

RESEARCH ARTICLE

A COMPARATIVE STUDY OF NAVAYASA CHURNA AND NISHA LAUHA IN THE MANAGEMENT OF PANDU W.S.R. TO IRON DEFICIENCY ANAEMIA (IDA)

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Manuscript Info

Abstract

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Key words: -

Pandu, Iron Deficiency Anaemia, Navayasachurna, Nisha Lauha, Hemoglobin **Background:** Iron deficiency Anaemia is one of the most common nutritional disorder world-wide, especially in India and other developing countries. In Ayurveda, Pandu is considered as a specific disease with its own Pathogenesis and treatment. In modern medicine, there is good treatment for Anaemia with considerable result but that is only for acute deficiencies Anaemias. No significant therapy is there for Chronic Anaemias which occur due to metabolic defects. Navayasachurna and Nisha Lauha both are herbomineralformulations which are effective in GIT disorders and chronic anemias.

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Materials& Methods: Total 80 Patients were registered of Iron Deficiency Anaemia. 15 patients were left the treatment before completion of therapy. Navayasachurna tablets were given in 33 patients of Group A and Nisha Lauha tablets were given in 32 patients of Group B.

Result: Statistically highly significant result was foundinNavayasachurna Group A. It's also improved Hb, S. Iron and S. Ferritin level. So, it is suggested that Navayasachurna is helpful to improve appetite, digestion, clear the obstruction in channels, relieves constipation and increase Rasa- Rakta dhatu and improves Hb level. 21.21 % moderate improvement and 39.39% mild improvement was found in group A.

Conclusion:Navayasachurna provided better improvement in Iron Deficiency Anaemia than Nisha Lauha.

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Introduction:-

Asia has the highest rates of Anemia in the world. About half of the world's anemic women live in the Indian subcontinent, and 88% of them develop Anemia during pregnancy. The situation in Asia has not improved in recent years. In Pandu roga change the color of the body like pallor of skin, sclera, Nail, Tongue etc. due to Rakta alpata¹means Hemoglobin level decrease than the normal level. Anaemia is a blood disorder characterized by abnormally low levels of healthy RBC cells that delivers oxygen to tissues throughout the body. The reduction of any or all of these blood parameters reduces the essential delivery of oxygen through the bloodstream to the organs of the body. Iron is a mineral found in the bloodstream that is essential for growth, enzyme development and

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function, a healthy immune system, energy levels, and muscle strength. It is an important component of hemoglobin and myoglobin, the type of hemoglobin in muscle tissue.²In modern medicine, there is good treatment for Anaemia with considerable result but that is only for acute deficiencies Anaemias. No significant therapy is there for Chronic Anaemias which occur due to metabolic defects. Ayurveda can provide better management of this area.

Material & Methods:-

- 1. Method of Sampling: Simple Random Sampling Method
- 2. Method of Research: Clinical Research

Study Design

The study was approved by the **Institutional Ethics Committee** of I. P. G. T and R. A., Gujarat Ayurved University, Jamnagar (No. PGT/7-A/Ethics/2010-11/3381, Dt. 07/1/2011) and the trial was also registered in the clinical trial registry of India (**CTRI No**: CTRI/2015/04/005695, Date: 13/04/2015.) Informed consent was taken from all the patients before including them in the trial. Patients were randomly divided into 2 groups.

No.	Name of Drug	Botanical name	Family	Part used	Parts
1	Haritaki	Termineliachebula	Combrataceae	Fruit	1 Part
2	Bibhitaki	Termineliabellirica	Combrataceae	Fruit	1 Part
3	Amalaki	Emblica officinalis	Euphorbiaceae	Fruit	1 Part
4	Sunthi	Zingiber Officinale	Zingiberaceae	Rhyzome	1Part
5	Maricha	Piper nigrum.	Piperaceae	Fruit	1Part
6	Pippali	Piper longum	Piperaceae	Fruit	1 Part
7	Musta	Cyperus rotundus	Cyperaceae	Rhyzome	1 Part
8	Vidanga	Embelia ribs	Myrsinaceae	Fruit	1 Part
9	Chitrak	Plumbago Zeylanica	Plumbaginaceae	Root	1 Part
10	NavayasaLauha	Incenereted Iron			9 Part
Total					18 Part

Table 1	Group	4- N	avavasa	Churna ³	- Ingredients
1 anic 1	UIUUD A	7- 18	avavasa	Chuina	- merculcino.

Formulation of the drug –

The drug "Navayasachurna" was prepared in the pharmacy of I.P.G.T. & R.A., Jamnagar.

Method of Preparation -

All the above drugs were taken in equal parts and made in powder form. Then after, LauhaBhashma was added to the powder in equal quantity to all 9 drugs and made tablets containing 250 mg. As a Binding Agent, Gum. **Dose:** - 1gm/1day/1Pt. (2 tablet twice a day) **Anupan:** - Ghrit**Duration:** - 2 months.

No.	Drug Name	Latin name	Family	Part used	Parts
1	Haritaki	Termineliachebula	Combretaceae	Fruit	1 Part
2	Bibhitaki	TermineliaBelirica	Combretaceae	Fruit	1 Part
3	Amalaki	Emblicaoficinalis	Euphorbiaceae	Fruit	1 Part
4	Haridra	Curcuma longa	Zingiberaceae	Rhyzome	1 Part
5	Daruharidra	Berberis aristate	Berberidaceae	Stembarkroot	1 Part
6	Katuki	Picrorhizakurroa	Scrophulariaceace	Root	1 Part
7	AyorajLauha				6 Part
Total					12 Parts

Table 2:- Group B- NishaLauha– Ingredients⁴.

Formulation of the drug -

The drug "Nisha Lauha" was prepared in thepharmacy of I.P.G.T. & R.A., Jamnagar.

Method of Preparation:-

All the above drugs were taken in equal parts and made in powder form. Then after, AyorajaLauhabhasma was added to the powder in equal containing and made tablet. (1 Tablet - 250 mg). As a Binding Agent, Gum was taken.

Dose: - 500mg/1day/1Pt. (1 tablet twice a day)Duration: -2-monthsAnupan: -Ghrit.

Sample Size:

It was estimated that a total of 80 patients, 44patients were registered in Group A (Navayasachurna) & 36 Patients were registered in Group B (Nisha Lauha). Among them 65 patients (81.25%) were completed their treatment & 15 patients (18.75%) were discontinued.



Diagnostic Criteria: -

(1) Classicaland modern cardinal features of Pandu Roga like Panduta (pallor), Daurbalya (generalised weakness), Pindikodwestana (calf muscle cramp), AyasajaShwasa (exertional dypsnoea), Shrama (fatigue) etc. (2) Patients having S. Iron, & S. Ferritin below the normal range. (S. Iron < 50ug/dl) (S. Ferritin < 15ug/dl).⁵ (3) Patients having Total Iron Binding Capacity (TIBC) increase the normal range. (TIBC > 370 ug/dl).⁵

Inclusion Criteria:

(1) Patients between the age group of 15-50 years. (2) Patients having Cardinal symptoms of Pandu i. e. Panduta (Pallor), Pindikodvestana (Pain in Calf muscles), shrama (Fatigue), Akshikutashoth (Peri-orbital swelling), Bhrama (Vertigo) etc. (3) Patients having Hb% below the normal range. (In Men<13% and In Women<12% according to W.H.O.⁶

Exclusion Criteria (1) Patients suffering from systemic disease like Diabetes Mellitus, Renal disorders, heart disease, cancer, AIDS, Hypertension etc. and having bleeding disorders. (2) Patients having Anaemia due to chronic disease, including inflammatory disease, malignancy and chronic infection, chronic blood loss. (3) Age less than 15 years and more than 50 years. (4) Hb level – below $7g/dl^{7}(5)$ Pregnancy.

Laboratory Investigation:

- 1.Complete Haemogram- Routine Haematological Examinations like Hb% (Haemoglobin), TLC (Total Leucocyte Count), DLC (Differential Leucocyte Count), ESR (Erythrocyte Sedimentation Rate), and PCV (Packed Cell Volume), MCV (Mean Corpuscular Volume), MCH (Mean Corpuscular Haemoglobin), MCHC (Mean Corpuscular Haemoglobin), MCHC (Mean Corpuscular Haemoglobin), Platelet Count and Peripheral Smear.
- 2. Blood Biochemistry- Serum Iron, S. Ferritin, T. I. B. C. (Total Iron Binding Capacity), S.G.P.T. Serum Glutamic Pyruvic Transaminase (to rule out Liver disease), Blood Sugar (To rule out DM), Blood Urea and Serum Creatinine (to assess the function of Kidney)
- 3. Urine & Stool Routine and microscopic examination of urine and stool was done to detect presence of any blood, mucus, ova, cyst etc.

Criteria for assessment of therapy: -Subjective Parameters -

(1) RogaBala: Cardinal and Associated symptoms of Pandu Roga (2) Dosha – SrotasaPariksha**Objective Parameters:-**(1) Hemoglobin% (2) Serum Iron (3) TIBC (Total Iron Binding Capacity) (4) S. Ferritin

Presentation Of Data:

The data obtained in clinical study is subjected to statistical tests and analyzed in three parts. (I) Subjective Criteria(A)Percentage of improvement in each parameter of each scale in both the groups is calculated. (B)Unpaired t test is applied to the statistical data for evaluating the difference in the effects of two therapies symptom wise.⁸

(II) Objective Criteria:

Students' test was applied to the objective parameters.

(1) Application of the paired 't' test:⁹-The information gathered on the basis of above observations was subjected to statistical analysis in terms of mean (X), standard deviation (S.D.) and standard error (S.E.). Paired' test was carried out at P<0.05, P<0.01 and P<0.001 levels. The obtained results were interpreted asNon-significant P > 0.05, P<0.1, Significant P < 0.05, & Highly Significant P < 0.01 & P<0.001

(2) Application of the unpaired 't' test:⁸For objective parameters observations were subjected to statistical analysis in terms of mean (x), standard deviation (S.D.) and standard error (S.E.). Unpaired' test was carried out at P<0.05, P<0.01 and P<0.001 levels to draw difference in the effects of two therapies.

Follow Up Study:

After the completion of above therapeutic procedures, all the patients will be kept under observation for 1 month. During the follow up study, further improvement or deterioration or no change in the signs & symptoms will be recorded.

Results:-

Total 80 patients were registered for the present study, among them 65 patients, 33 patients in GroupA (Navayasachurna) and 32 patients in Group B (Nisha Lauha) completed the course of treatment. In group -A 11 patients were drop out due to Personal work – 7pts., Admitted due to disease – 2pts., Transfer to other disease – 2pts.In group- B 4 patients were drop out due to Personal work – 2pt., Went to tour – 1pt., Admitted due to fever-1pt. [Figure 1].

Signa & Symptoms	N	Mean S	core	D	% Poliof	S D	S E	·+ '	D	
Signs&Symptoms	IN	B.T.	A.T.	D	% Kellel	S.D.	5. E.	L	r	
Aruchi	26	1.89	0	1.89	100	0.516	0.101	18.627	< 0.001	
AkshikutaShotha	8	1.25	0.125	1.125	90	0.354	0.125	9	< 0.001	
Bhrama	33	1.85	0.273	1.212	81.62	0.6	0.104	11.608	< 0.001	
Daurbalya	33	1.88	1.212	0.667	35.5	0.479	0.0833	8	< 0.001	

Table 3:- Effect of Navayasachurna (Group A) on Sign and Symptoms in 33 patients.

Hridspandana	12	1.17	1.17	0	10.71	0	0	0	>0.05
Jwara	4	1.25	0	1.25	100	0.5	0.25	5	< 0.05
Panduta	33	2.121	1.667	0.455	24.94	0.506	0.088	5.164	< 0.001
Pindikodweshtana	27	1.704	0.407	1.296	76.12	0.465	0.896	14.48	< 0.001
Shrama	33	1.94	1.212	0.727	37.49	0.574	0.099	7.278	< 0.001
Shwasa	14	1.43	0.5	0.929	65.01	0.475	0.127	7.32	< 0.001

N-No. of patients S.D.- Standard Deviation B.T.-Before treatment S. E. –Standard Error A.T.- After treatment t – Paired D-Difference P- confidence interval %-Percentage

Table 4:- Effect	of Nisha Lauha	(Group)B on	Sign and	Symptoms	in 32 patients.
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G* 0.G /	N	Mean So	core		0/ D 11 6	C D	0 E	4.2	D
Signs & Symptoms	N	B.T.	A.T.	D	% Relief	S.D.	S.E.	ť	Р
Aruchi	22	2	0	2	100	0.31	0.066	30.39	< 0.001
AkshikutaShotha	7	1.29	0.29	1	77.76	0	0	0	< 0.001
Bhrama	31	1.71	0.23	1.48	86.78	0.51	0.091	16.26	< 0.001
Daurbalya	31	1.81	1.26	0.55	30.34	0.51	0.091	6.04	< 0.001
Hridspandana	12	1.33	1.17	0.17	12.45	0.39	0.11	1.48	>0.05
Jwara	4	1	0.25	0.75	75	0.5	0.025	3	>0.05
Panduta	32	1.91	1.47	0.44	22.93	0.56	0.09	4.39	< 0.001
Pindikodweshtana	22	1.68	0.5	1.18	70.27	0.39	0.084	14.04	< 0.001
Shrama	32	1.81	1.41	0.41	22.45	0.50	0.089	4.61	< 0.001
Shwasa	20	1.3	0.65	0.65	50	0.59	0.13	4.95	< 0.001

Table 5:- Effect	of Navayasachurna o	on Haematological	Parameters in 33	patients.
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Investigation	N.	М	Mean Score		%	S.D.	S.E.	Т	Р.
		B.T.	A.T.						
Hb %	33	8.89	9.18	-0.28	13.18	1.63	0.28	-0.99	>0.05
TRBC	33	4.37	4.48	-0.11	↑2.42	0.29	0.05	-2.08	< 0.05*
T.L.C.	33	6348.5	6269.7	78.79	↓1.24	1140.68	198.56	0.397	>0.05
BloodPlatelet	33	348.73	355.2	-6.49	1.86	91.813	15.983	-0.45	>0.05
MCV	33	69.99	70.66	-0.67	10.96	7.032	1.24	-0.06	>0.05
МСН	33	21.20	26.40	-5.20	↑24.53	23.86	4.154	-1.28	>0.05
МСНС	33	29.93	29.85	0.08	↓0.27	1.92	0.334	0.217	>0.05

Investigation	N.	Ν	Iean Score	Diff	%	S.D.	S.E.	Т	Р.
		B.T.	A.T.						
Hb %	32	9.59	9.41	0.19	↓1.9	1.90	0.35	0.54	>0.05
TRBC	32	4.14	4.18	-0.05	10.97	0.45	0.79	-0.52	>0.05
T.L.C.	32	6747	3857	890.6	↓13.2	1639.8	289.8	3.07	< 0.05*
Blood Platelet	32	366.0	361.8	4.24	↓1.17	99.8	17.64	0.24	>0.05
MCV	32	73.70	75.05	-1.35	↑1.83	8.00	1.42	-0.95	>0.05
МСН	32	23.01	26.61	-3.5	15.6	12.51	2.21	-1.63	>0.05
MCHC	32	30.92	32.32	-1.30	↑4.52	5.64	0.99	-1.40	>0.05

Table 6:- Effect of Nisha Lauha on Haematological Parameters of 32 patients of Pandu.

Table 7:- Effect of Navayasachurna on Biochemical Parameters in 33 patients.

Investigation	N	Mean Sco	ore	Diff	04	S D	SЕ	т	р
Investigation	14.	B.T.	A.T.	DIII	70	5.D.	5.L.	1	г.
S. Iron	33	28.44	29.56	-1.12	↑3.93	4.71	0.82	-1.3	>0.05
TIBC	33	341.4	327.9	13.49	↓3.95	64.11	11.16	1.21	>0.05
Ferritin	33	4.65	6.85	-2.19	↑47.1	7.48	1.30	-1.68	>0.05

Table 8:- Effect of Nisha Lauha on Biochemical Parameters in 32 patients.

Investigation	N	Me	an Score	Diff	%	S D	S F	т	D
	14.	B.T.	A.T.	DIII	70	5.D.	5.L.	1	1.
S. Iron	32	28.14	34.11	-5.97	17.5	10.09	1.79	-3.34	< 0.05*
TIBC	32	361.3	352.3	9.03	↓2.56	39.88	7.05	1.28	>0.05
S. Ferritin	32	5.69	6.99	-1.3	↑22.8	8.155	1.44	-0.9	>0.05

Effect of Therapy:

Highly significant result (p<0.001) was noted in Aruchi (Anorexia), Akshikutsotha (Periorbital swelling), Bhrama (Vertigo), Darbalya (Weakness), Panduta (Pallor), Pindikodwestana (Pain incalf muscles), Shrama (Fatigue) and Shwasa (Dyspnoeaonexertion) in Both Group. (Table-3, Table-4). Statistically significant increase RBC (2.42%), Hemoglobin percentage (3.18%), MCV (0.96%), MCH (24.53%), and Blood platelet (1.86%) have non significantly increased, and MCHC was decreased at non-significant level. (Table-5). Serum Iron was increased by (3.93%), S. Ferritin was increased by (47.1%) and TIBC was decreased by 0.42% were at non-significantlevel (Table-7). TRBC (0.97%), MCV (1.83%), MCH (15.6%) andMCHC (4.52%) have not significantly increased, and Hb (1.9%) ESR (10.70%) has decreased which was statistically non-significant. (Table-6) S. Iron was increased by 17.5% at significant level. Non-significant effect was found in S. Ferritin&TIBC (p> 0.05) by Nisha Lauha. (Table-8)

Discussion:-

In this study, disease is common between younger age group. The main cause for increased prevalence in this younger age group patients are prone to mental stress, excessive exercises, irregularity in diet and improper viharas (Atapasevana, Ratrijagarana etc.) due to their professional responsibilities. As a result, a peak in the prevalence of iron deficiency frequently occurs among females. According to the 3 National Health a Nutritional Examination Survey (NHANES III) data, IDA Defined by 2 0r more abnormal measurement (s. iron; s. ferritin) continuous prevalent in US Females, 7-8 million >18 to 50 yrs. and 3.3 million females was found IDA.Sedentary life style, stress full situations and fast-food dietary patterns are responsible factors for the manifestation of disease. Maximum patients i.e., 95 % were taking Katu rasa dominant diet and 58.75% were taking Amla rasa dominant diet daily. Amla, Katu and Lavana Rasa have already indicated as causes of Pandu Roga and they directly vitiate pitta and Rakta and lead to Raktapradoshajavikaras like Pandu. Majority of the Patients i.e., 87.5% were taking Ushnaguna dominant diet. Ushna, Laghu and Rukshnaguna are indicated the Nidana of Pandu Roga which vitiated the Pitta dosha and Rakta dhatu. Compared to no Maximum i. e. 78.75% patients were vegetarian and 21.25% patients were found using mixed diet pattern. Vegetarians are more likely to develop iron deficiency, unless

their diet is supplemented with iron. The clinical condition Anemia may be due to the fact that availability of iron in plants ranges from only 1-10%, while that in meat, fish, chicken, and liver is 20-30%. Animal products are sources of iron and its absorption is usually high.

Effect on Aruchi, Akshikutshotha, Bhrama, Daurbaly&Hridspandana:

In these symptoms, 100% relief was provided by Group A(NC) i.e., Navayasachurna and Group B (NL) i.e., Nisha Lauha. Both relieves were statistically highly significant. It may be due to, most of the drugs in Navayasachurnai.e. Triphala, ¹⁰Trikatu, ¹⁰ Chitraka¹⁰ and Vidanga¹⁰ are having dipana, pachana and anulomana properties. Hence, they improve digestive power and ultimately absorption of nutrition and drug also. As per modern pharmacology, Trikatu (Pipplai, Shunthi, Maricha) is claimed to have properties like appetizer, digestive, carminative. ^{11,12}Further, Chitraka is said to be appetizer.¹³

Effect on Jwara (Fever):

Group A (NC) conferred 100 % relief and it was statistically significant while Group B (NL) gave 75% relief in Jwara and non-significant result. Effect of therapy by unpaired t test statistically non-significant result was noted. Thus, it can be inferred that both theripes provided similar effect in Jwara.Navayasachurna contains drugs like Pippali (Piper longum Linn.),¹⁴Musta (Cyperus rotundus Linn.),¹⁵Chitraka (Plumbago zeylanica Linn.),Triphala (Terminalia chebula Retz., Terminalia bellibicaRoxb., Embalica officinalis Gaertn.),¹⁶Maricha (Piper nigrum Linn), Shunthi (Zingiber officinale Rosc.), andVidanga (Embaliarobusta C. B. clarke) which are well documented as antipyretic by various research scholars.

Effect on Panduta (Pallor):

Panduta was decreased by 24.94% in Group A (NC) and 22.93% in Group B (NL)and highly significant result. On comparing effect of therapy, statistically non-significant result was obtained that both groups provided similar result on Panduta. This may be due to Haematinic property of Haridra¹⁷Triphala¹⁸ are described as Panduhara by Acharya Bhavprakasha. Pippali, LauhaBhasma and Katuki have been described for its benefits in Pandu Roga.

Effect on Pindikodwetana (Calf muscle pain):

Both the drugs provided statistically highly significant (p<0.001) relief in Pindikodwestana. Comparative effect indicates nonsignificant. On comparing effect of therapy, statistically non-significant result was obtained that both groups provided similar result on Pindikodwetana.Considering the ingredients of Navayasachurna Preliminary Pharmacological studies have revealed that Pippali (Piper longum Linn.)¹⁹Musta (Cyperus rotundus Linn.) and Chitraka (Plumbago zeylanica Linn)²⁰ is documented to possess anti- inflammatory activity in vivo and vitro studies. Study on Shunthi (Zingiber officinale Rosc.) demonstrate that daily consumption of raw and heat-treated ginger resulted in moderate-to-large reductions in muscle pain following exercise-induced muscle injury. Moreover, Maricha (Piper nigrum Linn)²¹ is having analgesic, anti-inflammatory and muscle relaxant properties. P. longum root show significant NSAID type of analgesia (p < 0.001) in one study.²²All above said properties of the drugs is useful in relieving Calf muscle pain by virtue of their analgesic and anti-inflammatoryproperties. Ingredients of Nisha Lauhai.e., Daruharidra (Berberis aristata DC)²³ is claimed to have analgesic activity.

Effect on Haemoglobin Percentage, Total Red Blood cell (R.B.C) count:

Navayasachurna provided non-significant increase in Hemoglobin 3.18% and significant increase in RBC count 2.42% while Nisha lauha has non significantly decrease Hemoglobin and RBC count increase 0.97%. In the present study, both the drugs provided increase in RBC count, MCV, and MCH. Because LauhaBhsma is having Panduhar properties is helpful to improve Hb, RBC, and MCVand MCH.

Effect on Biochemical Parameters:

In the present study, Navayasachurna provided increase in Serum Iron (3.93%), S Ferritin (47. %) and decrease the TIBC (3.95%) but it was statistically non-significant, while Nisha Lauhashows increase in Serum Iron (17.5%) at significant level, and increase S. Ferritin (22.8%) and decrease TIBC (2.56%) at non-significant level. Comparative effect of both drugs provided significant result in S. Iron. So, Nisha Lauha is better than the Navayasachurnato improve S. iron level.

Discussion on reason for getting better result in Group A (NC):

Reason for getting better result in Group A Navayasachurna (NC) than Group B Nisha Lauha (NL) may be due to its (1) Major component LauhaBhasma -9 parts (2) Pippali (3) Trikatu and chitraka (4) Krimighna drugs –Vidang, Bibhitaki, Musta and Pippali.

- (1) LauhaBhasma is useful in Panduroga and it is vayasya.So, it useful to improve Hb, RBC, S. Iron and S. Ferritin level in Group A.
- (2) Piperine, the alkaloidal constituent of long peppers, is now established as a bioavailability enhancer of various structurally and therapeutically diverse drugs and other substances. Potential of piperine to increase the bioavailability of drugs in humans is of great clinical significance. Piper longum (long pepper) increased the blood levels of the test drug, vasicine, by nearly 233%. Under the influence of piperine, blood levels of the test drug, sparteine, increased more than 100%. This action may be due to Piperine increases the bioavailability of drugs either by promoting rapid absorption from the gastrointestinal tract or by protecting the drug from being metabolized in its first passage through the liver after being absorbed, or by a combination of these two mechanisms.
- (3) Trikatu (Pipplai, Shunthi, Maricha) is claimed to have properties like appetizer, digestive, carminative. Further, Chitraka is said to be appetizer.
- (4) Krimi is a cause of Pandu Roga. Krimighna drugs of Group A are helpful to destroy the parasitic infection and improve the Hb level.

Comparative Overall effect of therapy:

On the basis of maximum number of patients having moderate improvement in Group A and Maximum number of patients having no improvement in group B. So, Group A (NC) is better in comparison to group B (NL).

Conclusion:-

Gr. A (NavayasaChurna) provided better result in all sign & symptoms, Hb, S. Iron, S. Ferritin and TIBC. And significant result in RBC While, Gr. B (Nisha Lauha) provided better result in S. Iron, S. Ferritin, and TIBC. No side effects of the research drug were observed during the clinical study. Lastly, it can be concluded that Navayasachurna is a better choice of treatment in Pandu Roga.

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Conflicts of interest:-

There are no conflicts of interest

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