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A Comparative Clinical Study to Evaleuate The Efficacy of Erandbeejadi Khanda & Pippalyadi Gana Kashaya Along With Ruksha Pottali Sweda In The Management of Amavata

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ABSTRACT

Introduction-Amavata is an Ayurvedic disease caused by the accumulation of Ama with vitiated Vata Dosha, presenting with joint pain, stiffness, and swelling. It is comparable to Rheumatoid Arthritis (RA), a chronic autoimmune inflammatory disorder. Conventional treatments provide relief but are associated with adverse effects, creating a need for safer alternatives. **Methods**-A clinical comparative study was conducted to evaluate the efficacy of Erandbeejadi Khanda with Ruksha Pottali Sweda and Pippalayadi Gana Kashaya with Ruksha Pottali Sweda in the management of Amavata. Assessment was based on improvement in pain, swelling, and stiffness. **Results**-Both treatment groups showed significant reduction in joint pain, swelling, and stiffness, indicating improvement in clinical symptoms of Amavata without notable adverse effects. **Discussion**-Ayurvedic management focusing on Deepana, Pachana, Shoolahara, and Shothahara actions addresses the root pathology of Amavata by correcting metabolic imbalance, offering a holistic approach compared to conventional therapy. **Conclusion**-The studied Ayurvedic interventions were effective and safe in the management of Amavata and may improve quality of life in patients with Rheumatoid Arthritis.

KEYWORDS: Amavata,Pippalyadi Gana Kashaya,Erandbeejadi Khanda,Rheumatoid Arthirits,Ruksha Baluka Sweda.

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INTRODUCTION

Amavata is defined as the state in which simultaneous accumulation of *Ama* and vitiation of *Vata Dosha* occurs. *Ama* is a maldigested product, which is not suitable for the body. The place at which this *Ama Dosha* along with aggravated *Vata* localized in the body (as in body tissues or joints) results in the production of Pain, Stiffness, and Swelling at that point.In the 7th century, *Acharya Madhava* emphasized that it is a systemic disorder in which digestive and metabolic mechanisms are involved. In modern science, it's been correlated to Rheumatoid Arthritis. It is a chronic autoimmune inflammatory systemic disease. In this disease, bilateral and peripheral joints are involved symmetrically.Rheumatoid Arthritis (RA) is a chronic inflammatory autoimmune disorder affecting approximately 23 million people worldwide, with a male-to-female ratio of 1:3, and is associated with a reduction in life expectancy by nearly 25%. The exact prevalence of Amavata (RA) in the local population is unclear; however, a significant number of patients from various age groups present with symptoms of Amavata in OPD and IPD settings. Ayurvedic management of Amavata focuses on correcting *Jatharagni* and metabolic dysfunction, thereby addressing the root cause of the disease and providing immunomodulatory effects without significant adverse reactions. In view of changing lifestyles, environmental factors, and the increasing prevalence of Amavata, there is a need to evaluate effective and safe Ayurvedic interventions.Therefore,The study was a single-center, non-randomized, open clinical trial

involving 60 patients with Amavata, divided into two groups. One group received Erandbeejadi Khanda (5 g twice daily) and the other Pippalyadi Gana Kashaya (50 ml twice daily), both administered for 90 days along with modified Ruksha Pottali Sweda. Statistical analysis included Wilcoxon signed-rank test, paired and unpaired t-tests, and Mann–Whitney test. The combined therapies demonstrated beneficial effects in reducing pain, swelling, and stiffness, supporting their role in effective Amavata management.

MATERIAL AND METHOD

Type Of Study:- Prospective,Interventional,Open level clinical,Single arm,Non Randomized**,** Comparative study.

Patient Selection Center:- The patients were selected from the outdoor and indoor department of the Kayachikitsa of "Shri Khudadad Dunga Ji Government Ayurved College Hospital, Raipur (Chhattisgarh)."

For Drug Identification:- The following drugs were purchased from the local market of Raipur market and were authenticated by CSIR-NIScPER, New Delhi (National Institute Of Science Communication & Information Resources).

For Preparation Of Formulation:- Preparation of medicines had Prepared with the collaboration of Department of Rasashastra & Bhaishajya Kalpana of Government Ayurvedic College Raipur, Chhattisgarh. The ingredients of formulation were analysed for physico-chemical testing in the Government Authorized State Drug Testing Laboratory and Research Center (DTL) Raipur C.G./NABL accredited lab.

CTRI Registration:-Clinical trial started with CTRI registration no CTRI/2023/02/049968.

Blinding	Not applied, Open trial
Number of patient	60 patients
Age	18 – 60 years
Duration of treatment	90 days
Expected duration of participant participation (total 3 months active intervention and 2 months follow up)	months

Washout Period :- (if applicable)-Patient were given Deepan, Pachan medicine *Haritaki Churna* for three to seven days.

POSOLOGY :-

Group	Medicine	Route	Form	Dose/ Frequency	Anupana	Time	Duration	During treatment follow-up	Post-trial follow up
A	**Erandbeejadi Khanda**	Oral	Khanda	5 Gram Two times a day	Lukewarm water	Prakbhakta Morning & evening before meal	90 days	15 days	30 days
B	**Pippalyadi Gana Kashaya**	Oral	Kwath (5-15 Gm.)	50 ml two times a day. As patients agnibala.		Morning & evening before meal	90 days	15 days	30 days
A & B Both	**Ruksha Pottali Sweda**	External	Powder (200Gm.)	As required/ 30 minutes		2 to 3 times a day	90 days	15 days	30 days

Adverse Effect:- There are no adverse effect found in our study.

Subjective criteria:-

Severity Pain	Morning stiffness	Swelling	Grade	Score
No pain	No stiffness	No swelling / not making the bony land marks of joints	Zero	0
Pain occasional ,can be managed without drug	Early morning stiffness up to 30 minutes	Just covering the body prominences	I	2
Pain frequent and can be managed with some pain killer	Early morning stiffness more than 30 minutes and less than 45 minutes	Considerably above the land marks may be with positive fluctuation.	II	4

Pain persistent and unmanageable even with drug	Morning stiffness more than 45 minutes	Considerably swelling present along with body promineces.	III	6

Objective Criteria :- RA-Factor, CRP, ESR
Inclusion Criteria :-
1. Patients between the age group of 18- 60 years were taken.
2. Patients having symptoms of Shoola, Shotha & Stabdhata (Pain, Swelling & Stiffness) along with the Shastrokta symptoms.

Exclusions Criteria:-Patients below 18 years and above 60 years of age were not taken, Patients who develop secondary complications of RA e.g. pleuro-pericardial disease. severely damaged joint with bedridden patients,Liver cirrhosis,Liver failure,Ischemic heart disease**,**Chronic renal failure**,**Nephrotic syndrome**,**Hepatocellular or any carcinoma**,** Tuberculosis**,** Ascites**,** Pregnant and lactating mother, Patients who are taken steroids**,** Other joints disorders like Gout, Osteoarthritis,The above-mentioned patient who is suffering from any serious disease were come under the category of exclusion.

Statistical Explanation:-
Clinical:- Subjective Parameter Group A & B - Wilcoxon Rank Sum Test, **Objective Parameter Group A & B -** Paired T test.
Comparative :- Group A & B , Subjective Parameter - Mann Whitney U test, **Objective Parameter-** Independent Sample test.

Medicine preparation
Erandbeejadi Khanda :- *Acharya Yogaratnakar* has described *Erandbeejadi Gutika* in his book. After purifying the castor seed marrow, it was not possible to make *Gutika* due to its *Pichchila Guan*, hence, under the guidance of the teachers, its form was changed and made in Khanda form.

Steps :- *Erandbeej Shodhana,Erandbeej Bharjan with Go-ghrita,Khanda Nirmaan*

Ingredients	**Amount**
Shunthi Churna	10.6
Erandbeej	10.6
Mishri	10.6
Cow ghee	5 kg
Got *Khanda*	**31.2 kg**

***Pippalyadi gana Kashaya* :-** After buying the drugs from the local market of Raipur. All the drugs were cleaned and *Chhaya shushka*. Here are the **individual drug names** used in the formulation:

Pippali,PippaliMula,Chavya,Chitraka,Shunthi,Maricha,Sarshapa,Bharangi,Ajmoda,Murva,Ativisha,Katurohini,Hingu,Nirgundi, Patha,Hastipippali,Jiraka,Mahanimba,Vacha,Vidanga,Ela,Kutaja

A total of **22 herbal ingredients**, each taken in **3 kg**, were mixed together. After machine processing, the combined formulation yielded **64.5 kg of Yavakuta**.

Mode of action
In the initial stage of Amavata, Ama formation (Amotpatti) predominates; therefore, Amapachana drugs were selected for the study. The pharmacodynamic properties of these drugs—Laghu, Tikshna, Ruksha guna; Katu-Tikta rasa; and Ushna veerya—directly counteract the Guru, Snigdha, Pichchila, and Sheeta qualities of Ama. Their antioxidant and free-radical scavenging activity may further contribute to Ama reduction. The Vata-Kapha shamaka action controls the combined aggravation (Yugapata prakopa), while Deepana activity prevents further Ama formation by improving Agni.

In conditions of Srotobhishyanda, the drugs perform Srotoshodhana, relieving symptoms such as Sandhishoola, Shotha, Alasya, and Aruchi through their analgesic (Vedanaprashamana) and anti-inflammatory (Shothahara) effects. Associated symptoms like Vibandha and Anaha are alleviated by Anulomana (purgative action). Since most of the drugs are Vata-Kapha shamaka and Agnivardhaka, they effectively facilitate Samprapti Vighatana by addressing the root causes—Vata, Kapha (Ama), and Mandagni.

Both formulations provide relief in joint pain, swelling, and stiffness, and improve systemic symptoms such as Asyavairasya, Angamarda, Gauravata, and disturbed sleep, likely due to Deepana, Pachana, Anulomana, and Agnivardhaka actions. They also enhance Agnibala (appetite, digestion, and metabolism) and possess Balya and antioxidant properties. Eranda, in particular, exhibits Vata-Kapha shamaka and Amavatahara effects; its ricin is converted to ricinoleic acid, inducing Rechana and promoting Amapachana through its Ushna veerya.

Mode of Action of *Ruksha Baluka Sweda* :-In this study, modified Ruksha Baluka Sweda with an indigenous compound drug was selected as the therapeutic intervention. Swedana promotes joint mobility (Sandhi cheshtakar), Srotoshuddhi, Agnideepana, and Kapha-Vata pacification, while reducing stiffness and pain. Physiologically, it relaxes muscles, improves blood circulation, enhances local metabolism, and facilitates transdermal absorption of Sneha.

The mode of action of Swedana is explained through its key properties. Ushna guna, derived from Agni Mahabhuta, counteracts Sheeta guna, relieves stiffness, and induces activity. Tikshna guna aids in the maturation and elimination of vitiated Doshas and Malas. Ruksha guna, opposite to Snigdha, alleviates Kapha and is beneficial in Samavastha, while Sukshma guna enables penetration through microchannels (Srotas), promoting metabolism and radiance. The thermal effect of Swedana may also produce a hypno-analgesic effect through stimulus diversion. In Amavata, where Sanga-type Srotodusti is present, Swedana facilitates Srotoshuddhi, thereby relieving obstruction and contributing to symptom relief.

OBSERVATION AND RESULT

Effect on cardinal symptoms :-

GROUP A

SYMPTOMS	BEFORE TREATMENT					AFTER TREATMENT					%
	G0	G1	G2	G3	TOTAL	G0	G1	G2	G3	TOTAL	
PAIN	0	2	20	4	54	3	22	1	0	24	55.55
SWELLING	4	12	10	0	32	17	09	0	0	9	71.87
STIFFNESS	0	8	12	6	50	8	14	4	0	22	56

SYMPTOMS	BEFORE TREATMENT					AFTER TREATMENT					%
	G0	G1	G2	G3	TOTAL	G0	G1	G2	G3	TOTAL	
PAIN	0	2	19	6	58	5	19	3	0	25	56.89
SWELLING	2	11	13	1	40	20	7	0	0	7	82.5
STIFFNESS	0	7	11	9	47	10	12	5	0	22	53.19

GROUP B

Pain		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Effect	Result
Group A	BT	2.08	2.00	0.48	0.09	-4.667[b]	0.0000031	55.56	Sig
	AT	0.92	1.00	0.39	0.08				
Group B	BT	2.15	2.00	0.53	0.10	-4.526[b]	0.0000060	56.89	Sig
	AT	0.81	1.00	0.40	0.08				

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

Swelling		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Effect	Result
Group A	BT	1.23	1.00	0.71	0.14	-4.234[b]	0.0000230	71.88	Sig
	AT	0.35	0.00	0.49	0.10				
Group B	BT	1.48	2.00	0.70	0.13	-4.562[b]	0.0000051	82.50	Sig
	AT	0.26	0.00	0.45	0.09				

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

Stiffness		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Effect	Result
Group A	BT	1.92	2.00	0.74	0.15	-4.613[b]	0.0000040	56.00	Sig
	AT	0.85	1.00	0.67	0.13				
Group B	BT	2.07	2.00	0.78	0.15	-4.608[b]	0.0000041	53.19	Sig
	AT	0.70	1.00	0.61	0.12				

Since observations are on ordinal scale (gradations), we have used Wilcoxon Signed Rank Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value	Result
Pain	Group A	26	25.37	659.50	308.500	0.036	Sig
	Group B	27	28.57	771.50			
	Total	53					
Swelling	Group A	26	23.25	604.50	253.500	0.004	Sig
	Group B	27	30.61	826.50			
	Total	53					
Stiffness	Group A	26	23.77	618.00	267.000	0.007	Sig
	Group B	27	30.11	813.00			
	Total	53					

Mann Whitney U Test is carried out for comparison between Group A and Group B. From above table, we can observe that P-Value for almost parameters is less than 0.05. Hence, we can conclude that, there is significant difference in Group A and Group B.

Further, we can observe that, mean rank for Group B is greater than Group A. Hence, we can conclude that, effect observed in Group B is better than Group A.

RA-F		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	48.54	26	44.22	11.06	3.390	0.00404	24.51	Sig
	AT	36.64	26	34.14	8.53				
Group B	BT	47.51	27	46.83	9.18	3.210	0.00363	28.83	Sig
	AT	33.82	27	27.31	5.36				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

CRP		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	29.05	26	51.16	12.06	2.583	0.01605	54.98	Sig
	AT	13.08	26	14.46	3.41				
Group B	BT	18.92	27	13.32	2.61	3.864	0.00070	31.32	Sig
	AT	12.99	27	10.86	2.13				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

ESR		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	44.62	26	27.10	5.91	4.761	0.00012	28.39	Sig
	AT	31.95	26	21.78	4.75				
Group B	BT	46.41	27	29.74	5.72	5.560	0.00001	43.81	Sig
	AT	26.07	27	16.75	3.22				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

BMI		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	24.58	26	4.06	0.80	3.891	0.00066	1.17	Sig
	AT	24.29	26	3.91	0.77				
Group B	BT	24.52	27	6.17	1.19	3.459	0.00188	1.55	Sig
	AT	24.14	27	5.79	1.11				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

BMR		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	1285.82	26	262.48	51.48	-0.846	0.40573	3.31	NS
	AT	1328.39	26	143.65	28.17				
Group B	BT	1298.22	27	147.98	28.48	1.766	0.08911	0.68	NS
	AT	1289.44	27	142.58	27.44				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is greater than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is not significant.

VAS		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	4.73	26	1.12	0.22	11.799	0.00000	37.40	Sig
	AT	2.96	26	1.11	0.22				
Group B	BT	5.04	27	1.09	0.21	13.838	0.00000	36.03	Sig
	AT	3.22	27	1.05	0.20				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

DAS 28		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	4.34	26	0.74	0.15	5.969	0.00001	6.68	Sig
	AT	4.05	26	0.68	0.14				
Group B	BT	4.86	27	0.81	0.16	6.920	0.00000	10.52	Sig
	AT	4.35	27	0.63	0.12				

Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

AAM		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Group A	BT	6.50	26	1.73	0.34	11.024	0.00000	34.32	Sig
	AT	4.27	26	1.31	0.26				
Group B	BT	6.44	27	2.03	0.39	7.378	0.00000	47.13	Sig
	AT	3.41	27	1.34	0.26				

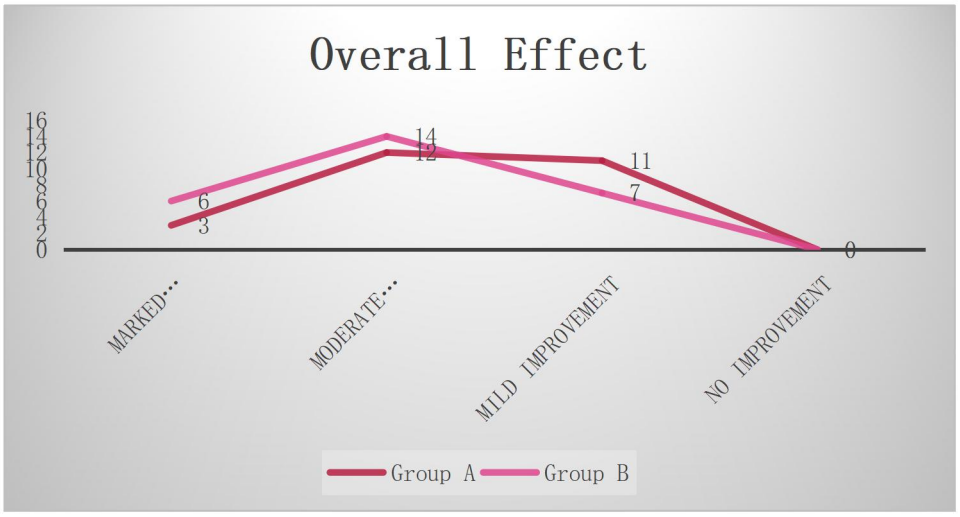
Since observations are quantitative, we have used Paired t-Test to test efficacy in Group A and Group B. From above table, we can observe that, P-Value for Group A and Group B is less than 0.05. Hence, we can conclude that, effect observed in Group A and Group B is significant.

Variable	Group	N	Mean	SD	SE	t-Value	P-Value	Result
RA-F	Group A	26	7.32	12.38	2.43	2.342	0.023	Sig
	Group B	27	13.19	21.50	4.14			
CRP	Group A	26	10.93	38.85	7.62	0.685	0.496	NS
	Group B	27	5.70	7.75	1.49			
ESR	Group A	26	10.23	12.03	2.36	2.302	0.025	Sig
	Group B	27	20.33	19.00	3.66			
BMI	Group A	26	0.29	0.38	0.07	0.690	0.493	NS
	Group B	27	0.38	0.57	0.11			
BMR	Group A	26	-42.56	256.63	50.33	2.224	0.031	Sig
	Group B	27	8.77	25.80	4.97			
VAS	Group A	26	1.77	0.76	0.15	0.229	0.820	NS
	Group B	27	1.81	0.68	0.13			
DAS 28	Group A	26	0.26	0.24	0.05	2.894	0.006	Sig

	Group B	27	0.51	0.38	0.07			
AAM	Group A	26	2.23	1.03	0.20	2.043	0.046	Sig
	Group B	27	3.04	2.14	0.41			

Unpaired t-Test is carried out for comparison between Group A and Group B. From above table, we can observe that P-Value for almost parameters is less than 0.05. Hence, we can conclude that, there is significant difference in Group A and Group B. Further, we can observe that, mean difference for Group B is greater than Group A. Hence, we can conclude that, effect observed in Group B is better than Group

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	3	11.54%	6	22.22%
Moderate Improvement	12	46.15%	14	51.85%
Mild Improvement	11	42.31%	7	25.93%
No Improvement	0	0.00%	0	0.00%
TOTAL	26	100.00%	27	100.00%



DISCUSSION

The clinical trial was conducted in a non randomized sample of 60 patients divided into two subgroups of 30 each among them 53 patients had completed their treatment in Group A -26 and Group B -27 patients. The drug and doses have already been described in the clinical study chapter. The results of each therapy were assessed individually on various parameters, before & after treatment monitored cautiously subjected to biostatistical analysis and finally, inferences were drawn and are here put forward.

Age :- The data revealed a Maximum number of patients registered in the age group of 40-50 years, (30.19%). The occurrence of *Amavata* (Rheumatoid arthiritis) is not mentioned in any particular age group in *Ayurvedic* texts. Still, at this age, due to improper dietary habits, the *Agni* slows which is the main cause of the formation of *Ama dosha*. *Ama dosha* is the main cause of this disease. Due to the slow process of *Ama* formation, it takes time to develop the symptoms of *Amavata* at an early age. So we can say in this stage *Agnimandya* and *Ama dosha* act as a major predisposing factor for this disease process. Modern texts also agree that the disease starts most commonly, between the third to fifth decades of life.

Sex :- In this study sample, it is observed that most of the patients were female (86.79%). The occurrence of *Amavata* (Rheumatoid arthiritis) is not mentioned in any particular gender in *Ayurvedic* texts. This shows similarity to modern prevalence, it is reported that females are three times more prone than males. An obvious explanation for the male/female ratio in RA susceptibility may lie at the level of hormonal differences. Hormone influences on RA susceptibility may be attributed to sex hormones. Estrogen and other sex hormones may regulate the immune response, and fluctuations in hormone levels. Women tend to have stronger and more reactive immune systems, which may make them more likely to develop autoimmune diseases. There are genetic factors that slightly increase the risk of getting RA.

Habitat:- 67.92% of patients in the study were living in Urban areas and 24.53% of patients belonged to Semi-urban areas. This picture of data is not sufficient for comments, because both these observations were imposed by some other factors, that the study was conducted in an urban area like Raipur. Possibly, in urban areas, irregular lifestyles, lack of physical exercise,

mental stress, consumption of fast and junk food, and night-awaking culture can triggered to this disease.

Marital status:- 90.57% of patients in this study were married. In this research work, the age of most of the patients is above 30 years and hence the number of married patients is greater. Some studies introduce the fact that in married life, taking contraceptive pills has an impact both on the onset and course of RA. In *Ayurveda,* the concept of *Vyanjaka Nidana* exists also the concept of *Vipakrishta nidana* resembles to supports that although married life is not responsible directly as a causative factor, the data shows that this may be considered a triggering factor for the development of RA.

Occupation:- Maximum 66.04 % of patients were female house workers. The nature of household work, due to Kshuda *vegadharana*, irregular dietary habits would have probably triggered disorder more in females. There is no direct relation between occupation and Rheumatoid arthritis.

Medication history:- Maximum 50.94 % of patients used any medication like NSAIDs. The rest of the others had no use of any medications. Most of the people took common painkillers due to pain.

Family history:- According to the modern concept of RA, genetic predisposition is one, among the major cause of this disease. However, the data shows that 88.68% of patients gave a negative family history of the disease. So it can be said that Nidana sevana plays an important role in the manifestation of the disease compared to the presence of family history.

Diet:- Dietary habits of patients give a clue about the etiological factors, in the series of 53 patients. Mixed diet habits were found more (77.36%) than veg diet (22.64%) in this study sample. It shows that in comparison to people who are pure vegetarians people of mixed diet habits are more prone to develop *Amavata*. Because the Mixed type of diet is *Guru, Snigdha, Abhisyandi & sometimes viruddha* in nature and it also provokes factors for the vitiation of *Kapha* some items in the mixed diet because of lack of knowledge become *Viruddha Ahara* like milk with meat, milk with fish, milk with yogurt, uses beans with meat, eggs, yogurt, use of canned meat, etc. This comes under one of the *Nidanas* of *Amavata*. Also, some studies suggested that meat and poultry are high in omega-6 fatty acids which usually causes an increase in inflammation.

Appeite:- In the current study sample maximum percentage of patients have poor appetite with 71.70%. *Ama* modulates signaling at the cellular level leading to an incompatible autoimmune response that damages tissue. Symptoms of fatigue, and loss of appetite. In some cases, people with rheumatoid arthritis may experience a loss of appetite and unintentional weight loss. This can be due to the overall systemic inflammation caused by the condition. The body may also divert energy and resources towards fighting the inflammation, leading to decreased appetite and weight loss.

Sleep:- The sleep pattern of patients is a cause of *Vata vriddhi* and the production of *Ama dosha*. Pain is the main symptom of this disease due to pain patients are unable to sleep properly. The disease, *Nidraviparyaya* is a symptom due to this the digestive system is disturbed and *Ama dosha* is produced. Which aggravates the disease. In the series of 53 patients, *Khanda nidra* found more (47.17 %), *Alpa nidra* (20.75%) & *Anidra* (11.32 %). It shows that in comparison to normal sleep patterns people who have disturbed sleep are more prone to develop *Amavata*.

Physical Exercise:- A maximum of 75.47 % of patients underwent less physical exercise and the rest of the others were irregular 16.98 %.

Addiction:- The maximum number of patients were addicted to Tea (83.02%). The habit of tea is not directly related to rheumatoid arthritis, but as it is often seen in tea drinkers, the possibility has been found in some previous research works. In modern science, Smoking is considered to be the cause of rheumatism. Consuming it for a long time is harmful due to which the immunity gets reduced. The remaining 3.77 were not addicted to anything and other patients had tobacco/alcohol/coffee addiction.

Prakriti:- Almost All the patients in the study were of *Dwandaja doshik* constitution. The majority of them were having *Vatakapha prakriti* (45.28%). Thus they are more prone to *Vatakapha* disorder like *Amavata*. The *samprapti* of the disease indicates the involvement of *Ama* (similar quality to *kapha*) and *vata* chiefly. In *amavata*, *Aam* is mainly present in the form of *Dushita Kapha* and obstructs the passage of *Vata*. In the chronic stage of the disease, *Vata* mainly gets affected and makes the disease chronic. 33.26% of *Vatapittaja prakriti*.

***Vikriti*:** The maximum number of patients in the study was *Kapha dosha pradhana vikriti* (52.83). 35.85 % were *Vata dosha pradhana vikriti* and 11.32 were Tridosha vikriti. Due to *nidana sevan* and improper diet patterns, *Agni* becomes imbalanced which is the main reason for the origin of *Amavata*.

***Satva* :-** Observation of these factors shows, that the maximum number of patients were found to be of *Madhyama satva* (66.04%). It reveals that the patients were affected by family responsibilities and work pressure, and there is irregularity in lifestyle. Along with this, mental stress can also contribute to the origin of the disease which has adverse effects on the digestive system have been considered to have influence on *Doshika's* provocation and functioning of *Agni*.

***Sara* :-** Observation of these factors shows, that the maximum patients were found to be of *Madhyama sara*. People with medium essence (*Sara*) have lack of physical strength and disease-causing ability. Due to this there is a higher possibility of

occurrence of disease.

***Samhanana* :-** Observation of these factors shows, that the maximum number of patients were of *Madhyama Samhanana* (65%). *Samhanana* signifies *Bala* of the patients. In people with medium compaction, there is evidence of medium physical strength and medium immunity, but the possibility of disease is hindered by the consumption of strong causative factor (*Nidan*).

Satmya :- By *Satmya,* most of the patients were *Madhyama satmya* 71.70 % which revealed that patients were taking *Ahara* with a combination of two or three *Rasas*. Satmya reflects the immunity of a person. In *Madhyam satmya* the immunity of the patients is slightly weaker than *Pravar satmya*. Which is prone to the progression of disease.

Aharashakti *:- Aharashakti* is calculated by *Abhyavaharana & Jaranashakti*. The study sample showed the maximum number of patients had *Avara Abhyavaharana shakti* (64.15%), and no patients had shown *Pravara Abhyavaharana shakti*. Many of the patients had shown *Avara jarana shakti* also due to *Agnimandya* probably. From this, it can be said that in patients with *Agnimandya*, even after an adequate diet is available, the condition of *Agni vaishmaya* is found, which leads to the development of *Aam*, which is the main causative factor of this disease. It can be concluded that *Agnimandya* directly affects the *Aharashakti* of the patient.

Vyayama shakti :- *Vyayam shakti* is the power to carry out physical work. In the present study sample, 77.36 % of patients were *Avar vyayam shakti*. This shows the incapability of the patient to carry out the physical work due to pain and stiffness.

Vaya :- All the patients were *Madhyama vaya*.

Chronicity:- Maximum patients in this study showed chronicity. The Established RA- Symptoms that last more than six months was 45.28 % which is the maximum and for more than 5 years people 37.7%. it proved that RA is a chronic autoimmune disorder but also affects acute conditions.

***Agni* :** The incidence of *Mandagni (*54.71%) was highest among the patients of this series indicating the etiological importance of *Mandagni* involvement in this disease. 43.39 % of patients were found with *Vishamagni* which shows the *Vata dosha* predominance. which proves the involvement of *Prakupita vata* in the disease process.

Joint involvement:- In above data revealed that the maximum percentage of joint involvements is knee (96 %) and wrist joint (90.5%). The joint involvement starts with small joints of the hand especially MCP (83 %) and PIP joint (73.5 %), Wrist joint, and Knee joints are prone to be affected in this disease. The data showed a very low involvement of MTP joints, which is contradictory to the textual reference. (80-95% effects).

Rheumatoid factor:-The presence of Rheumatoid factor does not establish the diagnosis of RA, but it can be of prognostic significance because patients with high titers tend to have a more severe and progressive disease with extra-articular manifestation. In this series, 78.84% of patients were seropositive, while 21.15% of patients were seronegative for RA. Factor.

ACR criteria:- The American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) established the 2010 classification criteria for rheumatoid arthritis (RA). In the present data, the percentage of diagnosed patients with RA is 79.24 %, and 20.75 % of patients are not clinically diagnosed with RA with ACR criteria but have symptoms of RA.

Effect on Cardinal Symptoms:-

***Sandhishoola* (Pain) :-** 55.56% relief was observed in *Sandhishoola* among the patients of Group A . 56.89% relief was found among the patients of Group B. The improvement was statistically significant in all the two groups. The p-value of Group A is 0.0000031 and Group B is 0.0000060. Group B had better relief than the other group. Pain is the result of Vata vitiation. This significant relief in Group B may be due to the *Amapachan, Vatahara (Anilahanti),* and *Shoolahara* properties of *Pipplyadi gana kashya* by its *Ushna Virya* and others. It can enter even *Sukshma Srotasa* and helps remove *Ama dosha* from *Srotasa* and clear them for the smooth functioning of *Vata*. So, *Srotorodhajanita Vataprakopa* is pacified.

Sandhishotha (Swelling):- 71.88 % relief was observed in *Sandhishotha* among the patients of Group A.82.50% relief was found among the patients of Group B.

The p-value of Group A is 0.0000230 and Group B is 0.0000051. The improvement was statistically significant in all the two groups. Group B had better relief than the other group. The improvement in Joint swelling may be justified based on the *Amapachana guna* and *Shothahara* properties of drugs and also by the combined effect of *Deepana-Pachana guna*, which can digest the *Ama* that was accumulated in *Sandhis*, thus causing a reduction in *Shotha*.

***Sandhigraha* (Stiffness):-**

56.00% relief was observed in Sandhigraha among the patients of Group A.

53.19 % relief was found among the patients of Group B. The p-value of Group A is 0.0000040 and Group B is 0.0000041. The improvement was statistically significant in all the two groups. Group B had better relief than the other group.

Effect of therapy on Biochemical Markers :-

RA-Factor :- 24.51 % changes were observed in RA-Factor among the patients of Group A and 28.83 % changes were observed in Group B. The p-value of group A is 0.00404 and group B is 0.00363.

The improvement was statistically significant in all the two groups. Group B had better changes than the other group.

CRP :- 54.98 % changes were observed in RA-Factor among the patients of Group A and 31.32 % changes were observed in RA-Factor among the patients of Group B. The p value of Group A is 0.01605 and Group B is 0.00070. The improvement was statistically significant in all the two groups. Group B had better changes than the other group.

ESR :- 28.39 % changes were observed in RA-Factor among the patients of Group A and 43.81 % changes were observed in RA-Factor among the patients of Group B. The p value of Group A is 0.00012 and Group B is 0.00001. The improvement was statistically significant in all the two groups. Group B had better changes than the other group.

VAS Scale :- 37.40 % changes were observed in RA-Factor among the patients of Group A and 36.03 % changes were observed in RA-Factor among the patients of Group B. The p value of group a is 0.00000 and group b is 0.00000. The improvement was statistically significant in all the two groups. Group A had better changes than Group B.

DAS 28 Criteria :- 6.68 % changes were observed in RA-Factor among the patients of Group A and 10.52 % changes were observed in RA-Factor among the patients of Group B. The p value of group a is 0.00001 and group b is 0.00000. The mean reduction in the DAS-28 severity score was statistically significant in groups A & B. But the difference of means was greater in Group B.

***Aam Pariksha* :-** 34.32 % changes were observed in RA-Factor among the patients of Group A and 47.13 % changes were observed in RA-Factor among the patients of Group B. The p value of Group A is 0.00000 and Group B is 0.00000. The improvement was statistically significant in all the two groups. Group B had better changes than the other group.

Note :-

Comparison of overall all the symptoms statistically The RA factor, ESR, BMR, DAS 28, and *Aam pariksha* are significant and CRP, BMI, and VAS scale are not significant. The overall effect of the study was marked improvement in Group A was 11.54%, moderate improvement was 46.15%, mild improvement was 42.31 % and no improvement was 0 %. The overall effect of the study was marked improvement in Group B was 22.22%, moderate improvement was 51.85%, mild improvement was 25.93 % and no improvement was 0 %.

Overall effect:-The selected Ayurvedic drugs for the management of **Amavata (Rheumatoid Arthritis)** demonstrated significant therapeutic efficacy. Their properties—**Ushna, Teekshna, Amapachaka, Shothahara, and Kapha-Vata Shamaka**—proved effective in breaking the disease pathogenesis. The study showed that **Pippalyadi Gana Kashaya combined with Ruksha Baluka Pottali Sweda** produced better clinical outcomes than **Erandbeejadi Khanda**, particularly in reducing pain, swelling, stiffness, and biochemical markers, while improving **Sharir Bala**.

Amavata is influenced by multiple demographic and lifestyle factors and primarily originates from Agnimandya, leading to Ama formation, Srotorodha, and Vata vitiation. Kashaya formulations play a crucial role in correcting Agni through Deepana, Pachana, Amapachana, Srotoshodhana, and Vata-Kapha pacification, thereby interrupting disease progression (Samprapti Vighatana). The ingredients of both formulations possess similar properties, including Ushna Veerya, Katu-Tikta Rasa, and Vatahara actions, contributing to Ama resolution and symptom relief.

The use of Ruksha Baluka Pottali Sweda as external therapy enhanced localized Ama pachana and relieved joint pain and stiffness. Overall, the findings confirm the clinical and biochemical effectiveness of the formulations, with Group B (Pippalyadi Gana Kashaya) showing superior relief due to its combined Amapachana, Srotoshodhaka, Shoolahara, and Vatahara actions, making it particularly effective in Kapha-Vata predominant Amavata.

CONCLUSION

At the end of the study following conclusions can be drawn based on observations, achieved results, and discussion.

- *Mandagni* produces the *Ama* which disturbs the normal state of bodily elements (*Dosha, Dushya,* etc). All 5 types of *Vata* play a major role in the disease process.
- Both the groups proved their efficacy in reducing the cardinal signs and symptoms, but the B-group showed better results than the A-group which was normal.
- The features of *Amavata, Sandhiraga, and bhrama* are not found in a single number of patients of both groups. One of the symptom *Kandu* is present in one patient.
- Both the Medicines show marked improvement on Haematological values or Biochemical values.
- *Erandbeejadi Khanda* proved its efficacy on *Vata and Kapha dosha*, similarly, *Pippalyadai Gana Kashaya* was found more relatively effective on Ama Dosha & Vata Dosha both.
- Regarding the *Nidana sevana* it is found that *Guru, Abhishyandi, Ahara, Vishamashana, Diva swapna, Nischestata*, *Chinta, Shoka* are the most etiological aggravative factors of the disease *Amavata.*
- Finally it can be concluded that the Drug taken for the study was found very effective in alleviating the symptoms of *Amavata* and also restricting the further disease progress when used after proper *matra*.

- *Anupana* helps the drug to act in its proper way. It adds synergetic results to the *Aushadha guna*. So in the trial drug, *Koshna jala* as *Anupana* was found very effective, as best *Ama pachaka*. Here the *Anupana* adds the extra result with the trial drug.

This work was done by keeping in view all the caution. Despite that, there may be the chance of bios in research and also in the interpretation of concepts in an appropriate way as the study sample contains a very small no. of patients. It may be hoped that the reader of this dissertation would gain some additional aspects of knowledge giving up the errors/mistakes peeping in this dissertation.

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