

Exploring the Role of Herbo-mineral Combinations for the Management of Hypothyroidism

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ABSTRACT

Background: Hypothyroidism, the second most common endocrine disorder after diabetes, significantly reduces quality of life (QoL). Women are more commonly affected (7.5%) than men (2.8%). In Ayurveda, hypothyroidism is associated with *Dhatwagni mandya*, especially *Medodhatwagni mandya*, which leads to decreased hormone production. *Jalakumbhi bhasma* is highly regarded in Ayurvedic texts for its effectiveness against *Galaganda* (goitre-related hypothyroidism).

Materials and Methods: The study included 40 individuals with primary hypothyroidism enrolled at Patanjali Wellness in Haridwar. Participants, aged 18-60, were divided into two groups of 20 based on disease symptoms. Group A received *Jalakumbhi bhasma* with *ushnodaka* (hot water) as an *anupana* (vehicle), while Group B received a combination of *Jalakumbhi bhasma*, *Yava kshara*, and *Pippali churna* with *Shigrupatra kwath* (moringa leaf decoction) as an *anupana*. Pre- and post-treatment data were analyzed using an unpaired t-test.

Results: There were significant improvements ($p < 0.05$) observed in the symptoms of hypothyroidism in both groups. The Wilcoxon signed-rank test and Mann Whitney-U test showed a significant reduction in TSH levels, with Group B showing the most improvement, followed by Group A. Both treatments were effective in managing hypothyroidism.

Discussion: *Jalakumbhi bhasma* alone was beneficial for treating hypothyroidism, but its effectiveness was significantly enhanced when combined with *Yava kshara*, *Pippali churna*, and *Shigrupatra kwath*. This combination provided a synergistic effect, improving the management of *Medodhatwagni mandya* (primary hypothyroidism).

Keywords: *Jalakumbhi bhasma*; *Yava kshara*; *Pippali churna*; *Shigrupatra kwath*; *Medodhatwagni mandya*; Hypothyroidism.

INTRODUCTION

The thyroid gland is one of the most essential organs in the endocrine system. It governs practically all body functions, including metabolic, respiratory, cardiovascular, digestive, neurological, and reproductive activities, either directly or

indirectly [1]. Hormones play a major role in maintaining equilibrium in the human body, and even a small departure from the norm can result in substantial systemic dysfunction and the development of various illnesses [2]. Thyroid disorders include thyroid nodules, hypothyroidism,

hyperthyroidism, goiter, thyroiditis, and thyroid cancer [3]. Among these, hypothyroidism is particularly significant. It occurs when the thyroid fails to generate and release sufficient thyroid hormone into the body, leading to systemic dysfunction. Hypothyroidism focuses on anatomical and functional problems that hinder the body from creating adequate thyroid hormones. Hypothyroidism is one of the most common endocrine disorders, second only to diabetes. It is especially prevalent among women, being six times more common in females than in males. This condition is increasingly frequent worldwide, often attributed to stress caused by poor diet and lifestyle [4]. In Ayurveda, the *pitta-dosha* regulates hormones and metabolism, with the Ayurvedic concept of Agni, or digestive fire, being interchangeable with the thyroid's involvement in metabolism. Lifestyle is seen as a key factor in the emergence of disease [5, 6]. While hypothyroidism is not specifically referenced in ancient Ayurvedic texts, the literature provides enough information to relate it to *Medodhatwagni mandya*, a form of *Dhatwagni mandya*. This association suggests that the disorder involves a blockage in the body's ability to receive appropriate nutrients, resulting in incorrect hormone production and function [7-9].

Kshara are alkaline solutions or crystals formed from dried plant drug ashes, used in both external (*Pratisarniya kshara*) and internal (*Paneeya kshara*) administration. They are characterized by their subtle nature and *ushna-tikshna gunatmak* properties, making them crucial for overcoming *agni mandya* and *avarana* observed in hypothyroidism [10]. *Kshara* primarily targets the *kapha dosha* [11]. Among the various treatment options, oral administration of *Jalakumbhi kshara* has emerged as a medicine of interest for hypothyroidism. *Jalakumbhi* (*Variparni* or

Pistia stratiotes) is an aquatic stemless plant known for its *tridosh nashak* properties [12]. This traditional approach has shown promise in managing hypothyroidism, particularly when associated with goiter-related hypothyroidism (*galaganda*) [13, 14]. The combination of *Jalakumbhi kshara* with *Yava kshara* and *Pippali churna* is highly effective in managing hypothyroidism [15]. This classical medicine approach aims to leverage the synergistic effects of these components to treat the disease effectively. The thyroid gland plays a crucial role in regulating numerous bodily functions. Hypothyroidism, a common endocrine disorder, can significantly impact overall health. Ayurvedic treatments, particularly those involving *kshara* and traditional combinations, offer promising potential for managing hypothyroidism. This study aims to establish a detailed understanding of how classical Ayurvedic medicine can be effectively utilized to manage hypothyroidism.

MATERIALS AND METHODS

Subjects and study design

A clinical trial was conducted at the Department of Kayachikitsa, Patanjali Bhartiya Ayurvedigyan Evam Anusandhana Sansthan, Haridwar, focusing on 40 individuals diagnosed with primary hypothyroidism. Participants, aged 18 to 60 years, were selected randomly from the OPD/IPD based on blood levels of TSH, T3, and T4, with no demographic restrictions. They were registered using a comprehensive Performa developed from Ayurvedic texts and related studies, and clinical aspects were assessed and scored according to predefined criteria (Table 1). The trial adhered to CONSORT guidelines, as depicted in a flowchart (Figure 1), outlining the structured approach to investigation and reporting [16].

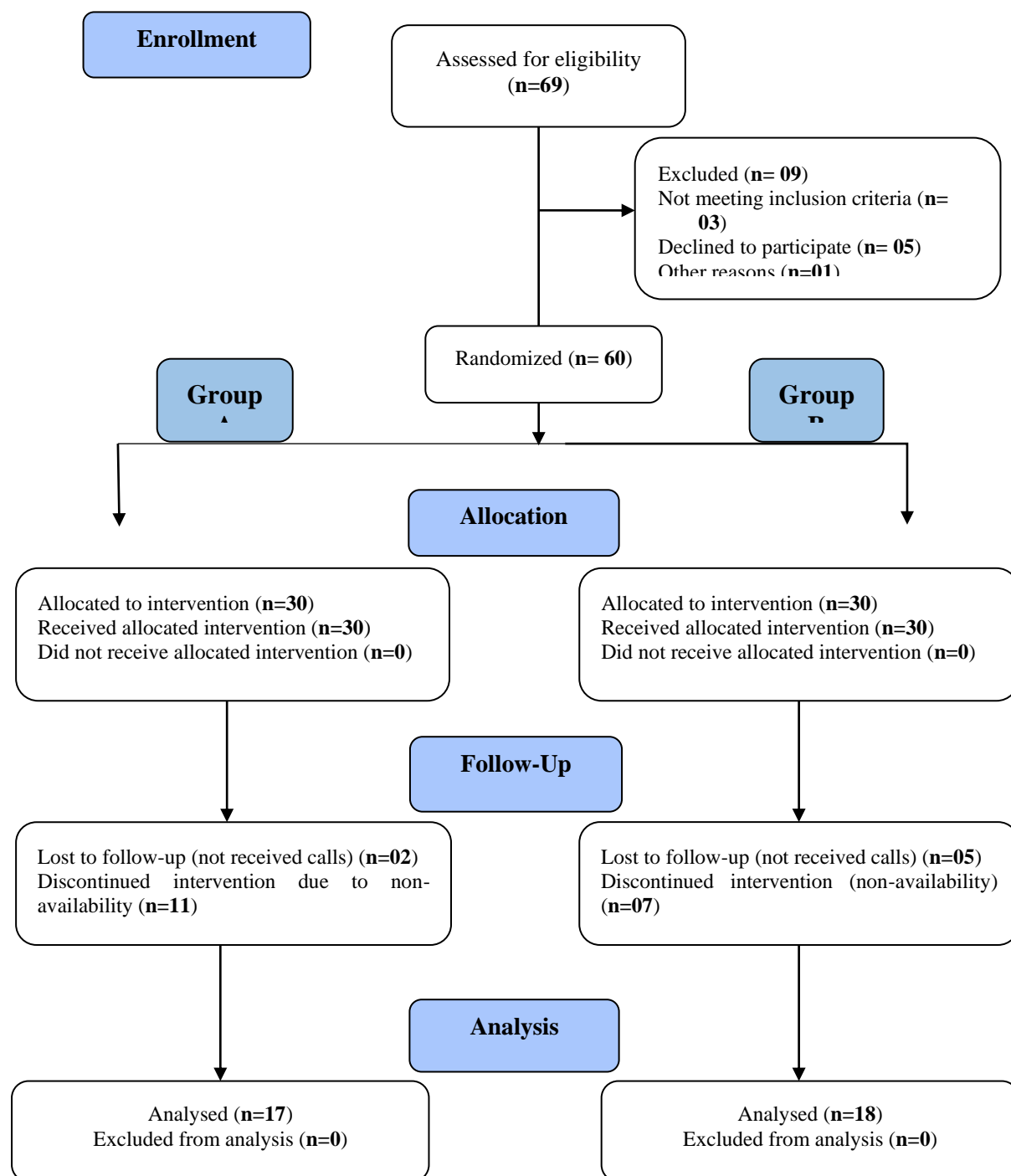


Fig. 1 CONSORT flow chart for the study

Table 1. A schematic study design for the trial.

Study Design Details	Specifications
Sample Selection	Randomized sampling
Type of Study	Open-label clinical study
Total Number of Patients Completing Trial	35
Groups	2
Group A	1 gm Jalakumbhi bhasma
Group B	1 gm Jalakumbhi bhasma + 500 mg Yava kshara + 500 mg Pippali churna
Study Level	Outpatient Department (O.P.D)
Study Period	18 months

Follow-Up Period	Monthly
Number of Follow-Ups	3
Assessment	Before and after treatment

* Assessment was conducted pre- and post-treatment, delineating the groups, treatments administered, study variables, and assessment criteria.

Ethical considerations

The study was approved by the Institutional Ethical Committee (PAC/DOPGS/55), and all patients were treated in accordance with the principles outlined in the Declaration of Helsinki. Before data collection commenced, participants provided written informed consent.

Drug intervention

The drug *Jalakumbhi Bhasma* was developed by the Department of Rasa Shastra at Patanjali Ayurvedic College. *Panchanga* was sourced from Patanjali Yoga Bhawan in Haridwar, dried, and processed using *kshara vidhi*. *Yavakshara*, a traditional formulation, was obtained from Baidyanath Pharmacy and directly administered. *Pippali Churna* from Patanjali Divya Pharmacy was employed in the study [17]. *Shigru Patra*, collected, dried, and packaged, was distributed to patients for

preparing and consuming a *kwath* (herbal decoction) [18].

The group-based drug administration consists:

Group A:

The patients were administered a capsule containing 1 gm of *Jalakumbhi bhasma* with warm water twice daily for a duration of three months.

Group B:

A capsule containing 1 gm of *Jalakumbhi bhasma*, 500 mg of *Yava kshara*, and 500 mg of *Pippali churna*, accompanied by *Shigru patra kwath* (20 ml), was administered twice daily for a duration of three months.

Drug Schedule

The summary of the protocol and drug administration are illustrated in Table 2.

Table 2. Various drug administration during the trial.

Groups	Medicine	Form	Administration	Dose	Anupana	Timing
A	<i>Jalakumbhi bhasma</i>	Powdered	Oral	1 gm	<i>Ushnodaka</i> (warm water)	After meals (morning and evening)
B	<i>Jalakumbhi bhasma</i> <i>Yava kshara</i> + <i>Pippali churna</i>	Powdered	Oral	1 gm 1 gm (500 mg+500 mg)	<i>Shigru patra kwath</i> (<i>Moringa oleifera</i> leaf decoction)	After meals (morning and evening)

The details of both Group A and Group B, including the medicine, form, administration method, dose, *anupana* (substance used to take the medicine with), and timing of

administration, as summarized in Table 2. The inclusion and exclusion and diagnostic criteria were laid as follows in Table 3.

Table 3. The inclusion, exclusion and diagnostic criteria adopted during the trial

Inclusion criteria
• Patients were diagnosed on the basis of serum TSH, T3, & T4 levels.
• TSH: >4.5 to <30 mIU/ml
• T3: ≤ their respective normal range (4.5–12.5 µg/dl)
• T4: ≤ their respective normal range (80–220 µg/dl)
• Patients within the age group of 18–60 years.
• Fresh and treated case were incorporated.
• Patients with issues like weight gain and unable to lose weight.

<ul style="list-style-type: none"> Patients suffering from oligo-menorrhea/ menorrhagia.
Exclusion criteria
<ul style="list-style-type: none"> Patients who are <18 and >60 years of age. Pregnant and lactating women. Patients with severe complications such as CAD, CHF, CRF and MI. Patients suffering from tuberculosis, malignancy, uncontrolled diabetes, hypertension, or any congenital abnormality. During the trial, patients were allowed to withdraw at any moment if they were dealing with personal issues, inter-current illness, symptom exacerbation, leaving against medical recommendation, or other challenges.
Diagnostic Criteria and Investigations
The diagnostic criteria were based on classical symptoms and investigatory reports of hypothyroidism, and the evaluation was performed using a score chart.
TSH, T3, and T4 levels were measured in blood samples to determine thyroid function.

Assessment criteria

The evaluation relied on both subjective and objective criteria, encompassing scores obtained before and after treatment (Annexure 1).

Overall effect of the therapy

The scores (%) of patients' symptoms before therapy (BT) and after treatment (AT) were summed, and the overall percentage improvement of each patient was calculated using the formula:

$$\text{Score (\%)} = (\text{Total BT} - \text{Total AT} / \text{total BT}) \times 100$$

The results were categorized according to the following grades:

Response Type	Percentage Range
Excellent response	>75% ≤ 100%
Marked positive response	>50% ≤ 75%
Moderate positive response	>25% ≤ 50%
Mild positive response	>25%
No change	0%

This table categorizes responses based on the percentage range of change or impact observed.

STATISTICAL ANALYSIS

The null and alternate hypotheses related to the efficacy of *Jalakumbhi bhasma* and its combined formulation in the treatment of hypothyroidism, as described below:

Hypothesis	Statement
Null Hypothesis; H₀, μ₁=μ₂	<ul style="list-style-type: none"> Insignificant effect of <i>Jalakumbhi bhasma</i> in hypothyroidism. The combined formulation of <i>Jalakumbhi bhasma</i>, <i>Yavakshara</i>, <i>Pippali churna</i>, and <i>Shigru patra kwath</i> as <i>Anupana</i> had an insignificant effect on hypothyroidism. There was no difference in the efficacy of <i>Jalakumbhi bhasma</i> as a single drug vs. a combined formulation of <i>Jalakumbhi bhasma</i> with <i>Yavakshara</i>, <i>Pippali churna</i>, and <i>Shigru patra kwath</i> as <i>Anupana</i> in counteracting hypothyroidism.
Alternate Hypothesis; H₁, μ₁≠μ₂	<ul style="list-style-type: none"> Significant effect of <i>Jalakumbhi bhasma</i> in hypothyroidism. The combined formulation of <i>Jalakumbhi bhasma</i>, <i>Yavakshara</i>, <i>Pippali churna</i>, and <i>Shigru patra kwath</i> as <i>Anupana</i> has a significant effect on hypothyroidism. Difference in the efficacy of <i>Jalakumbhi bhasma</i> as a single drug vs. a combined formulation of <i>Jalakumbhi bhasma</i> with <i>Yavakshara</i>, <i>Pippali churna</i>, and <i>Shigru patra kwath</i> as <i>Anupana</i> in treating hypothyroidism.

where,
μ₁= *Jalakumbhi bhasma*, *Yava kshara*, *Pippali churna* with *anupana* of *Shigru*

patra kwath, μ₂= *Jalakumbhi bhasma* with *anupana* of *ushnodaka*

This study was an open-label randomized clinical trial. Detailed analysis of the

findings was conducted using rigorous statistical tests, employing tools including GraphPad PRISM v8.0 and the SPSS program.

Study bias and conflicting factors

Bias refers to systematic inaccuracies or deviations from truth. Inaccurate laboratory reports due to default lab settings, overstatement of patient symptoms resulting in unreliable data, non-adherence to prescribed regimens and medications, and delayed intake of scheduled drugs all influence the study outcomes [19].

RESULTS

A total 40 patients were recruited for the study and sorted into two groups of 20 individuals each, based on meeting specific inclusion and exclusion criteria. Diagnosis relied on both subjective symptoms and objective assessments, including various signs of hypothyroidism and thyroid profile tests. The participant demographics revealed a distribution of 30% male and 70% female. Initially, the study began with 40 patients, but five withdrew during the course, resulting in a retention rate of 87.5%. These parameters were evaluated both before and after the therapy. Table 4 provides a concise summary of the demographic and clinical characteristics of the enrolled patients according to the predefined criteria.

Table 4. A succinct overview of the study participants' medical histories.

Category	Total	Males	Females	Percentage (%)
Total patients at the start of trial	40	12	28	Males=30% Females=70%
Patients that completed the trial	35	11	24	Total=87.5% Males=31% Females=69%
LAMA/Drop-outs	5	1	4	Total=12.5% Males=20% Females=80%

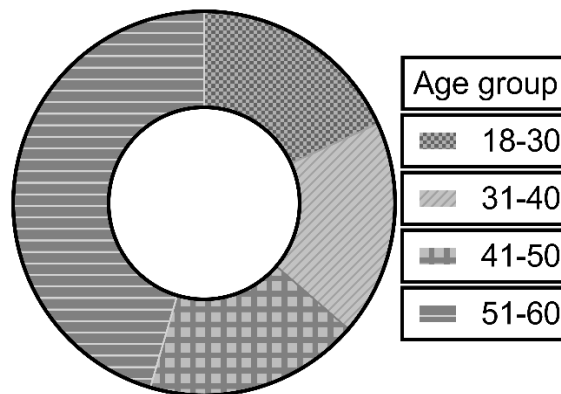


Fig. 2 Demographic profile of patients involved in study

The demographic analysis indicates that the majority of patients, specifically 14 individuals, fall within the age bracket of 51-60 years. Following this group, there are 11 patients (28%) aged 41-50 years, 8

patients (20%) aged 18-30 years, and 7 patients (17%) aged 31-40 years. This distribution highlights a clear trend where the incidence of hypothyroidism increases with age, as illustrated in Figure 2.

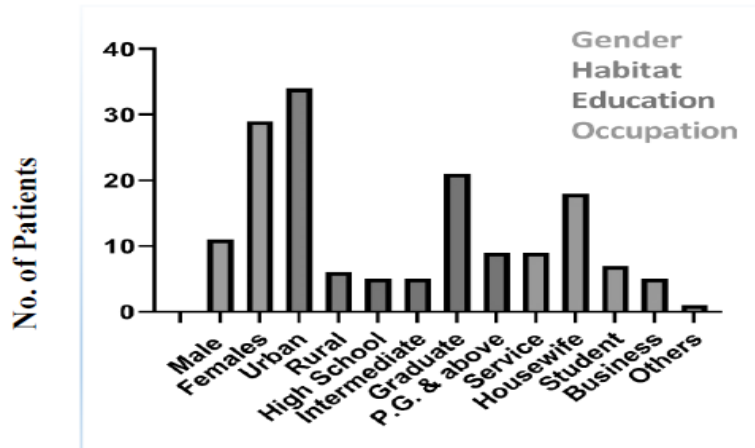


Fig. 3 Distribution of participants on the basis of gender, habitat, educational and occupational status.

Among the total patient cohort of 40 individuals, hypothyroidism was predominantly observed in females, accounting for 29 cases (73%), compared to males with 11 cases (27%), indicating a higher prevalence among women. Urban areas showed a higher incidence with 34 patients (85%) compared to rural areas with 6 patients (15%). Regarding educational status, graduates comprised the largest group with 21 patients (53%), followed by

postgraduates with 9 patients (23%), while higher school and intermediate graduates each constituted 5 patients (12%). In terms of occupation, housewives recorded the highest incidence at 18 patients (45%), followed by individuals in the service sector with 9 patients (22%), students with 7 patients (17%), business owners with 5 patients (13%), and others with 1 patient (3%), as shown in Figure 3 & 4.

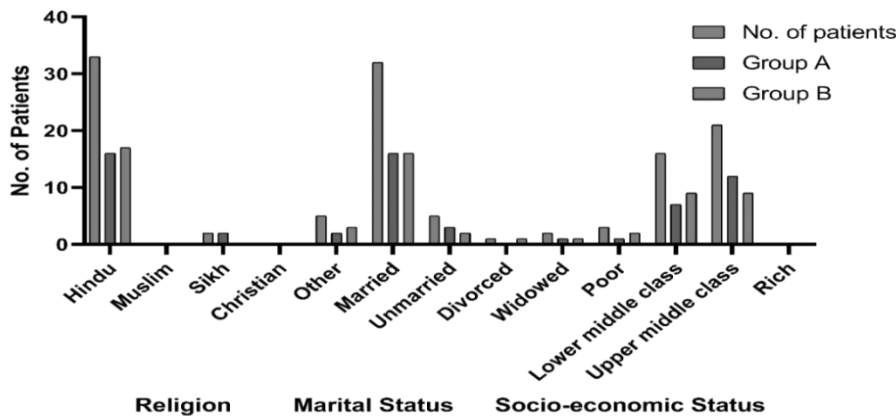


Fig. 4 Socio-economic, religious and relationship status of participants involved in study

The Wilcoxon Signed Rank test was utilized to assess the efficacy of treatments in Group A, given the ordinal nature of symptomatic relief gradations. A significant effect ($p < 0.05$) was observed, indicating treatment effectiveness. Similarly, Group B treatment also yielded significant result (Table 5), affirming its efficacy.

The Mann-Whitney U test was used to compare the treatment effects between two

groups, Group A and Group B, for hypothyroidism. The analysis revealed a significant difference, with Group B having a higher mean rank than Group A. As a result, it was concluded that the treatment received by Group B had a more favourable effect on hypothyroidism compared to Group A (Table 6).

Table 5. Symptomatic changes in patients from Group A and Group B before and after treatment.

Symptoms		Mean		Wilcoxon test	p value	% effect	Significance
		Before treatment	After treatment				
Puffiness	Group A	1.18±0.95	0.41±0.62	-3.357	0.000789	65	***
	Group B	1.89±0.9	0.28±0.46	-3.695	0.00022	85.29	***
Dry and coarse skin	Group A	1.94±0.97	1±0.94	-3.557	0.000375	48.48	***
	Group B	2±0.84	0.56±0.37	-3.714	0.000204	72.22	***
Cold Intolerance	Group A	1.53±1.07	0.76±0.45	-3.357	0.000789	50	***
	Group B	1.56±1.1	0.22±0.13	-3.355	0.000794	85.71	***
Hoarseness of Voice	Group A	0.65±0.79	0.29±0.27	-2.449	0.014306	54.55	*
	Group B	1.11±0.96	0.22±0.08	-3.017	0.002551	80	**
Hair Fall	Group A	1.59±1	0.59±0.62	-3.494	0.000476	62.96	***
	Group B	1.67±1.03	0.44±0.31	-3.508	0.000451	73.33	***
Fatigue	Group A	1.82±0.81	0.82±0.64	-3.69	0.000224	54.84	***
	Group B	1.94±1.21	0.61±0.48	-3.487	0.000488	68.57	***
Breathlessness	Group A	1.94±0.9	1±0.87	-3.557	0.000375	48.48	***
	Group B	1.61±1.09	0.5±0.32	-3.272	0.001068	68.97	**
Oedema	Group A	0.71±0.77	0.2±0.44	-2.53	0.011412	66.67	*
	Group B	1.33±0.97	0.39±0.21	-3.314	0.00092	70.83	***
Weakness	Group A	1.41±0.71	0.35±0.49	-3.819	0.000134	75	***
	Group B	0.83±0.71	0.11±0.02	-3.127	0.001766	86.67	**
Lethargy	Group A	1.59±0.62	0.65±0.49	-3.771	0.000162	59.26	***
	Group B	1.22±0.73	0.44±0.51	-3.276	0.001054	63.64	**
Muscle Ache	Group A	0.65±0.79	0.29±0.47	-2.449	0.014306	54.55	*
	Group B	0.56±0.7	0.06±0.04	-2.714	0.006656	90	***
Anorexia	Group A	0.88±0.86	0.41±0.62	-2.828	0.004678	53.33	**
	Group B	0.83±0.62	0.06±0.04	-2.889	0.003868	93.33	**
Excessive sleep	Group A	1±0.94	0.41±0.62	-3.162	0.001565	58.82	**
	Group B	0.94±0.44	0.06±0.04	-3.017	0.002551	94.12	**
Constipation	Group A	0.76±0.9	0.18±0.53	-2.887	0.003892	76.92	**
	Group B	1.11±1.02	0.22±0.13	-3.176	0.001491	80	**

Legend: Mean: Mean value of triplicates; ±: Standard Deviation; *: level of significance; SE: Standard Error

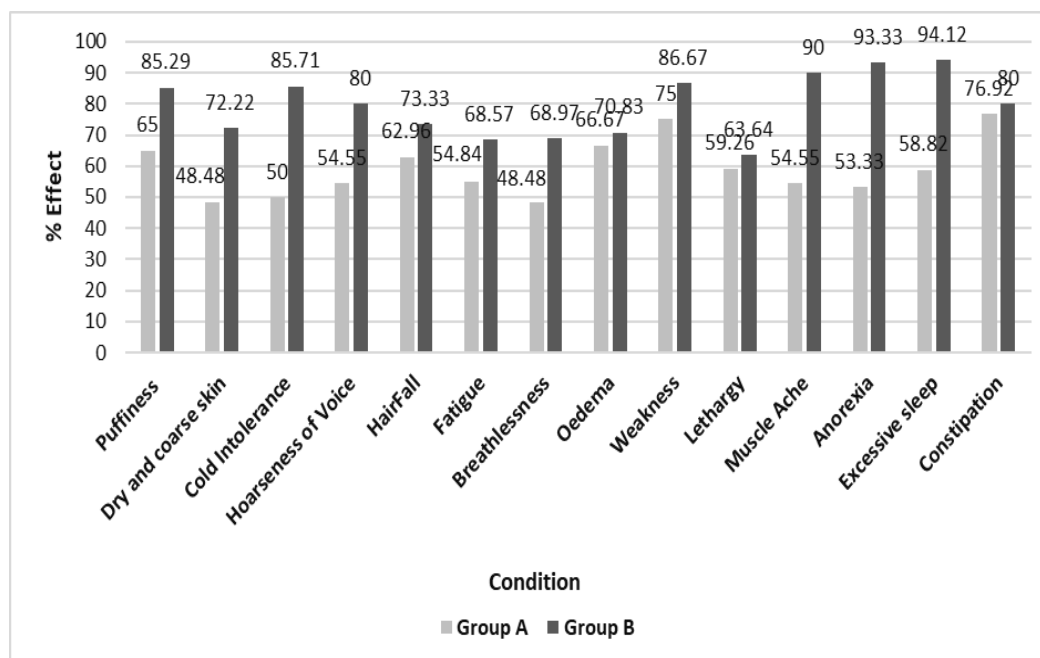
Table 6. Comparison of treatments between Group A and Group B.

Variables	Groups	Number (N)	Mean Rank	Sum of Ranks	Mann Whitney U	p value
Puffiness of face and eyelids	Group A	17	12.76	217	64	0.0004
	Group B	18	22.94	413		
	Total	35				
Dry and Course Skin	Group A	17	14.56	247.5	94.5	0.0003
	Group B	18	21.25	382.5		
	Total	35				
Cold intolerance	Group A	17	14.88	253	100	0.0006
	Group B	18	20.94	377		
	Total	35				
Hoarseness of voice	Group A	17	14.79	251.5	98.5	0.0005
	Group B	18	21.03	378.5		
	Total	35				
Hair fall	Group A	17	16.35	278	125	0.0031
	Group B	18	19.56	352		
	Total	35				
Fatigue	Group A	17	15.74	267.5	114.5	0.0015
	Group B	18	20.14	362.5		
	Total	35				

Breathlessness	Group A	17	16.79	285.5	132.5	0.0046
	Group B	18	19.14	344.5		
	Total	35				
Oedema	Group A	17	14.76	251	98	0.0005
	Group B	18	21.06	379		
	Total	35				
Weakness	Group A	17	20.68	351.5	107.5	0.0007
	Group B	18	15.47	278.5		
	Total	35				
Lethargy	Group A	17	19.41	330	129	0.0033
	Group B	18	16.67	300		
	Total	35				
Muscle ache	Group A	17	17	289	136	0.0051
	Group B	18	18.94	341		
	Total	35				
Anorexia	Group A	17	16.29	277	124	0.0029
	Group B	18	19.61	353		
	Total	35				
Excessive sleep	Group A	17	16.32	277.5	124.5	0.003
	Group B	18	19.58	352.5		
	Total	35				
Constipation	Group A	17	16.06	273	120	0.0023
	Group B	18	19.83	357		
	Total	35				

The results indicated that Group B, which received a combination treatment of 1 gm *Jalakumbhi bhasma*, 500 mg *Yava kshara*, and 500 mg *Pippali churna*, demonstrated

superior effectiveness in treating hypothyroidism compared to Group A, which received only 1 gm *Jalakumbhi bhasma*.



Percentage effect of treatments on Group A and Group B

DISCUSSION

In Ayurvedic philosophy, hypothyroidism is understood as a condition primarily characterized by the imbalance of *Kapha*

and *Vata doshas*. According to Ayurveda, the proper functioning of the body hinges significantly on Agni, the digestive fire [21]. When Agni, particularly *Jatharagni*

(digestive fire located in the stomach), becomes impaired, it disrupts *Dhatwagni*, the metabolic fire present in each tissue (*dhatu*). This disturbance leads to an inability of tissues to receive adequate nourishment, contributing to the development of diseases such as hypothyroidism [22]. This perspective underscores the critical role of addressing Agni imbalance and supporting *Dhatwagni* as essential steps in managing hypothyroidism within Ayurvedic principles.

Madhura, amla-lavan rasas aggravate *Kapha dosha* which leads to *agni mandya* resulting in pathogenesis of the disease. In hypothyroidism, there is *avran* of *vata* by *kapha dosha*. All the *dhatwagni* are hampered thus there is *vridhi* of *uttar dhatu* or if we follow the *khale kapot nyaya* then the particular *dhatwagni* is not able to nourish its own *dhatu* thus, leading to its *vridhi* [23, 24]. So, when *medodhatwagni* is *mandya* or even *mamsagni* is *mandya* it directly increases the production of *meda* as there is no *agni* to digest [25]. The various signs and symptoms mentioned by the *Acharyas* in the *vikruti* of *dushyas* is easily co-related with hypothyroidism [26]. This disease is a metabolic disorder and increases with sedentary lifestyle. To treat this disease, one must think about *samprapti bhanga* and, thus administer *deepan-pachan* drugs which will work on *kapha* and *vata vikruti* [27].

In the present study, Group A experienced the highest level of relief from constipation symptoms (76.92%), followed by weakness (75%), edema (66.67%), puffiness of the face and eyelids (65%), hair loss (62.96%), lethargy (59.26%), excessive sleep & fatigue (54.84%), hoarseness of voice, muscle ache (54.55%), anorexia (53.33%), cold intolerance (50%), dry & course skin, and breathlessness (48.48%). All of these symptoms were statistically significant at $p < 0.05$. Furthermore, excessive sleep was the most significantly relieved symptom in Group A (94.12%), followed by anorexia (93.33%), weakness (86.67%), cold

intolerance (85.71%), puffiness of the face and eyelids (85.29%), hoarseness of voice & constipation (80%), hair fall (73.33%), dry & course skin (72.22%), edema (70.83%), fatigue & breathlessness (68.97%), and lethargy (63.64%), all considered to be significant ($p < 0.05$). Three main *doshas* are *kapha dosha vridhi*, *kapha avrut vata vridhi* and *pitta kshaya* in the manifestation of *Medo dhatwagni mandya* (primary hypothyroidism) [28]. To normalise *kapha vata vridhijanya dhatvagnimandya*, treatment comprises taking drugs with *rasa* that soothes the *kapha vata*, *agni deepan*, and *ama pachan gunas* [29].

Furthermore, excessive sleep was the most significantly relieved symptom in Group A (94.12%), followed by anorexia (93.33%), weakness (86.67%), cold intolerance (85.71%), puffiness of the face and eyelids (85.29%), hoarseness of voice & constipation (80%), hair fall (73.33%), dry & course skin (72.22%), edema (70.83%), fatigue & breathlessness (68.97%), and lethargy (63.64%), all significant ($p < 0.05$). In the manifestation of *Medo dhatwagni mandya* (primary hypothyroidism), the three main *doshas* are *kapha dosha vridhi*, *kapha avrut vata vridhi*, and *pitta kshaya* [28]. To normalize *kapha vata vridhijanya dhatvagnimandya*, treatment comprises taking drugs with *rasa* that soothes the *kapha vata*, *agni deepan*, and *ama pachan gunas* [29].

Jalakumbhi bhasma is considered as *Tridosha nashak*, which interferes with the breakdown of illness diathesis and operates on the *avrita kapha vatal medovata*, *samprapti vighatan*, and *medadhatu dushti*. It enhances the *medagnil* synthesis of thyroid hormones. *Yava kshara* has *kapha-pitta hara*, *vatahar*, *lekhan* and *medohara* properties, acts on *avrita kapha vata/medovata*, *samprapti vighatan*, *medadhatu dushti*, *ksharan* of *meda dhatu* and, *medagni praditi*. *Pippali* possesses *deepan-pachan*, *shothahar*, *tridosahar gunas* and it is *ushna virya* and of *tikshna guna* which works effectively well on the vitiated *kapha* and *agni mandata*. It has

anti-oxidant, immunomodulatory and anti-inflammatory properties so it might help to overcome autoimmune responses [30]. *Shigru* leaves are rich in iodine with the most important supplement missing which is one of the most important causes of the disease. It is *vata pitta hara* and *medohara* [31], thus, overcomes the *vikruti* in *vata dosha* and, also helps to combat *meda vridhhi* which is the foremost *vikruti* seen in hypothyroidism [32, 33].

CONCLUSION

The Ayurvedic perspective on hypothyroidism, known as *Medo dhatwagni mandya*, highlights the crucial role of metabolic processes controlled by *Jatharagni*, *Bhutagni*, and *Dhatwagni*. When there is hypo-functioning of *Agni*, it leads to the formation of *ama*, which serves as the foundation for diseases like hypothyroidism. Primary hypothyroidism is considered a manifestation of *Medo dhatwagni mandya*. A study observed patients treated with *Jalakumbhi bhasma* alone in Group A and a combination of *Jalakumbhi bhasma*, *Yavakshara*, *Pippali churna*, and *Shigru patra kwath* in Group B. Both groups showed significant recovery in clinical manifestations and TSH levels, with Group B demonstrating better results, possibly due to the inclusion of *kshara* and *deepan-pachan* drugs that effectively addressed *agni mandya* and *ama utpatti*. Importantly, no adverse effects were observed during the study, suggesting the safety of these treatments. The study concludes that *Jalakumbhi bhasma*, particularly in combination with other herbs, is effective in managing *Medo dhatwagni mandya* (hypothyroidism). The accessibility and affordability of herbs like *Yavakshara*, *Pippali churna*, and *Shigru patra* further enhance their potential utility in treating this condition. Lifestyle modifications, including exercise and a healthy diet, also played a significant role in improving treatment outcomes. Continued research could potentially lead to the availability of *Jalakumbhi bhasma* in the market, offering

a beneficial option for managing various diseases, especially hypothyroidism.

Declaration by Authors

Ethical Approval: Approved

The study was approved by the Institutional Ethical Committee (PAC/DOPGS/55).

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