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CLINICAL EVALUATION OF LAGHU PANCHAMOOLA KWATHA AS AN ADJUVANT THERAPY IN THE MANAGEMENT OF PANDU ROGA WITH SPECIAL REFERENCE TO IRON DEFICIENCY ANAEMIA

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ABSTRACT

Pandu Roga is among the major debilitating afflictions explained in Ayurveda. *Pitta* predominant in nature, this condition affects the tissue metabolism, bringing about a progressive structural and functional deficiency in all the *Dhatus*. Iron deficiency anaemia is the most common nutritional anaemia. Deficient and inefficient diets, along with stressful life style have made it a major health concern. The objective of the study is to evaluate *Laghu Panchamoola Kwatha* as an adjuvant therapy in the management of *Pandu Roga.* The study was conducted on 40 patients assigned to two groups (A and B). Group A received the primary therapy in the form of *Dhatri Loha* and Group B received *Dhatri Loha* and *Laghu Panchamoola Kwatha* for two months. Statistical analysis revealed that both the interventions were effective in the management of *Pandu Roga*. However the overall improvement was significantly better in Group B, indicating that the combined effect of *Dhatri Loha* and *Laghu Panchamoola Kwatha* was more effective than the individual effect of *Dhatri loha*. Thus the present study gives a positive indication that *Laghu Panchamoola Kwatha* is effective as an adjuvant therapy in the management of *Pandu Roga* w.s.r. to iron deficiency anaemia.

Keywords: *Pandu Roga*; Iron deficiency anaemia; *Laghu panchamoola kwatha*; Adjuvant therapy.

INTRODUCTION

"Ayurveda" the science of life is the most unique amongst the medical systems of the world. The preventive, curative and restorative aspects of Ayurveda have given it a special position in the field of health care. For millennia people have followed the principles of Ayurveda to augment their health and life spans. *Pandu Roga*[1], a disease caused by *Pitta pradhana vatadi doshas* vitiating *Rasadi dhatus*,

thereby bringing about *dhatu shaithilya, bala-varna-snehadi ojo guna kshaya* in the body leading to symptoms like *Nissarata, Alparaktata, Alpameda & Indriya shaithilya*,ultimately resulting in *Varna vikruti* (*Panduta* or Pallor) has been tormenting man from ancient times. *Pandu Roga* literally means a disease condition marked with pallor or paleness or yellowish white discolouration of the body. The symptoms of *Pandu Roga* like, *Daurbalya, Arohanayasa, Agnimandya, Pindikodweshtana* etc. make the patient very feeble and unable to carry out normal duties satisfactorily. In Ayurvedic texts we can find *Pandu* as an independent disease, as a sequel of many other diseases (as *Upadrava* and *Nidanarthakara Roga*) and also as a *Lakshana* of several diseases. Thus being the importance of *Pandu Roga* it is worthwhile to endeavour in understanding this disease and its management in a better way.

Pandu Roga explained in Ayurveda is comparable to Anaemia in modern parlance.

Anaemia[2] is functionally defined as the presence of insufficient red blood cell (RBC) mass to adequately deliver oxygen to the peripheral tissues. According to the World Health Organization (WHO) haemoglobin (Hb) of less than 13g/dL in an adult male, less than 12g/dL in an adult non-pregnant female and less than 11g/dL in a pregnant female should be considered as evidence of anaemia. Nutritional deficiency is the commonest cause for anaemia in India.

As per WHO[3] Iron deficiency anaemia is the most common and widespread nutritional disorder in the world. As well as affecting a large number of children and women in developing countries, it is the only nutrient deficiency which is also significantly prevalent in Industrialized Countries. An estimated 25% of the world's population (about 1.6 billion people) is anaemic, mainly due to iron deficiency, and in resource-poor areas, this is frequently exacerbated by infectious diseases like Malaria, HIV/AIDS, hookworm infestation, tuberculosis etc. In developing countries every second pregnant woman and about 40% of preschool children are estimated to be anaemic. The major health consequences include poor pregnancy outcome, impaired physical and cognitive development and increased risk of morbidity in children and reduced work productivity in adults. Anaemia contributes to 20% of all maternal deaths. Albeit numerous preparations are prescribed for *Pandu* in various Ayurvedic treatises, it is but human nature to endeavour to improve upon the existing solutions. In this regard the present study aims at evaluating, probably for the first time, the adjuvant effect of *Laghu Panchamoola Kwatha* in the management of *Pandu Roga*. *Acharya Charaka*[4] and *Vagbhata*[5] have both prescribed *Laghu Panchamoola shruta jala* for *Paana* and *Ahara nirmana* along with other *Panduhara yogas*. Hence it is imperative that *Laghu Panchamoola* provides additional benefits in the treatment of *Pandu* and thus acts as an adjuvant . In the present study *Dhatri Loha*[6] which has been extensively studied and proved to be efficacious in the treatment of *Pandu Roga* will be given as the primary therapy.For convenience purpose and to ensure uniformity in all patients, '*Laghu Panchamoola Kwatha'* will be used in therapeutic dosages as adjuvant therapy.

MATERIALS AND METHODS

Source of Data: The patients attending the *Kayachikitsa* OPD and IPD of Dhanvantari Ayurveda College and Hospital, Siddapur were screened and 40 patients of *PanduRoga* who fulfilled the below mentioned Inclusion criteria were selected for the study.

Selection Criteria: The patients were selected based on the Inclusion and Exclusion criteria.

Inclusion Criteria:

- Patients with cardinal symptoms of *Pandu* w.s.r Iron deficiency anaemia.
- Patients with Hb % within the range of 7 - 11gm%.
- Patients within the age group of 16 to 60 years.
- Patients of either sex.

Exclusion Criteria

- Patients with history of other systemic diseases like diabetes mellitus and hypertension.
- Patients with history of congenital disorders related with haematopoietic system like sickle cell anaemia, leukaemia, and haemophilia.
- Patients suffering with any infectious diseases like malaria, TB, HIV/AIDS.

- Patients suffering from disorder associated with gastro intestinal bleeding
- Pregnant ladies.

Study Design

Type of Study- The present study is a 'randomized clinical study'.

Research design- 40 diagnosed patients of Pandu, fulfilling the inclusion criteria were taken for study and randomly divided into two groups

GROUP A - 20 patients of *Pandu* were administered *Dhatri Loha*- 2 tablets (500 mg) twice daily, with *Madhu* & *Ghrita* after food for 2 months.

GROUP B - 20 patients of *Pandu* were administered *Laghu Panchamoola Kwatha* 1*pala* (48ml) twice a day before food and *Dhatri Loha* 2 tablets (500 mg) twice daily, with *Madhu* & *Ghrita* after food for 2 months.

Follow-up - Patients were reviewed at the end of 1 month during the course and after the completion of 2 months of treatment in both the groups.

Total Duration of the Study – 2 months.

Intervention

Table 1: Showing Ingredients of *Laghu Panchamoola Kwatha*

Sl No	Name	Botanical Name	Part used	Proportion
1	*Shalaparni*	Desmodium gangeticum	Root	1
2	*Prishnaparni*	Uraria picta	Root	1
3	*Brihati*	Solanum indicum	Root	1
4	*Kantakari*	Solanum xanthocarpum	Root	1
5	*Gokshura*	Tribulis terrestris	Root	1

Drugs 1 to 5 are taken in equal quantity and a coarse powder (*Kwatha Choorna*) is prepared. To one part of *choorna* 16 parts water is added and boiled on medium flame and reduced to 1/4th to prepare concentrated *Kwatha*. 12 ml of concentrated *Kwatha* is to be diluted with three times warm water and taken twice a day, before food.

Table 2: Showing the Ingredients of *Dhatri Loha*

S No	Name of Plant	Botanical Name	Part used	Proportion
1	*Dhatri*	Emblica officinalis	Fruit	4
2	*Loha bhasma*			2
3	*Madhuyasti*	Glycyrrhiza glabra	Root	1
4	*Guduchi*	Tinospora cordifolia	Stem,leaf	*Bhavana*

Drugs 1 to 3 are powdered separately and mixed together and its given *Bhavana* with *Guduchi kwatha* for seven days and then it is taken and dried in the sun. It is then mixed well and made into tablets of 250mg each.

Anupana: *Madhu* & *Ghrita*.

Assessment Criteria: Changes in clinical signs and symptoms of *Pandu Roga* / Iron deficiency anaemia before and after treatment., Hb% before and after treatment., PCV before and after treatment., Total RBC count before and after treatment. Graded Clinical parameters and absolute Blood Parameters were used to assess the response to the treatment. Baseline values and post-intervention values were statistically analysed.

Clinical Parameters: *Pandutha, Dourbalya, Arohanayasa, Shrama, Hritspandana, Bhrama, Akshikoota shotha, Rookshata, Shwasa, Aruchi, Pindikodweshtana, Jwara*

Blood Parameters: Hb%, PCV, RBC count

OBSERVATIONS

20 patients were registered in Group A and 20 patients in Group B. All the patients were thoroughly examined before and after treatment.

The age limit of the subjects in the study was 16 to 60 years. The incidence was highest in the age group 16-30 years (67.5%), females (92.5%), middle class (60%), menstruating females (100%), *Vatapittaja Prakriti* (35%), *Madhyama Ahara Shakti* (85%), *Madhyama Bala* (85%).

All 40 patients (100%) had *Pandutha*; 33 patients (82.5%) had *Daurbalya*; 38 patients (95%) had *Arohanayasa*; 30 patients (75%) had *Shrama*; 21 patients (52.5%) had *Hritspandana*, *Bhrama* and *Akshikoota Shotha*; 34 patients (85%) had *Rukshata*; 9 patients (22.5%) had *Shwasa*; 15 patients (37.5%) had *Aruchi*; 35 patients (87.5%) had *Pindikodweshtana*; 5 patients (12.5%) had *Jwara*.

Table 3: Showing Overall response for the treatment

Group	Response									
	Complete Remission		Marked Improvement		Moderate Improvement		Mild Improvement		No Change	
	No. of Patients	%	No. of Patients	%	No. of Patients	%	No. of Patients	%	No. of Patients	%
Group A	00	00	04	20	08	40	08	40	00	00
Group B	01	05	12	60	07	35	00	00	00	00

RESULTS

Table 4: Showing the Statistical Analysis of Group A and Group B after treatment

Parameters	**Group A**			**Group B**			**t value**	**df**	**p value**	**Remarks**
	N	**MD**	**SD**	**N**	**MD**	**SD**				
Pandutha	20	1.45	0.51	20	2.20	2.80	1.18	38	>0.05	NS
Daurbalya	20	0.9	0.45	20	1.55	1.55	1.80	38	>0.05	NS
Arohanayasa	20	1.10	0.72	20	1.80	1.8	1.61	38	>0.05	NS
Shrama	20	1.15	0.49	20	1.60	1.75	1.11	38	>0.05	NS
Hritspandana	20	0.60	0.75	20	1.20	1.30	1.79	38	>0.05	NS
Bhrama	20	0.80	0.77	20	1.75	1.95	2.03	38	<0.05	SS
AkshikootaShotha	20	0.90	0.55	20	1.15	1.15	0.877	38	>0.05	NS
Rukshata	20	1.65	0.49	20	2.25	2.85	0.928	38	>0.05	NS
Shwasa	20	0.55	0.61	20	1.35	1.50	2.21	38	<0.05	SS
Aruchi	20	0.40	0.50	20	0.70	0.70	1.56	38	>0.05	NS
Pindikodvestan	20	1.30	0.87	20	2.45	2.60	1.88	38	>0.05	NS
Jwara	20	0.15	0.37	20	0.45	0.45	2.30	38	0.0269	SS
Hb	20	1.48	0.53	20	2.85	0.91	5.82	38	<0.001	HS
PCV	20	2.47	3.27	20	5.73	4.57	2.59	38	<0.05	SS
RBC	20	0.64	0.53	20	0.92	0.65	1.49	38	>0.05	NS

*HS – Highly Significant, SS –Statistically Significant, NS – Not Significant

Statistical Interpretation: Based on the results obtained from unpaired t test the overall improvements seen in Group B are more significant than that of Group A.

DISCUSSION

Role of *Laghu Panchamoola Kwatha* in the treatment of *Pandu Roga:* Inspired by *Acharya Charaka*'s statement that '*Laghu Panchamoola shruta jala* is beneficial in *Pandu Roga*'[7] an attempt to evaluate the adjuvant effect of *Laghu Panchamoola Kwatha* in the management of *Pandu Roga* has been carried out in the present study.

Probable mode of action: *Acharya Sushruta*[8] has described *Laghu Panchamoola* as *Pittashamana*, *Vataghna, Brimhana* and *Balavardhana* whereas *Vagbhata*[9] attributes *Madhura Rasa, Madhura Vipaka, Anushna Sheeta guna* and *Sarva Dosha hara* properties. If we analyse the properties of each of the ingredients viz, *Shalaparni, Prishnaparni, Brihati, Kantakari* and *Gokshura*, we will get a better understanding of the action of *Laghu Panchamoola*. ***Rasa-*** 3 out of the 5 drugs i.e. 60% have *Madhura Rasa*, 4 out of the 5 drugs i.e. 80% have *Tikta Rasa* and 2 out of the 5 drugs i.e. 40% have *Katu Rasa*. ***Guna-*** 3 out of the 5 drugs i.e., 60% has *Snigdha Guna*. ***Veerya-*** 4 out of the 5 drugs i.e., 80% has *Ushna Veerya*. ***Vipaka-*** 3 out of the 5 drugs i.e. 60% has *Madhura Vipaka*. ***Doshaghnata-*** 2 out of the 5 i.e. 40% drugs are *Tridosha Shamaka*, 2 out of the 5 i.e. 40% drugs are *Kapha-vata Shamaka* while 1drug i.e. 20% is *Vata-Pitta Shamaka*. Based on the above, it can be asserted that *Laghu Panchamoola* has a *Tridosha Shamana* property in general and a special *Pitta Shamana* property because of *Madura- Tikta Rasa Pradhanata* and *Madhura Vipaka*. Hence it is effective in all varieties of *Pandu Roga* on the basis of *Dosha Pratyanika* action. *Ushna Veerya* acts as *Agni Deepana*, relieves *Sroto Rodha* corrects *Dhatu Poshana Krama* whereby *Snigdha Guna* and *Madhura Vipaka* act as *Brimhana* and *Balya* thereby having specific *Roga Pratyanika* action in *Pandu Roga*. Thus, *Laghu Panchamoola* has both *Dosha Pratyanika* and *Vyadhi Pratyanika* actions in *Pandu Roga.*

CONCLUSION

Pandu Roga is a metabolic disorder caused by the vitiation of all the *doshas*, *Pitta* playing the most important role. Though *Rakta* plays a role in the manifestation of *Pandu Roga* and Anaemia is considered as a disorder of altered blood composition, it is important to note that *Pandu* is a *Rasa Pradoshajanya Vyadhi*. Aggravated *Pitta* vitiates *Rasa Dhatu* and expresses the disease through *Twak* (structural component of *Rasa Dhatu*). *Pandu Roga* may be roughly co-related to Anaemia on the basis of similarities in some aspects. Incidence of Anaemia is more in females due to menstrual problems, pregnancy related complications and stress related factors. People from all economic strata suffer from Anaemia owing to work related stress and improper food habits. Thus Anaemia may be considered in the modern days as a life style disorder. Modern medicine is effective in managing acute cases of Anaemia and cases of deficiency of specific vitamins and minerals, but not so in chronic cases caused by metabolic defects. Ayurveda proves more effective in such cases. The statistical analysis of the results obtained in the present clinical work suggests that the interventions of both Group A and Group B are effective in the management of *Pandu Roga*. But Group B (Combined effect of *Laghu Panchamoola Kwatha* and *Dhatri Loha*) showed significantly better response than Group A (Individual effect of *Dhatri Loha*). The study reiterates the efficacy of *Dhatri Loha* in the management of *Pandu Roga*. The study shows that *Laghu Panchamoola Kwatha* is effective as an adjuvant therapy in the management of *Pandu Roga* with special reference to iron deficiency anaemia.

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