test** highly significant result were obtained at the end of clinical study and comparison by **Mann Whitney test**, there is no significant difference found in relief of Bhrama. The reason for good result nutrient property of Lohabhasma in groups A, Group B- Chitrak is Dipan, Pachak therefore drugs increase Jatharagni and Dhatvagni upto normal level along with Pittadosha and Dhatu nirman process toned up which results ultimately to Dhatu pushti and prasadana.

Shunakshikuta

It occurs due to lack of blood and Amotpatti due to Mandagni. Regarding effect of therapy, in both groups, by **Wilcoxon Signed rank test** significant result were obtained at the end of clinical study. And comparison by **Mann Whitney test**, there is no significant difference found in relief of Shunakshikuta. In Group-A lohabhasma having Raktavardhan and Group–B Chirak having Agnidipan and Shothghna property gives good result.

6. Rukshta

It occurs due to improper formation of Rasa-Raktadi dhatu results Snehakshaya in pandu. The effect of therepy, By **Wilcoxon Signed rank test** Highly significant result were obtained in Group A and significant in Group B at the end of clinical study and comparison By **Mann Whitney test**, there is no significant difference found in relief of Rukshta**.** The reason for good result of therapy is nutrient property of Lohabhasma which correct Raktashaya in group A and Snigdha, pichhil, balya property of Bala in Group-B.

7. AyasenShwasa

Ayasenshwasa is observed in Pandu patients due to Raktalpta, more work load and lack of proper nourishment to heart. Hence heart becomes weak and symptom of shwasa occurs. The relief in both groups by **Wilcoxon Signed rank test** Hightly significant result were obtained at the end of clinical study and comparison by **Mann Whitney test**, there is no significant difference found in relief of Ayasenshwasa. The reason for good results in two groups may be due to Rasa-Rakta vardhan so as the Hb levels are increased and Heart has not to pump so quickly anymore to maintain the oxygen flow to tissues.

8. Pindikodweshtana

It also occurs due to provoked Vata dosha and Pitta dosha due to Dhatukshya results to some changes in muscular tissue metabolism. It was Regarding the effect of therapy, in Both groups, by **Wilcoxon Signed rank test** highly significant result were obtained at the end of clinical study and comparison by **Mann Whitney test**, There is no significant difference found in relief of Pindikodweshtana. In both groups drug increases Myoglobin level along with haemoglobin which present in muscles and reduces symptom Pindikodweshtana.

Biochemical markars (Objective criteria)

In this study, Biochemical markers observed before and after treatment were Complete blood count with peripheral smear, Heamoglobin, Heamatocrit, Red Cell Count, Mean ccorpuscular Volume, mean corpuscular heamoglobin and Mean corpuscular haemoglobin concentration. In both Group A And Group-B, The result of Complete blood count with peripheral smear were found highly significant by **Wilcoxon Signed rank test** and by **mann-whitney test** no significant difference found in Results. In Hb level, Haematocrit, MCV, MCH and MCHC in Both groups, by **paired t test** highly significant result were obtained at the end of clinical study and comparison by **unpaired t test**, There is no significant difference found in improvement except the MCH, by **paired t test** highly significant result were obtained but the difference was significant by **unpaired t test**. it may be due to direct intake of iron in Group - A but as the no. of patients was very less we can not conclude any inference.

In Group–B results may be due to Bala –Chitrak mool help in absorption and metabolism of iron. Iron absorption takes place largely in the proximal small intestine and is a carefully regulated process. For absorption, iron must be taken up the luminal cell. That process is facilitated by the acidic contents of the stomach, which maintains the iron in solution. that means Gastric acid is required to release iron from food and helps to keep iron in the soluble ferrous state. Dietary iron distributed in <10% Heam iron and >90% non-heam in total iron from which Respectively only <5% and 30% iron made available for absorption .In this process Chiktak acts on gastic acid (May called action on Jathragni) to maintain PH of acid by its Katu rasa-vipak,Ushn- virya and laghu, Tikshna guna. Bala also plays important role in absorption, by its Snigdhha Pichhila Guna and compensate excess tikshna –ushna action of chitrak, along with its bala-Ojovardhan.

Metabolism

In Erythroid marrow iron bearing transferrin complex internalised and transported in acidic endosoms, here iron is released at the low PH. the iron is then made available for heam synthesis. Chitrak and Bala acts in form of Dhatwagni in acidic endosoms and here again bala-chitrak helps in metabolism of rakta poshak sarabhag and results in improvement in blood indices.

Discussion on mechanism of action of drug.

In present study, in Group-A Lohabhasma with milk as anupana and in Group–B Bala-Chitrak mool with sukhoshna jala as anupan was given to patients. The mechanism of action of drugs with respect to the Samprapti bhang of Pandu roga is described as follows-

Action of Lohabhasma

In present Study Gomutra bhavit Lohabhasma was used with milk. Lohabhasma breaks Pandu roga Samprapti as it brings Raktadhatuvardhak, krimighna, vishaghna and Rasayana karma. Acharya charak mentioned that Mutra is best remedies for Panduroga also explained action on dosha as it alleviates Kapha and Vata also brings down Pitta dosha which breaks pandu roga samprapti(Ch.Su. 1/97). It helps to correct agnimandya by its dipaniya karma hence useful in Udara vyadhi which causes due to Dosha. Vishghna and Krimighna karma is very important as krimi are the one of the important factor of iron deficiency anemia. Gomutrabhavana incerases Lohabhasma potency and given more effective result in the Pandu roga. Milk as anupan given with Lohabhasma as we all know Jivaniya, nutritive karma of milk which is very essential part of Pandu roga. To increase absortion of Lohabhasma it was given in Rasayan kaal i.e. early in the morning in empty stomach.

Action of Bala–Chitrak mool

Agnimandya and mainly Rasa-Raktadhatu kshya are the important events of Pandu roga samprapti, the combination of bala and chitra corrects these events by their potency. There is Agnimandya due to which there is reduction in process of digestion. The food that is ingested is not digested properly. Indigested food is, not absorb or assimilated properly which produces Ama as a toxic substance(free radical) which results in obstruction in stotasa along with Agnimandya. Due to reduction in digestive power, iron present in diet is not absorbed which is a basic element in the process of Haemopoiesis. Chitak is considered as one of the best Agnideepak and Aamapachak drug. It relives stotasavrodha produces by Ama And increase the absortion of iron and other nutrients. Chitrak by its lekhan karma acts on excess kapha dosha as along with vatapitta prakopa, Gourava, sadan, Shtivan are the symptom of kaphavruddhi also present in pandu roga. The combination of drugs acts on Rasadhatu and produced it in proper manner, due to which rasa dhatu becomes more potent and as per Ekposhan nyaya Rakta dhatu gets its nutrition from previous dhatu i.e. rasa dhatu therefore when the rasa dhatu becomes vishuddha naturally raktadhatu also becomes more potent and hence remaing all dhatu and breaks samprapti sarva-dhatu shaithya in Panduroga. Bala has Snigha, pichhil in Guna, it aid to alleviate the Dhaturukshata. Because of balya karma it aid to alletiate balakshaya and Ojokshaya which produced. The concept of Ranjak pitta is very much scientific, Acharya Sushrut mentioned Yakrit and pliha are places of Ranjak pitta, while Acharya Vagbhat said that Amashaya is the natural abode of ranjak Pitta. This Ranjak Pitta performs Ranjan karma on rasa dhatu to produce rakta dharu from it. Chitrak have the property of Yakrutgamitva which is very significant in samprapti bhanga of Pandu roga. In addition, this combination was advised to take in madyabhakta kaal as it is pitta kaal which increase action of drug. At the end, we can conclude that Lohabhasma used in this study is good Raktavardhak, Raktashodhak, Krimighna and Rasayana. Bala Chitrak mool used in this study is also good Agnideepak, Aamapachak, Raktavardhak, Krimighna. No any adverse effect of the drug was reported during the course of study. The drug of both group Gomutra bhavit Lohabhasma and Bala-Chitakmool is very easy to prepare, all the constituents are readily available, cost effective.

CONCLUSION

Clinical evaluation of Lohabhasma in Group-A and Bala-Chitrakmool in Group-B was completed in 60 Patients. Conclusion drawn according to observation and results are given here:-

The **conclusions** drawn from this study are as follows:-

- Pandu roga can be effectively compared with Anemia on the grounds of its similar signs and symptoms.
- In this study maximum female patients were observed. Hence female are more prone to this disease. May be because of child bearing and menstruating period.
- In Pandu, krodha, chinta etc. mansika factors plays a major role as an etiological factor. Pandu is a Tridoshaj vyadhi with the main culprit dosha is Pitta.
- Drugs having the properties like deepan, pachana, Rasa-raktadhadhuvardhan, balya and rasayan are useful in the treatment of Pandu.
- Lohabhasma and Bala-Chitrak-mool both provided better results in improving signs and symptoms. Both drugs found to have role in increasing the Hb%.
- The drug administration should be done for longer duration for better results.
- As Pandu roga may be a chronic disease follow up should be kept for longer duration.
- Though this study was carried out in limited patients period, the mass study programming is needed for future huge database statistical study.

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