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Comparative Evaluation of *Dashamula saindhavaa Sarpi* as *Nasya* (nasal administration) versus Oral administration in the Management of *Ardhavabhedaka* (~Migraine): A Randomized Parallel Group Clinical Study

Research Article

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Abstract

Ardhavabhedaka is described as one of the eleven types of *Shiroroga* (headache disorders) in all Ayurvedic classical texts. It is a disease in which there is acute pain in half of the head, laterals of the neck, temporal region, ear and eyes. Based on the similarity in etiology, pathology, symptoms and treatment principles *Ardhavabhedaka* can be very well connected with migraine. As per the International Headache Society (IHS), Migraine accounts for 16% of all primary headaches. As per WHO, Migraine prevalence and incidence of the attack suggest that migraine attacks around 3000 persons per million populations every day globally. Aim of Study: To compare the effect of Dashmula saindhavaa Sarpi Nasya and Oral in the Management of Ardhavabhedaka wsr to Migraine. Material and Methods: Total of 68 patients of age group 16 to 60 years of either sex were enrolled based on headache as the chief complaint. After screening via a Pre-diagnostic questionnaire (IHS), 24 patients were excluded and 44 patients recruited were randomly divided into two groups, group A received *Dashmula saindhavaa Sarpi nasya,* 6 drops in each nostril for 7 days, repeated after intervals of 1 week (four cycles) and Group B received *Dashmula saindhava Sarpi* orally 12 grams/day in two divided doses for 2 months. The assessment was done based on 4 point grading score of Clinical symptoms of Ardhavabhedaka (Migraine). Result: Overall effect of therapy shows that in Group A 05.00% had the complete cure, 50.00% of patients had marked improvement and 40.00% had moderate improvement whereas, in Group B, 05.88% had the complete cure, 35.29% of patients had marked improvement and 35.29% had moderate improvement. Both groups showed highly significant results (p = >0.001) in severity, duration, and frequency and various parameters of Ardhavabhedaka with more percentage improvement in Group A i.e., with *Nasya* therapy. Conclusion: Clinical assessment of *Dashmula saindhava Sarpi nasya* and as oral therapy on different parameters of Ardhavabhedaka showed that both are effective and safe.

Keywords: *Ardhavabhedaka,* Migraine, *Shiroroga, Nasya, Dashmula saindhava sarpi*.

Introduction

Ardhavabhedaka is described in Ayurveda as one of the 11 types of *Shiroroga* (headache disorders) in which there is acute pain in half of the head, laterals of the neck, temporal region, ear and eyes (1). Ardhavabhedaka can be well connected with migraine because of its similarity in etiology, pathology and its primary symptom *"Ardha Mastaka Vedana"*(2) i.e., half-sided headache. In *Ardhavabhedaka* there is cutting and churning type of pain in half of the head, cervical region, eyebrows, temporal part, ears, eyes, and frontal part which is very much similar to Migraine. The headache varied in intensity, frequency and duration. Other accompanying clinical features as nausea and vomiting along with paroxysmal nature also resemble migraine (3) (4). According to Acharya Charaka, it is *vatakaphaja* (5) while Acharya Sushruta has described it as *tridoshaja* (6) and it is only *vataja* as per Acharya Vaghbhat (7). Its attack comes in 10 days, 15 days and even after a month. Ardhavbhedaka, is a *sadhya* (curable) type of *Shiroroga* that can be best managed with *aushadhi* (medicine) having *Tridoshahara* or *Vata-Kapha-hara* properties.

Migraine is a worldwide prevalent chronic one of the most disabling disorders (8). It is a paroxysmal primary headache disorder, which is characterized by throbbing moderate to severe pain. Headache is usually unilateral and lasts for 6 to 48 hours. It is characterized by episodic headaches with or without aura (9). An aura in the form of neurological symptom, that may precede headache as visual disturbance, viewing flashes of light, tingling, nausea, vomiting, etc.(10). Migraine is a lifestyle disorder that is precipitated by stress, studying under dim light, loud sound, interrupted sleep, irregular and faulty eating habits. Associated symptoms are

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nausea, vomiting, phonophobia, and photophobia (10). In today's stressful life, migraine is one of the most common complaints for which the patient seeks medical advice. It is a common human experience, diverse in its expressions, complex in its manifestations, and difficult to understand in any simple mechanistic way. As per the International Headache Society, Migraine accounts for 16% of all primary headaches (10)(11). It affects 10-20% of people worldwide4. As per WHO, Migraine prevalence and incidence of the attack suggest that nearly 3000 migraine episodes per million people occur every day (12). Migraine alone is the 19th cause that is capable of bringing disability to the common man. Females are 3 times more likely to have Migraine than males. Migraine is most common between ages 30 and 50. Recent studies suggest a similar scenario in India with higher prevalence in certain places (13).

Management of Migraines comprises both pharmacological and non-pharmacological treatment. Medications are often required for acute attacks and also as prophylactic medicine to decline attacks (12). Many of the conventional drugs are often high-cost and cause a serious economic burden on developing countries (14). As per the survey of the global burden of disease, in 2010, Migraine was graded as the third most widespread disease. It is also ranked as 7th foremost reason for disability worldwide (15). Medication overuse headache further complicates the treatment plan (16). Also, relief of symptoms is temporary or many times there is no relief with progressive worsening of the disease along with side-effects of drugs (16)(17). As a result, the use of Complementary and alternative medicine (CAM) as acupuncture (18)(19), Yoga therapy (20), biofeedback therapy (21), herbal medicine, and mineral supplementation (22) is growing practice in the management of migraine (23). *Panchakarma* therapy also shows promising results in the management of chronic disorders. It expels the *doshas* from the body completely and prevents the recurrence of the disease. *Nasya* is the prime therapy in the management of *Shiroroga* including *Ardhavabhedaka* (24). It is a therapeutic measure in which medicine is instilled through the nostrils (25) (26). According to Acharya Charaka (3) and Acharya Sushruta (27), Ghrita is the best for pacifying Pitta and *Vata doshas* and is an effective remedy for *Ardhavabhedaka*. It nourishes *Dhatus* and improves *Ojas*. Exclusive indication of *Dashmula saindhava Sarpi* as *Nasya* is available in *Ardhavabhedaka chikitsa* in Chakradutta (28). It is *Vata-kapha shamaka, Jeevaneeya (provides nourishment),* and *Brinhaneeya* (improves strength) and may provide relief to patients of migraine.

Aims and Objectives

The present study aims to compare the effect of *Dashmula saindhava Sarpi* Oral and *Nasya* in *Ardhavabhedaka* with special reference to Migraines.

Materials and Methods

Protocol of Clinical Study

IEC approval and CTRI Registration- Clinical trial Approval was attained from the Institutional Ethical Committee (IEC) of Vaidya Yagya Dutt Sharma Ayurveda Mahavidyalaya and Hospital, Dharpa, Khurja, Bulandshahar (No. IEC 2017/IEC/14, dated 17/02/2018). CTRI Registration no. is CTRI/ 2019/12/022512.

Proforma: A comprehensive research proforma was prepared integrating all the points from Ayurvedic and modern aspects to study the disease and patients.

Consent –A voluntary, signed consent was taken in writing, from the patients preceding the trial.

Clinical Study

Study type- A Randomized parallel-group study.

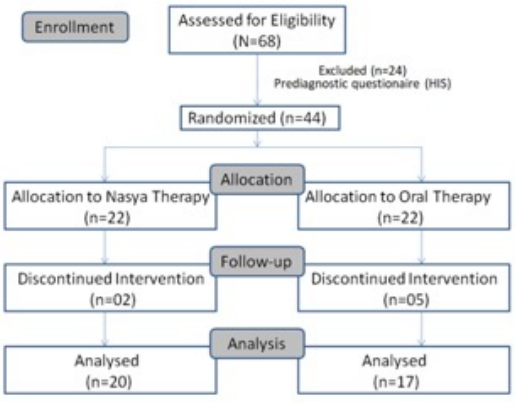
Age- 16 to 60 years

Total of 68 patients, from O.P.D. & I.P.D. of Post Graduate Department of Panchakarma, Vaidya Yagya Dutt Sharma Ayurveda Mahavidyalaya and hospital, Dharpa, Khurja, Bulandshahar, of either sex were enrolled based on headache as the chief complaint. After screening via a Pre-diagnostic questionnaire (IHS), 24 patients were excluded and 44 patients recruited were randomly divided into Group A and Group B. Assessment was done on 4 point grade score of signs and symptoms of *Ardhavabhedaka* (Migraine). Out of them, 2 patients from Group A and 5 from Group B discontinued the treatment. Thus 20 participants from Group A and 17 from Group B underwent the clinical trial. (Fig. 1)

Group A- *Dashmula saindhava Sarpi (nasya),* 6 drops instilled in each nostril/day for 1 week, repeated after 1 week (four cycles). Duration- 02 Months.

Group B- *Dashmula saindhava Sarpi (oral),* 12 grams/ day in two divided doses. Duration- 02 Months.

Fig. 1 CONSORT 2010 Flow diagram of Parallel group study



Trial Drug

Ingredients and Properties of *Dashamula saindhava Sarpi* – *Dashamula saindhava Sarpi* is mentioned in Chakradutta in Shiro-Rogadhikara for *Ardhavabhedaka Chikitsa* (28). It is Vata- kapha shamaka, Jeevaneeya and Brumhaneeya and may provide relief to the patients of migraine.

Dashamula saindhava Sarpi is a compound formulation containing :

- Drugs of *Dashamula Gana*
- *saindhava*
- *Goghrita*

Dashamula

In *sutrasthana* of *Charak Samhita Shavyathuhara* (anti-inflammatory) *Mahakashaya*,a group of ten drugs are mentioned. These are termed as *Dashmula*. *Dashamula* is is the combination of *Laghu* and *Brihat Panchamula*. *Laghu Panchamula* comprises of *Brihati* (*Solanum indicum* L.), *Kantakari* (*Solanum xanthocarpum* L.), *Gokshura* (*Tribulus terrestris* L.), *Shalaparni* (*Desmodium gangeticum* L. DC.) and *Prishniparni* (*Uraria picta* Jacq. Desv. ex DC). *Brihat panchamula* includes *Bilva* (*Aegle marmelos* L.Corr.), *Agnimantha* (*Premna obtusifolia* R. Br.), *Shyonak* (*Oroxylum indicum* Vent.), *Patala* (*Stereospermum suaveolens* Mabb.) and *Gambhari* (*Gmelina arborea* Roxb.). *Dashamula* is recommended in *Vata* predominant *Tridoshaja* diseases.It is described under *Shothahara* (anti-inflammatory) drugs (29). As per Ayurvedic Pharmacopoeia of India (API), *Dashamula* has the property of subsiding inflammation and thereby reduce pain and fever (30).

Goghrita

In this preparation *goghrita* performs not only as an active drug component but also as a vehicle for the drug. It directly penetrates deeper into the tissues and bypasses the digestive system.

Saindhava

By stimulating blood circulation and having Kapha vilayana property *saindhava* helps to dissolve and disintegrate *Kapha* It helps to dissolve and expel *Doshas*. It is indicated specifically in Pitta Kapha dominant Shiroroga.

Table 1. Pharmacological Properties and actions of Ingredients of *Dashmula saindhava Sarpi* (31)

Serial No.	Sanskrit Name	*Guna*	*Rasa*	*Veerya*	*Vipaka*	*Dosha Karma*	Main *karma*
1	*Brihati* (*Solanum indicum* L.)	*Laghu, Rooksha Tikshna*	*Katu, Tikta*	*Ushna*	*Katu*	*Kaphavatahar*	*Kashahar, Mutral,*
2	*Kantakari* (*Solanum xanthocarpum* L.)	*Laghu, Rooksha Tikshna*	*Katu, Tikta*	*Ushna*	*Katu*	*Kaphavatahar*	*Kashahar, Mutral,*
3	*Gokshura* (*Tribulus terrestris* L.)	*Guru, Snigdha*	*Madhura*	*Sheeta*	*Madhura*	*Vatapittahar*	*Mutra-virechaniya*
4	*Shalaparni* (*Desmodium gangeticum* L. DC.)	*Guru, Snigdha*	*Madhura, Tikta*	*Ushna*	*Madhura*	*Tridoshahar*	*Shoolahar, Shothahar,*
5	*Prisnaparni* (*Uraria picta* Jacq. Desv. ex DC)	*Laghu, Snigdha*	*Madhura, Tikta*	*Ushna*	*Madhura*	*Tridoshahar*	*Shoolahar, Deepana*
6	*Bilva* (*Aegle marmelos* L.Corr.)	*Laghu, Rooksha*	*Kasaya, Tikta*	*Ushna*	*Katu*	*Kaphavatahar*	*Shothahar, Deepana*
7	*Agnimantha* (*Premna obtusifolia* R. Br.)	*Laghu, Rooksha*	*Tikta, Katu, Kashaya, Madhura*	*Ushna*	*Katu*	*Kaphavatahar*	*Shothahar, Vednasthapak*
8	*Syonaka* (*Oroxylum indicum* Vent.)	*Laghu, Rooksha*	*Madhura, tikta, kashaya*	*Ushna*	*Katu*	*Kaphavatahar*	*Upashosana, Shothahara*
9	*Patla* (*Stereospermum suaveolens* Mabb.)	*Laghu, Rooksha*	*Tikta, kashaya*	*Ushna*	*Katu*	*Tridoshahara*	*Shothahara,*
10	*Gambhari* (*Gmelina arborea* Roxb.)	*Guru*	*Tikta, Kasaya, Madhura*	*Ushna*	*Katu*	*Tridoshahara*	*Shothahara,*
11	*Saindhavaa(32)(33) (Rock Salt)*	*Laghu, Snigdha*	*Lavana, Ishat Madhura*	*Sheeta*	*Madhura*	*Tridoshahara*	*Chakshusya, Hridya, Deepana.*
12	*Goghrita(34) Cow ghee*	*Guru, Snigdha, Mridu*	*Madhura*	*Sheeta*	*Madhura*	*Vatapittahara*	*Deepana, Ayushya, Balya, Chakshusya*

Drug standardisation and Safety protocol

- All the ingredients mentioned above were procured from the market. These were then authenticated by the Department of Dravyaguna, Vaidya Yagyadutt Sharma College & Hospital, Khurja.
- *Dashamula saindhava Sarpi* was prepared in the Pharmacy of Vaidya Yagya Dutt Sharma Ayurveda Mahavidyalaya and hospital, Khurja, Bulandshahar, by concerned experts and under the supervision of department of *Rasa Shastra* and *Bhaishajya Kalpana*. All the necessary measures regarding the preparation of trial drug were taken by competent authority.

Dose deciding criteria

- Dose of *Dashamula saindhava Sarpi* was decided on basis of dosage of *ghrita* preparation, as prescribed by Ayurvedic Formulary of India (A.F.I.), i.e., 12 grams/ day in two divided doses(35).
- *Nasya (Marsha)*- Dose- 6 drops in each nostril.

Preparation of *Dashamula saindhava Sarpi*

Dashamula saindhava Sarpi

It was prepared on the basis of *Sneha Kalpana* preparation mentioned in *Sharangadhar Samhita*. There are ten (*Dashmula gana*) ingredients. These drugs were mentioned for the preparation of kalka. Fine paste of these drugs added to heated *go-ghrita* and then heated on *mandagni* (60-80 C), till the *sneha siddhi lakshana* were obtained. The process was completed on 4th day. *saindhava* is added in the form of *prakshepa dravya.*

In both the groups the prescribed drug was *Dashamula saindhava Sarpi* but for nasya therapy ghrita was cooked up to mridu paka and for the purpose of oral therapy, ghrita was cooked to manda paka.

The procedure for Nasya Karma was as follows:

- *Purva Karma* (Pre- *Panchakarma/Nasya)* : *Sthanika Abhyanga* (Local massage) with Koshna (warm) Tila Taila followed by Swedana (sudation).
- *Pradhan Karma* (Main-*Panchakarma/Nasya)* : *Dashamula saindhava Sarpi* to both the nostrils daily in the morning in empty stomach with a dosage of 6 drops in each nostrils
- *Paschat Karma (*Post-*Panchakarma/Nasya)* : *Kavalam* (gargling and mouth-wash) with *Sukhoshna Jala* (luke-warm water).

Duration of trial

2 months with every fortnightly follow up.

Criteria adopted for research

Diagnostic criteria

· A prediagnostic- questionnaire was prepared for the screening of patients on the basis of classical symptoms of *Ardhavabhedaka* and diagnostic Classification of International Headache Society (2-4)(36)

International Criteria of Headache Disorders (ICHD) for Migraine :

a) Atleast 5 attacks fulfilling the features of points (b) – (d)
b) Headache paroxyms lasting 4-72 hours.
c) It must have atleast one of the these symptoms.
   (1) Pain in one half of head.
   (2) Throbbing pain.
   (3) Pain severe and impairs daily activities.
   (4) Pain intensified by exertion such as walking.
d) During attack one or more of these symptoms.
   (1) Nausea or vomitting
   (2) Photophobia or phonophobia

Inclusion Criteria

- Patients between 16 - 60 years.
- Patients having clinical features of *Ardhavabhedaka* vis a vis Migraine as per Ayurveda and modern parameters were included in the clinical trial.

Exclusion Criteria

- Sinusitis, hypertention
- Referred pain because of problems of ear, eye or teeth.
- Trigeminal neuralgia.
- Space occupying brain lesions.
- All patients contraindicated for *Nasya*.

Discontinuation criteria

- Patients not willing to continue treatment.
- Aggravation of symptoms.

Investigations

- Routine blood, urine, stool was carried out before therapy to exclude any systemic illness.
- PNS X-ray, CT-SCAN and ophthalmological examination were done in doubtful cases to exclude other etiologies of headache.

Criteria for assessment

The improvement in patients was assessed on the basis of relief in the signs and symptoms of the disease. For this purpose main signs and symptoms were assessed on 4 point score according to their severity. Main signs and symptoms assessed are :Severity, Frequency and Duration of Headache, Nausea, Vomiting, Vertigo and Aura. The observations obtained on various parameters, were statistically analyzed for Mean and Standard Deviation (S.D.). Significance of effect of treatment was calculated by "Wilcoxon Signed Rank Test"by using Sigma Stat, Ver-3.5 (2007), by Systat Software Inc., San Jose, California.

Criteria for final Assessment

100% relief in clinical features with no recurrence during follow up was considered as cured, 76-99% improvement as marked, 51-75% as Moderate,

26-50% as Mild and less than 25% was noted as no improvement.

Side-effects evaluation criteria

Clinical evaluation was done to find out any untoward effect of the therapy and trial drug. It comprises the documentation of information regarding change in appetite, sleep, abdominal discomfort, pain, irritation etc.

Observations

The study of incidence of age showed that maximum patients were belonging to age group of 21-30 years i.e. 40.91% in each group and 31-40 years of age group was also very common (31.82%). In general, patients suffer from headache in their middle age group, striking individuals early in their peak productive years. 77.27% of patients were female, 56.81% were homemakers, 84.09% were Hindu, 81.82% were married, 31.82% of patients had education till graduation, 36.36% of the patients belonged to middle class, 61.36% patients were living in urban area, 59.09% patients had negative family history.Maximum patients were vegetarian (63.64%) with moderate appetite (65.91%) and regular bowel habit (75%). Maximum patients were having addiction of tea (59.09%), which contains caffeine. Caffeine in low doses can increase alertness and energy, but caffeine in high doses can cause insomnia, irritability, anxiety and headaches. 40.91% of patients having *Vata-Pitta Sharirika Prakriti* (physical constituation) and 63.64 % of patients were having *Rajasika Manasa Prakriti* (psycololgical status).

Distribution according to *Nidana* (Triggering factors) shows that t*he* maximum etiological factors observed were *Vishamashana* (combination of incompatible food or unhealthy food) (56.82%), *Adhyashana* (eating before digestion of previous meal) (40.91%), *Anashana* (skipping meals or eating little amount) (70.45%), followed by *Ratrijagarana* (night wakefulness) 79.55% and *Diwaswapa* (day-sleep) 52.27%. This shows faulty dietary habits and lifestyle, lead to *Agnimandhya* (derangement of digestive and metabolic capacity) and vitiation of all doshas, Tyramine present in junk food causes dilation of the vessels in brain, causing rush of blood. Constipation (40.91%) and Hyperacidity (70.45%), was also evident in the patients during migraine headache. Disturbed sleep was found in most of the patients (56.82%). Allergens, like *Dhupa* (fumes) (86.36%), *Dhuma*(smoke) (75%), *Dhuli* (dust)(68.18%) also reported as common provoking factors. Mental factors such as *Chinta* (stress) (84.09%), *Krodha* (anger) (84.09%), emotional (79.55%) and physical stress (75%) also evident as trigger factors. Sunlight and Bright lights (86.36%) also reported one of the major triggering factor.

On observing the chief complaints, *Shirah-shula* (headache)was present in 100% patients with *Hrillas* (nausea) in 84.09%and *Chardi* (vomiting) in 65.91%. *Bhrama* (vertigo) was found in 43.18%and Aura in 27.27%. Prevalence of associated symptoms in patients of migraine presented that 86.36% patients had Photophobia, 72.73% had Phonophobia, 81.82% had Supra-orbital pain and 63.64% had Ocular pain. Heaviness of eyes was found in 65.91% patients, neck stiffness in 59.09%, sleep disturbance in 52.27% and loss of memory in 50% patients. all these clinical features correspond to textual symptoms of *Ardhavabhedaka* and migraine. On analyzing *Shirah-shula* (headache), Maximum (68.18%) number of patients had one- sided headache, with more prevalent in orbitaland temporal region (86.36% each), Tivra (sharp) type of pain was perceived by 52.27%.The duration of 3-6 hours and >12 hours of headache were found in maximum (29.55% each). Frequency, of episode observed maximum 43.18% of interval of 10 days. 72.73%patients presented complaint of acute onset of headache.

Results

Table – 2: Effect of *Nasya (Dashmula saindhava Sarpi)* on headache

Headache (n=17)	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Severity	3.53	0.53	85.00	3.00	0.35	0.09	34.99	>0.001
Duration	2.59	0.71	72.73	1.88	0.86	0.21	9.05	>0.001
Frequency	3.06	0.76	75.00	2.29	1.10	0.27	8.56	>0.001

The effect of *Nasya* Therapy on headache showed highly significant (>0.001) improvement in severity (85%), duration (72.73%) and frequency (75%) of headache in Group A.

Table – 3: Effect of *Nasya (Dashmula saindhava Sarpi)* on Chief Complaints

Chief Complaints	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Nausea (Hrillas) (n=15)	2.57	0.14	94.44	2.43	0.65	0.17	14.06	>0.001
Vomiting (Chhardi) (n=13)	3.00	0.23	92.31	2.77	0.44	0.12	22.77	>0.001
Vertigo (Bhrama) (n=8)	2.50	0.25	90.00	2.25	0.46	0.16	13.75	>0.001
Aura (n=5)	3.2	0.60	81.25	2.60	0.54	0.24	10.61	>0.001

Before treatment the mean score of Nausea (*Hrillas*) was 2.57, which is reduced to 0.14 after treatment. This reduction of 94.44%. Before treatment the mean score of Vomiting (*Chardi)* was 3, which is reduced to 0.23 after treatment. This reduction of 92.31% . Mean score of Vertigo *(Bhrama)* also reduced to 0.25 from 2.50 after therapy with 90%reduction. Also Aura showed 81.25% reduction with mean score reduced to 0.60 from 3.2. Statistically highly significant (p>0.001) improvement observed in chief complaints in Group A.

Table – 4: Effect of *Nasya (Dashamula saindhava Sarpi)* on Associated Complaints

Ocular complaints	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Blurring of vision (n=4)	2.25	0.50	77.78	1.75	0.50	0.25	7.00	<0.001
Lacrimation (n=7)	2.00	0.71	64.29	1.29	0.49	0.18	6.97	>0.001
Ptosis (n=3)	2.00	0.67	66.67	1.33	0.58	0.33	4.00	<0.05
Eyelid oedema (n=4)	1.75	0.50	71.43	1.25	0.50	0.25	5.00	<0.01
Ocular pain (n=11)	2.18	0.73	66.67	1.45	0.52	0.16	9.24	>0.001
Supraorbital pain (n=11)	2.67	0.67	75.00	2.00	0.74	0.21	9.38	>0.001
Heaviness of eyes (n=11)	2.82	0.64	77.42	2.18	0.60	0.18	12.00	>0.001
Photophobia (n=15)	2.41	0.29	87.80	2.12	0.49	0.12	18.00	>0.001
Ear complaints								
Phonophobia (n=15)	2.24	0.35	84.21	1.88	0.60	0.15	12.91	>0.001
Tinnitus (n=4)	1.75	0.25	85.71	1.50	0.58	0.29	5.20	<0.01
Nasal complaints								
Rhinorrhoea (n=4)	1.75	0.00	100	1.75	0.50	0.25	7.00	<0.001
GIT complaints								
Constipation (n=7)	2.71	0.57	78.95	2.14	0.38	0.14	15	>0.001
Hyperchlorhydria (n=9)	2.90	0.10	96.55	2.80	0.42	0.13	21.00	>0.001
Other complaints								
Sleep disturbance (n=9)	3.33	2.11	36.67	1.22	0.44	0.15	8.32	>0.001
Mood swinging (n=12)	2.71	1.36	50.00	1.36	0.49	0.13	10.21	>0.001
Stiffness of neck (n=12)	2.67	1.25	53.13	1.42	0.51	0.15	9.53	>0.001
Loss of memory (n=10)	2.81	1.64	41.94	1.18	0.40	0.12	9.69	>0.001

Regarding Ocular complaints 87.80% improvement was observed in Photophobia. Heaviness of eyes and Blurring of vision were improved by 77% each, followed by 75% improvement in Supraorbital pain, 66% in Ocular pain and Ptosis each and 64.29% in Lacrimation.

Regarding Ear complaints Tinnitus and Phonophobia were improved by 85.71% & 84.21% respectively. In GIT complaints such as Constipation and Hyperchlorhydria, improvement was 78.95% and 96.55% respectively, which were statistically highly significant. Similarly improvement in Stiffness of neck was 53%, Mood swinging 50%, Sleep disturbance 36.37% and Loss of memory 41.94%.

Table – 5: Effect of Oral *(Dashamula saindhava Sarpi)* on headache (chief complaint)

Headache (n=20)	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Severity	3.20	0.85	73.44	2.35	0.75	0.17	14.10	>0.001
Duration	2.20	0.90	59.09	1.30	0.92	0.21	6.30	>0.001
Frequency	2.70	1.05	61.11	1.65	1.09	0.24	6.77	>0.001

The effect of oral *Dashamula saindhava Sarpi* on headache showed highly significant (>0.001) improvement in severity (73.44%), duration (59.09%) and frequency (61.11%) of headache in Group B.

Table – 6: Effect of Oral *(Dashamula saindhava Sarpi)* on other Chief Complaints

Chief Complaints	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Nausea (Hrillas) (n=14)	2.35	0.24	90.00	2.12	0.70	0.17	12.16	>0.001
Vomiting (Chhardi) (n=10)	2.55	0.27	89.29	2.27	0.47	0.14	16.14	>0.001
Vertigo (Bhrama) (n=6)	2.33	0.50	78.57	1.83	0.41	0.17	11	>0.001
Aura (n=4)	2.60	0.60	76.92	2.00	1.00	0.45	4.47	<0.05

Before treatment the mean score of Nausea *(Hrillas)* was 2.35, which is reduced to 0.24 after treatment. This reduction of 90%.Before treatment the mean score of Vomiting *(Chhardi)* was 2.55, which is reduced to 0.27after treatment. This reduction of 89.29%.Mean score of Vertigo *(Bhrama)* was reduced to 0.50 from 2.33 after therapy with 78.57%reduction. Statistically highly significant (p>0.001) improvement observed in all these 3 parameters in Group B Aura showed 76.92% reduction with mean score reduced to 0.60 from2.60, which was not found statistically significant (p<0.05).

Table – 7: Effect of Oral *(Dashamula saindhava Sarpi)* on Associated Complaints

Ocular complaints	Mean Score		%	X	S.D. ±	S.E. ±	t'	P
	B.T.	A.T.						
Blurring of vision (n=6)	1.83	0.67	63.64	1.17	0.75	0.30	3.80	<0.01
Lacrimation (n=10)	0.83	1.17	58.33	2.33	0.72	0.21	5.63	>0.001
Ptosis (n=3)	2.33	1.00	57.14	1.33	1.15	0.67	2.00	<0.10
Ocular pain (n=12)	2.31	0.85	63.33	1.46	0.66	0.18	7.98	>0.001
Supraorbital pain (n=18)	2.67	0.72	72.92	1.94	0.94	0.22	8.80	>0.001
Heaviness of eyes (n=14)	2.64	0.93	64.86	1.71	1.27	0.34	5.06	>0.001
Photophobia (n=15)	2.47	0.65	73.81	1.82	0.88	0.21	8.52	>0.001
Ear complaints								
Phonophobia (n=12)	2.31	0.77	66.67	1.54	0.88	0.24	6.32	>0.001
Tinnitus (n=5)	2.00	0.40	80.00	1.60	0.55	0.24	6.53	<0.001
Impaired hearing (n=3)	1.67	0.33	80.00	1.33	0.58	0.33	4.00	<0.05
Nasal complaints								
Rhinorrhoea (n=7)	2.00	0.29	85.71	1.71	0.49	0.18	9.30	>0.001
GIT complaints								
Constipation (n=9)	2.89	0.67	76.92	2.22	0.67	0.22	10.00	>0.001
Hyperchlorhydria (n=16)	2.75	0.13	95.45	2.63	0.50	0.13	21.00	>0.001
Other complaints								
Sleep disturbance (n=9)	3.00	1.89	37.04	1.11	0.33	0.11	10.00	>0.001
Mood swinging (n=15)	2.47	1.33	45.95	1.13	0.35	0.09	12.47	>0.001
Stiffness of neck (n=10)	2.50	1.10	56.00	1.40	0.70	0.22	6.33	>0.001
Loss of memory (n=6)	2.33	1.67	28.57	0.67	0.52	0.21	3.16	<0.01

Regarding ocular complaints, Photophobia and Supraorbital pain were improved by 73.81% & 72.92% respectively. 63% improvement was observed in Ocular pain and Blurring of vision each. Heaviness of eyes was improved by 64.86%, Lacrimation by 58.33% and Ptosis by 57.14%. Regarding ear complaints Tinnitus and Impaired hearing were improved by 80% each and Phonophobia by 66.67%. Improvement in Rhinorrhoea was 85.71%, which is statistically highly significant. In GIT complaints such as Constipation and Hyperchlorhydria, improvement was 76.92% and 95.45% respectively, which were statistically highly significant. Similarly improvement in Stiffness of neck was 56%, Mood swinging 45.95%, Sleep disturbance 37.04% and Loss of memory 28.57%.

Fig 2: Effect of Therapy on Chief Complaints

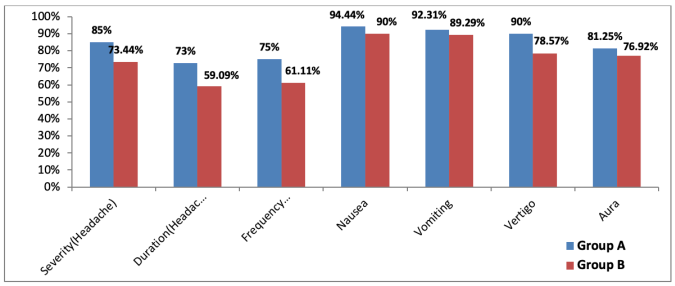


Fig 3: Effect of therapy on associated complaints

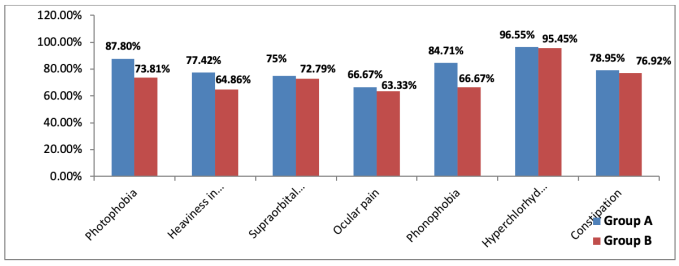


Table 8: Total effect of therapy in 37 patients of *Ardhavabhedaka*

Total effect	Group A	%	Group B	%
Cured	1	5.00%	1	5.88%
Marked improvement	10	50.00%	6	35.29%
Moderately improvement	8	40.00%	6	35.29%
Mild improvement	1	5.00%	4	23.52%

All-inclusive result of the study presented that in Group A, 05.00% participants showed complete improvement, 50.00% showed marked improvement, 40.00%moderate and 05.00% showed mild improvement. In Group B, 05.88% participants showed complete improvement, 35.29% marked improvement, 35.29 %moderate and 23.52% showed mild improvement.

Effect of therapy on blood investigations

Minute changes were observed in blood investigation in Group A, as Hb was increased by 2.25%, TC by 0.32%. But these findings were statistically non-significant. Decrease in Blood sugar and S. Cholesterol was 8.38% & 7.51%, which were statistically significant. Also in Group B minimal changes were observed. Hb was increased by 0.95%, S. Cholesterol by 1.09%. But these findings were statistically insignificant.

Discussion

Overall result of the clinical studyshows that, Group A (*Dashmula saindhava Sarpi* – nasya) and group B (*Dashmula saindhava Sarpi* – oral) both has shown highly significant improvement, although percentage improvement was better in group A as compared to Group B. Symptomatic improvement was more pronounced in patients of group A, i.e., who had received Nasya therapy. After 7 days, reduction in duration and severity of Headache was found more in group A as compared to group B, suggesting relatively faster action of Nasya therapy. No untoward effect has been noticed during the study in either group.*Nasya* is specified therapy for *shirorogas* including *Ardhavabhedaka*. *Nasya,* facilitates direct access of drugs to brain. Medicines instilled through nostrils reaches to *Shringataka marma* along with associated channels within brain and helps in removal of vitiated *doshas* (37). Various clinical studies supports this concept.(38) It reaches readily to target organ as it acts locally and bypasses first phase metabolism. Modern researches establish the relationship between brain and nose. Nasal or olfactory mucosa is the only passage that directly links brain & outer environment. From nose medicine gets absorbed via three pathways - nasal mucosa, vascular pathway and neural pathway. The study drug *Dasahmula saindhavaa Sarpi* is a ghrita preparation and lipophilic in nature. Therefore, it also facilitates drug diffusion through lipoid matrix of cell-membrane. Lipophilic substances can also cross the junctions of capillary endothelium. During *nasya*, patient is advised to lie supine with head extended and somewhat lower. Because of this, drug molecules come in touch with olfactory mucosa helping in better absorption (39). *Abhyanga* (local massage) with *Tila tail* was done prior to *Nasya* therapy, also helped in mitigating *vata* and provides nourishment(40). Cutaneous stimulation dilates the blood vessels and improves circulation, thereby increases the transdermal absorption of drug. Massaging the skin generates endorphins or peptide which enhances the immune system of the body (41).

Ingredients of *Dashmula saindhavaa Sarpi* are *Dashmula gana dravya,, saindhava lavana and go ghrita*. The ingredients were found to have *Snigdha and Guru Guna, Madhura and Lavana Rasa, Madhura Vipaka* and *Ushna Veerya* that pacify *Vata Dosha*. *Ruksha Guna, Kashaya Rasa, Madhura Rasa* and *Tikta Rasa* and *Madhura Vipaka* pacify the *Pitta Dosha*. *Laghu, Tikshna and Ruksha Guna, Katu, Tikta and Kashaya Rasa and Ushna Veerya* mitigates *Kapha Dosha*. *Madhura rasa* helps in nourishment of *dhatus*. Owing to its *sarvadhatu vardhaka guna* it supports and nourishes brain cells. *Sandhankara* guna helps in regeneration of tissues. *Katu rasa* serves as *indriyouttejaka* ie, stimulates sensory perception, *marganavivrunoti* ie, clear neural pathway for accurate performance and replenishment of neurons. *Guru and Snigdha* guna supply sustenance to the brain and body. *Ushna veerya* pacifies *vata dosha* maintains better circulation in CNS. Cow ghee is used as a carrier or base for the herbal drugs because of its quality of penetrating deeper into the tissue and thus facilitating better bioavailability of drugs to target organs (42).Ghee because of the presence of fatty acids and having lipophilic property, can cross through the tough Blood Brain Barrier (BBB) (43). Ghrita also possess *Sanskaravahi* property, i.e, it attains the properties of drugs without leaving its own (44). *Ghrita* having *Balya (*strengthening*), Brimhana(* nourishing*), Rasayana (*rejuvenating*)* and *Medhya* (improving brain functions)effect. Digestion, assimilation and access to the deeper tissues are easier if any drug is formulated with *Ghrita* because of its lipophilic action. *Go-Ghrita* (Cow-ghee) also exhibits anti-oxidative property because of the presence of Vitamin A and E (45). *saindhava lavana* (rock salt) in the formulation also helped by stimulating blood circulation owing to its *Kapha vilayana* (liquefaction) and *chedana* (breaking down) property. It helps in expelling doshas and clearing channels. It is indicated specifically in *Pitta Kapha* dominated *Shiroroga*. *saindhavaa lavana* also elevates *Sattva guna* i.e, it helps in upholding positive mind-set and serenity of brain. It also provides essential minerals and helps in replenishing electrolytes. *saindhavaa* has *ishat madhura rasa* (slight Sweet taste), *sheeta veerya*, is *agni-deepaka* (improves appetite), *laghu* (easily digestible), *vrshya* (aphrodiasic), *chakshushya* (good for eyes), *Hridya* (good for heart) and pacifies *tridoshas* (46)(47).

Conclusion

It can be concluded from above study that *Dashmula saindhava Sarpi* both in the form of *nasya* as well as oral is a safe and effective therapy for *Ardhavabhedaka* (Migraine). Both the group showed highly significant result (p = >0.001) in severity , duration and frequency and in various parameters of *Ardhavabhedaka* with more percentage improvement in Group A i.e, with *Nasya* therapy. Further multi-centric research studies on large samples is desired for concrete conclusions.

Conflicts of interest - None

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