Research Article

A COMPARATIVE CLINICAL STUDY TO ASSESS THE EFFICACY OF *KARIMBIRUMBADI KASHAYAM* AND *VASAGULUCHYADI KASHAYAM* IN *PANDUROGA* WITH SPECIAL REFERENCE TO IRON DEFICIENCY ANEMIA IN THE REPRODUCTIVE AGE GROUP OF WOMEN

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ABSTRACT

This study is an attempt to clinically analyze the independent effect of *Karimbirumbadi kashayam* and *Vasaguluchiadi kashayam* in *Panduroga* and also compare their efficacy. Aims and Objectives: To evaluate the comparative efficacy of *Karimbirumbadi kashayam* and *Vasaguluchyadi kashayam* in *Panduroga* with special reference to iron deficiency anemia in the reproductive age group of women. Methodology: Among 46 registered subjects, 22 were registered in group A and 24were registered in group B. Out of which 20 subjects of A group and 20 subjects of B group completed the study. Group A was administered with 25ml of *Karimbirumbadi kashayam* with 40ml of luke warm water twice daily before food for 2 months and Group B was administered with 25ml of *Vasaguluchyadi kashayam* with 40ml of luke warm water and 10ml of *Madhu* as *Anupana* twice daily before food for 2 months. Objective and subjective parameters were analyzed using paired T test and Wilcoxon signed rank test respectively. Independent T test and Mann-Whitney U test were used to compare the parameters between the groups. Result: There was statistically significant improvement in the objective and subjective parameters (p<0.05 was observed). Conclusion: The study shows that both *Karimbirumbadi kashayam* and *Vasaguluchyadi kashayam* are effective in relieving the symptoms of *Panduroga*. Symptomatic relief was seen in both the group A & B, but there was no statistically significant difference between the groups in relieving these symptoms.

KEYWORDS: *Panduroga,* Iron Deficiency Anemia, *Karimbirumbadi kashayam, Vasaguluchyadi kashayam.*

INTRODUCTION

Nutritional anaemia is a major public health problem in India and is primarily due to iron deficiency[1]. Low dietary intake, poor availability of iron, chronic blood loss due to hook worm infestation and malaria are causes for this.

The WHO Global Database on Anaemia for 1993–2005, covering almost half the world's population, estimated the prevalence of anaemia worldwide at 25 percent. Although the prevalence of anaemia is estimated as 9 percent in countries with high development, in countries with low development the prevalence is 43 percent. In absolute numbers anaemia affects 1.62 billion people globally with about 293 million children of preschool age, 56 million pregnant women, and 468 million non-pregnant women estimated to be anaemic.

The prevalence in India is shown in the data of National Family Health Survey-3 (NFHS-3) suggesting anaemia widely prevalent among all age groups, and particularly high among the most vulnerable nearly 58 percent among pregnant women, 50 percent among non-pregnant non-lactating women, 56 percent among adolescent girls (15–19 years), 30 percent among adolescent boys and around 80 percent among children under 3 years of age.

Panduroga is a *Santarpanotha Vyadhi*with *Pandu Varna* or *Pandu Bhava*[2]. *Acharya Charaka* mentioned it as one among the *Rasavaha Srotovikaras* while *Acharya Susruta* mentioned it as *Raktavaha Sroto vikara*[3]. It is a *Pitta Pradhana Tridosha Vyadhi* which vitiates *Rasadi Dhatus. Prakupita Pitta* resides in *Tvak* and *Mamsa* and causes *Vata*, *Kapha*, *Asrik*, *Tvak* and *Mamsa Dushti*[4]. This result in *Pandulakshanas* like *Vaivarnya, Hrid Dravata, Tandra, Bhrama* and *Srama*[5]. On *Anupakrama* it causes *Upadravas* like *Aruchi, Pipasa, Chardi, Jwara* and may result in *Asadhya lakshanas*[6].

Anemia in moderate form, presents itself with symptoms like fatigue, loss of appetite, weakness, breathlessness and palpitation, particularly with physical exertion and pallor of the skin and the mucous membrane[7].

Anaemia can translate into significant morbidities for affected individuals and consequent socio-economic losses for the country. The conventional iron therapy for Anemia is only palliative and associated with less patient compliance and side effects on long term use. Patient's complaints of metallic taste, nausea, abdominal discomfort and giddiness by iron tablets[8]. Owing to the need of the situation two *Kashayas* were selected namely *Karimbirumbad ikashayam*[9] and *Vasaguluchyadi kashayam*[10] for the study. These two preparations are mentioned in *Sahasrayogam* and *Ashtangahridaya* respectively. In the study an attempt is made to evaluate the efficacy of each drug on *Pandu* and their efficacies are mutually compared.

OBJECTIVE

- To evaluate the efficacy of *Karimbirumbadi Kashayam* and *Vasaguluchyadi Kashayam* in *Pandu Roga* with special reference to iron deficiency anemia in the reproductive age group of women

- To compare the results in between the groups.

MATERIALS AND METHODS

Source of Data: Patients who attended the out-patient department of *Kayachikitsa*, RAMCH & RC, Bengaluru.

Method of Collection of Data

46 patients (Table 1) were screened and selected based on the screening form prepared. They were grouped in to groups A and B containing 22 and 24 patients respectively. Data was collected using specially prepared case report form. The demographic details of 40 patients of *Pandu Roga* who completed the study such as age, gender, educational status etc are represented in table below (Table 1).

Table 1: Demographic detail of 40 patients of *Pandu Roga*

Geographic Observation	Predominance	No of Patients (%)
Age	25-29years	12 (30.00%)
	20-24years	8 (20.00%)
	40-44 years	8 (20.00%)
Educational Status	Degree	18 (46.20%)
Marital Status	Married	22 (55.00%)
	Unmarried	18 (45.00%)
Occupation	Home maker	19 (47.50%)
Socio economic status	Middle class	19 (47.50%)
	Lower class	16 (40.00%)
Diet	Mixed	29 (72.50%)
	Vegetarian	11 (27.50%)
Dominance of *Rasa* in Diet	*Amla*	31 (77.50%)
	Katu	28 (70.00%)
Dominance of *Guna* in Diet	*Guru*	12 (30.00%)
	Laghu	11 (27.50%)

The observations related to the disease details of the patients of *Pandu Roga* are represented in table below (Table 2).

Table 2: Observations related to disease details of *Pandu Roga*

Lakshana (number of patients)	Duration	No of patients (%)
Panduta (35)	1 month	19 (54.30%)
	2 months	14 (40.00%)
Arohanaayasa (34)	1 month	12 (35.40%)
	2 months	11 (32.40%)
Shrama (23)	1 month	8 (34.80%)
	2 months	8 (34.80%)
Bhrama (22)	2 Months	8 (36.40%)
	3 Months	6 (27.30%)
Aruchi (22)	1 Month	10 (45.50%)

	2 Months	7 (31.80%)
Dourbalya (39)	2 Months	13 (33.30%)
	3 Months	8 (20.50%)
Karnakshweda (7)	1 Month	5 (71.40%)
	2 Weeks	2 (28.60%)
Mukhadourgandhata (7)	1 Month	3 (42.90%)
	2 Months	2 (28.60%)

The observations related to the clinical presentation of the patients of IDA are represented in table below (Table 3)

Table 3: Observations related to clinical presentation of the patients of IDA

Presentation (number of patients)	Duration	No of patients (%)
Pallor	Present	36 (90.00%)
	Absent	4 (10.00%)
Periorbital swelling (3)	1 Month	2 (66.70%)
	2 Weeks	1 (33.30%)
Hair fall (39)	2 Months	15 (38.50%)
	4 Months	11 (28.20%)
Body ache (32)	2 Months	14 (43.80%)
	1 Month	8 (25.00%)
History of repeated Illness (16)	2 Months	11 (68.80%)
	1 Month	4 (25.00%)

Diagnostic Criteria

An elaborate proforma incorporating all the points of history taking and physical examinations mentioned in Ayurveda texts as well as in modern sciences was prepared. In this, special provision was made for *Lakshanas* of *Pandu* and objective parameters.

Inclusion Criteria

- Patients presenting with signs and symptoms of *Pandu*
- Blood Hemoglobin level less than 10mg /dl
- Female Patients are considered
- Age group between 12-45years.

Exclusion Criteria

- Blood Hemoglobin level less than 7mg/dl
- Any other type of anemia except Iron Deficiency Anemia
- Iron Deficiency Anemia with any other systemic diseases
- Pregnant women
- Patient with previous history of blood transfusion
- Patient with continuous or inter menstrual bleeding.

Ethics

Ethics clearance was obtained from Institutional Ethics Committee before initiation of the study

Study design

The study was open label, double arm, exploratory, prospective, comparative clinical on 40 patients of *Panduroga* selected using the convenience/ purposive (non-random) sampling technique with pre and posttest design conducted in a tertiary Ayurveda hospital attached to district headquarters in southern India.

Intervention

- **Group A**– 20 patients of *Pandu Roga* will be administered with 25 ml of *Karimbirumbadi Kashayam* with 40ml of luke warm water twice daily before food for 2 months
- **Group B**– 20 patients of *Pandu Roga* will be administered with 25ml of *Vasaguluchyadi Kashayam* with 40ml of luke warm water and 10ml of *Madhu* as *Anupana* twice daily before food for 2 months.

Duration: 2 months

Assessment:

- Pre-test: 1st day
- Post-test: 60th day
- Follow up:30th day

Assessment criteria
Subjective parameters
- *Pandutha*
- *Pindikodveshtana*
- *Gathrashula*
- *Bhrama*
- *Aruchi*
- *Daurbalya*
- *Hathanala*
- *Hathaprabha*
- *Karnakshweda*

Objective Parameters
- Haemoglobin percentage
- Mean cell volume
- MCH
- MCHC
- RBC count

OBSERVATIONS AND RESULTS

In the present study, 46 patients were registered of which 22 in group A and 24 in group B. 20 patients in both groups have completed their course of treatment.

Table 4: Effect of therapy on subjective parameters in group A (*Karimbirumbadi kashayam*)

Parameters	Z value	P value	Significance
Panduta	-3.542	0.000	**S**
Pindikodweshtana	-3.771	0.000	**S**
Gatrashula	-3.494	0.000	**S**
Bhrama	-3.127	0.002	**S**
Aruchi	-2.887	0.004	**S**
Dourbalya	-4.000	0.000	**S**
Hathanala	-1.897	0.058	**N**
Karnakshweda	-1.414	0.157	**N**
Hathaprabha	-3.276	0.001	**S**

In 20 enrolled subjects of group A, significant improvement (P value < 0.05) was noticed in all subjective parameters except *Hathanala* and *Karnakshweda*.

Table 5: Effect of therapy on subjective parameters in group B (*Vasaguluchyadikashayam*)

Parameters	Z value	P value	Significance
Panduta	-1.890	0.000	**S**
Pindikodweshtana	-3.464	0.000	**S**
Gatrashula	-3.873	0.000	**S**
Bhrama	-2.646	0.002	**S**
Aruchi	-2.828	0.004	**S**
Dourbalya	-3.606	0.000	**S**
Hathanala	-1.000	0.317	**N**
Karnakshweda	0.000	1.000	**N**
Hathaprabha	-1.732	0.083	**N**

In 20 enrolled subjects of group B, significant improvement (P value < 0.05) was noticed in all subjective parameters except *Hathanala, Karnakshweda* and *Hathaprabha*.

Table 6: Comparison of subjective parameters after the treatment in between Group A & B

Parameters	Z value	P value	Significance
Panduta	-1.959	0.050	**N**
Pindikodweshtana	-0.431	0.667	**N**
Gatrashula	-3.122	0.002	**S**
Bhrama	-1.221	0.222	**N**
Aruchi	0.000	1.000	**N**
Dourbalya	-1.419	0.156	**N**
Hathanala	-2.082	0.037	**S**
Karnakshweda	-1.749	0.080	**N**
Hathaprabha	-3.628	0.000	**S**

On comparing the subjective parameters in between group A & B, no statistically significant difference was noticed in most of the subjective parameters. Statistically significant difference was noticed in *gatrashula, hathanala* and *hathaprabha*.

Table 7: Effect of therapy on objective parameters in group A (*Karimbirumbadikashayam*)

Parameters	P value	Avg. Improvement	Significance
Hb %	0.000	13.47%	**S**
RBC	0.000	11.95%	**S**
MCV	0.022	0.87%	**S**
MCH	0.003	2.80%	**S**
MCHC	0.124	0.87%	**N**

In 20 enrolled subjects of group A, significant improvement (P value < 0.05) was noticed in all subjective parameters except MCHC.

Table 8: Effect of therapy on objective parameters in group B (*Vasaguluchyadikashayam*)

Parameters	P value	Avg. Improvement	Significance
Hb %	0.000	6.92%	**S**
RBC	0.000	10.06%	**S**
MCV	0.081	0.62%	**N**
MCH	0.001	0.86%	**S**
MCHC	0.004	0.56%	**S**

In 20 enrolled subjects of group B, significant improvement (P value < 0.05) was noticed in all subjective parameters except MCV.

On comparing the average improvement of each parameters between the groups, differences are seen which are statistically not significant.

DISCUSSION

Karimbirumbadi Kashayam

Effect on subjective parameters

- Statistically highly significant results were obtained in subjective parameters like *Pandutha*, *Pindikodveshtana, Gatrashula* and D*aurbalya*.
- Significant results were seen in other parameters like *Bhrama, Hathaprabha, Aruchi* and *Hathanala*

Effect on objective parameters

- Highly significant results were observed with Hb% and RBC
- Significant results were observed with M.C.V and M.C.H

Vasaguluchiadi Kashayam

Effect on subjective parameters

- Highly significant results were observed with *Gatrashula* and D*aurbalya*
- Significant results were observed with *Aruchi* and *Pindikodveshtana*

Effect on objective parameters

- Highly significant results were observed with Hb% and RBC
- Significant results were observed with MCH and MCHC.

Probable Mode of Action

Karimbirumbadi Kashayam is having *Loha Bhasma* and *Mandura Bhasma* which act as iron supplement. *Amla rasa* of *Amalaki* and *Jambeera Swarasa* help in the absorption of iron in the intestine. The properties of other ingredients (*Trikatu, Ajamoda, Punarnava, Ikshu, Pathya, Bala, Chincha Patra, Nisha, Vajralatha, Tripadi*) like D*eepana* and P*achana* act on *Jataragni* by improving the *Agni*, relieving symptoms like *Agni Mandya* and *Aruchi*. By S*roto Shodana* activity they act at *Dhatwagni* level helping in absorption. The *Sroto Shodana* property along with *Varnya*, *Twachya Guna* reduces *Pandutva*.

By correcting *Dhatwagnis* proper *Poshana* and formation of *Dhatus* occurs. This helps in correcting *Arohanayasa*, *Srama*, *Daurbalya* and *OjoKshaya*. The ingredients of *Vasaguluchiadi kashayam* are *Tridosha Samaka*, particularly *Pitta Samaka* property helps in controlling the enzymatic activity in the gut thus improving the iron absorption.

Sitavirya and *Madhura Vipaka* in both formulations help in *Pitta Samana* and does *Tarpana* of *Rasa Dhatu* and helps in controlling *Kesa Patana*, *Bhrama, Karna Kshweda*. *Madhura Vipaka* and *Rasa*

Dhatu Pushti helps in relieving *Vata Prakopa*. *Shareera Vedana* is a *Lakshana* caused by *Vata Prakopa*. Hence with *Vata Prasamana, Sareera Vedana* also reduces.

Use of *Madhu* as *Anupana* with *Vasaguluchiadi Kashayam* further enhances its *Kapha* and *Pittahara* activity by the properties of ingredients (*Vasa, Kalamegha, Nimba, Triphala, Katuki, Guduchi*). The improvement with Hb% and RBC in both groups was observed. This change in the objective parameters gives evidence about the *Raktha Vardhaka* and *Raktha Shodhaka* properties of the drugs present in both the groups.

CONCLUSION

Karimbirumbadi Kashayam showed statistically highly significant result in subjective parameters like *Pandutha, Pindikodveshtana, Gatrashula* and *Daurbalya*. Significant results were seen in other subjective parameters like *Bhrama, Hathaprabha, Aruchi, Hathanala*. Among the objective parameters Hb% and RBC showed statistically highly significant results and significant result were seen in parameter like MCV and MCH.

Vasaguluchyadi kashayam showed statistically highly significant result in subjective parameters like *Gatrashula* and *Daurbalya*. Significant result was obtained in subjective parameters like *Aruchi* and *Pindikodveshtana*. Objective parameters Hb% and RBC showed highly significant results and significant results were seen in MCH and MCHC.

Hence this study shows that both *Karimbirumbadi Kashayam* and *Vasaguluchyadi Kashayam* are effective in relieving the symptoms of *Pandu Roga*. Symptomatic relief was seen in both the group A & B, but there was no statistically significant difference between the groups in relieving these symptoms.

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